



# UC STRATEGIC ENERGY PLAN

University of California, Irvine

**FINAL**

Prepared for

**University of California  
Office of the President**

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## PREFACE

This report was produced by Newcomb Anderson McCormick for the University of California, Office of the President (UCOP) and the University of California, Irvine.

Valuable assistance and direction was provided for this project by George Getgen, Dirk VanUlden, Clifton Bowen, Matthew St. Clair and John Rolle of the UC Office of the President, and Wendell Brase, Paul Howland, Paul Wingco, Tammy Kelleher and Chris Abbamonto of UC Irvine.



## 1. EXECUTIVE SUMMARY

### 1.1 Policy on Sustainable Practices

The Regents of the University of California adopted a Policy on Sustainable Practices in March 2007 which states that the University will develop a Strategic Energy Plan (SEP) for implementing energy efficiency projects in existing buildings. The initial goal for the retrofit projects is to reduce systemwide, growth adjusted energy consumption by 10% or more by 2014 from the year 2000 base consumption level.

In addition, the Policy directs the campuses to pursue the goal of reducing greenhouse gas (GHG) emissions to year 2000 levels by 2014 and to 1990 levels by 2020. This target is not growth adjusted. The 2020 target follows the AB32 directive on GHG emissions. Because electricity and gas purchases are expected to represent perhaps three quarters of a campus' GHG emissions, the energy and GHG reduction goals are closely linked. It is anticipated that the Strategic Energy Plan projects will be one of the main tools the campus uses to meet its GHG targets.

### 1.2 Energy Use and Greenhouse Gas Reduction Targets

Table 1.1 lists past, current and projected energy purchases by UC Irvine, starting with the baseline year 2000. The energy purchases are divided by the gross building area of the campus to establish an Energy Use Index to evaluate the growth adjusted energy use targets.

The energy purchases are also converted to GHG emissions, using emissions factors for electricity generation and natural gas use. Individual campuses are preparing plans for meeting the GHG goals, due by December 2008. Those plans will address the historical campus emissions in detail. At present the emissions factors for the different electricity providers operating in 2000 and 1990 are not available. For this Strategic Energy Plan the GHG emissions factors are based on the statewide emissions factors for 2000. The 1990 utility purchases are not currently available from university or utility records so the 2020 target is undefined.

The UC Irvine energy purchases in the most recent year (FY 06-07) are also shown in Table 1.1. The cost of this energy in this year is \$14,959,647 for electricity and \$6,197,931 for natural gas, for a combined cost of \$21,157,578. The Energy Use Index and GHG emissions for this year can be compared with the 2000 baseline to see progress to date on achieving the 2014 target.

Table 1.1 also shows growth in building area and energy use projected to the year 2014 without investment in new energy efficiency, based on new construction identified in the Five Year Capital Program (2007-08 to 2011-12). Actual growth could be higher. In addition, allowance was made for the anticipated changes in electricity and gas purchases due to the operation of the cogeneration system, which was just starting up during FY 06-07. The cogeneration system will have a major net effect on the source energy use of the campus and a smaller effect on the GHG emissions. Since the campus has committed to the installation of 1 MW of photovoltaic power, this effect is also included in the 2014 projected energy purchases. Finally this growth number includes the energy savings anticipated by the end of 2008 for the Partnership projects funded in the 2006-08 Program.

### 1.3 Strategic Energy Plan Projects

This Strategic Energy Plan provides initial identification of potential for energy efficiency retrofit projects at all buildings over 50,000 square feet at University of California Irvine, summarized in Table 1.2. This includes primarily lighting, HVAC, commissioning and central plant measures. A number of other measures that apply in all sizes of buildings are identified as well. The potential for energy efficiency in new construction and renovated buildings is also addressed, based on the same Capital Program. A number of these efficiency projects were initially identified and evaluated by the campuses. A separate line item shows the potential from addition of photovoltaic power to additional roof areas on campus, not covered in the currently planned project. This report does not represent an investment grade audit so the numbers are expected to be refined in the engineering process before the campus submits them for funding. All projects except photovoltaics were evaluated using the campus energy recharge rates.

The Strategic Energy Plan attempts to be comprehensive in its identification of potential energy projects. As a result the total potential savings is significant and the payback periods for some of the measures are fairly long. During implementation the campus will select measures to implement which meet its investment and physical plant needs.

The efficiency measures will be implemented through the UC/CSU Investor Owned Utility Partnership Program in the 2009-11 and 2012-14 funding cycles. Utility incentives are projected to be similar to past cycles, \$0.24/kWh and \$1.00/therm annual savings. Energy savings have been calculated on a project by project basis, with incentives based on the building level savings. The photovoltaic projects would be implemented using the California Solar Initiative incentives.

The magnitude of project investment is many times greater than the size of past Partnership cycles, which have been constrained by the limited capital available from the campuses. A new funding mechanism will offer bond money from the Office of the President to pay upfront the University portion of the project cost, with the 15 year bond to be repaid by the campus through utility savings.

The effect of these potential projects on meeting the efficiency and GHG targets is illustrated in Table 1.1. In this table the energy savings are reported as they would be measured at the utility meters, taking into account the effect of the cogeneration and TES at the central plant. The indication is that the 2014 goals can be met with an aggressive program of project implementation. The 2020 goals cannot be addressed until the 1990 baseline is established.

The economics of these projects are described in Table 1.2, which lists the potential projects according to the funding source for the facility and the type of project. This table also lists the projected Partnership Program or Solar incentives and the net simple paybacks to the site, factoring in the incentives.



**Table 1.1A: Summary of Baseline and Projected Energy Usage, Emissions, and Goals, All Potential Projects**

Year	Energy Use Basis	Electricity (kWh/yr)	Natural Gas (th/yr)	Campus Area (GSF)	Source Energy Use Index (kBtu/sf-yr)	Source Energy Use Index vs. 2000 Baseline 2014 Target: 90%	GHG Emissions (tonne CO2 eq.)	GHG Emissions vs. 2000 Baseline 2014 Target: 100%
<b>1990 Baseline</b>	FY 89-90 Data Not Available	80,211,201	2,909,054	4,880,715	228	N/A	44,759	N/A
<b>2000 Baseline</b>	FY 99-00 Historical Use per UCOP	132,079,915	4,654,277	7,549,828	241	<b>100%</b>	72,983	<b>100%</b>
<b>Most Recent Year</b>	FY 06-07 Historical Use per UCOP	155,453,593	7,759,695	9,732,925	243	<b>101%</b>	97,980	<b>134%</b>
<b>2014 Projected</b>	With Projected Growth, 2006-2008 Partnership Projects, Cogeneration, Signed 1 MW PV	41,677,095	17,112,414	10,509,964	203	<b>84%</b>	105,855	<b>145%</b>
<b>2014 Projected</b>	Add Potential Strategic Energy Plan Efficiency Projects	(3,873,760)	10,771,168	10,509,964	99	<b>41%</b>	55,610	<b>76%</b>
<b>2014 Projected</b>	Add Remaining Potential Full Roof PV	(8,385,603)	10,771,168	10,509,964	94	<b>39%</b>	53,959	<b>74%</b>
<b>2020 Projected</b>	Additional Growth Projected	8,310,862	11,743,305	11,287,003	112	<b>49% (vs. 1990 Baseline)</b>	65,217	<b>146% (vs. 1990 Baseline, 100% Goal)</b>

**Notes:**

Source Energy	10,239	Btu/kWh Electric
	100,000	Btu/th Gas
Emissions	0.000366	tonne CO2 eq/kWh
	0.005295	tonne CO2 eq/th

**Table 1.1B: Summary of Baseline and Projected Energy Usage, Emissions, and Goals, All Committed Projects**

Year	Energy Use Basis	Electricity (kWh/yr)	Natural Gas (th/yr)	Campus Area (GSF)	Source Energy Use Index (kBtu/sf-yr)	Source Energy Use Index vs. 2000 Baseline 2014 Target: 90%	GHG Emissions (tonne CO2 eq.)	GHG Emissions vs. 2000 Baseline 2014 Target: 100%
<b>1990 Baseline</b>	FY 89-90 Data Not Available	80,211,201	2,909,054	4,880,715	228	N/A	44,759	N/A
<b>2000 Baseline</b>	FY 99-00 Historical Use per UCOP	132,079,915	4,654,277	7,549,828	241	<b>100%</b>	72,983	<b>100%</b>
<b>Most Recent Year</b>	FY 06-07 Historical Use per UCOP	155,453,593	7,759,695	9,732,925	243	<b>101%</b>	97,980	<b>134%</b>
<b>2014 Projected</b>	With Projected Growth, 2006-2008 Partnership Projects, Cogeneration, Signed 1 MW PV	41,677,095	17,112,414	10,509,964	203	<b>84%</b>	105,855	<b>145%</b>
<b>2014 Projected</b>	Add Committed Strategic Energy Plan Efficiency Projects (Tier 1 and Tier 2)	8,580,388	12,443,323	10,509,964	127	<b>53%</b>	69,022	<b>95%</b>
<b>2014 Projected</b>	Add Remaining Potential Full Roof PV	4,068,545	12,443,323	10,509,964	122	<b>51%</b>	67,370	<b>92%</b>
<b>2020 Projected</b>	Additional Growth Projected	25,276,853	13,415,460	11,287,003	142	<b>62% (vs. 1990 Baseline)</b>	80,279	<b>179% (vs. 1990 Baseline, 100% Goal)</b>

**Notes:**

Source Energy	10,239	Btu/kWh Electric
	100,000	Btu/th Gas
Emissions	0.000366	tonne CO2 eq/kWh
	0.005295	tonne CO2 eq/th

**Table 1.2: SEP Project Savings and Economics Summary**

Efficiency Projects	Purchased Utility Savings				Project Cost (\$)	Anticipated Incentive (\$)	Net Project Cost (\$)	Net Simple Payback Period (yr)
	Electricity (kWh/yr)	Demand (kW)	Gas (th/yr)	Monetary (\$/yr)				
<b>State Funded</b>								
MBCx	3,706,223	501	515,463	911,901	4,143,193	1,536,982	\$ 2,606,211	2.9
HVAC Retrofits	25,212,757	1,808	3,915,283	6,538,616	81,440,159	12,031,760	\$ 69,408,399	10.6
Lighting Retrofits	2,745,898	894	272,503	585,911	5,501,962	1,318,030	\$ 4,183,932	7.1
Other Retrofits	4,336,689	520	445,310	937,597	28,228,923	2,057,129	\$ 26,171,794	27.9
New Construction	1,644,857	272	209,751	389,117	4,196,261	713,296	\$ 3,482,965	9.0
Deferred Maintenance & Capital Renewal	3,665,930	624	422,679	830,499	12,445,000	1,663,158	\$ 10,781,842	13.0
<b>Subtotals</b>	<b>41,312,354</b>	<b>4,619</b>	<b>5,780,988</b>	<b>\$ 10,193,641</b>	<b>\$ 135,955,498</b>	<b>\$ 19,320,355</b>	<b>\$ 116,635,143</b>	<b>11.4</b>
<b>Non State Funded</b>								
MBCx	377,857	24	48,839	\$ 89,925	\$ 404,682	\$ 162,784	\$ 241,898	2.7
HVAC	1,307,169	60	222,006	\$ 354,591	\$ 6,811,576	\$ 545,562	\$ 6,266,014	17.7
Lighting	1,409,916	244	139,920	\$ 300,843	\$ 2,344,577	\$ 676,761	\$ 1,667,816	5.5
Other	822,335	-	105,790	\$ 195,296	\$ 2,753,385	\$ 355,088	\$ 2,398,297	12.3
New Construction	321,224	46	43,703	\$ 78,238	\$ 818,500	\$ 134,808	\$ 683,692	8.7
<b>Subtotals</b>	<b>4,238,501</b>	<b>374</b>	<b>560,258</b>	<b>\$ 1,018,894</b>	<b>\$ 13,132,719</b>	<b>\$ 1,875,003</b>	<b>\$ 11,257,716</b>	<b>11.0</b>
<b>Total Efficiency Projects</b>	<b>45,550,855</b>	<b>4,993</b>	<b>6,341,246</b>	<b>\$ 11,212,535</b>	<b>\$ 149,088,217</b>	<b>\$ 21,195,358</b>	<b>\$ 127,892,859</b>	<b>11.4</b>

Campus Planned & Committed Projects (Tier 1 & 2 Projects)	Electricity (kWh/yr)	Peak Demand (kW)	Gas (th/yr)	Monetary (\$/yr)	Project Cost (\$)	Anticipated Incentive (\$)	Net Project Cost (\$)	Net Simple Payback Period (yr)
Equivalent Energy Savings (Incentive Basis)	53,140,177	4,417	2,810,962			\$ 12,754,324		
Purchased Energy Savings (with Cogen)	33,096,707	4,417	4,669,091	\$ 8,197,420	\$ 87,316,026	\$ 12,754,324	\$ 74,561,702	9.1
% of Planned vs Potential	73%	88%	74%	73%	59%	60%	58%	

**Table 1.2: SEP Project Savings and Economics Summary (continued)**

Renewable Projects	Purchased Utility Savings				Note
	Electricity (kWh/yr)	Demand (kW)	Gas (th/yr)	Monetary (\$/yr)	
Photovoltaics	4,511,843	3,293	-	\$ (180,474)	Assumes Power Purchase Agreement Method of Delivery

Total Projects	Purchased Utility Savings				Project Cost (\$)	Anticipated Incentive (\$)	Net Project Cost (\$)	Net Simple Payback Period (yr)
	Electricity (kWh/yr)	Demand (kW)	Gas (th/yr)	Monetary (\$/yr)				
State Funded Efficiency Projects	41,312,354	4,619	5,780,988	\$ 10,193,641	\$ 135,955,498	\$ 19,320,355	\$ 116,635,143	11.4
Non State Funded Efficiency Projects	4,238,501	374	560,258	\$ 1,018,894	\$ 13,132,719	\$ 1,875,003	\$ 11,257,716	11
Renewable Projects	4,511,843	3,293	-	\$ (180,474)				
<b>TOTAL</b>	<b>50,062,698</b>	<b>8,286</b>	<b>6,341,246</b>	<b>\$ 11,032,061</b>	<b>\$ 149,088,217</b>	<b>\$ 21,195,358</b>	<b>\$ 127,892,859</b>	<b>11.6</b>

The campus has reviewed a preliminary version of the initial list of potential projects in this report and has initiated a planning process for engineering, scheduling and implementation of the projects over the next six years. It is anticipated that the list of potential projects will be continuously tuned and updated as projects are built, savings are measured, new technologies become commercially available, and campus loads change over the course of the next six years.



## 2. INTRODUCTION

### 2.1 Strategic Energy Plan Methodology

The University of California Office of the President has contracted with Newcomb Anderson McCormick (NAM) to create a Strategic Energy Plan for nine campuses and five medical centers. This Plan will identify potential energy saving projects throughout these campuses that can be implemented over the next six years, and will evaluate their contribution to helping the campuses meet the system-wide goals of reduced energy consumption and reduced greenhouse gas emissions.

In conjunction with the campus sub-consultant selection process, Newcomb Anderson McCormick assembled a team of highly respected engineering firms and experts to perform the work at the campus and assemble the Strategic Energy Plan. The team for UC Irvine included:

<b>Team Member</b>	<b>Role</b>
Newcomb Anderson McCormick	Program Manager, SEP Aggregation
P2S Engineering	Campus Field Auditor, Efficiency Projects
Michael Wall Engineering	Renewable Energy Projects, Power Quality
Cogent Energy	Air Handler Simulations

A kickoff meeting was held at the campus on January 14, 2008, with good representation from the campus and appropriate auxiliaries. The kickoff meeting introduced the SEP team and process, collected valuable input and provided an understanding of the campus' priorities and needs. Additionally, the list of 50,000 square foot and larger buildings to be included in the SEP was reviewed and substitutions and additions were made to align the effort of the SEP with campus priorities and the best opportunities for energy savings. The resulting list of buildings (referred to as SEP Building List, or SEP Buildings) became the basis for the field work and building specific project identification.

Following the kickoff meeting the field investigation phase ensued. Collectively, the team performed audits and analysis of all SEP buildings and other specific opportunities to identify the list of projects included in this report. The energy efficiency projects identified by the Campus Field Auditor were focused on the SEP Buildings' mechanical and lighting systems, with field data collected on standardized field data templates (included in Appendix A). Renewable energy potential was investigated by Michael Wall Engineering, along with a brief power quality and reliability investigation, while Newcomb Anderson McCormick's efforts focused on historical data collection, campus wide projects, projects outside of the SEP buildings and green house gas emission impacts.

During the analysis phase, the previously compiled field data was analyzed to develop projects with consistency and reasonableness in mind, using the most detailed methods of analysis possible in the time available. To this end, a standardized analysis tool was used to analyze the majority of the air handler related projects. The analysis tool provides results which incorporate factors typical of a more detailed investigation as opposed to a strategic level project analysis, including system specifics, site specific weather data, operating schedules, control strategies and typical system setpoints as determined by field

investigation. Analysis of other projects was performed using project-specific engineering calculations and followed recognized engineering principles. Reasonable engineering judgment was applied to all project analyses.

Construction costs of recommended projects are built up from contractor quotes, Means manuals, experience from past project cycles, and a variety of other sources. Project costs are the sum of the construction cost and contingency (10%), engineering and design (15%), construction management (5%) and project management (6%). While individual projects' final costs and savings may vary from the results presented in this report, it is anticipated that the aggregate level of accuracy by campus or by utility service territory will be reasonable.

A preliminary list of energy efficiency projects, delivered to UCOP on March 28, was the initial step in delivery of the Strategic Energy Plan results. This list of projects was reviewed, prioritized and scheduled by the individual campuses and returned to UCOP. The compiled results were then used to determine the level of savings commitment for the Investor Owned Utilities to use in support of their filings to the CPUC for the UC/CSU/IOU Partnership Program. The results will also assist UCOP in planning for a bond to finance the campus contributions for the construction of these projects.

As of the writing of this report, the details of the Partnership Program have not been defined for the 2009-2011 cycle, and discussions are ongoing with the Municipal utilities to solicit similar participation and incentive levels for the campuses. While these crucial details are not confirmed, this Strategic Energy Plan was in large part commissioned to determine overall potential for projects, and is a critical step in securing the incentive funding levels from both the IOU and Municipal utilities, and for UCOP funding. Consequently, this report assumes that many of the aspects of the current plan will be carried forward, including the incentive rates of \$0.24/kWh and \$1.00/therm of annual savings. These rates are used in the analyses of all projects in this report, including those at campuses served by Municipally Owned Utilities.

Following delivery of the Preliminary List, the projects in this Strategic Energy Plan report were aggregated and assembled. The projects from the Preliminary List are included, with some refinements following additional quality control checks. Projects have been compared to historical energy use and project costs have been refined. Other projects have been added following the development of the Preliminary List, including renewable electric generation projects (such as photovoltaics, which qualify for different utility programs).

The projects included in this SEP are the result of a survey of the campus, discussions with campus personnel, and preliminary engineering of projects. This effort is not an investment grade audit. This means that the projects will require additional detailed cost estimating and refinement of savings before the campuses or the utilities can commit to specific construction budgets and energy saving calculations.

This effort was designed to identify significant physical modifications required to make buildings energy efficient. It did not concentrate on operational details that might be found in an investment grade audit, such as a broken economizer, or an improper control sequence. However, the Strategic Energy Plan does recommend the monitoring-based commissioning (MBCx) of each of these buildings over the next six years (excluding buildings that have already been commissioned through the Partnership). This process will ensure that the



operational problems of each building are identified and corrected, so that all measures that might be identified in an investment grade audit will ultimately be included.

The equivalent energy and cost savings for projects presented in the Preliminary List were been simplified to meet the financial criteria established for the UCOP funding mechanism, and to be consistent with utility incentive requirements. For HVAC projects, chilled water and hot water (or steam) savings calculated at the buildings were converted to electric (kWh) and natural gas (therm) savings using marginal central plant efficiencies, and summed with direct electric and natural gas savings, which include cooling or heating from local sources. For all other projects, the electric and gas savings were calculated directly, without involving the intricacies of the central plant. The sums of these savings for each project became the equivalent electric and gas savings, and are used for the basis of the utility incentive. The published FY06-07 recharge rates, as provided by UCOP, were applied to the equivalent electric and gas savings to estimate the energy cost savings of projects. Using the recharge rate builds in a level of conservatism for future energy savings, as no utility rate escalation is built in, and meets UCOP bond funding requirements. Operational and maintenance savings have generally been discounted in financial analysis of measures, as UCOP funding will involve only the purchased utility budgets as a repayment source.

The equivalent energy savings methodology remains unchanged from the preliminary list to this SEP report. However, the central plant and any cogeneration impacts are incorporated to reflect a purchased utility cost savings and give a more true estimate of utility cost savings for the campus.

The following tables show the recharge rates and marginal central plant efficiencies used in this report. The individual campuses may charge themselves different prices internally, or may calculate marginal utility costs differently, and so can use other pricing in their internal project evaluation.

**Table 2.1: Recharge Rates - Non-State Funded and Auxiliaries FY 06-07**

Campus	\$/kWh	\$/Therm
Irvine	\$0.132	\$0.820

**Table 2.2: Marginal Central Plant Efficiencies**

Campus	Plant kWh/ Bldg ton-hr	Plant Therm/ Bldg ton-hr	Plant Therm/ Bldg MMBTU
Irvine	0.8	0	12.5

**Table 2.3: Central Plant & Cogeneration Impacts on Purchased Utilities**

Campus	Building Energy Saved	Purchased Utility Savings Per Unit Saved at Building		Notes
Irvine	High Temperature Hot Water	31.5	kWh/MMBtu	High temperature hot water will be delivered by a combined cycle cogeneration system. When heat is saved in a building the steam will be used in the condensing steam turbine generator to offset electrical purchases. Part of the time savings will come from the duct burner.
		6.25	th/MMBtu	
	Chilled Water	0.124	th/tonh	Bulk of cooling is from electric centrifugal chillers with TES. Night operation is on combined cycle cogeneration system.
Electricity		0.5	kWh/kWh	Combined Cycle Cogen: Reduction in electricity use lowers purchases from utility. Import several MW during the day. At night import power. Combined Cycle Cogen: Gas turbine will track electric load. Steam turbine will adjust to steam load. Assume importing electricity 50% of the time.
		0.04962	th/kWh	

## 2.2 General Project Identification Categories and Approach

The following is a general description of the projects that were identified by the Strategic Energy Plan. More detailed scope and savings information is included in the Project Descriptions section of the report.

In general, projects were selected for this report that will bring campus systems up to the state of the art technology. This is intended to identify all of the possible energy savings available through retrofit projects. This results in some projects with longer paybacks where the existing system may be moderately efficient, but not necessarily state of the art. However, it defines a maximum savings target for the buildings evaluated. The campuses can decide on the appropriate level of investment based on their individual needs and their performance in meeting energy savings and green house gas emissions goals.

### 2.2.1 Lighting Projects

The report identifies the potential to convert existing T12 and 32W T8 fluorescent fixtures to 28W T8 lamps with premium efficiency ballasts with low ballast factor, at 42 W per two lamp fixture. Several campuses have alternative standards, including UC Santa Barbara, which is emphasizing dimming ballasts, and UC Irvine, which installs 25W T8 lamps at 37 W per two lamp fixture. Also recommended are increased penetration of occupancy sensor controls, daylight harvesting, new stairwell fixtures, and replacement of interior HID fixtures with fluorescent. Fluorescent conversion is also generally recommended for parking structures.

### 2.2.2 HVAC Projects

A variety of HVAC projects are recommended for implementation at campus buildings. The general intention of these retrofits is to make all air handlers of 10 hp and above meet basic efficiency standards: variable air volume with economizers, operating only the hours necessary, with direct digital controls, demand control ventilation where warranted, and static pressure reset. Laboratory air handlers would also be converted to variable air volume, with variable flow fume hoods and minimum ventilation controls set at 6 air changes

per hour. In some cases further savings will be achieved through air quality monitoring and automatic sash closers. Kitchen hoods are recommended for conversion to variable air volume as well. A variety of other chiller and boiler projects are recommended for other buildings that are not served by a central plant.

### 2.2.3 Monitoring Based Commissioning Projects

This report includes a monitoring-based commissioning project at every Strategic Energy Plan building. This is an integral element of the retrofit projects that are recommended at most buildings. The combination of retrofits and commissioning will capture the majority of the energy saving potential of the HVAC systems. Monitoring based commissioning is also recommended for all main central plants where it has not yet been implemented.

### 2.2.4 New Construction and Renovation from Capital Program

This report includes a number of planned construction and renovation projects at each campus. It is assumed that a Savings By Design process will be in place to generate a design which outperforms Title 24 by at least 30%. The campus contribution to the resulting construction costs are assumed to come from UCOP bond funding. This removes the capital constraint from the construction budget and allows more efficient buildings to be designed and built.

### 2.2.5 Deferred Maintenance and Capital Renewal Projects

The campuses each spend up to \$10 million per year on deferred maintenance and capital renewal projects. This report estimates that about 12% of these projects have an energy savings component. It is recommended that utility incentives be employed to make these measures marginally more efficient. It is also recommended that UCOP bond funds be used where possible to supplement project funding to allow construction of energy saving projects that otherwise might not be funded.

### 2.2.6 Campus Wide Projects

Campus wide projects include the replacement of pre-2001 refrigerators with Energy Star units, replacement of lab freezers with more efficient units, and the installation of occupancy sensor controls on vending machines. The campus wide use of power management software is recommended to reduce the energy consumption of network computers when they are not in use. The replacement of CRT monitors with LCD monitors is recommended as well. Finally, an estimate of the potential energy savings from computer server virtualization was included.

### 2.2.7 Other Projects

Several other miscellaneous projects were evaluated, including swimming pool projects. Pool covers with powered take up spools were recommended where they are not currently used. Variable speed drives are recommended for pool filter pumps during off hours operation. Solar collectors are also recommended for pools where adjacent roof space is available. In addition, boiler replacement was evaluated for swimming pool and other boilers for thermal loads not served by the central plant.

### 2.3 Campus Overview

University of California, Irvine was founded in 1965 and currently has 27,000 students, nearly 2,000 faculty members and 8,900 staff. UCI is among the fastest-growing campuses in the University of California system with over 200 buildings spread across 1,500 acres. The Campus has executed numerous energy retrofit projects in the past, ranging from retrofitting lighting systems with DDC controls, CV Fume Hoods to VAV conversions, installation of VFD's on air handling units, and installation of high efficiency motors.

### 2.4 Central Plant

The central plant at UCI serves most of the campus with chilled water (CHW) and high temperature hot water (HTHW). It comprises four gas fired steam boilers (totaling 90,000 lb/hr), seven electric centrifugal chillers (totaling 14,000 tons), one condensing steam turbine centrifugal chiller (2,000 ton), a 4.5 million gallon thermal energy storage chilled water tank, a 6 cell cooling tower with 12 fans, steam to high temperature hot water heat exchangers for distribution to the campus, and a new cogeneration system including a gas turbine and a condensing steam turbine generator.

The forced draft steam boilers are natural gas fired. They produce saturated steam at about 230 psig. The steam in the central plant serves the HTHW heat exchanger, the steam turbine chiller, the cogeneration steam turbine generator, and the deaerator. Steam does not leave the plant for space or domestic water heating.

High temperature hot water is distributed to the campus at 360°F, with a return temperature ranging from 230 to 180°F. Chilled water is generated at 39°F at night to charge the TES tank. When distributed during the day the chilled water has an 15 to 25°F delta T across the buildings, depending upon the age of the chilled water coils. Variable speed pumping is used for both HTHW and CHW.

The cogeneration equipment in the UCI Central Plant includes a 13.5 MW Solar Titan gas turbine generator, which uses an SCR with urea injection for NOx control. A heat recovery steam generator produces approximately 58,000 lb/hr of steam unfired and 120,000 lb/hr with a duct burner. The steam is produced at 230 to 240 psig, slightly superheated. A condensing steam turbine drives a 5 MW generator. In typical operation the gas turbine would track the campus electric load, the steam chiller would be operated when the steam was not needed for space heating, and the steam turbine generator would continuously modulate to maintain the steam header pressure. This tracking will be done manually by the operators, with an effort to avoid exporting power to the grid.

The cogeneration plant was turned over to the campus in July 2007. The steam turbine generator has not operated any significant hours because of vibration issues that have not yet been resolved. The gas turbine is still controlled to track electrical demand. During periods of low space heating demand there is heat available from the HRSG that would normally be used in the steam turbine generator. Since this is not available, the excess steam is used in the steam turbine chiller. When this operates it offsets TES chilled water use, so it reduces the need to generate chilled water the following night. A power import of 3 MW was observed during daytime operations. It is anticipated that the operation of the

condensing steam turbine will not offset all of this power import so that the campus will remain a net importer during the day.

Electricity savings at the buildings will appear at the meter as electric purchase reductions because the campus is likely to remain a net electricity importer during daytime hours. During nighttime hours the campus does not normally import power. Electric savings at the buildings were projected to reduce imported electricity 50% of the time and to reduce natural gas use in the cogeneration plant the rest of the time.

Heating savings at the buildings are likely to result in increased steam availability at the central plant, which will allow the steam turbine to generate additional power, offsetting electricity purchases during the daytime. Therefore, when heating savings are passed through the cogeneration plant the resulting utility impact is projected to be a reduction in electricity purchases half of the time. The other half of the time the savings are projected to come as reduced gas use in the duct burner which is tracking the steam load.

Chilled water savings at the buildings will result in a reduced chiller load at the plant. The chilled water is generated at night by electric chillers and stored in the TES tank. At night the chillers will be driven by electricity from the gas and steam turbines, as electric imports at night are not anticipated. Therefore, reductions in chilled water loads at the buildings are projected to reduce natural gas purchases to operate the gas turbine combined cycle system.

## 2.5 Strategic Energy Plan Buildings

The following 44 buildings were investigated as part of this SEP effort, and were selected using the criteria described above. The total gross area of the SEP buildings represents 3,573,523 square feet, or 45% of the campus gross area (exclusive of parking).

**Table 2.4: SEP Buildings**

Building Key	Building Name	Basic Gross Area - Non-assignable Parking Area
09C9001	LANGSON LIBR	150,883
09C9003	ADMIN BLDG	101,022
09C9005	UCI STU CNTR	164,042
09C9035	HIB	74,090
09C9050	W SMITH HALL	9,458
09C9051	CTB THEATRE	20,377
09C9052	SOTA DANCE	12,747
09C9053	SOTA PROD ST	5,182
09C9054	SOTA DRAMA	8,772
09C9055	UNIV ART GAL	8,920
09C9056	SOTA ART STD	10,570
09C9057	SOTA SCULPTR	10,894
09C9073	SCILIBRARY	189,590
09C9075	STEINHAUS H	107,521
09C9082	GILESPIE BLD	82,920
09C9084	MCGAUGH HALL	213,717
09C9087	SPRAGUE HALL	90,211
09C9088	HEWITT HALL	78,871
09C9090	NAT SCI 1	120,913
09C9091	NAT SCI 2	136,305
09C9100	ROWLAND HALL	196,057
09C9107	BERKELEY PL	114,000
09C9108	REINES HALL	156,514
09C9114	M SCI & TECH	63,111
09C9115	CROUL HALL	66,170
09C9118	CAL (IT)2	119,860
09C9125	ENG TOWER	113,941
09C9126	COMP SCI BLD	60,678
09C9128	SOC ECOLOGY	55,000
09C9132	IRVINE HALL	54,620
09C9140	ENG GATEWAY	132,090
09C9204	SOCSCI TOWER	83,844
09C9212	SOC SCI PL A	46,479
09C9221	SOC SCI PL B	49,078
09C9222	SOC ECOLOGY2	35,753
09C9299	ANT REC CTR	89,320
09C9300	CRAWFORD HAL	57,437
09C9314	BREN EVENTS	97,259
09C9322	MED SCI C	55,853
09C9323	MED SCI D	71,959
09C9325	MED SCI A	13,418
09C9328	MED SCI B	35,864
09C9329	MED SURG 2	60,238
09CTBD1	BREN HALL	147,975

## 2.6 Recent Energy Project Inventory

The campus has actively and aggressively participated in the UC/CSU/IOU Partnership Programs. The projects in Table 2.5 were implemented during the 2004-05 Partnership cycle. Since they were implemented no later than calendar year 2005, the associated energy savings are considered to be reflected in the historical energy use data gathered for 2006-07. Therefore, no adjustment has been made to the campus' baseline energy use.

**Table 2.5: 2004-05 UC/CSU/IOU Project History**

<b>Building</b>	<b>Project Description</b>	<b>Electric Savings (kWh/yr)</b>	<b>Gas Savings (th/yr)</b>
Crawford Hall	LightingT-12 to T-8 with Electronic Ballast	25,279	
Engineering Gateway	LightingT-12 to T-8 with Electronic Ballast		
Engineering Tower	LightingT-12 to T-8 with Electronic Ballast	107,183	
Langson Library	LightingT-12 to T-8 with Electronic Ballast	176,406	
McGaugh Hall	LightingT-12 to T-8 with Electronic Ballast		
Multi	Elevator Lighting: Replace Incandescent lights with CFLs/Pars	120,538	
Reines Hall	LightingT-12 to T-8 with Electronic Ballast		
Social Ecology I	LightingT-12 to T-8 with Electronic Ballast	72,169	
Sprague Hall	Install occupancy sensors on fume hoods	23,536	4,685
Gillispie Research	Install occupancy sensors on fume hoods	23,536	4,685
Berkeley Place	MBCx	245,010	28621
McGaugh Hall	MBCx	1,348,620	0

The projects in Table 2.6 are planned, or may have begun during the current 2006-08 UC/CSU/IOU Partnership, but were not substantially complete prior to the FY06-07 historical energy use baseline. Since they are scheduled for implementation, the SEP has considered these projects in a couple of ways. First, the projects recommended in this report have not included these projects, thereby avoiding duplication of measures. Second, the 2006-07 baseline energy use has been adjusted by the anticipated energy savings for baseline energy use to compare the proposed projects to, and for the comparison of, building benchmarks. Details of savings for each project in SEP buildings and the associated adjustment in baseline energy are reflected on the building summary sheets later in this report.

**Table 2.6: 2006-08 UC/CSU/IOU Project History**

Building	Project Description	Electric Savings (kWh/yr)	Gas Savings (th/yr)
<b>SEP Buildings</b>			
Crawford Hall	Fan Rooms S-2,3&4 – Install DDC controls, install VSDs, optimize economizer control	95,478	10,094
Crawford Hall	First floor attic S-5 – Install full DDC controls, install VSDs, optimize economizer control	38,721	6,925
Crawford Hall	Ground Floor S-1 – Install DDC controls, implement demand controlled ventilation, implement VAV control	14,313	-14
Crawford Hall	Room G-4 P-5&6 – Install VSDs on hot water pumps	23,217	0
Croul Hall	Croul Hall – Install Aircuity	117,399	9,443
Gillispie Research	Gillispie – Add occupancy sensors and change bulbs	143,273	0
Gillispie Research	Gillispie Research MBCx	435,000	10,000
Langson Library (Main Library)	Langson Library – Install PC Management Software in 709 PCs	251,776	0
McGaugh Hall	Replace fans on AHU 1 and 3, install VFDs, remove sound attenuators, replace cooling coils and controls valves	1,685,501	21,761
Social Science Tower	Replace existing stairwell lighting with bi-level technology	6,460	
McGaugh Hall	Replace existing stairwell lighting with bi-level technology	16,465	
Reines Hall	Replace existing stairwell lighting with bi-level technology	12,058	
Rowland Hall	Replace existing stairwell lighting with bi-level technology	15,105	
Science Library	Replace existing stairwell lighting with bi-level technology	14,607	
Steinhaus Hall	Replace existing stairwell lighting with bi-level technology	8,284	
HIB	Replace existing stairwell lighting with bi-level technology	5,708	
CAL IT2	Replace existing stairwell lighting with bi-level technology	9,234	
Berkeley Place	Replace existing stairwell lighting with bi-level technology	8,783	
Croul Hall	Replace existing stairwell lighting with bi-level technology	5,098	
Eng Gateway	Replace existing stairwell lighting with bi-level technology	10,177	
Hewitt Hall	Replace existing stairwell lighting with bi-level technology	6,076	
Natural Sciences I	Replace existing stairwell lighting with bi-level technology	9,315	
Social Ecology I	Replace existing stairwell lighting with bi-level technology	4,237	
Irvine Hall	Replace existing stairwell lighting with bi-level technology	4,208	
Multipurpose Science and Tech Bldg	1 <sup>st</sup> & 2 <sup>nd</sup> Floor FC-1-8 – Optimize controls	0	2,282
Multipurpose Science and Tech Bldg	Roof AHU 1&2 – Convert to fully networked DDC controls, replace VIV with VSDs, improve control sequences	299,316	3,960
Natural Sciences I	Natural Sciences I MBCx	528,335	18,000
Reines Hall	Install Phoenix Controls on Lab Fume Hoods and Supply Air VAVs – Reines Hall	679,391	30,981
Sprague Hall	MBCx	350,000	9,000
Sprague Hall	Sprague Hall – Add occupancy sensors and change bulbs	188,001	0
Steinhaus Hall	Reduce air changes in Teaching Labs by installing dampers, controls, and occupancy sensors	463,966	26,347



**Table 2.6: 2006-08 UC/CSU/IOU Project History (continued)**

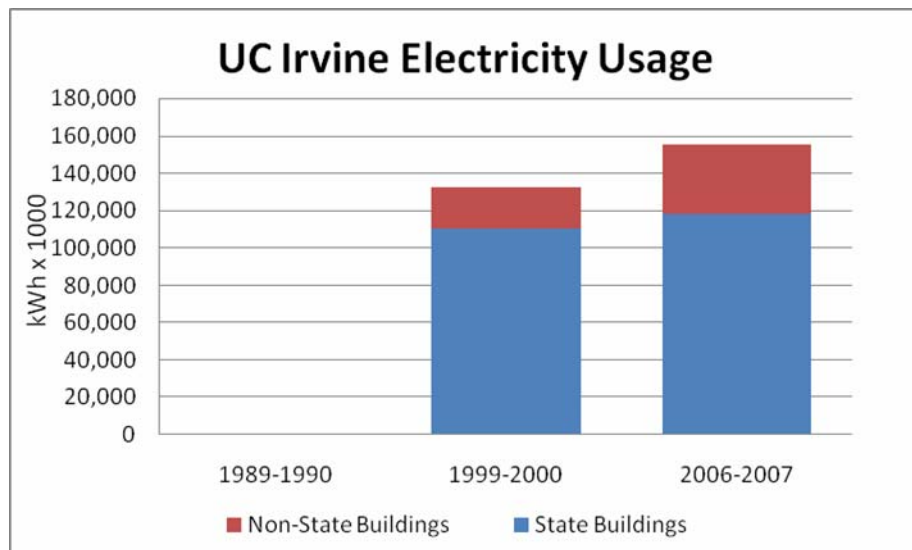
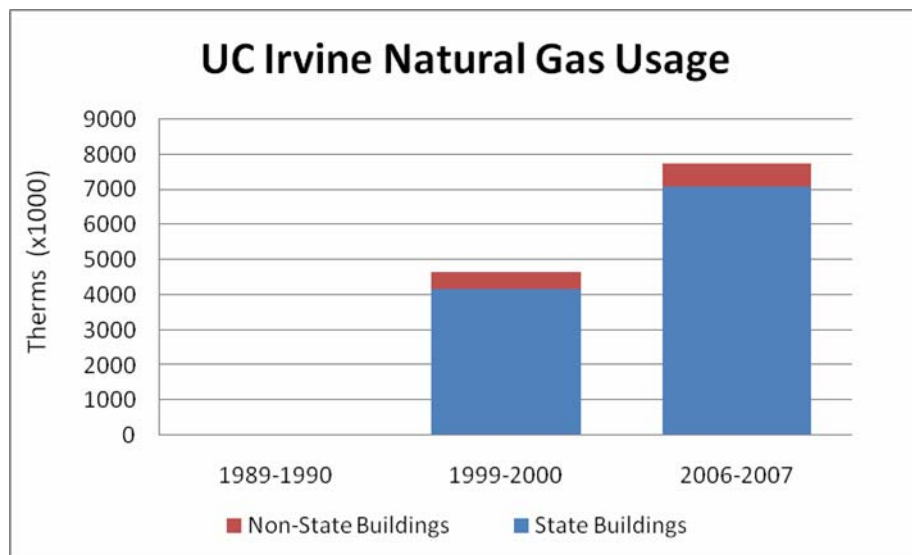
<b>Building</b>	<b>Project Description</b>	<b>Electric Savings (kWh/yr)</b>	<b>Gas Savings (th/yr)</b>
<b>Non-SEP Buildings</b>			
Rockwell Engineering Center	McDonnell Douglas - Implement Demand Control Ventilation	37,240	657
Mesa Arts	Mesa Arts AC 1&3 - Replace units, install full DDC, implement new sequences	106,923	6,843
Mesa Arts	Mesa Arts AC 2 - Install full DDC controls, new sequences	36,408	2,831
Mesa Arts	Mesa Arts HWP 1&2 - Install VSDs on hot water pumps	1,923	0
Mesa Arts	Mesa Office AC 4&5 - Replace units, install full DDC, implement new sequences	84,874	4,894
Mesa Arts	Mesa Office HWP 1&2 - Install VSDs on hot water pumps	1,923	0
Multi	Install Occupancy Controls on Restroom Exhaust Fans and Lighting	257,802	0
Krieger Hall	Replace existing stairwell lighting with bi-level technology	3,154	
Information and Computer Science	Replace existing stairwell lighting with bi-level technology	4,675	
Paul Merage School of Business	Replace existing stairwell lighting with bi-level technology	3,194	
MPAAB	Replace existing stairwell lighting with bi-level technology	3,411	
Rockwell Engineering Center	Replace existing stairwell lighting with bi-level technology	1,122	
Gateway Commons	Replace existing stairwell lighting with bi-level technology	2,035	
Humanities Hall	Replace existing stairwell lighting with bi-level technology	3,469	
Quereshey Lab	Replace existing stairwell lighting with bi-level technology	1,456	
EH&S Building	Replace existing stairwell lighting with bi-level technology	2,967	
Engineering Lab	Replace existing stairwell lighting with bi-level technology	2,802	
Multi	Upgrade to Low Pressure Drop/High Eff HVAC Filters	3,092,758	0
Multi	Multiple Bldgs - Replace 1,000 CRT Monitors with LCDs	343,715	0
Physical Science Lecture Hall	Physical Sciences - Implement Demand Control Ventilation	57,307	1,438
Schneiderman	Shneiderman - TOD controls, new sequences, DAT reset	3,727	1,679
Social Science Hall	Social Sciences #1 - Implement Demand Control Ventilation	23,740	634



### 3. HISTORICAL CAMPUS ENERGY USE

#### 3.1 FY 99-00 and 06-07 Energy Baseline

Purchased electricity and natural gas consumption for the University of California, Irvine are provided in the graphs below. The University of California Office of the President has provided information on purchases for fiscal years 1999-2000, 2005-2006, and 2006-2007<sup>1</sup>. Reliable information is not currently available for the fiscal year 1989-1990. The information is divided between state-funded buildings (shown in blue) and non state-funded buildings (shown in red). Savings from energy efficiency projects will use the fiscal year 2006-2007 as the baseline for comparison. Note that the FY 06-07 natural gas use includes some of the startup of the cogeneration system, seen in increased gas use and less growth in the electrical load.



<sup>1</sup> Campus PU Costs & Usage State & NonSt.xls



#### 4. HISTORIC BUILDING ENERGY USE

##### 4.1 Existing Metering Infrastructure

Three types of metered historical energy use data were requested from the UC Irvine energy management personnel – total annual, total monthly, and interval data for one summer and one winter week. An effort was made to obtain this data for each of the four utilities present on the UC Irvine campus – electric, gas, chilled water, and hot water. However, building-level meter data was widely available only for electricity and gas consumption. Chilled water consumption was available for a handful of buildings, and no records of hot water use were available.

The percentage of SEP buildings on the UC Irvine campus for which metered electricity and gas consumption was available is shown in Table 4.1. This table also shows estimates of the percentage of non-metered buildings, applying the assumption that if data was not provided it was because the building lacked a functioning meter. This may slightly overestimate the number of buildings without meters, as other causes for missing data were occasionally reported by energy management personnel throughout the UC system.

**Table 4.1: Building Electric and Gas Meters**

SEP Buildings								SEP Bldgs W/Local Gas	Total SEP Bldgs	Total Bldgs
Metered				No Metered Data Available						
Electric		Gas		Electric		Gas				
28	64%	4	57%	16	36%	3	43%	7	44	441

The number of SEP buildings for which chilled water and hot water consumption was available is shown in Table 4.2. Again, it is assumed that the SEP buildings with no metered data lacked a functioning meter.

**Table 4.2: Building BTU Meters**

SEP Buildings								SEP Bldgs W/Distr. Heat	Total SEP Bldgs	Total Bldgs
Metered				No Metered Data Available						
Heating		Cooling		Heating		Cooling				
0	-	3	7%	37	100%	41	93%	37	44	441

We recommend that all SEP buildings that currently lack metered data be outfitted with a meter for each utility. The Monitoring Based Commissioning (MBCx) measures that we have outlined in Section 8.3 should provide meters for all of the SEP buildings. However, additional meters are appropriate for buildings that are below the 50,000 SF threshold that are large energy consumers.

## 4.2 Individual Building Metering

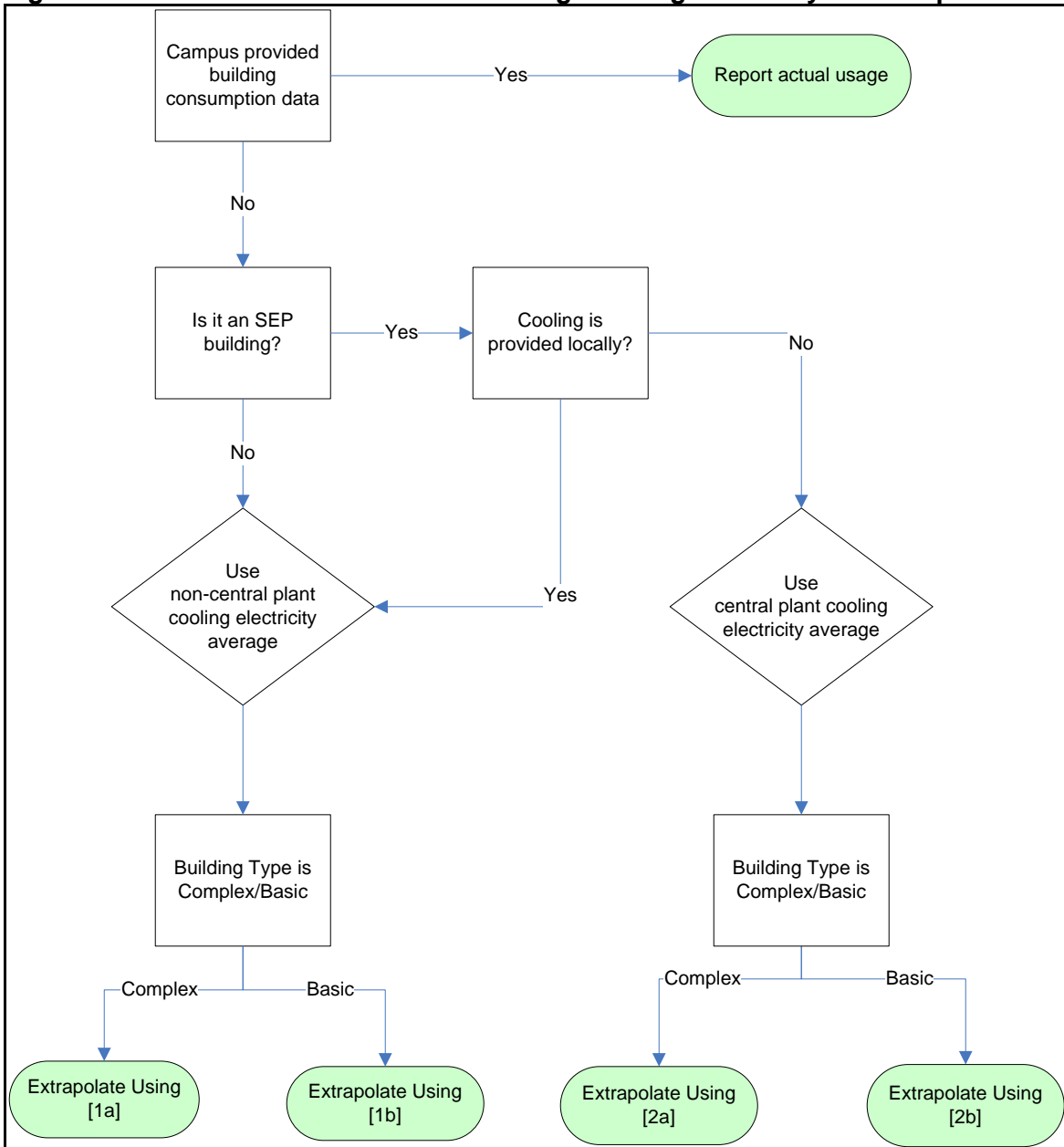
Where available, the annual historical energy use for the SEP buildings has been incorporated in this study. Where no meter data was available, an estimate of building energy use was made based on campus average values. Generally, the campus average values were calculated for each utility using the sample of buildings with campus-supplied metered consumption. However, where the sample of buildings with metered data was too small to allow a reliable estimate of the campus average, a campus average was estimated based on total campus energy purchase data. The sources of building energy estimate data for UC Irvine are summarized in Table 4.3.

**Table 4.3: Sources of Data Used for Baseline Building Energy Estimates**

<b>PREFERRED METHOD</b>		
Use actual metered consumption		
<b>ALTERNATE METHOD</b>		
Extrapolate use using average values from the following sources		
	<i>Basic Buildings</i>	<i>Complex Buildings</i>
<b>Electricity</b>		
- Buildings with local cooling	adjusted average of campus-supplied meter data <b>[1a]</b>	double the average for complex buildings <b>[1b]</b>
- Buildings receiving chilled water from the central plant	adjusted average of campus-supplied meter data <b>[2a]</b>	adjusted average of campus-supplied meter data <b>[2b]</b>
<b>Gas</b>	derived from total campus gas purchase	derived from total campus gas purchase
<b>Steam</b> (SEP buildings only)	no steam distribution	
<b>Hot Water</b> (SEP buildings only)	same as gas use	
<b>Chilled Water</b> (SEP buildings only)	one half the average for complex buildings	average of campus-supplied meter data

Using the various sources described in Table 4.3, factors with units of energy use – kWh, therm, or MMBtu – per gross square foot were developed for each of the energy use categories in the left column of the table. A procedure was required to apply the appropriate factors to each building. For SEP buildings, this procedure relied on the building classification – “basic” or “complex” – as well as field data that described the types of utilities present at the building. A sample of the decision structure applied to each building to determine the appropriate energy use factors for electricity is shown in Figure 4.1 . Similar structures were used to apply appropriate factors for gas, steam, hot water and chilled water.

**Figure 4.1: Decision Structure for Estimating Building Electricity Consumption\***



\* [1a] – [2b] refer to the factors described in Table 4.3

The building energy consumption estimated by applying campus averages to building area provides a rough measure of the baseline building energy use for buildings that lacked metered data. The overall accuracy of this method is evaluated based on the comparison of the resulting campus-wide energy consumption and the total reported campus energy purchase. Where there was a significant (greater than 5 percent) difference between these two sources, the extrapolated campus averages were adjusted to close the gap. Minor adjustments were also made to estimates for a handful of buildings where field observations or engineering judgment suggested higher/lower energy use. The final comparison of the summed building energy estimates and the campus energy purchase is shown in Table 4.4.

**Table 4.4: Comparison of Estimated Building Energy Use to Campus Purchased Energy**

	Electricity (kWh)	Natural Gas (th)
Purchased	155,453,000	7,760,000
Cogen Balance*	16,208,000	-1,660,000
Net Campus Consumption	171,661,000	6,100,000
Estimated Building Consumption	179,688,000	6,230,000
Difference	8,027,000	130,000
Percent Difference	4.7%	2.1%

\*Estimated based on comparison of FY 05/06 and FY 06/07 purchases.

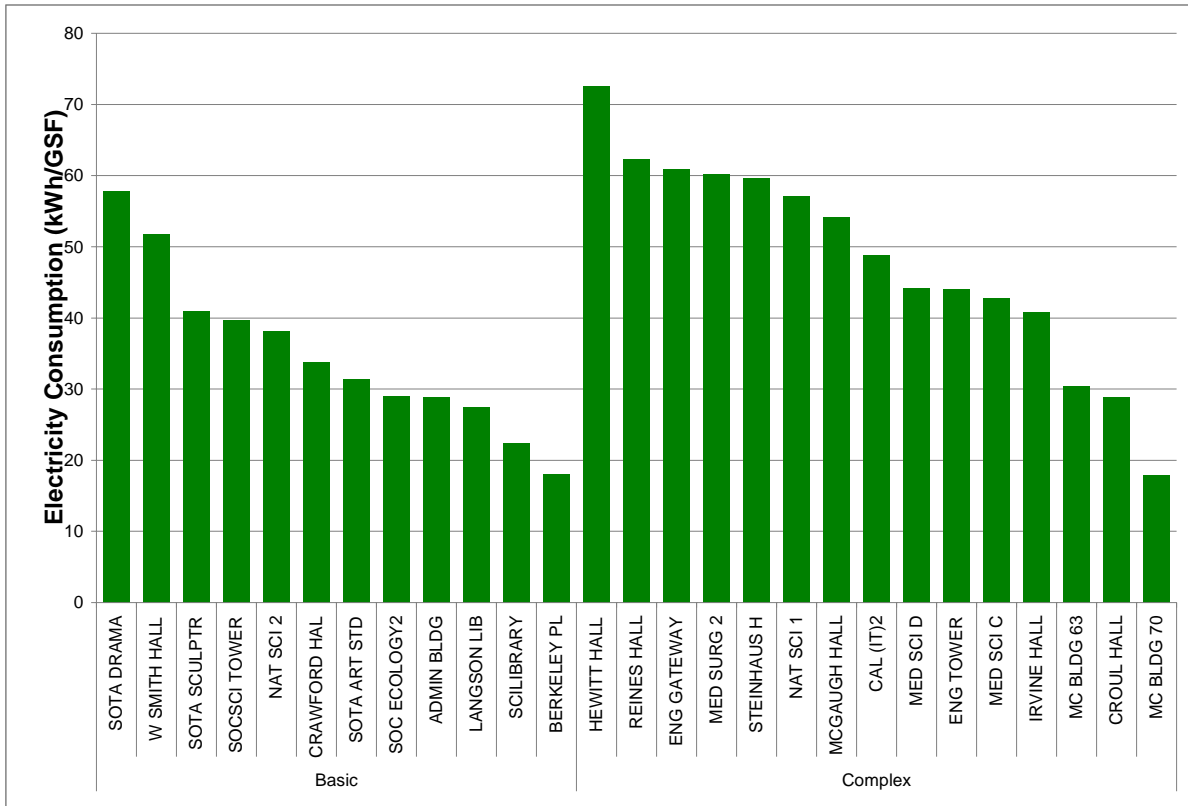
As shown in Table 4.4, electricity consumption estimated on a building-level results in 4.7% higher overall consumption than was actually purchased. Gas consumption estimated on a building-level results in 2.1% greater consumption than was actually purchased. These minor discrepancies result from a combination of several factors – a lack of information about which utilities are used by smaller buildings, the mix of metered consumption and overall campus average consumption represented in the summation of estimated building consumption, and the equipment conversion efficiencies (e.g. for chillers and boilers) that were assumed in making the comparison.

#### 4.3 Building Energy Use Targets

The metered annual electricity use is shown for the buildings where it is available in Figure 4.2, grouped according to whether the building is identified as Basic or Complex. Note that there is a broad range in electricity use intensities, with a factor of three or four between the lowest and the highest in either group. In addition, some of the Basic buildings use more electricity per square foot than some of the Complex buildings. Although there are significant differences from one building to another, the performance of many buildings at a relatively low electricity use per square foot indicate that there is room to move many of the higher use buildings in that direction.



Figure 4.2: Electricity Use Index for UC Irvine Buildings with Meter Data





## 5. UTILITIES

### 5.1 Providers & Tariffs

In the baseline 2006-07 Fiscal Year, electricity at UC Irvine was provided by Southern California Edison (SCE), for both commodity and transmission and distribution, under a TOU-8 rate schedule. While nearly all the electricity consumed in the baseline year was supplied by SCE, the campus completed its cogeneration plant during the baseline year, and has since been commissioning the plant. In FY 2006-07, the cogeneration plant provided less than 1% of the total campus electricity.

The campus purchases natural gas commodity for both cogeneration and campus use from the Department of General Services, and Southern California Gas (SCG) provides the transportation service. The main campus gas meter is on a SCG GTF3 D tariff, and the cogeneration account is on a GTF5 tariff.

### 5.2 Procurement Options

There are limited procurement options for the campus, but the campus is taking advantage of opportunities and should continue to explore other avenues if and when available.

For electricity, current regulations do not allow for direct access, so electricity in excess of the campus' self generating capacity is likely to remain with SCE for the foreseeable future. The campus is, however, operating a cogeneration plant and has executed a contract for photovoltaic generation. For natural gas, the campus is already exercising its option to purchase gas commodity on the DGS rate schedule.



## 6. CAMPUS ELECTRIC INFRASTRUCTURE

Although the term “power quality” can be used to describe a variety of electrical generation and distribution system attributes, for the purposes of this study, issues that could result in additional energy charges from the utility were the focus. Primarily, these are conditions that cause a differential between campus and/or facility kW and kVA usage. When this differential is large enough, the utility will apply an additional charge, commonly referred to as a VAR charge. A review of the UC Irvine campus utility charges and discussion with facilities personnel confirms that there are no power quality issues of this type on campus.



## 7. RENEWABLE ENERGY GENERATION

### 7.1 Technologies

Sustainable energy sources are available in many types and forms, including photovoltaics, fuel cells, and wind power. The use of direct solar heating as an alternative energy source is discussed under Section 8 of this report.

Fuel cell infrastructure and operational requirements typically give this type of generation project an unacceptably long payback, unless the cell was designed to be installed as part of curriculum or research requirements. As such, fuel cell use was discounted. Additionally, wind patterns in and around the buildings at the campus were not conducive to a reliable pattern that could sustain sufficient power generation to make a wind power project viable.

Photovoltaic sources were identified as the most cost-effective and readily available means of sustainable energy. The remaining evaluation of sustainable energy on campus is focused on this technology. The most efficient, least intrusive form of this technology is a relatively flat, non-penetrating array mounted on a rooftop or parking structure canopy. This resource is available from several sources around the globe, and is not considered proprietary. Available square footage for power production assumes maximum exposure at a low angle of incidence, along with regular access and maintenance of the equipment. Due to the potential for substantial variance in the availability of incentives and funding for installation due to existing public utility agreements, third-party power contracts, and the potential for existing renewable resources already in use at the campus, no incentives are included to offset construction costs.

### 7.2 Existing Equipment

UC Irvine has entered into a Power Purchase Agreement with a third party for 1 MW of photovoltaic power to be roof installed on several buildings. This Plan assumes that this project has been accomplished already and projects a reduced electricity load of 1,370,000 kWh from the FY 06-07 historical use. This is based on a Clean Power Estimator simulation of 1,370 full load hours equivalent production from a system installed in Irvine at a 5° south slope, based on a typical roof mount configuration.

#### 7.2.1 Potential Projects

When the 1 MW of committed photovoltaic power is accounted for, there remains 3.293 MW of remaining potential rooftop photovoltaic available to be developed at the existing campus buildings. The University's cost of Power Purchase Agreement photovoltaic power used in this report is assumed to be \$0.02/kWh above available retail power for investor owned utility customers for the first 1 MW of photovoltaic power, assuming the third party receives the utility incentives, tax credits and so on. The University's cost of PPA PV power for all capacity beyond the first 1 MW is assumed to be \$0.04/kWh above available retail power for IOU customers. It is assumed that the campus will have access to the Renewable Energy Credits associated with this power, at least in time for the 2014 and 2020 target dates.

The study identified a total photovoltaic potential of 4.3 MW of system capacity at an estimated construction cost of \$38.6M. System locations and details are listed in the table below. Based on the California Energy Commission's Clean Power Estimator tool, the

annual output of the system is estimated at 5,881,843 kWh. After accounting for the 1 MW already constructed, the additional future potential renewable generation is estimated at 4,511,843 kWh/yr.



**Table 7.1: Photovoltaic Project Potential**

Building Name	Building Number	Gross Roof Area (sf)	Available Roof Area (sf)	PV Power Density (W/sf)*	PV System Capacity (kW)	Estimated Annual Power Output (kW-h)**	Estimated PV System Construction Cost***
LANGSON LIBR	09C9001	28,840	17,136	8.5	146	199,549	\$1,310,904
ADMIN BLDG	09C9003	22,396	16,042	8.5	136	186,809	\$1,227,213
UCI STU CNTR	09C9005	134,491	40,338	8.5	343	469,736	\$3,085,857
HIB	09C9035	14,076	5,224	8.5	44	60,833	\$399,636
SCILIBRARY	09C9073	31,196	6,717	8.5	57	78,219	\$513,851
STEINHAUS H	09C9075	21,411	12,775	8.5	109	148,765	\$977,288
GILESPIE BLD	09C9082	15,833	6,897	8.5	59	80,316	\$527,621
MCGAUGH HALL	09C9084	32,062	19,938	8.5	169	232,178	\$1,525,257
SPRAGUE HALL	09C9087	18,135	12,830	8.5	109	149,405	\$981,495
HEWITT HALL	09C9088	18,808	9,245	8.5	79	107,658	\$707,243
NAT SCI 1	09C9090	19,741	12,327	8.5	105	143,548	\$943,016
NAT SCI 2	09C9091	24,614	17,442	8.5	148	203,112	\$1,334,313
ROWLAND HALL	09C9100	30,960	18,768	8.5	160	218,553	\$1,435,752
BERKELEY PL	09C9107	34,230	20,471	8.5	174	238,385	\$1,566,032
REINES HALL	09C9108	31,703	12,744	8.5	108	148,404	\$974,916
M SCI & TECH	09C9114	31,560	22,073	8.5	188	257,040	\$1,688,585
CROUL HALL	09C9115	5,680	4,020	8.5	34	46,813	\$307,530
CAL (IT)2	09C9118	30,611	15,975	8.5	136	186,029	\$1,222,088
ENG TOWER	09C9125	14,798	6,500	8.5	55	75,693	\$497,250
COMP SCI BLD	09C9126	17,700	11,826	8.5	101	137,714	\$904,689
SOC ECOLOGY	09C9128	19,496	12,439	8.5	106	144,852	\$951,584
IRVINE HALL	09C9132	27,558	1,500	8.5	13	17,468	\$114,750
ENG GATEWAY	09C9140	43,431	21,813	8.5	185	254,012	\$1,668,695
SOCSCI TOWER	09C9204	9,856	7,037	8.5	60	81,946	\$538,331
ANT REC CTR	09C9299	57,232	45,960	8.5	391	535,204	\$3,515,940
CRAWFORD HALL	09C9300	35,056	29,173	8.5	248	339,720	\$2,231,735
BREN EVENTS	09C9314	68,946	38,884	8.5	331	452,804	\$2,974,626
MED SCI C	09C9322	17,008	8,935	8.5	76	104,048	\$683,528
MED SCI D	09C9323	17,008	8,935	8.5	76	104,048	\$683,528
MED SURG 2	09C9329	30,026	20,733	8.5	176	241,436	\$1,586,075
BREN HALL	09CTBD1	24,675	20,399	8.5	173	237,546	\$1,560,524
<b>UCI Campus Total</b>			<b>505,096</b>		<b>4,293</b>	<b>5,881,843</b>	<b>\$38,639,844</b>

\* Based upon CEC typical PV module rating.

\*\* Based upon 1370 equivalent full load sun-hours per year, calculated using Clean Power Estimator (<http://www.consumerenergycenter.org/renewables/estimator/index.html>) for a Simple Commercial PV System, 5 degree tilt, south facing system in zip code 92697.

\*\*\* Based upon \$9.00 per watt, exclusive of tax credits, rebates, or incentives.



## 8. RECOMMENDED ENERGY EFFICIENCY PROJECT DESCRIPTIONS

The projects identified in this SEP are described below, and the project titles are referenced for each applicable project on the individual Project Summary pages later in this report. While there are often alternative technologies or approaches to projects that can be considered for a given retrofit, this report's recommendations focus on projects that can be implemented cost effectively with available technologies and methods. Where appropriate, alternate approaches and considerations are discussed for projects considered but not included as a recommendation of this SEP.

For ease of reference, all SEP projects have been assigned an SEP ID Number. The SEP ID number consists of one letter followed by four digits, and is a unique number that will help easily locate projects. The SEP ID number has been included on the Building Overview pages later in this report, and the Project Summary section of this report is organized by SEP ID number to allow easy location of a project.

### 8.1 Lighting Projects

The Strategic Energy Plan includes a projection of the magnitude of lighting energy efficiency projects in each SEP building, and, where the information was available, in smaller buildings as well. The plan addresses fluorescent building lighting in some detail. It also identifies potential energy savings in interior HID lighting, as well as parking garage lighting and some outdoor lighting.

#### 8.1.1 Lighting Project 1. Interior Linear Fluorescent Lighting

The standard project for fluorescent light fixtures is to use a state of the art lamp and ballast combination to limit each pair of fluorescent lamps and ballast to approximately 42 watts. This can be achieved through different combinations of lamps and ballasts according to each individual campus's preference. Unless a campus expressed a specific preference, the default retrofit used for the analysis was to replace existing 32W T8 lamps and any remaining T12 lamps and their associated ballasts with 28W T8 lamps and premium efficiency ballasts with low ballast factors. The resulting fixtures typically operate at slightly lower light levels relative to the existing levels, but their improved color rendition has been shown to increase or maintain the perceived light level. Campuses can factor in color temperature, lamp life, lamp standardization, ballast standardization and a number of issues into their design.

UC Irvine, has made it a campus standard to install 25W T8 lamps. This provides increased energy savings while reducing light output slightly. The higher savings are reflected in the analysis.

#### 8.1.2 Lighting Project 2. Interior Lighting Controls

Another standard lighting project is to install occupancy control in rooms that do not currently have occupancy control. The analysis accounts for the fact that most campuses already have occupancy sensors in some buildings, primarily in offices and classrooms. Some campuses have early generation occupancy sensors in classrooms, many of which have been disabled at the request of faculty and staff. Newer "dual technology" occupancy

sensors, which detect both motion and heat, are much more reliable than the older technology, which was prone to turning off lights when occupants were not moving.

Occupancy sensors are recommended in this report for all classrooms, offices, meeting rooms, restrooms, lecture halls, auditoriums, storage areas, some library spaces, and a portion of residential areas. They are not recommended in this report for laboratories, animal quarters, greenhouses, food service areas, museums, or medical service areas. On average, occupancy sensors are assumed to reduce lighting energy use by 25%, per utility incentive standards.

The lighting recommendations also include daylight harvesting. Daylight harvesting should be applied to fixtures near skylights or windows, in areas that are overlit when sunlight is entering the building. Daylighting controls are assumed to apply to 10% of the fluorescent fixtures in classrooms, lecture halls, libraries, athletic areas, and common spaces, and 5% of fixtures in offices. For those fixtures, the daylighting controls are assumed to reduce energy use by 75% after occupancy sensor control.

#### 8.1.3 Lighting Project 3. Stairwell Lighting

There is a significant energy savings potential from the lighting in stairwells. The standard project for these fixtures is to replace them with bi-level fluorescent fixtures. Bi-level fixtures are controlled by occupancy sensors that reduce lighting levels to a low standby mode when the space is unoccupied. The fixtures are specifically designed to meet fire code requirements for stairwells.

It is recommended that UC replace every stairwell fixture in the system with this technology.

#### 8.1.4 Lighting Project 4. Interior High Bay Lighting

Interior high intensity discharge (HID) fixtures are identified for conversion to fluorescent sources, generally T8 or T5 lamps, with occupancy sensor control. These are typically located in gymnasiums, sports facilities, swimming pools, and other high ceiling areas. Fluorescent has become the standard design for efficient lighting in high bay applications because of the relatively efficient output of the fluorescent sources, the higher output capacity of the T5 lamps, better color rendition, and the instant-on capability that permits occupancy control.

#### 8.1.5 Lighting Project 5. Parking Garage and Outdoor Pole Lighting

Fluorescent lighting is a common conversion for parking garage lighting as well. A number of garages are lit with high pressure sodium (HPS) fluorescent fixtures, so the conversion to two or three lamp T8 fluorescent fixtures provides a significant energy savings and much improved color rendition. The lumen level is not necessarily maintained in these conversions, but occupant satisfaction is maintained. Some campuses are experimenting with bi-level garage lighting, controlled by occupancy sensors. This can be applied to HID as well as fluorescent light sources. Others have chosen to replace HID lighting with induction lighting, which is a more expensive technology that has much longer lamp life than any other technology.

Campuses also have a significant amount of outdoor pole lighting, along sidewalks, in parking lots, and on the roofs of parking garages. Pole lighting is commonly LPS, HPS, or HID technology. LPS and HPS fixtures can be retrofitted with fluorescent technology, and metal halide fixtures with pulse start metal halide or fluorescent technology.

One campus, UC Santa Barbara, has chosen to replace existing HPS pole street lights with new LED technology. LED technology is currently quite expensive, but has great potential for energy savings.

#### 8.1.6 Campus Specific Lighting Survey Details

Sampling data of the SEP buildings at UC Irvine shows that the majority of fluorescent fixtures on campus have 32W T8 lamps with standard, normal ballast factor ballasts. UC Irvine recently retrofitted the last 44 campus buildings that had T12 lighting with 32W T8 lamps and low ballast factor ballasts.

It is now a campus standard to replace linear fluorescent lamps with 25W lamps, regardless of the ballast factor. This was therefore used as the general campus recommendation. By the end of 2008, the campus will have re-lamped five buildings with 25W T8 lamps throughout. In the remaining buildings, the campus energy manager estimated that 5% of the fluorescent fixtures have 25W T8 lamps. This was consistent with the findings of the SEP lighting auditors.

Sampling data shows that approximately 20% of campus buildings have some occupancy sensor control, typically in offices or classrooms.

The energy density of the campus was estimated based on the results of the SEP lighting auditors, with 1.2 W/sf in areas with 32W T8 lamps and normal light output ballasts.

#### 8.1.7 Other Projects & Technologies to Consider

##### *Potential Lighting Alternate 1. Integrated Classroom Lighting System*

The Integrated Classroom Lighting System (ICLS) has been developed and promoted by the California Energy Commission's PIER Program. ICLS combines direct-indirect fluorescent fixtures with occupancy and daylight sensors, and plug-and-play interconnection cables, to provide a highly energy-efficient system that offers teachers more control and flexibility than conventional systems. ICLS has been demonstrated to demand an average of 0.6 to 0.85 watts per square foot, compared to more conventional systems, which typically draw between 0.8 and 1.4 watts per square foot.

PIER has found that the cost of installing ICLS in new construction projects is often equal to or lower than for conventional systems, because the system is available as an integrated package. New construction or renovation costs have been in the range of \$3,000 to \$4,000 per classroom. Installing ICLS as a retrofit is less cost-effective at current prices. UC Berkeley installed a few ICLS systems with an added dimming feature, at a cost of approximately \$9,000 per classroom. Although the cost of ICLS can be high relative to conventional systems, it is expected to drop to competitive levels within the next six years.

### Potential Lighting Alternate 2. LED Exterior and Interior Lights

LED lighting is a technology with significant energy-saving potential. Although the current cost of LEDs is significantly higher than more conventional systems, costs are expected to drop significantly within the next few years. With their anticipated drop in cost and extremely high efficiency, LEDs should be seriously considered for applications at the UC campuses within the next six years.

Historically, LEDs have been used for specialized lighting applications that required bright point sources of light, but products are quickly emerging to address more standard commercial and residential lighting needs. Every UC campus is now using LED exit signs in their buildings, and LED stop lights have also become standard. UC Santa Barbara is currently planning to replace nearly 400 high pressure sodium (HPS) pole fixtures with LED pole fixtures, a project that will save an estimated 40% of the lights' energy use. UC Davis has installed bathroom vanity lights in two residence halls that use LED technology. The vanity light combines a one watt LED nightlight with an occupancy sensor controlling the overhead light.

Other emerging LED technologies applicable to the UC system include exterior pathway lights, exterior wall packs, office and classroom task lighting, and cabinet undermount fixtures.

### Potential Lighting Alternate 3. Wireless Lighting Controls

A promising technology for lighting control is the wireless mesh network fixture controller being developed by Acura Technologies of San Francisco. This is a technology which was developed at the UC Berkeley Center for the Built Environment. Several test sites have been installed in UC Berkeley buildings.

The controller under development is a device to be installed in every light fixture in a ceiling grid. It can turn one or two ballasts in a fixture on or off. The controller measures power use by the fixture so it can report back on actual operations. Wireless sensors are installed in the building in appropriate locations to measure occupancy, ambient light, and so on.

The wireless mesh network allows the controllers and sensors to communicate with each other. An internet portal in the building gives access to web based software which is used to configure the system. A variety of logic applications can be used to control fixtures individually or in groups. One set of ambient light sensors might be used to turn off or reduce output from all fixtures on a west face. Occupancy sensors can be programmed to control any set of fixtures. The controllers themselves are programmed to respond to certain sensors as well as time control settings. Once programmed the mesh network can operate itself optimally with no external input. Or it can be used to control fixtures according to a web based signal, such as a demand response incident.

Wireless mesh network lighting controllers promise extensive lighting control (time scheduling, occupancy sensor, daylight harvesting, and demand response) with power measurement and a relatively low first price. No wiring outside of the fixture is required, saving time and complexity.

One feature not likely to be offered is dimming control, but with relatively low power fixtures, as well as individual ballast switching, this offers diminishing returns. This product is expected to be commercially available in one to two years.

## 8.2 HVAC Projects

### 8.2.1 Air Handler Project 1. Convert Constant Volume Air Handlers and Terminal Boxes to Variable Air Volume

This project converts constant volume air handlers with terminal boxes to variable air volume. This project concentrates on larger air handlers which may be dual duct, multizone, reheat, or other constant volume configuration. These air handlers serve the zones through terminal boxes which may be mixing boxes or reheat boxes, often including pressure independent devices and sound attenuators.

The project involves installing VFDs on the supply and return fans to allow the air flow to vary according to the load. In addition, a retrofit kit (damper, actuator, flow measuring station) is installed on each of the terminal boxes to convert it into a pressure independent variable volume device. This kit includes direct digital controls, which increases the cost but greatly increases the functionality. A large multizone air handler could fit in this category as well, with a retrofit kit installed in each zone duct and a two position actuator applied to the existing mixing dampers.

The retrofit allows the zone temperatures to be properly controlled with less simultaneous heating and cooling energy use. In addition, reduced air flow requirements and lower operating static pressures will result in fan energy savings.

In some cases, the air handlers have existing variable volume devices such as variable inlet vanes (VIV) or varicone flow devices, which are generally less efficient than modern VFDs, and may not be working optimally. In these cases, the project would replace the existing flow control device with a variable frequency drive, and the existing flow control is reflected in the project costs and savings.

The savings are calculated for this project through a bin simulation adjusted for local weather, operating hours, building load characteristics, air handler flows and configuration, and temperature control strategies.

The cost for implementing this project includes variable frequency drives for the supply and return fans, retrofit kits with DDC for each zone terminal box, and a control strategy to optimize the air flow and static pressure from the supply fan.

This project does not apply to air handlers that serve patient areas in the medical centers, as they are required by OSHPD to operate at constant volume all of the time. It does not apply to laboratory air handlers, where more elaborate air flow control devices are needed.

### 8.2.2 Air Handler Project 2. Convert Constant Volume Air Handlers to Variable Air Volume

This project converts constant volume air handlers that do not use terminal boxes to variable air volume. This project concentrates on medium size air handlers which may be single zone, dual duct, multizone, reheat or other constant volume configuration. These air handlers do not serve zones through terminal boxes but through simpler reheat coils or

mixing devices that do not have pressure independent controls. Large single zone air handlers without specific zone temperature control will fall into this category as well.

The project involves installing VFDs on the supply and return fans to allow the air flow to vary according to the load. A retrofit kit is not installed at each zone temperature controller because there are not standardized boxes, the zones tend to be smaller and more numerous. Older construction tends to include plaster ceilings and other access constraints.

In the case of a single zone air handler the VFD controls will be integrated into the current temperature controls to reduce the air flow to a minimum flow rate when the thermostat is not calling for full heating or cooling. For the other air handlers with zone temperature controls the retrofit includes DART wireless supply air temperature sensors or equivalent. This wireless control system allows the fan speed to be slowed to a minimum flow rate whenever the zone temperatures are satisfied.

The retrofit allows the zone temperatures to be properly controlled with less simultaneous heating and cooling energy use. In addition, reduced air flow requirements and lower operating static pressures will result in fan energy savings.

In some cases, the air handlers have existing variable volume devices such as variable inlet vanes (VIV) or varicone flow devices, which are generally less efficient than modern VFDs, and may not be working optimally. In these cases, the project would replace the existing flow control device with a variable frequency drive, and the existing flow control is reflected in the project costs and savings.

The savings are calculated for this project through a bin simulation adjusted for local weather, operating hours, building load characteristics, air handler flows and configuration, and temperature control strategies.

The cost for implementing this project includes variable frequency drives for the supply and return fans, wireless remote supply air temperature sensors for representative zone supply registers and a control strategy to optimize the air flow and static pressure from the supply fan.

This project does not apply to air handlers that serve patient areas in the medical centers, as they are required by OSHPD to operate at constant volume all of the time. It does not apply to laboratory air handlers, where more elaborate air flow control devices are needed.

### 8.2.3 Air Handler Project 3. Demand Control Ventilation

This project adds a carbon dioxide sensor to air handlers that serve areas with highly variable occupancies, such as lecture halls, theaters, gymnasiums. Measurement of the carbon dioxide level is used to reset the minimum outside air flow function of the outside air economizer according to occupancy requirements. The project includes a carbon dioxide sensor which is usually located inside the lecture hall or building space. This will result in the heating and cooling of less outside air when it is not needed for ventilation.

The minimum flow of outside air into the air handler has typically been designed according to full occupancy of the space. For example, if there are 200 seats in a lecture hall the minimum outside air flow may have been determined by multiplying 15 cfm per person (or



seat) times 200 seats, or 3,000 cfm. The outside air economizer would be adjusted never to drop below this level.

In the modified case the minimum outside air flow will be allowed to drop to lower levels as long as adequate ventilation is maintained for the number of people in the room, as indicated by the carbon dioxide levels. This is a standard control sequence required by Title 24 for new construction in high density spaces. Title 24 requires a minimum outside air flow rate of at least 0.15 cfm/sf, regardless of occupancy. This level of ventilation removes contaminants not related to human occupants. This level of outside air supply is typically found in office areas, so carbon dioxide sensors do not offer significant energy savings potential for offices and other areas that are never densely occupied.

The savings are calculated for this project through a bin simulation adjusted for local weather, operating hours, building load characteristics, air handler flows and configuration, and temperature control strategies.

The cost for implementing this project includes a carbon dioxide sensor, which can be factory calibrated with no need for additional calibration during its service life, and integration into the economizer control sequence. The campus can choose to monitor and log the carbon dioxide levels.

This project does not apply to air handlers serving office areas or other relatively low density areas. It does not apply to patient handling or laboratory air handlers where other outside air requirements exist.

#### 8.2.4 Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers

This project adds a static pressure reset capability to existing VAV air handlers that do not have direct digital zone controls. The current design static pressure setpoint may be the appropriate pressure to operate at during hours of high air conditioning load, but it is not necessarily needed during other hours of operation. This project automatically resets the static pressure to a level that maintains comfort conditions but is typically lower than the original setpoint.

There are two technologies commonly used to apply this control strategy. If the VAV system has direct digital controls at the room thermostats it is possible to use information from these thermostats to automatically reset the supply static pressure. It can be continuously reset so that a small portion of the VAV boxes are calling for full cooling. This would be an indicator that the pressure is operating at as low a point possible. For air handlers with DDC at the zones, this is a control sequence change which could be addressed in the commissioning project. The cost for reprogramming is relatively minor and so is not included in this section as a project.

Other VAV air handlers do not have DDC at the zone level, and so do not provide this type of feedback. An alternative control strategy will be used to address this situation, SAV with InCITe offered by Federspiel Controls. This system uses air flow measurement at the air handler to quantify the building load and resets the supply air pressure accordingly. This control sequence has been installed in several UC buildings over the last several years. The cost and savings for applying SAV with InCITe to air handlers without DDC zone controls are included in this project.

This approach to resetting supply pressure setpoints reduces fan energy use during part load conditions, while continuously meeting comfort requirements. The savings are calculated through a bin simulation adjusted for local weather, operating hours, building load characteristics, air handler flows and configurations and temperature control strategies.

The cost of implementing this control involves either reprogramming the DDC system or installing the SAV with InCITe system. Either process requires fine tuning for optimal performance.

This measure should apply to all existing VAV air handlers except in laboratories or other areas where static pressure control of the spaces is critical. It also applies to air handlers

#### 8.2.5 Air Handler Project 5. Reduce Air Handler Operating Hours

This project shuts down air handlers during nights and weekends, when the areas they serve are not in use. This applies to classroom buildings, offices, lounges, gyms and libraries. These air handlers may operate continuously now in order to cool a server or telecom closet. Or they may operate to condition the building in case someone comes in to work during non-business hours.

The building needs can typically be met by means other than running the air handlers continuously. In the case of the cooling needs of servers, the first choice would be to locate these servers in data centers where they receive cooling as needed, conditioned power, UPS backup, and continuous staffing. If there are servers or telecom equipment which cannot be relocated outside the building, they should be conditioned during nights and weekends by either split heat pumps, or dedicated chilled water coils where chilled water is continuously available.

In the case where the comfort of faculty, staff or students is critical during non-standard hours, these requirements can be met in several ways with existing control systems. For example, the space temperature of the buildings can be monitored during the nights and weekends so when it drifts outside a given comfort zone (perhaps 65° to 80°F) the air handler can operate as long as necessary to reestablish temperature control. The air handler would then shut off again until the building drifts outside of the setback temperature control points again. Some faculty or staff could also be given phone in access to the building control system to allow them to request air handler operation for several hours at a time when they find the temperature unacceptable.

The intention of this project is to provide a similar level of service to the University occupants that they currently enjoy, but at a lower energy use. The cost of this modification will be based on the number of spot cooling devices which may be necessary to serve specific building hot spots. The programming portion for the DDC system is not particularly expensive, as this is a standard control sequence. Temperature monitoring may be needed in older air handlers without direct digital control. Specific application notes are listed below.

#### Anteater Recreation Center Time of Day Controls

Project considers implementing time of day controls for mechanical equipment to match building occupancy requirements and re-program existing building energy management

system (EMS) to match actual building occupancy schedule. With time of day controls, mechanical equipment such as Chillers, Cooling Towers, Condenser Water Pumps, AHU, Package Roof Top Units, HHW/ CHW pumps serving non-critical areas will be turned off during unoccupied mode or when not necessary. This ECM also considers re-programming existing sequence of operation for mechanical equipment which currently runs without proper direction from EMS. (For example pumps Lead-Lag Operation). By turning off equipment during unoccupied periods or when not required will significantly reduce electrical energy use. Since most of the equipment is controlled and monitored through building energy management system, by properly re-scheduling and re-programming the existing sequence will significantly reduce energy usage. With implementation of this ECM, equipment will be running for fewer hours, this will save on maintenance and operating cost of the equipment.

For successful implementation of this ECM existing building energy management system will be re-programmed and/or equipment sequence of operation will be changed/alterd for efficient operation of the cooling and heating equipment. This ECM assumes equipment is already tied/controlled and monitored through existing EMS and only programming effort is required for implementation and to realize energy savings.

#### Admin Building Spot Cooling

The project applies to buildings which run Main Building Air Handling Unit (AHU) to serve comparatively small portion of the building during periods when rest of the building is not occupied and require conditioned air at certain conditions or at particular temperature. Thus, portion or part of the building with high heat density (such as Data Rooms, Computer Rooms, MDF rooms) which require 24-hours of conditioned air should be served with a separate local mechanical equipment to meet conditioning needs during periods of no occupancy or when main air handling unit is not scheduled for running. If building has DDC controls at zone level, it is possible to schedule VAV boxes to unoccupied mode and save some conditioning energy. If building has pneumatic controls at zone level scheduling of VAV boxes is complicated, tedious and costly. The point is due to lack of a spot cooling, a large air handling unit is run to meet needs of one zone when the rest of the zones in the building do not require conditioning air. Therefore this results in significant energy wastage, both fan and conditioning.

The work involved for implantation of this ECM is installing a Fan Coil Unit (If chilled water is available) or installing split-system such as DX computer room unit. Since this ECM is site specific and site conditions it will require to take into account actual conditioning needs of zone (such as a server room). This ECM will require Mechanical, Electrical, and Plumbing and may require some Structural Work. Also, with this ECM additional redundancy is added to system or to the areas with critical applications.

#### 8.2.6 Air Handler Project 6. Convert Air Handlers to Direct Digital Control

This measure involves replacing pneumatic controls on larger air handlers with direct digital controls. The intention is that no air handlers with supply fans of 10 hp or larger be left operating with pneumatic controls. The continued use of pneumatic controls creates problems in terms of calibration and drift, inadequate control sequences, inability to monitor and verify proper operation, incompatibility with demand response and inability to commission with lasting effect.

### 8.2.7 Air Handler Project 7. Outside Air Ventilation Heat Recovery

An energy recovery system is recommended in some facilities to capture heat or cooling from exhaust air and reuse some of it to precondition the make-up air before supplying it to the building. The type of heat exchangers or HVAC coils used to transfer this energy from the exhaust flow to the supply air can vary according to building design. Installation of a heat exchanger can result in significant energy savings in buildings that require a supply of 100% outside air. This was recommended for specific buildings in locations that experience significant variances in outdoor air temperature over the course of a year.

### 8.2.8 Air Handler Project 8. Kitchen Hood VFD

Demand ventilation controls are recommended for the university's larger dining facilities' commercial kitchen hood exhaust fans (typically 3 hp and up). Standard exhaust hoods consume a significant amount of energy because they constantly run at maximum flow and require make-up air that must be heated or cooled. By installing VAV hoods controlled by infrared smoke sensors and temperature sensors, supply and exhaust fan speeds can be adjusted to match actual cooking activity under the hood, reducing the excess energy consumed in between meal preparation times. These controls have already been installed in several UC campus dining facilities with positive results that have led to further installation requests.

### 8.2.9 Air Handler Project 9. Add Air Side Economizer

This project adds air side economizer on air handlers. This project concentrates on larger air handlers which use minimum fresh air for ventilation and do not take advantages of outside air conditions for cooling (or for heating). During cooling mode, in the absence of an economizer return air that is generally warm is mixed with the minimum outside air and then cooled with the help of mechanical cooling to meet the supply air temperature requirements. The amount of fresh or outside air brought into space through air handlers is fixed and not varied.

In the economizer mode, whenever outside conditions favor, outside air cooler than return air is brought into the space and, instead of being supplied back to the space, return air is exhausted. This is also known as free cooling, and significantly reduces cooling energy cost and system load. The same applies to heating mode where outside air warmer than return air is brought into the space to meet heating demand.

The project involves installing DDC dampers on outside air intake, return air and exhaust air to control percentage of outside air and return air in supply air to vary according to the load and outside conditions. In addition, a retrofit kit (damper actuator, flow measuring station, outside air temperature and humidity monitoring station, mixed air temperature sensor) is installed on each of the air handler. This kit includes direct digital controls, which increases the cost but greatly increases the functionality. Enthalpy changeover control strategy will be adapted to use outside air in the most economical way without use of energy required to dehumidify additional outside air. Enthalpy is a measure of the total heat in the air, which is calculated by measuring both the dry bulb temperature and the relative humidity. Outside air will be used for cooling when the enthalpy of outside air is lower than the enthalpy of return air. Outside air and return air dampers are modulated to admit enough outside air to

minimize cooling energy use. When outside air enthalpy is greater than the return air enthalpy, minimum outside air required for ventilation is brought into the space.

#### 8.2.10 Laboratory Air Handler Project 1. Convert Laboratory Air Handlers and Fume Hoods to Variable Air Volume

The intention of this project is to convert laboratories to variable air volume systems and reduce the large outside air heating, cooling and fan power loads. Many existing labs are constant volume reheat systems, with a fixed air flow coming from the air handlers being reheated at the laboratory and exhausted through the constant volume hoods or room general exhaust. Most new laboratories utilize VAV air handlers and fume hoods. The intention of this project is to update the configuration of the existing labs so that they can operate as efficiently as the new labs. The UC EH&S Laboratory Safety Design Guide Second Edition September 2007 states "All laboratories should contain a fully integrated laboratory variable air volume (VAV) airflow/pressure control system to control room temperature, ventilation rate and room pressurization."

This project starts with a review of the air balance requirements of the facility. The air flow needs of each room are determined according to the function of the room, the number of hoods and the internal and external heat loads. This air balance may be significantly reduced from the existing design because of better understanding of actual loads or better design parameters. The minimum air changes typically needed in a laboratory are 6 air changes per hour for a room with a 10 foot ceiling, per the EH&S Design Guide. A given lab may need higher minimums, depending upon the density of hoods.

The mechanical work includes converting the air handlers to VAV with the addition of VFDs to the supply fans. This may be appropriate for the exhaust fans as well, depending upon how they are ducted together. The hoods are converted to variable flow through the addition of an exhaust flow control valve and the sealing off of the sash bypass. If there are a small number of hoods in a larger room, these do not need to be converted to VAV, where the general exhaust requirements for the room are great enough that it makes no difference whether the air leaves through the hood or the general exhaust duct. The room supply air and general exhaust typically require new flow control valves or dampers as well to allow pressure control of each room. The exhaust fans may need stepping control and/or VFDs to maintain proper exhaust pressure in the duct and proper discharge velocity on the roof. The control systems should include supply temperature reset, utilizing either a DDC sequence or a controller such as DART, described above.

#### 8.2.11 Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers

A number of newer laboratories at the campuses were designed and built with VAV fume hoods and air handlers. Some of these have presented opportunity for efficiency improvement through rebalance of their systems to provide desired minimum air change rates (6 ACH). The current air change rate may be higher if the labs were designed for standard heat loads that did not end up being installed in most places. In some buildings air changes were provided for future hoods that were not installed.

This project will readjust the air balance in the existing labs to meet the air flow requirements as the buildings are currently operating. Should the operations of a given laboratory change in the future, the air change rate can be adjusted just for that room through a similar process.

The work involved in implementing this project is the recalculation of air change minimum air flows for each lab, based on the current building loads and 6 ACH minimum. Where the building has a DDC system, the new minimum air flows are set for the boxes and the operation is observed for stability and temperature control. Where there is no DDC system a more involved air balance will be necessary, probably manually setting the minimum flows on the zone supply boxes. The existing static pressure controllers should provide the reduced air flow and fan savings when the minimum air flows occur. The control systems should include supply temperature reset, utilizing either a DDC sequence or a controller such as DART, described above.

#### 8.2.12 Laboratory Air Handler Project 3. Reduce Minimum Air Change Requirements through Continuous Monitoring

The first two Laboratory Air Handler Projects will reduce air change rates according to the needs of the individual rooms, with minimum flows set for 6 air changes per hour. This project will further reduce the minimum air flow setpoints in laboratory areas, with monitoring provided to raise the air change rate should a chemical spill be detected. The plan from the UC Irvine campus is to drop minimum air flow setpoints to 4 ACH during hours when the laboratories are normally occupied and to 2 ACH during other hours. This will further reduce the use of electricity to circulate the air, as well as heating and cooling requirements for the 100% outside air flow.

The approach at UC Irvine is comprised of a chemical monitoring system that monitors the concentration of a number of common gases. The currently proposed system is an Aircurity system which uses a central monitoring station physically connected by sampling tubing to perhaps 20 rooms. The air quality in each laboratory is sampled periodically, typically once every 15 minutes. Detection of high gas concentrations caused by a spill would automatically increase the air change rate in the affected lab. A push button in each lab could be manually activated to do the same.

Implementation of this measure requires approval of the campus Environmental and Health Safety department, which exists at UC Irvine.

### 8.2.13 Laboratory Air Handler Project 4. Variable Drives on Exhaust Fans

This project considers installing variable frequency drives on laboratory fume hood exhaust fans that run 8,760 hrs per year. This project applies to exhaust fans that run at constant speed and do not change fan speed in accordance with the laboratory exhaust duct pressure requirements. In other words these fans run at design speed (100%) independent of system characteristics, thus wasting fan energy and imposing electric demand charges on the campus. Bypass air is introduced at the inlet of the exhaust fan to maintain constant fan airflow and stack exit velocity when building exhaust airflow changes. The exhaust systems have either more negative duct static pressure or high fan airflow under partial loads. This results in excessive fan energy consumption and considerable noise problems. The design of a manifold with a bypass damper for tracking changing manifold volume can be improved by adding variable frequency drives to the exhaust fans. With the help of VFD, fan speed is also varied in addition to modulating bypass damper which results in significant reduction in fan electrical energy use and demand. To achieve this existing bypass damper on manifold, multi-stack fan system will be used. Due to diversity in the system, exhaust flow is continuously changing depending upon the number of fume hoods in use and their respective sash position. When all sashes in the system are in the closed position (absolute minimum) adequate discharge velocity which is crucial in every laboratory design will be achieved by opening outside air (bypass) damper to its full open position. When increased exhaust capacity is required due to increase in sash opening area, the bypass damper is gradually modulated to a fully closed position. To meet increased and decreased exhaust flow requirements and exhaust plenum set-point, exhaust fans speed and bypass damper are modulated to achieve fan savings without compromising safety to the users.

The project involves installing VFDs on exhaust fans and static pressure sensors at multiple locations in laboratory fume hood exhaust systems. This will require direct digital control integration with the existing building energy management system. Special programming and sequencing will be required to control and monitor the exhaust fan system. Also, for successful implementation of this energy conservation measure, testing and balancing of laboratory exhaust system is required. This measure assumes that existing fan motors are inverter duty type.

### 8.3 Monitoring Based Commissioning Projects

#### 8.3.1 Monitoring Based Commission for All SEP Buildings

Monitoring Based Commissioning (MBCx) is recommended for all campus buildings of 50,000 sf and greater over the course of the next two utility funding cycles (six years). This process includes installing networked whole building meters on the buildings to automatically track electricity, steam, hot water, chilled water and/or natural gas use. It also includes a commissioning effort to review building operations, the functionality of controls, the appropriateness of sequences of operations, time scheduling, and numerous other building operation parameters. The process of identifying the SEP projects was a building survey, as opposed to an investment grade energy audit. The operational changes which would normally be identified in a detailed audit should be identified and resolved through the commissioning process.

Where capital projects have been identified for buildings, for example, convert to variable air volume or install variable flow fume hoods, it is recommended that the commissioning

process be integrated with the retrofit process, even though it is included separately in the project list. This is a hybrid MBCx process which will result in the most expedient change in building operations. In the case where no retrofit projects have been identified the commissioning process can be implemented at any time. It is possible that the commissioning process will result in the identification of additional retrofit measures which can be funded and installed in a later process.

No commissioning project is recommended for buildings which received monitoring based commissioning in the 2004-2005 or 2006-2008 UC CSU IOU Partnership Program.

The budgets for the MBCx projects were projected based on the 2006-2008 Partnership Program applications. The average cost for MBCx in Basic buildings was \$0.61 per square foot. For Complex buildings the average cost is \$1.22 per square foot.

The projected MBCx energy savings for the SEP buildings are determined relative to the 2006-2008 Partnership Program applications. There is a 70% multiplier applied to all savings projections because the buildings already in the MBCx program were selected specifically for their potential, while the proposed SEP buildings are only selected based on size.

Basic building applications average electricity savings of 10% or 1.1 kWh/sf-yr, and gas savings of 15% or 0.15 th/sf-yr. Energy savings are projected to SEP buildings according to historical energy use of the building, if it is known. If historical energy use is not known, savings are projected on the basis of the building area. In both cases a 70% savings scaling factor is applied.

Complex building applications average electricity savings of 9% or 2.7 kWh/sf-yr, and gas savings of 21% or 0.29 th/sf-yr. Energy savings are projected to SEP buildings according to historical energy use of the building, if it is known. If historical energy use is not known, savings are projected on the basis of the building area. In both cases a 70% savings scaling factor is applied.

In addition, MBCx was recommended for all central plants which have not previously been commissioned through the Partnership program.

## 8.4 Capital Program Projects

### 8.4.1 New Construction and Renovation from Capital Program

There is a significant opportunity to integrate energy efficiency with new construction and renovation of campus facilities. This is currently implemented through the Savings By Design process administered by the statewide investor owned utilities, as well as SMUD. It is anticipated that this program will be continued in the 2009-2014 utility portfolio. It is hoped that it can be integrated with the UC CSU IOU Partnership Program to become more effective.

The anticipated program modifications include the following: encourage energy savings of greater than 25% relative to Title 24 to earn the maximum incentive levels of \$0.25 per kWh and \$1.00 per therm; use the Partnership minimum required campus contribution of 20%



rather than the Savings By Design requirement of 50%; remove the \$150,000 or \$450,000 cap per project; consider some up front engineering funding.

On the UC side the current process is hampered by severe competition for construction funds to implement the efficiency measures. Even when funds are set aside in the design budgets to meet the current UC goal of 20% below Title 24, efficiency measures are sometimes lost in “value engineering” during the construction process. There are typically not enough funds available to allow construction of buildings with the energy efficiency measures justified by life cycle costing.

The opportunity to use the energy efficiency bond money in new construction and renovation projects would create significantly more opportunities for the installation of energy efficiency in these projects. The potential cost and savings is projected for this analysis, assuming each project could reduce energy use by approximately 30% below Title 24 and assuming that the total investment to achieve this performance would result in a simple payback period of 7 years. It is possible that this performance level can be achieved with a shorter payback, or that higher percentage savings can be achieved with this payback period.

The potential cost and savings for this measure is based on the planned construction for the campuses, as detailed in the *2007-08 to 2011-12 Capital Program* document from the UCOP website. This includes construction and renovation projects on all campuses, independent of building funding source. The total project cost and savings were projected for individual projects, based on average performance numbers from existing UC buildings. A projected 30% savings in Basic buildings is 3.3 kWh/sf-yr and 0.3 th/sf-yr. A projected 30% savings in Complex buildings is 8.9 kWh/sf-yr and 0.4 th/sf-yr.

These savings were projected to the building areas identified in the Capital Program document. Where building area was not directly identified, it was estimated from the project budget based on a projected construction cost of \$611 per gross square foot. This is based on the average construction cost of the projects where stated (\$917 per assignable square foot) and the observed ratio of gross square feet to assignable square feet from the UCOP comprehensive building list (1.5).

The *2007-08 to 2011-12 Capital Program* identifies hundreds of planned projects. Savings By Design projects for the Strategic Energy Plan were not calculated for projects which are currently on the UCOP list of Savings By Design projects underway through the current program. It was assumed that these projects are too advanced in the design process to switch to a deeper savings investment based on the proposed SEP process. In addition projects were not included on the SEP list if they are shown with an occupancy date of 2007-08 or 2008-09. It is assumed that these projects are too far along in design to allow significant changes. Once the new SEP program is underway, there may be an opportunity to include some of these projects, or to replace recommended measures that could not be supported in the original budget.

Also excluded from the SEP project list are buildings listed for occupancy in 2014-15 or later, parking structures, and general infrastructure projects. Several buildings were added to the list by request of a campus.

The projects listed include new buildings and renovation of existing buildings. In some cases the projects are not defined, but fall under general budgets, such as Campus Approved Projects Under \$5 Million. The total list assumes that energy efficiency is an integral part of each of these projects.

## 8.5 Deferred Maintenance and Capital Renewal Projects

There is a significant budget spent on deferred maintenance and capital renewal projects each year. This is an investment in returning buildings and equipment to proper operating condition. This often includes roof replacement, window replacement and chiller or boiler replacement. This project comes from a different source than the capital project funding.

Each campus produces a list based on a combination of priorities, although energy savings are typically not a factor. Although projects typically may save a nominal amount of energy, the replacement of this type of equipment typically has a long simple payback if calculated on energy savings only. Certainly some capital investment could be used to increase the efficiency of a project by improving the U value of a roof, increasing the performance of glazing or improving the efficiency of a chiller or boiler.

The budget that each campus has to spend on these projects is highly variable. It can be in the range of \$10 million per year in a good year.

It has been estimated that about 12% of these projects have an energy savings component. An increment of \$0.25 to \$0.5 million per year of deferred maintenance and capital renewal projects is used in the SEP project list. The campuses could elect to include one or more of these projects per year in their SEP commitment.

## 8.6 Campus Wide Projects

### 8.6.1 Campus Wide Project 1. Refrigerators

It is recommended that all pre-2001 refrigerator units be replaced by Energy Star units. Old refrigerators can consume twice the electricity of a current Energy Star unit. Refrigerators are especially prevalent in universities where they are widely used in both academic and residential settings. Electricity and cost savings were calculated using the Energy Star calculator adapted for replacement of pre-2001 residential-type refrigerators on campuses.

Refrigerators in Housing – The number of refrigerators in housing per campus were estimated based on the total number of apartment-type housing and suite-type housing available on each campus. Where available, we used the numbers of housing refrigerators to be replaced, as specified by the campus.

Refrigerators on Campus – The number of refrigerators on campus was estimated based data provided by the UCB BETS database and prorated by the number of enrolled students at each campus. The BETS database provides an inventory of refrigerators that were purchased before 2001.

### 8.6.2 Campus Wide Project 2. Lab Freezers

It is recommended that all pre-2001 lab freezers be replaced by energy efficient units. According to New Brunswick Science (NBS), current energy efficient units consume half the amount of electricity of the industry average. Due to this significant waste of energy, Energy Star is currently developing standards for the industry. These units are especially prevalent in universities where they are widely used in research settings. Electricity and cost savings are calculated using data for ultra-low temperature (-86°F) upright lab freezers provided by NBS. While the Energy Star standards are currently being developed, this calculation can serve as an estimate for -20° to -30°F lab freezers as well by using an average industry installed cost of \$7,000. The number of ultra-low temperature lab freezers on each campus was estimated based on data provided by the UCB BETS database and prorated by the number of enrolled students at each campus.

### 8.6.3 Campus Wide Project 3. Server Virtualization

Server Virtualization maximizes the utilization of servers by installing virtualization software on existing servers and allows the elimination of idling or under-utilized physical servers. Energy savings potential was calculated based on deemed values provided by the SCE "Virtual Machine" calculator, version 6. The baseline server assumed the default values provided by the SCE calculator, whereas the proposed VM server used an average of two servers' specifications, "HP DL 585" and "Dell Blade 1955", servers that UC Berkeley are considering for future VM projects. The number of "virtualizable servers" per campus was estimated using data provided by the UC Berkeley IT Department and then prorated by the number of enrolled students per campus in Fall 2006. This includes both the decentralized servers across campus and servers that are in the data center servers. A ratio of ten baseline servers consolidated onto one virtual machine was used based on a conservative estimate from past partnership projects.

Note that this project is based on the reduction in the number of servers operating and their local air conditioning load. Where a large air handler was operating continuously to cool a server, this measure was included in the HVAC projects.

### 8.6.4 Campus Wide Project 4. Network Computer Power Management Software/CRT

Network computer power management software is recommended to power down computers that are on the network when they are not being used. Network PC power management software energy savings potential was calculated based on deemed values provided by the Verdiem PG&E work paper. Installed cost was estimated by the retail price of the software with installation, and with additional maintenance and support costs. For each campus, the number of computers on campus was estimated based on data provided by UC Berkeley's BETS database and prorated by the number of enrolled students per campus in Fall 2006. The BETS database showed the number of computers on campus older than 5 years. To be conservative, we estimated that half of these computers represented the number of managed, networked-computers on which power management software could be installed. However, we recommend that power management software be installed on all managed, networked-computers.

CRT monitor to LCD monitor conversions were also recommended for each campus. Both the energy savings potential and cost were based on the Energy Star calculator for LCDs, adapted to represent conventional 17" CRT monitors to be replaced by Energy Star 17"

LCDs. We recommend, however, that all CRTs be replaced with Energy Star LCDs to maximize energy savings.

#### 8.6.5 Campus Wide Project 5. Install Controllers on Vending Machines

Vending machines and sliding-door coolers can easily be retrofit to use approximately 40 percent less energy using inexpensive controllers. To examine the potential for this efficiency measure, counts of sliding door coolers and two types of vending machines, refrigerated and non-refrigerated, were collected from the UC campuses. Information about existing measures to reduce the energy consumption of these machines (e.g. requiring service providers to use Energy Star machines) was also gathered to avoid duplication of those efforts. For campuses that were not able to provide vending machine data, typical values determined for the rest of the UC system were applied.

Based on the reported or estimated number of vending machines on each campus and the estimated annual energy usage of a machine, the existing energy consumption of all vending machines was calculated for each campus. For campuses that had not implemented controls or had done so only to a limited extent, full use of controllers on all campus vending machines and sliding-door coolers is recommended. The energy and cost savings associated with implementing this measure are calculated based on typical energy savings listed in the Database for Energy Efficient Resources (2005) and reported by equipment manufacturers.

### 8.7 Other Projects

#### 8.7.1 Swimming Pools

The Strategic Energy Plan includes energy savings and cost estimates for a number of energy efficiency measures for swimming pools. Four potential measures have been identified for campus pools and information is provided for each individual pool when appropriate.

#### 8.7.2 Pool Project 1. Variable Speed Drives and High Efficiency Motors for Filter Pumps

Pool filter pumps are often continuously run at a constant flow rate regardless of usage and cleanliness standards. Codes typically require certain circulation rates when the pool is occupied. This measure includes installing a variable speed drive with control system and, when appropriate, replacing the motor with a premium efficiency motor. The energy savings calculations for this project assume that the pump will be slowed down to 50% of its normal speed during unoccupied hours (8 hours per day for most pools).

#### 8.7.3 Pool Project 2. Pool Covers

Heated pools and spas lose approximately 70% of their energy to evaporation. Since evaporation is the major source of heat loss for pools, covering the pool when it is not in use is an effective manner of minimizing water and heat loss. This project includes standard insulating pool blankets, storage reels, and a power winder. Energy savings are modeled using the RETScreen4 software. The calculations assume that pool covers will be used eight hours per day.

#### 8.7.4 Pool Project 3. Solar Water Heating

Solar water heating can significantly reduce pool operating cost by decreasing heating requirements. This measure is for a solar pool heating system of unglazed collectors with a total collecting area equal to 60% of the size of the area of the pool. Energy savings are modeled using RETScreen4 software. The calculations assume that pool covers are installed and used to minimize heat loss.

#### 8.7.5 Pool Project 4. Boiler Replacement

This project replaces standard boilers for pool heating with dedicated high efficiency condensing boilers. The energy savings calculations for this measure assume 80% thermal efficiency for the currently installed boiler. Although some condensing boilers for pool heating claim up to 98% thermal efficiency, a conservative estimate of 90% thermal efficiency was used for the replacement boiler. The baseline energy consumption for this measure assumes that both pool covers and solar water heating are used. Information is not provided for pools that are heated using the central loop or a non-dedicated boiler.

#### 8.7.6 Domestic Solar Hot Water

The use of solar hot water heating was explored as a possible measure to reduce energy use in campus residences. Total domestic hot water consumption was estimated for large residence halls and apartment buildings based on occupancy data collected from the campuses. Then, using data on the solar resource available on each campus and an assumed fraction of total water use to be provided, a solar hot water system was sized to meet demand. The cost of an appropriate system – active, closed-loop, with glazed flat-plate collectors – was then estimated to determine the cost effectiveness of this measure.

Paybacks for domestic solar hot water were close to 80 years and therefore this measure was not recommended. However, in certain circumstances domestic solar hot water may prove more attractive. For example, where a solar hot water system has already been in use, adding or upgrading panels while preserving existing storage and pipes may offer a cost-effective measure. Also, access to state or federal tax credits and/or utility incentives – currently in pilot phase – could greatly increase the attractiveness of this measure.

### 8.8 Custom Projects

#### 8.8.1 UCI Custom Project 1. Install Air Curtains

This project considers installing air curtains for conditioned spaces at strategic locations such as loading dock, building entrance, and entrance for swimming pools having comparatively large openings or doors. Basically air curtain is creating an invisible air barrier between an unconditioned space (such as outdoor) and conditioned space (indoor) whenever the opening to the indicated spaces is opened or kept open. Air barrier is created by forcing or blowing pressurized air to separate and block infiltration of outside air into conditioned space and prevent escape of conditioned air to outside. Air curtain prevent energy transfer across unconditioned space and conditioned space therefore saving energy required to condition space. In absence of an air curtain such as in summer, outside air that is hot and unfiltered is brought into condition space thereby adding cooling load on the system. Same applies in winter, cold outside air is brought into space creating additional

heating load on the system. In addition, outside air that is brought directly into the space is not filtered and can cause discomfort to the occupants. Depending on the frequency of use of opening and its size, outside air brought or unfiltered into space can cause higher air conditioning cost and costs associated with changing filters on HVAC system. Air curtains help to maintain controlled environment and prevents dust, bugs, and insects from entering the occupied area. Since air curtains are invisible and do not block vision, they help to achieve and maintain space at comfort level without compromising occupant health. Fan energy required to run the blower is negligible in comparison to the energy required for additional cooling or heating of the space. Air curtains will be in operation only when the opening is open.

This project involves installing Air Curtain at Loading Dock. This will require some electrical work for electrical connection to the air curtain unit and structural work for supporting air curtain unit to the ceiling above the opening.

#### 8.8.2 UCI Custom Project 2. Variable Speed Drives on Pumps

This project considers installing Variable Frequency drives (VFD) on HVAC centrifugal pumps to vary pump speed by varying electrical frequency input to pump motor in relation to system heating and cooling load. This project concentrates on pumps which run at fixed speed and do not alter flow of water in accordance with the HVAC system load requirements. In other words these pumps run at design speed (100%) independent of system characteristics wasting pumping energy and imposing electric demand charges on the campus. Generally pumps are designed to run at rated speed to meet the peak HVAC system demand which occurs only few hours per year. Rest of the time, due to the diversity in the system, the system does not require pump to deliver design flow (since the peak for each zone does not occur at the same time). Therefore system requires less flow than the design flow providing an opportunity to save pump energy by reducing pump speed to meet reduced system flow requirements. Speed reduction results in a more significant energy reduction. The larger the flow reduction from the designed operating point, the larger the energy savings. Since flow rate is directly proportional to pump speed and the differential pressure is directly proportional to the square of the pump speed, power usage is directly proportional to the cube of the pump speed. For example, reducing speed by 50% requires only 12.5% of the power needed at full speed.

The project involves installing Variable Speed Drives on pumps and differential pressure transmitter in HVAC loop to control and monitor pump speed. Pump VFD and differential pressure transmitter will be connected to existing building energy management system.

Also existing bypass valves in loop will be disabled for successful implementation of this ECM. This ECM assumes that existing pump motors are inverter duty type.

#### 8.8.3 UCI Custom Project 3. Condenser Water Reset

This project considers implementing condenser water reset control strategy for water cooled chillers through use of existing building direct digital controls (DDC). In condenser water reset control, water supplied to chiller condenser is varied according to outside air wet bulb temperature. With condenser water reset methodology, variable set point is used to control condenser water entering temperature. Every cooling tower can cool water up to certain limits depending on tower design and ambient wet bulb temperature. Since tower size is

fixed, only driving factor is ambient wet bulb temperature. Cooling tower can cool water to temperatures equal to “*wet bulb temperature + cooling tower approach*”. Approach is defined as the difference between cooling tower leaving water temperature and ambient wet bulb temperature. In other words if ambient wet bulb temperature is 50°F with cooling tower design approach of 14°F, cooling tower can cool water to temperature of 64°F. Most of the Chiller Manufacturer’s literature indicates that a one-degree drop in condenser entering water temperature will reduce chiller energy consumption by two percent. Due to location of the building, ambient conditions favor use of condenser water reset and fan power usage due to condenser water reset will be comparatively less than the energy used for the chiller. An algorithm will set upper and lower limits on condenser water temperature to protect chiller from damage and by restricting set point to minimum approach, fan speed will not be increased in vain to achieve impossibly low temperatures. Without condenser water reset strategy, Cooling tower will run at fixed low temperature wasting fan energy during conditions when cooling tower cannot achieve the set-point due to higher outside air wet-bulb temperature/ or due to high cooling loads on chiller. Condenser water reset strategy calculates overall system load, chiller characteristics (kW/ton), outside air wet bulb (enthalpy) and determines the best possible condenser water set-point under given circumstances for an efficient plant operation.

To implement condenser water reset strategy, a wet bulb temperature sensor and humidity sensor will be installed in cooling tower yard. The existing DDC panel will be programmed to add an algorithm to reset (lower) condenser water entering temperature based on ambient wet bulb temperature. This algorithm will be used to control cooling tower fan VFD to maintain pre-set temperature at existing temperature sensors.

#### 8.8.4 UCI Custom Project 4. Replace Old CRAC units with New CRAC units, Separate Hot and Cold Aisles and Add Air Side Economizer

This project considers replacing old Computer Room Air Conditioning Units (CRAC) with new efficient CRAC units. Existing CRAC units are old and do not vary supply fan speed in accordance with the data center loads. Often fan is run at full speed. Energy used to run fan at high speed is comparatively higher than running fan at lower speed. Heat dissipated into space due to fan running at full speed causes extra cooling load on the system and thereby extra energy costs. Since load in the data center is not constant and there is redundancy in the system, it is not required to run fan at full speed at all times. CRAC units run 8760 hrs and heat from the fan motor is constantly added to space. In addition Data Center does not require design air flow ay all times and it is possible to supply lower airflows during low cooling demands. In conventional data center design CRAC is controlled based on return air temperature sensor in return air duct of the unit and there is no separation between hot and cold aisles. This is inefficient and results in excessive air flow requirements. With the separation of hot and cold aisle, cold air supplied to the rack and hot air returned from the back of rack do not mix together thus allowing to tap energy savings both from fan and cooling. It is thus possible to supply air comparatively at higher temperatures of about 65F (adjustable) instead of 60F allowing savings in chilled water use and realizing significant energy savings. By adding air side economizer outside air or free cooling will be used whenever outside air is below (55F- Adjustable). With air side economizer, significant amount of energy savings are possible and requirements for fresh air (ventilation air) will be also be met with no air required from the housing. Addition of economizer gives extra redundancy to the system.

This project involves replacing existing old CRAC units with new CRAC units, separating hot and cold aisles, enthalpy sensor for economizer, humidity sensor in data center, adding air side economizer, duct work for economizer, return air duct for CRAC. Since location of Data Center is site specific, the scope and work requirement for Mechanical, Electrical, Plumbing and Structural will also vary according to site. The operation of economizer and CRAC will be monitored and controlled by existing building direct digital controls.

#### 8.8.5 UCI Custom Project 5. Elevator Upgrade to VVVF

This project considers upgrading existing motor generator elevator systems to new solid state drives. Motor generators draw approximately 35% to 40% of the full load power during idle mode, and are relatively inefficient, typically operating with a range of 72% to 81% efficiency. Newer technologies are available to drive elevators with a variable voltage variable frequency drive (VVVF) coupled with an AC motor. With a VVVF, the elevator drive draws less power during idle mode, and the operating efficiency approaches 97%. An alternate retrofit is to replace the motor generator with a silicon controlled rectifier (SCR) coupled with a DC drive. This retrofit is less expensive, but produces less savings; approximately 26% savings for a SCR retrofit, compared to approximately 57% savings with VVVF.

#### 8.8.6 UCI Custom Project 6. Campus Generated Projects

Throughout the SEP effort, the campus has contributed numerous projects for consideration and analysis, and even in some cases included projects already analyzed by the campus. These projects have been reviewed and incorporated in the project list. Where available, the energy calculations have been included in the appendix.



## 9. BUILDING OVERVIEW & PROJECTS

The following pages provide an overview of the recommended projects and summary of information for the associated buildings. The section is organized sequentially according to the Building Key, and each contains the following information for each SEP Building.

- Basic information about the building is contained in the header.
- Annual historical energy use by utility for the FY 06/07 baseline, whether metered or extrapolated.
- Monthly historical energy use by utility, where data is available.
- Hourly load profiles by utility for one summer week and one winter week, where data is available.
- Currently planned energy projects being implemented as part of the 2006-08 UC/CSU/IOU Partnership cycle, and their associated savings as approved for the incentive application.
- Projects identified by the Strategic Energy Plan, and the projected savings and economics. The SEP ID Number is a key reference to find the applicable Project Summary.
- Benchmarking information, calculating the baseline and projected energy uses after implementation of currently planned energy projects and after implementation of the projects identified in this SEP.





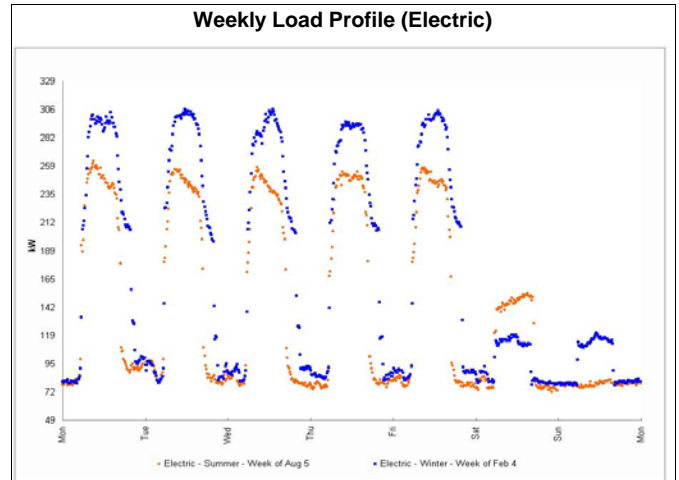
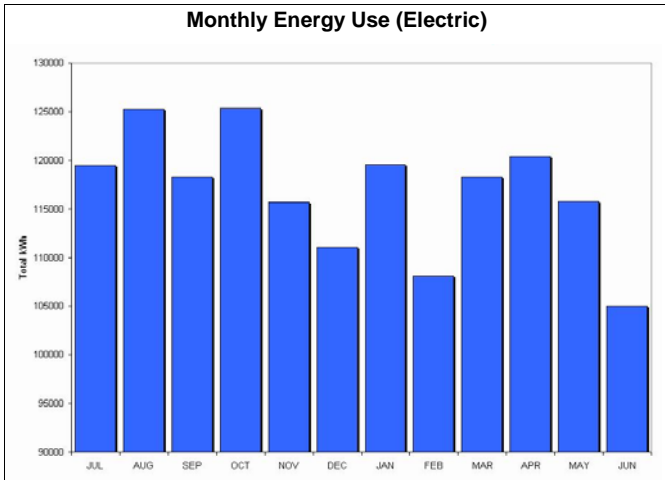
# ADMIN BLDG

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9003  
**Funding Source:** STATE  
**Year Built:** 1973

**Basic Gross Area (sf):** 101,022  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Storage

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,402,386		6,000.0		1,516,100
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# ADMIN BLDG

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9003  
**Funding Source:** STATE  
**Year Built:** 1973

**Basic Gross Area (sf):** 101,022  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Storage

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1001	AHU-1 (S-1) Spot Cooling and SP reset										Committed Tier: Tier 1
		113,874	0.0	2,280	0	46,056	\$37,997	\$179,023	\$64,673	\$114,350	3.0
I1002	AHU-2 (S-2) SP reset										Committed Tier: Tier 1
		11,234	0.0	39	0	2,295	\$1,794	\$24,841	\$3,624	\$21,217	11.8
I1003	AHU-3 (AC-3) SP reset										Committed Tier: Tier 1
		17,159	0.0	78	0	4,123	\$2,974	\$26,956	\$5,885	\$21,071	7.1
I3013	Demand Control Ventilation										Committed Tier: Tier 1
		7,590	8.0	0	0	0	\$810	\$6,704	\$1,822	\$4,882	6.0
I3014	Zone DDC Upgrade										Committed Tier: Tier 1
		52,531	9.0	0	2,425	0	\$7,856	\$359,918	\$15,032	\$344,886	43.9
I3076	Monitoring Based Commissioning										Committed Tier: Tier 1
		98,167	11.0	0	10,607	0	\$20,320	\$85,411	\$34,167	\$51,244	2.5
I3186	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas										Committed Tier: Tier 1
		118,239	28.0	0	0	0	\$12,615	\$158,333	\$28,377	\$129,956	10.3
I3318	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors										Committed Tier: Backup
		6,300	0.0	0	0	0	\$672	\$8,265	\$1,512	\$6,753	10.0
<b>Totals</b>		<b>425,094</b>	<b>56.0</b>	<b>2,397</b>	<b>13,032</b>	<b>52,474</b>	<b>\$85,037</b>	<b>\$849,452</b>	<b>\$155,092</b>	<b>\$694,359</b>	<b>8.2</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	2,615,266	75,000	25.9	0.7	339.3	N/A
Implement Partnership Projects	2,615,266	75,000	25.9	0.7	339.3	0.0%
Implement SEP Projects	2,148,193	32,006	21.3	0.3	249.4	26.5%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10,239 kBTU per kWh    100 kBTU per th



# ANT REC CTR

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9299  
**Funding Source:** OTHER  
**Year Built:** 1999

**Basic Gross Area (sf):** 89,320  
**Building Type:** BASIC  
**Primary Asset Type:** Athletics  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,406,700			114,002	
Extrapolated	N/A	N/A	Metered	N/A

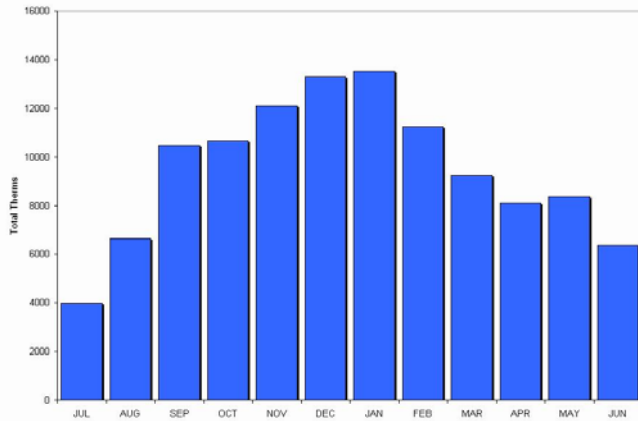
Monthly Energy Use (Electric)

Metered Data Not Available

Weekly Load Profile (Electric)

Metered Data Not Available

Monthly Energy Use (Gas/Heating Hot Water/Steam)



Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

Monthly Energy Use (Chilled Water)

Metered Data Not Available

Weekly Load Profile (Chilled Water)

Metered Data Not Available



# ANT REC CTR

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9299  
**Funding Source:** OTHER  
**Year Built:** 1999

**Basic Gross Area (sf):** 89,320  
**Building Type:** BASIC  
**Primary Asset Type:** Athletics  
**Secondary Asset Type:** Office

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1020	DCV & Scheduling Controls for a VAV system (1A, 1B, 2 and 6)										Committed Tier: Tier 2
		103,098	31.0	0	19,190	0	\$28,813	\$70,790	\$43,934	\$26,856	0.9
I1072	AHU3,4,5,7 Convert to VAV & DCV from CAV system										Committed Tier: Tier 2
		121,474	-10.0	0	-388	0	\$12,600	\$152,729	\$28,766	\$123,963	9.8
I3068	Variable Speed Circulation Pump - Anteater Pool										Committed Tier: Backup
		35,513	0.0	0	0	0	\$3,789	\$18,940	\$8,523	\$10,417	2.7
I3070	Solar Pool Water Heater - Anteater Pool										Committed Tier: Tier 2
		0	0.0	0	13,908	0	\$12,911	\$143,765	\$13,908	\$129,857	10.1
I3072	High Efficiency Boiler Replacement - Anteater Pool										Committed Tier: Backup
		0	0.0	0	4,459	0	\$4,139	\$117,650	\$4,459	\$113,191	27.3
I3109	Monitoring Based Commissioning										Committed Tier: Tier 2
		68,776	8.0	0	11,970	0	\$18,449	\$75,516	\$28,476	\$47,040	2.5
I3217	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate										Committed Tier: Tier 1
		167,825	43.0	0	0	0	\$17,905	\$219,763	\$40,278	\$179,485	10.0
I3366	Solar Hot Water for Showers and Laundry										Committed Tier: Backup
		0		0	10,000	0	\$9,283	\$120,000	\$10,000	\$110,000	11.8
I3367	Pool Covers										Committed Tier: Backup
		0		0	11,000	0	\$10,211	\$175,000	\$11,000	\$164,000	16.1
I6001	CW Reset & MBCx Chiller Plant(in addition to MBCx of Building)										Committed Tier: Tier 2
		316,372	0.0	0	0	0	\$33,753	\$126,492	\$75,929	\$50,563	1.5
<b>Totals</b>		<b>813,058</b>	<b>72.0</b>	<b>0</b>	<b>70,139</b>	<b>0</b>	<b>\$151,854</b>	<b>\$1,220,646</b>	<b>\$265,273</b>	<b>\$955,372</b>	<b>6.3</b>

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	1,406,700	114,002	15.7	1.3	288.9	N/A
Implement Partnership Projects	1,406,700	114,002	15.7	1.3	288.9	0.0%
Implement SEP Projects	593,642	43,863	6.6	0.5	117.2	59.4%

**Assumed Incentives:**

Electricity	\$0.24 per annual kWh
Natural Gas	\$1 per annual therm
Cap	80% project cost

**Central Plant Efficiencies:**

th/MMBTU:	12.5
kWh/ton-hr:	0.8
th/ton-hr:	0.0

**Source Energy Use Conversion Factors:**

10.239 kBtu per kWh	100 kBtu per th
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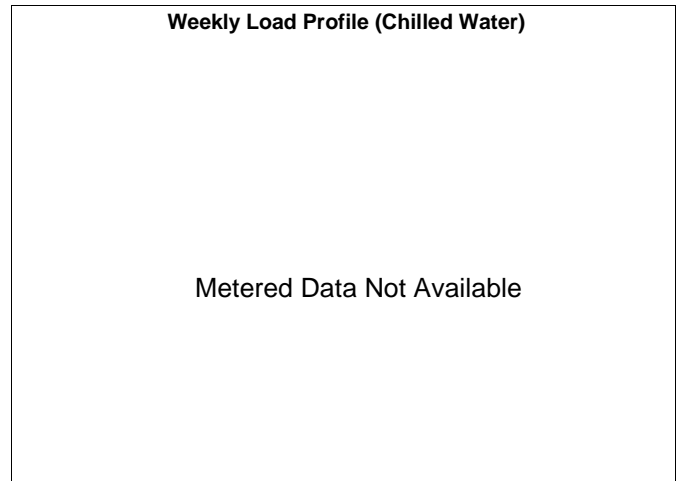
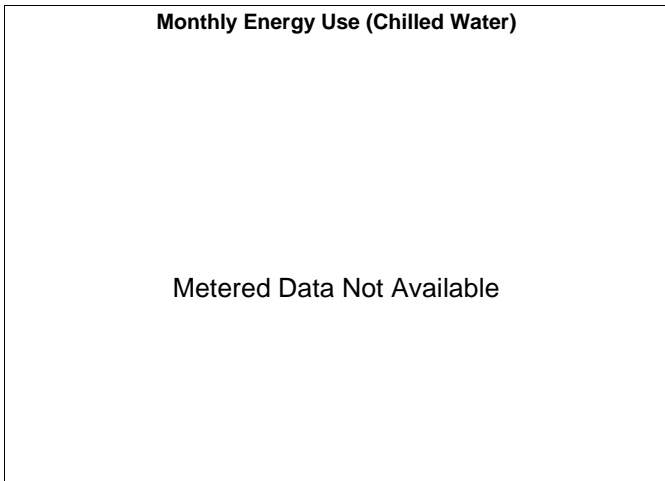
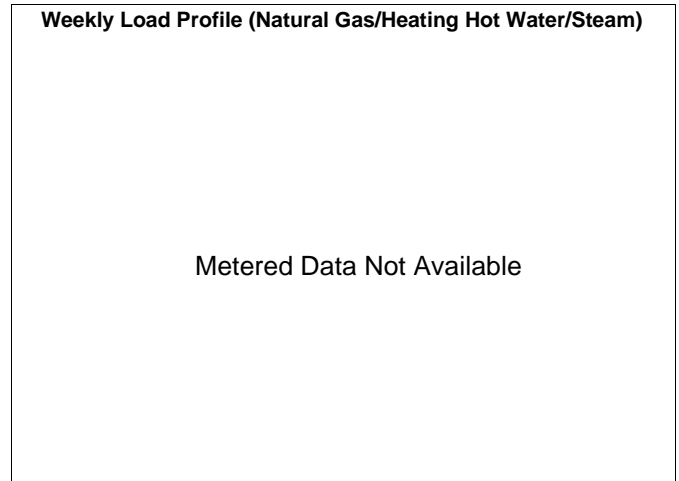
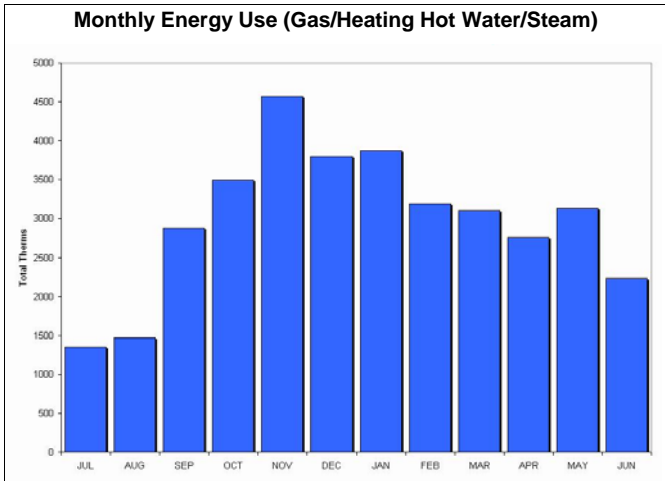
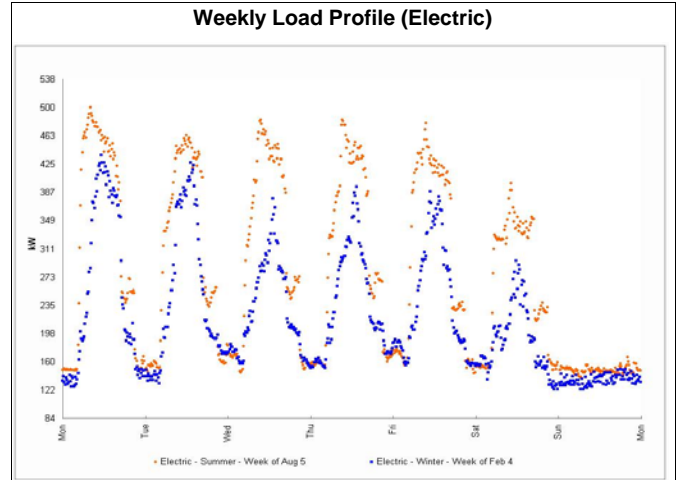
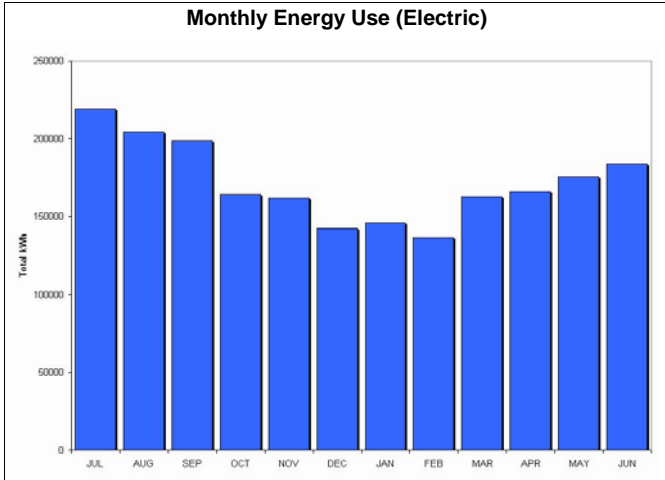
# BERKELEY PL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9107  
**Funding Source:** STATE  
**Year Built:** 1991

**Basic Gross Area (sf):** 114,000  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
2,061,702			35,875	
Metered	N/A	N/A	Metered	N/A





# BERKELEY PL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9107  
**Funding Source:** STATE  
**Year Built:** 1991

**Basic Gross Area (sf):** 114,000  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	8,783		

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1037	AC-1 SP Reset										Committed Tier: Tier 1
		5,323	0.0	0	1,333	0	\$1,805	\$21,092	\$2,611	\$18,481	10.2
I1038	South Wing -AC-2,3,4 SP Reset										Committed Tier: Tier 1
		15,264	0.0	0	3,628	0	\$4,996	\$63,563	\$7,291	\$56,272	11.3
I1039	North AC-1 SP Reset										Committed Tier: Tier 1
		7,955	0.0	0	2,085	0	\$2,784	\$21,572	\$3,994	\$17,578	6.3
I1040	North Wing -AC-2,3 SP Reset										Committed Tier: Tier 1
		25,421	0.0	0	5,937	0	\$8,223	\$43,144	\$12,038	\$31,106	3.8
I3032	Demand Control Ventilation										Committed Tier: Tier 2
		8,565	9.0	0	0	0	\$914	\$17,878	\$2,056	\$15,822	17.3
I3033	Zone DDC Upgrade										Committed Tier: Tier 1
		59,280	10.0	0	2,736	0	\$8,864	\$408,479	\$16,963	\$391,516	44.2
I3094	Replace air handlers in Berkeley Place (Deferred Maintenance, to be combined with other retrofits)										Committed Tier: Tier 2
		278,788	56.0	0	11,220	0	\$40,159	\$990,990	\$78,129	\$912,861	22.7
I3203	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas										Committed Tier: Tier 1
		58,160	21.0	0	0	0	\$6,205	\$45,956	\$13,958	\$31,998	5.2
<b>Totals</b>		<b>458,756</b>	<b>96.0</b>	<b>0</b>	<b>26,939</b>	<b>0</b>	<b>\$73,951</b>	<b>\$1,612,674</b>	<b>\$137,040</b>	<b>\$1,475,634</b>	<b>20.0</b>

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	2,061,702	35,875	18.1	0.3	216.6	N/A
Implement Partnership Projects	2,052,919	35,875	18.0	0.3	215.9	0.4%
Implement SEP Projects	1,594,163	8,936	14.0	0.1	151.0	30.0%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh 100 kBtu per th





## BREN EVENTS

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9314  
**Funding Source:** STATE  
**Year Built:** 1987

**Basic Gross Area (sf):** 97,259  
**Building Type:** BASIC  
**Primary Asset Type:** Auditorium  
**Secondary Asset Type:** Office

### Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,531,700		5,800.0		1,459,600
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

#### Monthly Energy Use (Electric)

Metered Data Not Available

#### Weekly Load Profile (Electric)

Metered Data Not Available

#### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

#### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

#### Monthly Energy Use (Chilled Water)

Metered Data Not Available

#### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# BREN EVENTS

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9314  
**Funding Source:** STATE  
**Year Built:** 1987

**Basic Gross Area (sf):** 97,259  
**Building Type:** BASIC  
**Primary Asset Type:** Auditorium  
**Secondary Asset Type:** Office

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1056	AHU 1 and 3 - Convert to VAV and SP reset										Committed Tier: Tier 2
		410,592	-4.0	3,246	0	241,322	\$98,476	\$570,110	\$185,451	\$384,659	3.9
I1057	DCV for a CAV system - AHU 2 and AHU 5										Committed Tier: Tier 2
		33,445	0.0	169	0	4,655	\$5,610	\$73,167	\$11,033	\$62,134	11.1
I1077	AHU 4 and 6 - VIV to VAV and SP reset										Committed Tier: Tier 2
		25,964	-1.0	239	0	19,108	\$6,932	\$107,423	\$12,888	\$94,535	13.6
I3057	Zone DDC Upgrade										Committed Tier: Tier 2
		50,575	8.0	0	2,334	0	\$7,562	\$348,492	\$14,472	\$334,020	44.2
I3074	Retrofit existing 1000-watt HID's with fluorescent high bays, multiple switching										Committed Tier: Tier 1
		110,160	37.0	0	0	0	\$11,753	\$61,937	\$26,438	\$35,499	3.0
I3112	Monitoring Based Commissioning										Committed Tier: Tier 1
		74,889	8.0	0	10,212	0	\$17,470	\$82,229	\$28,185	\$54,044	3.1
I3219	Retrofit T12 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate										Committed Tier: Tier 1
		56,484	13.0	0	0	0	\$6,026	\$65,414	\$13,556	\$51,858	8.6
I6002	ECM- Install Air Curtain At Loading Dock (Bren Events Center)										Committed Tier: Tier 2
		-2,820	0.0	172	0	0	\$1,296	\$16,342	\$1,473	\$14,869	11.5
<b>Totals</b>		<b>759,289</b>	<b>61.0</b>	<b>3,826</b>	<b>12,546</b>	<b>265,085</b>	<b>\$155,124</b>	<b>\$1,325,113</b>	<b>\$293,496</b>	<b>\$1,031,618</b>	<b>6.7</b>

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	2,699,380	72,500	27.8	0.7	358.7	N/A
Implement Partnership Projects	2,699,380	72,500	27.8	0.7	358.7	0.0%
Implement SEP Projects	1,728,023	12,129	17.8	0.1	194.4	45.8%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



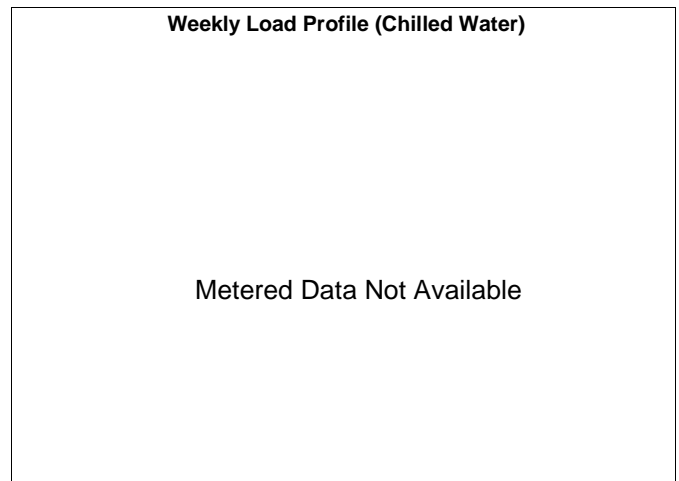
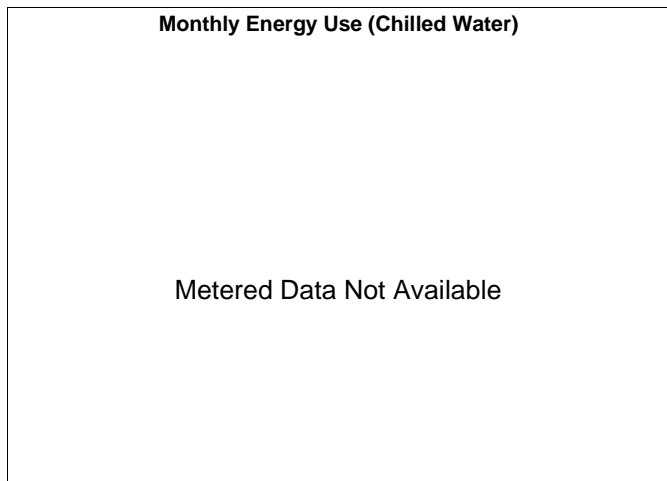
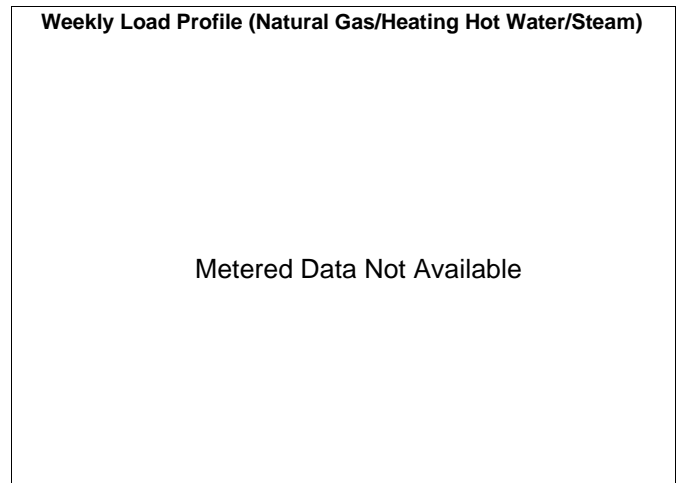
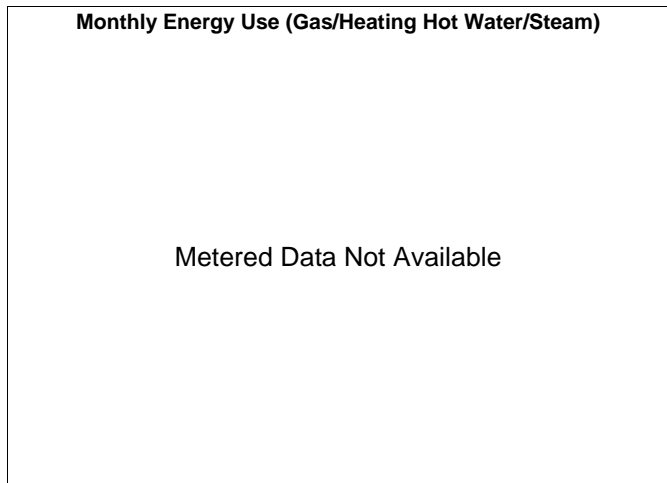
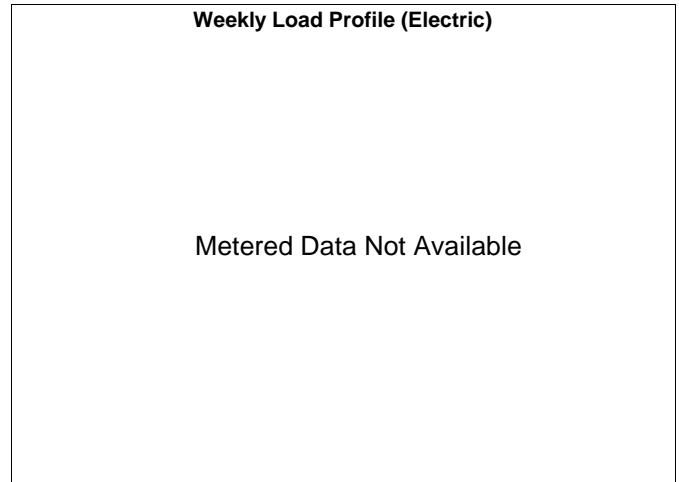
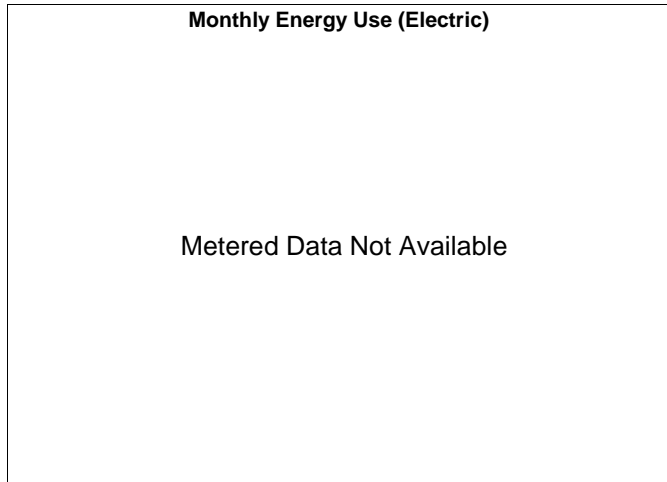
# BREN HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09CTBD1  
**Funding Source:** STATE  
**Year Built:** 0

**Basic Gross Area (sf):** 147,975  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
2,330,500		8,800.0		2,220,700
Extrapolated	N/A	Extrapolated	N/A	Extrapolated





# BREN HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09CTBD1  
**Funding Source:** STATE  
**Year Built:** 0

**Basic Gross Area (sf):** 147,975  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I3067	Demand Control Ventilation										Committed Tier: Tier 2
		11,117	12.0	0	0	0	\$1,186	\$4,470	\$2,668	\$1,802	1.5
I3125	Monitoring Based Commissioning										Committed Tier: Tier 2
		113,941	13.0	0	15,537	0	\$26,579	\$125,107	\$42,883	\$82,224	3.1
I3224	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install daylighting sensors where appropriate										Committed Tier: Tier 1
		151,218	54.0	0	0	0	\$16,133	\$164,283	\$36,292	\$127,991	7.9
<b>Totals</b>		<b>276,276</b>	<b>79.0</b>	<b>0</b>	<b>15,537</b>	<b>0</b>	<b>\$43,898</b>	<b>\$293,860</b>	<b>\$81,843</b>	<b>\$212,017</b>	<b>4.8</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	4,107,060	110,000	27.8	0.7	358.5	N/A
Implement Partnership Projects	4,107,060	110,000	27.8	0.7	358.5	0.0%
Implement SEP Projects	3,830,784	94,463	25.9	0.6	328.9	8.3%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



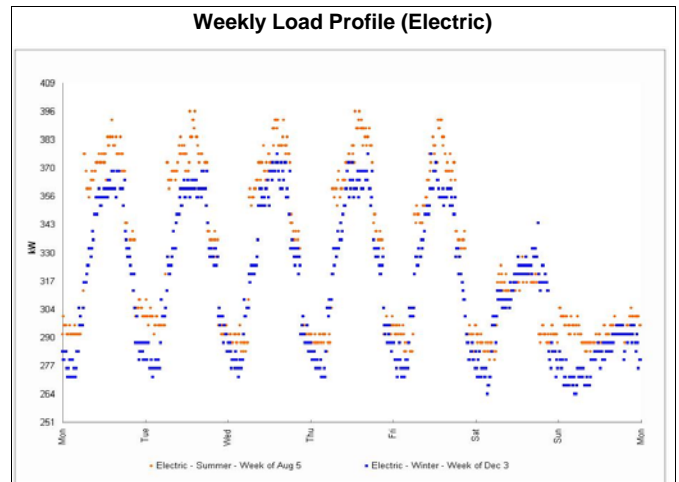
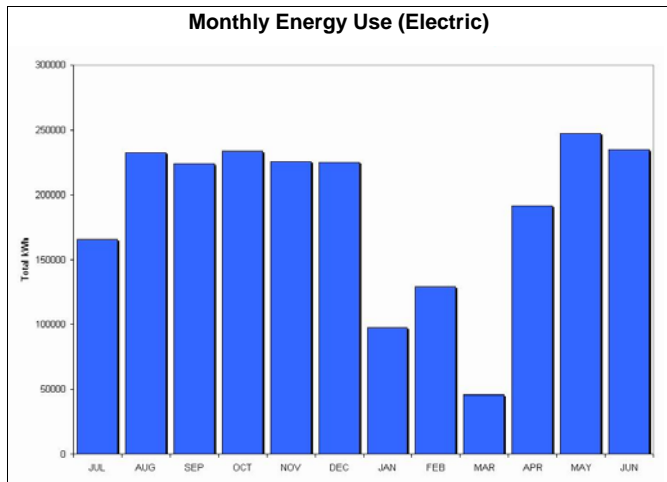
# CAL (IT)2

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9118  
**Funding Source:** OTHER  
**Year Built:** 2004

**Basic Gross Area (sf):** 119,860  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
2,251,803		14,200.0		3,597,600
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



## CAL (IT)2

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9118  
**Funding Source:** OTHER  
**Year Built:** 2004

**Basic Gross Area (sf):** 119,860  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

### 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	9,234		

### Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1065	AHU 5,6,7 SP Reset											Committed Tier: Tier 1
		38,463	0.0	283	0	8,757	\$7,621	\$67,409	\$14,450	\$52,959	6.9	
I3039	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc											Committed Tier: Tier 1
		339,437	0.0	5,583	0	129,648	\$101,224	\$294,269	\$176,145	\$118,124	1.2	
I3040	Demand Control Ventilation											Committed Tier: Tier 2
		9,005	10.0	0	0	0	\$961	\$15,644	\$2,161	\$13,483	14.0	
I3098	Monitoring Based Commissioning											Committed Tier: Tier 1
		141,864	16.0	0	24,332	0	\$37,723	\$202,673	\$58,379	\$144,294	3.8	
I3207	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 1
		117,494	41.0	0	0	0	\$12,535	\$124,684	\$28,199	\$96,485	7.7	
<b>Totals</b>		<b>646,263</b>	<b>67.0</b>	<b>5,866</b>	<b>24,332</b>	<b>138,405</b>	<b>\$160,063</b>	<b>\$704,679</b>	<b>\$279,334</b>	<b>\$425,345</b>	<b>2.7</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	5,129,883	177,500	42.8	1.5	586.3	N/A
Implement Partnership Projects	5,120,649	177,500	42.7	1.5	585.5	0.1%
Implement SEP Projects	4,363,662	79,843	36.4	0.7	439.4	25.0%

#### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

#### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

#### Source Energy Use Conversion Factors:

10,239 kBtu per kWh    100 kBtu per th



## COMP SCI BLD

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9126  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 60,678  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Laboratory

### Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,239,800		7,200.0		1,821,200
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

#### Monthly Energy Use (Electric)

Metered Data Not Available

#### Weekly Load Profile (Electric)

Metered Data Not Available

#### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

#### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

#### Monthly Energy Use (Chilled Water)

Metered Data Not Available

#### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# COMP SCI BLD

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9126  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 60,678  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Laboratory

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1066	AHU-1 SP reset & Add Economizer Controls											Committed Tier: Tier 2
		26,761	0.0	293	0	39,630	\$9,605	\$75,878	\$17,694	\$58,184	6.1	
I1067	AHU-2 SP reset & VIV to VAV & Add Economizer											Committed Tier: Tier 2
		18,201	0.0	65	0	14,906	\$4,061	\$26,710	\$8,043	\$18,667	4.6	
I3043	Demand Control Ventilation											Committed Tier: Tier 2
		4,559	5.0	0	0	0	\$486	\$4,470	\$1,094	\$3,376	6.9	
I3044	Zone DDC Upgrade											Committed Tier: Tier 1
		31,553	5.0	0	1,456	0	\$4,718	\$217,094	\$9,029	\$208,065	44.1	
I3100	Monitoring Based Commissioning											Committed Tier: Tier 1
		114,681	13.0	0	12,318	0	\$23,670	\$102,601	\$39,841	\$62,760	2.7	
I3209	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas											Committed Tier: Tier 1
		60,192	15.0	0	0	0	\$6,422	\$71,786	\$14,446	\$57,340	8.9	
<b>Totals</b>		<b>255,947</b>	<b>38.0</b>	<b>358</b>	<b>13,774</b>	<b>54,536</b>	<b>\$48,962</b>	<b>\$498,539</b>	<b>\$90,147</b>	<b>\$408,392</b>	<b>8.3</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	2,696,760	90,000	44.4	1.5	603.4	N/A
Implement Partnership Projects	2,696,760	90,000	44.4	1.5	603.4	0.0%
Implement SEP Projects	2,397,184	71,751	39.5	1.2	522.8	13.4%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10,239 kBtu per kWh    100 kBtu per th





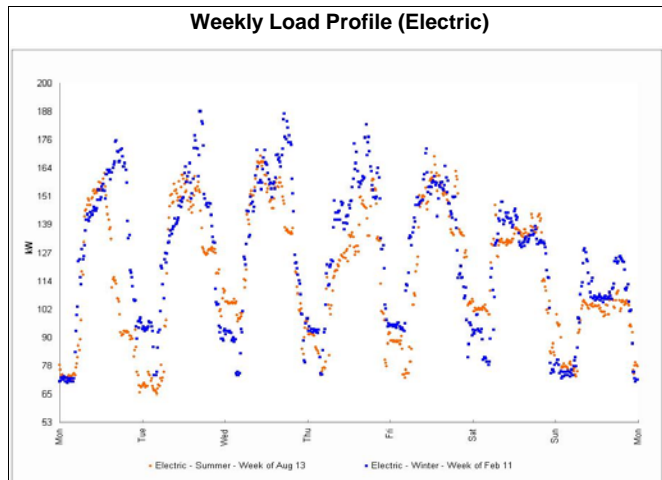
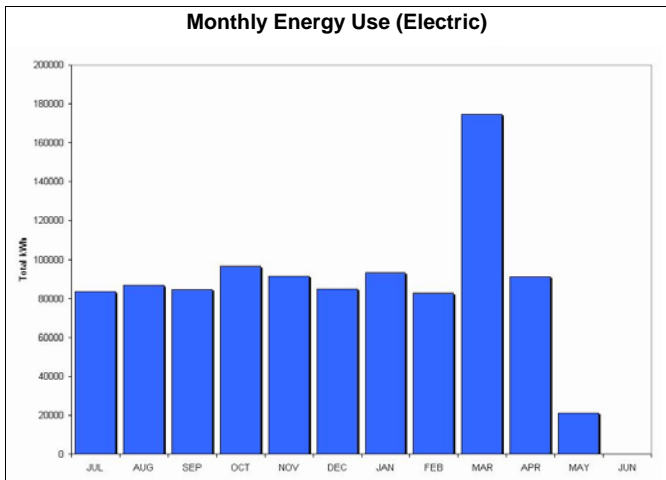
# CRAWFORD HAL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9300  
**Funding Source:** STATE  
**Year Built:** 1965

**Basic Gross Area (sf):** 57,437  
**Building Type:** BASIC  
**Primary Asset Type:** Athletics  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,080,215		4,500.0		862,000
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# CRAWFORD HAL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9300  
**Funding Source:** STATE  
**Year Built:** 1965

**Basic Gross Area (sf):** 57,437  
**Building Type:** BASIC  
**Primary Asset Type:** Athletics  
**Secondary Asset Type:** Office

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Fan Rooms S-2,3&4 - Install DDC controls, install VSDs, optimize economizer control	95,478	10,094	
First floor attic S-5 - Install full DDC controls, install VSDs, optimize economizer control	38,721	6,925	
Ground Floor S-1 - Install DDC controls, implement demand controlled ventilation, implement VAV control	14,313	-14	
Room G-4 P-5&6 - Install VSDs on hot water pumps	23,217	0	

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1068	DCV for a CAV system - AHU 1, 3 and 4										Committed Tier: Tier 1
		133,563	-1.0	328	0	0	\$17,294	\$122,834	\$36,155	\$86,679	5.0
I1069	AHU 2 - CAV to VAV										Committed Tier: Tier 1
		4,238	0.0	54	0	0	\$953	\$30,988	\$1,692	\$29,296	30.7
I3056	Gym Lighting Retrofit - Implement recommendations in AEI Lighting Survey, with occupancy sensors										Committed Tier: Tier 1
		77,280	10.0	0	0	0	\$8,245	\$22,484	\$18,547	\$4,497	0.5
I3110	Monitoring Based Commissioning										Committed Tier: Tier 1
		69,314	8.0	0	6,031	0	\$12,994	\$48,560	\$22,666	\$25,894	2.0
I3218	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas										Committed Tier: Tier 1
		70,768	17.0	0	0	0	\$7,550	\$99,615	\$16,984	\$82,631	10.9
I3319	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors										Committed Tier: Backup
		3,150	0.0	0	0	0	\$336	\$4,133	\$756	\$3,377	10.0
I3365	Solar Hot Water for Showers and Laundry										Committed Tier: Backup
		0		0	10,000	0	\$9,283	\$120,000	\$10,000	\$110,000	11.8
I3368	Pool Covers										Committed Tier: Backup
		0		0	8,000	0	\$7,426	\$140,000	\$8,000	\$132,000	17.8
<b>Totals</b>		<b>358,313</b>	<b>34.0</b>	<b>382</b>	<b>24,031</b>	<b>0</b>	<b>\$64,082</b>	<b>\$588,614</b>	<b>\$114,800</b>	<b>\$474,374</b>	<b>7.4</b>

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	1,769,815	56,250	30.8	1.0	413.4	N/A
Implement Partnership Projects	1,598,086	39,245	27.8	0.7	353.2	14.6%
Implement SEP Projects	1,239,773	10,439	21.6	0.2	239.2	32.3%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh 100 kBtu per th



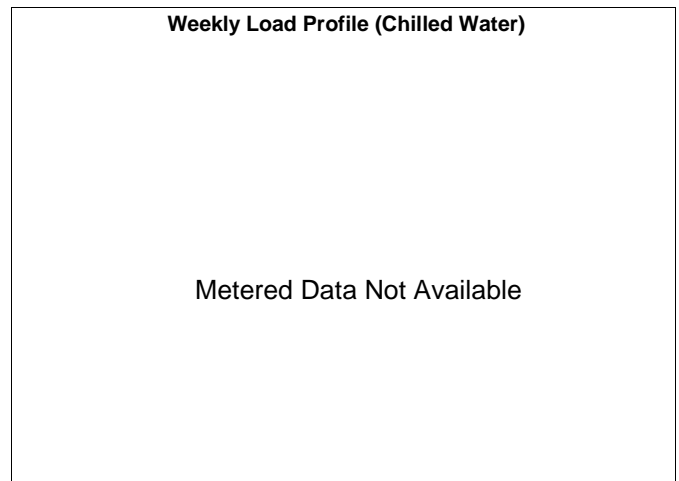
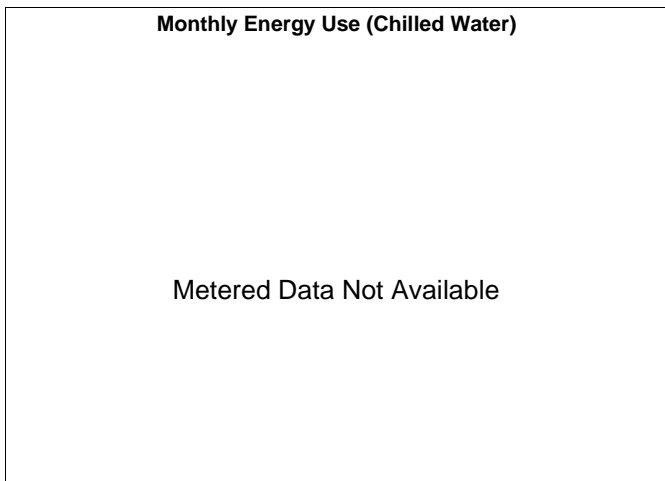
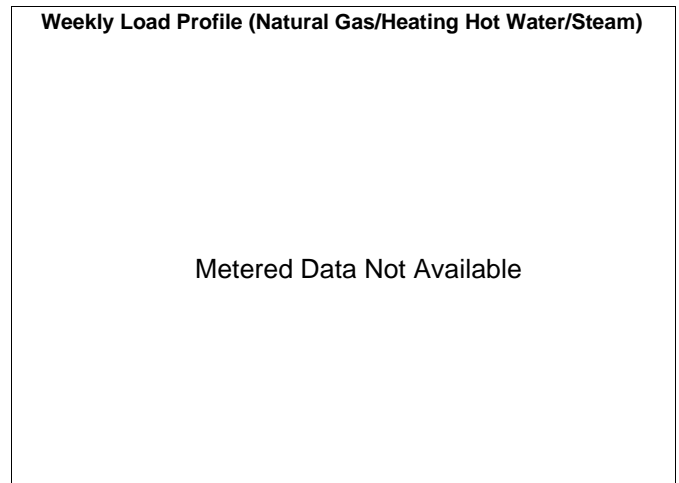
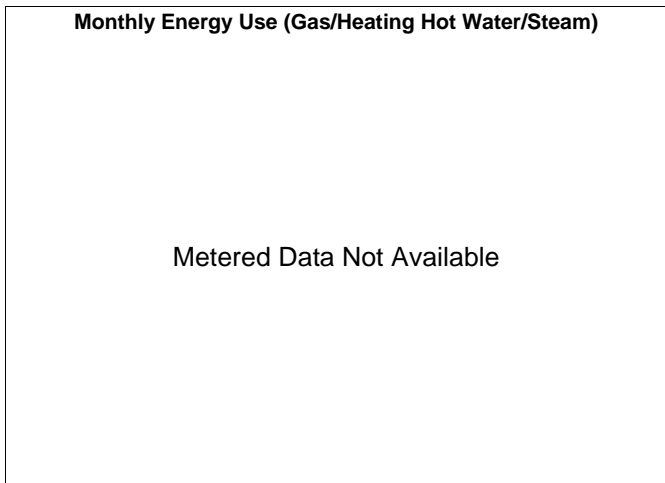
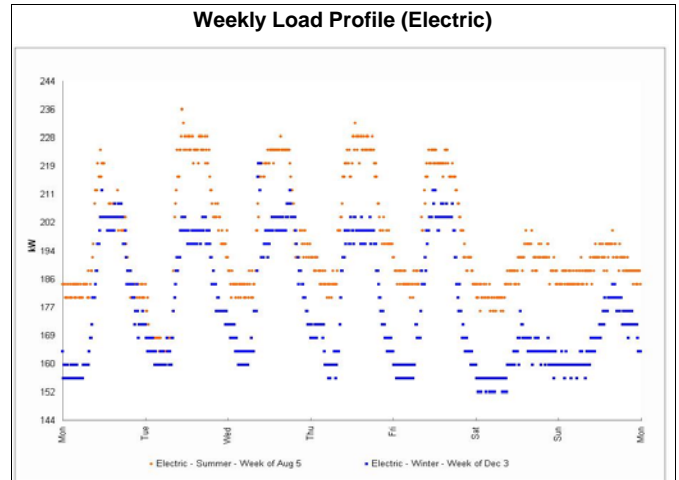
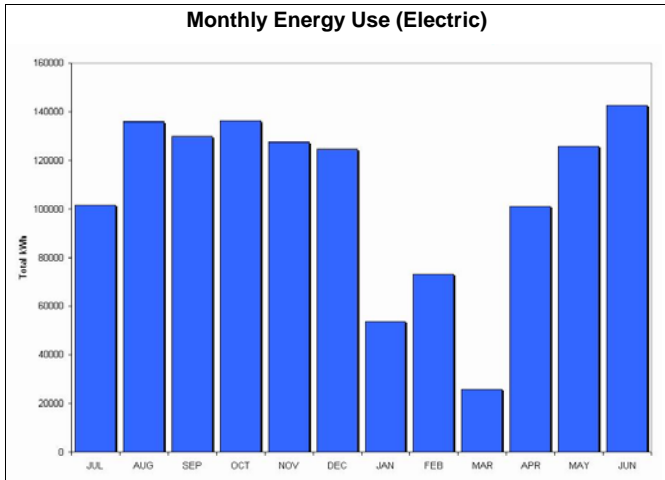
# CROUL HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9115  
**Funding Source:** STATE  
**Year Built:** 2003

**Basic Gross Area (sf):** 66,170  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,277,427		7,900.0		638,142
Metered	N/A	Extrapolated	N/A	Metered





# CROUL HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9115  
**Funding Source:** STATE  
**Year Built:** 2003

**Basic Gross Area (sf):** 66,170  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Croul Hall - Install Aircurty	117,399	9,443	
Replace existing stairwell lighting with bi-level technology	5,098		

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1004	AHU 1 SP Reset											Committed Tier: Tier 1
		10,591	0.0	139	0	7,490	\$3,182	\$2,747	\$5,717	\$549	0.2	
I3097	Monitoring Based Commissioning											Committed Tier: Tier 1
		112,640	13.0	0	13,433	0	\$24,487	\$111,889	\$40,467	\$71,422	2.9	
I3206	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 1
		32,540	10.0	0	0	0	\$3,472	\$30,833	\$7,810	\$23,023	6.6	
I3225	EF VFDs											Committed Tier: Backup
		375,219	21.0	0	0	0	\$40,032	\$48,707	\$90,053	\$9,741	0.2	
I3335	Exhaust Stack Discharge Reduction											Committed Tier: Backup
		85,000	0.0	0	1,000	0	\$9,997	\$85,000	\$21,400	\$63,600	6.4	
I3336	Additional Aircurty in Labs											Committed Tier: Backup
		100,000	0.0	0	20,000	0	\$29,235	\$150,000	\$44,000	\$106,000	3.6	
<b>Totals</b>		<b>715,990</b>	<b>44.0</b>	<b>139</b>	<b>34,433</b>	<b>7,490</b>	<b>\$110,404</b>	<b>\$429,176</b>	<b>\$209,447</b>	<b>\$274,335</b>	<b>2.5</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	1,787,941	98,750	27.0	1.5	425.9	N/A
Implement Partnership Projects	1,665,444	89,307	25.2	1.3	392.7	7.8%
Implement SEP Projects	943,462	53,137	14.3	0.8	226.3	42.4%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBTU per kWh    100 kBTU per th



# CTB THEATRE

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9051  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 20,377  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Auditorium

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
320,900		1,250.0		305,800
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)

Metered Data Not Available

### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# CTB THEATRE

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9051  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 20,377  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Auditorium

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1078	AHU-1 (AC-1) - SP reset											Committed Tier: Tier 2
		18,172	-1.0	915	0	34,210	\$13,911	\$24,360	\$22,367	\$4,872	0.4	
I3080	Monitoring Based Commissioning											Committed Tier: Tier 2
		15,690	2.0	0	2,140	0	\$3,661	\$17,227	\$5,906	\$11,321	3.1	
I3190	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 1
		32,008	8.0	0	0	0	\$3,415	\$7,834	\$7,682	\$1,567	0.5	
I3270	DDC Conversion											Committed Tier: Tier 2
		25,000	0.0	0	1,500	0	\$4,060	\$103,950	\$7,500	\$96,450	23.8	
<b>Totals</b>		<b>90,870</b>	<b>9.0</b>	<b>915</b>	<b>3,640</b>	<b>34,210</b>	<b>\$25,046</b>	<b>\$153,371</b>	<b>\$43,455</b>	<b>\$114,210</b>	<b>4.6</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	565,540	15,625	27.8	0.8	360.9	N/A
Implement Partnership Projects	565,540	15,625	27.8	0.8	360.9	0.0%
Implement SEP Projects	447,302	548	22.0	0.0	227.4	37.0%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



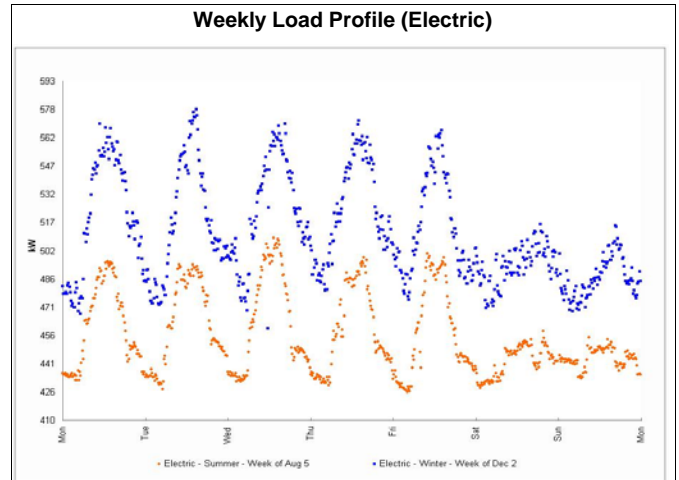
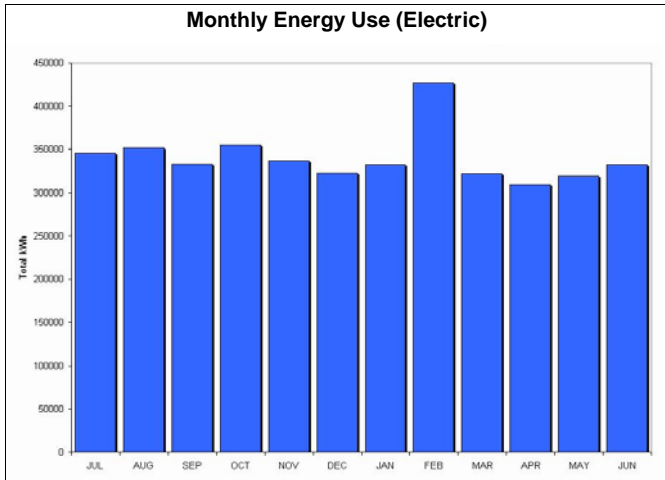
# ENG GATEWAY

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9140  
**Funding Source:** STATE  
**Year Built:** 1994

**Basic Gross Area (sf):** 132,090  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
4,087,980		15,700.0		3,964,700
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



## ENG GATEWAY

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9140  
**Funding Source:** STATE  
**Year Built:** 1994

**Basic Gross Area (sf):** 132,090  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

### 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	10,177		

### Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1005	AHU 1 and 2 - SP Reset											Committed Tier: Tier 1
		11,496	0.0	177	0	8,989	\$3,784	\$2,747	\$6,697	\$549	0.1	
I1006	AHU 3 thru 8 - Reduce ACH from 7 to 6 for 20 Hoods											Committed Tier: Tier 2
		440,149	0.0	2,471	0	94,077	\$79,463	\$1,170,871	\$154,586	\$1,016,285	12.8	
I1007	AHU 10 SP Reset & DCV											Committed Tier: Tier 2
		1,330	0.0	-3	0	-60	\$108	\$2,235	\$270	\$1,965	18.2	
I3048	Zone DDC Upgrade											Committed Tier: Tier 1
		68,687	11.0	0	3,170	0	\$10,271	\$471,322	\$19,655	\$451,667	44.0	
I3103	Monitoring Based Commissioning											Committed Tier: Tier 1
		257,543	29.0	0	26,814	0	\$52,368	\$223,353	\$88,624	\$134,729	2.6	
I3212	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas											Committed Tier: Tier 1
		103,750	27.0	0	0	0	\$11,069	\$96,962	\$24,900	\$72,062	6.5	
I3339	CAV to VAV											Committed Tier: Backup
		450,000	0.0	0	89,000	0	\$130,628	\$1,500,000	\$197,000	\$1,303,000	10.0	
I3340	Exhaust Stack Discharge Reduction											Committed Tier: Backup
		80,000	0.0	0	1,000	0	\$9,463	\$100,000	\$20,200	\$79,800	8.4	
I3341	Aircuity											Committed Tier: Backup
		175,000	0.0	0	35,000	0	\$51,161	\$225,000	\$77,000	\$148,000	2.9	
I3558	Replace Old CRAC Units with New CRAC Units, Install Air Side Economizer & Separate Hot & Cold Aisle											Committed Tier:
		91,104	0.0	0	0	0	\$9,720	\$138,600	\$21,865	\$116,735	12.0	
<b>Totals</b>		<b>1,679,059</b>	<b>67.0</b>	<b>2,645</b>	<b>154,984</b>	<b>103,006</b>	<b>\$358,035</b>	<b>\$3,931,089</b>	<b>\$610,797</b>	<b>\$3,324,792</b>	<b>9.3</b>	

### Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	7,259,740	196,250	55.0	1.5	711.3	N/A
Implement Partnership Projects	7,249,563	196,250	54.9	1.5	710.5	0.1%
Implement SEP Projects	5,488,100	8,204	41.5	0.1	431.6	39.3%

#### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

#### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

#### Source Energy Use Conversion Factors:

10.239 kBtu per kWh 100 kBtu per th





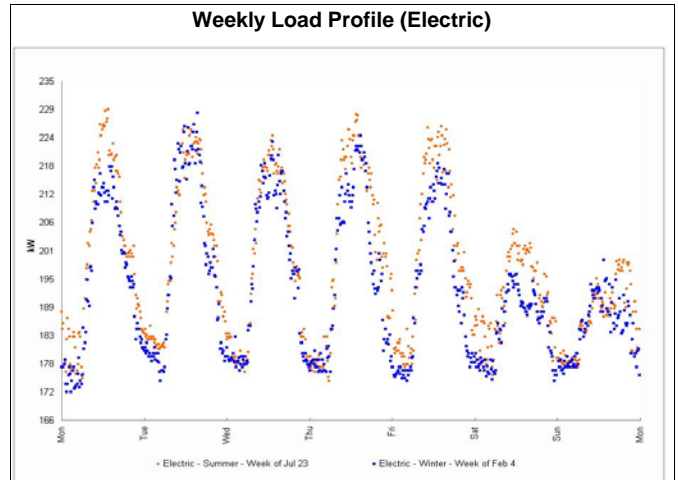
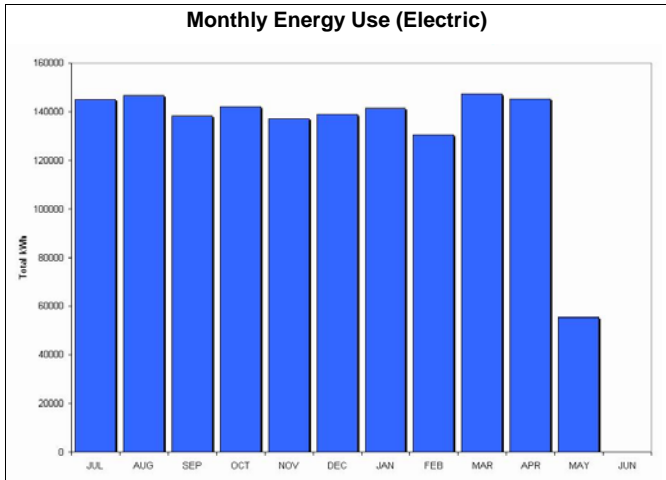
# ENG TOWER

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9125  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 113,941  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,600,922		13,500.0		3,419,900
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# ENG TOWER

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9125  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 113,941  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1008	AHU-1,2 - CAV to VAV, SP Reset & Add Economizer											Committed Tier: Tier 2
		109,263	0.0	2,729	0	306,276	\$68,133	\$1,718,777	\$119,141	\$1,599,636	23.5	
I1009	AHU 10 and 20 - SP Reset											Committed Tier: Tier 1
		42,080	0.0	56	0	576	\$5,068	\$47,759	\$10,910	\$36,849	7.3	
I3041	Demand Control Ventilation											Committed Tier: Tier 2
		8,560	9.0	0	0	0	\$913	\$8,939	\$2,054	\$6,885	7.5	
I3042	Zone DDC Upgrade											Committed Tier: Tier 1
		59,249	10.0	0	2,735	0	\$8,860	\$405,622	\$16,955	\$388,667	43.9	
I3099	Monitoring Based Commissioning											Committed Tier: Tier 1
		92,453	11.0	0	23,130	0	\$31,335	\$192,665	\$45,319	\$147,346	4.7	
I3208	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas											Committed Tier: Tier 1
		85,968	22.0	0	0	0	\$9,172	\$76,170	\$20,632	\$55,538	6.1	
I3337	Aircuity											Committed Tier: Backup
		300,000	0.0	0	60,000	0	\$87,705	\$450,000	\$132,000	\$318,000	3.6	
I3338	DM Component of Exhaust Fan Replacement											Committed Tier: Backup
		300,000	0.0	0	8,000	0	\$39,433	\$850,000	\$80,000	\$770,000	19.5	
<b>Totals</b>		<b>997,573</b>	<b>52.0</b>	<b>2,785</b>	<b>93,865</b>	<b>306,852</b>	<b>\$250,618</b>	<b>\$3,749,933</b>	<b>\$427,011</b>	<b>\$3,322,921</b>	<b>13.3</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	4,336,842	168,750	38.1	1.5	537.8	N/A
Implement Partnership Projects	4,336,842	168,750	38.1	1.5	537.8	0.0%
Implement SEP Projects	3,093,787	40,073	27.2	0.4	313.2	41.8%

**Assumed Incentives:**

Electricity	\$0.24 per annual kWh
Natural Gas	\$1 per annual therm
Cap	80% project cost

**Central Plant Efficiencies:**

th/MMBTU:	12.5
kWh/ton-hr:	0.8
th/ton-hr:	0.0

**Source Energy Use Conversion Factors:**

10.239 kBtu per kWh	100 kBtu per th
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# GILLESPIE BLD

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9082  
**Funding Source:** STATE  
**Year Built:** 1997

**Basic Gross Area (sf):** 82,920  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
2,778,909			159,386	707,917
Extrapolated	N/A	N/A	Metered	Extrapolated

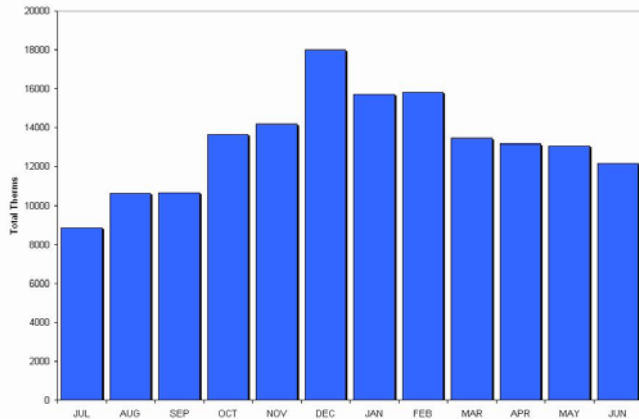
Monthly Energy Use (Electric)

Metered Data Not Available

Weekly Load Profile (Electric)

Metered Data Not Available

Monthly Energy Use (Gas/Heating Hot Water/Steam)



Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

Monthly Energy Use (Chilled Water)

Metered Data Not Available

Weekly Load Profile (Chilled Water)

Metered Data Not Available



## GILLESPIE BLD

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9082  
**Funding Source:** STATE  
**Year Built:** 1997

**Basic Gross Area (sf):** 82,920  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

### 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Gillispie - Add occupancy sensors and change bulbs	143,273	0	
Gillispie Research MBCx	435,000	10,000	

### Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1010	AHU 2 - Reduce ACH from 15 to 8 for 5 Hoods in Vivarium											Committed Tier: Tier 2
		302,452	34.0	0	24,030	99,730	\$64,716	\$249,134	\$115,767	\$133,367	2.1	
I1011	AHU 1 - VAV Aircurity (4 ACH Occ & 2 Unocc)											Committed Tier: Tier 2
		657,113	61.0	4,265	0	195,662	\$129,593	\$180,740	\$248,587	\$36,148	0.3	
I3019	Demand Control Ventilation											Committed Tier: Tier 1
		6,230	7.0	0	0	0	\$665	\$4,470	\$1,495	\$2,975	4.5	
I3279	CAV to VAV Fume Hoods Proposed from Previous MBCx study by EMC											Committed Tier: Tier 2
		198,663	266.0	0	0	0	\$21,195	\$291,060	\$47,679	\$243,381	11.5	
I3342	Zone DDC Controls (Lab Floors)											Committed Tier: Backup
		35,000	0.0	0	7,000	0	\$10,232	\$302,000	\$15,400	\$286,600	28.0	
I3343	Aircuity (Including Vivarium)											Committed Tier: Backup
		320,000		0	62,000	0	\$91,695	\$600,000	\$138,800	\$461,200	5.0	
I3344	CAV to VAV											Committed Tier: Backup
		198,663		0	2,000	0	\$23,052	\$175,000	\$49,679	\$125,321	5.4	
I3345	Exhaust Stack Discharge Reduction											Committed Tier: Backup
		82,000		0	1,000	0	\$9,677	\$105,000	\$20,680	\$84,320	8.7	
<b>Totals</b>		<b>1,800,121</b>	<b>368.0</b>	<b>4,265</b>	<b>96,030</b>	<b>295,392</b>	<b>\$350,824</b>	<b>\$1,907,404</b>	<b>\$638,087</b>	<b>\$1,373,312</b>	<b>3.9</b>	

### Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	3,345,243	159,386	40.3	1.9	605.3	N/A
Implement Partnership Projects	2,766,970	149,386	33.4	1.8	521.8	13.8%
Implement SEP Projects	730,535	44	8.8	0.0	90.3	82.7%

#### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

#### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

#### Source Energy Use Conversion Factors:

10.239 kBtu per kWh 100 kBtu per th



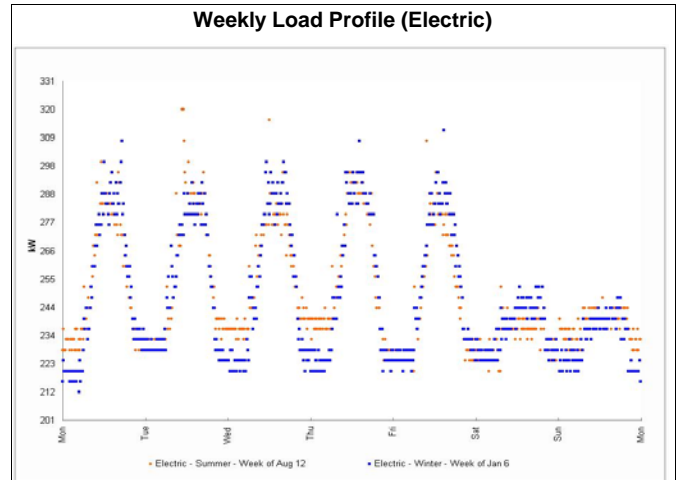
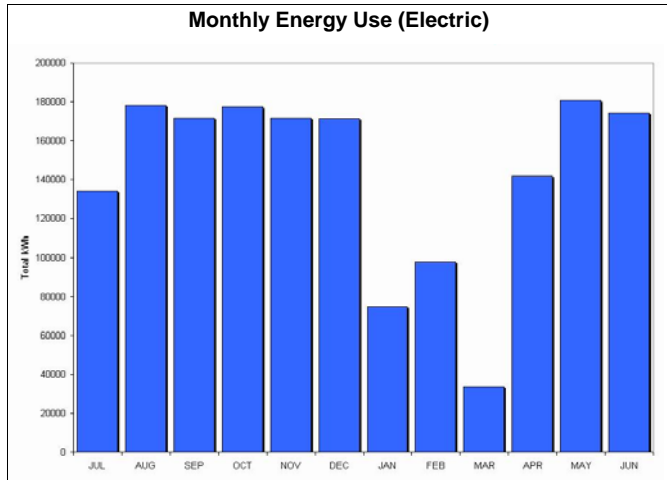
# HEWITT HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9088  
**Funding Source:** STATE  
**Year Built:** 2003

**Basic Gross Area (sf):** 78,871  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,707,662			117,100	4,014,771
Metered	N/A	N/A	Extrapolated	Metered



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# HEWITT HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9088  
**Funding Source:** STATE  
**Year Built:** 2003

**Basic Gross Area (sf):** 78,871  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	6,076		

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1012	AHU 1, 2 - Reduce ACH from 15 to 8 for 5 Hoods in Vivarium (Overall AHU goes from 8.36 to 6.52)											Committed Tier: Tier 1
		446,068	51.0	0	25,331	105,131	\$81,795	\$236,969	\$152,572	\$84,397	1.0	
I1013	AHU 3 - SP Reset											Committed Tier: Tier 1
		13,458	0.0	0	2,175	8,153	\$4,284	\$2,747	\$6,970	\$549	0.1	
I3026	Aircuity - Reduce Vivarium from 15 to 8 ACH, Labs from 6 ACH to 4 & 2 ACH											Committed Tier: Tier 2
		187,302	0.0	3,081	0	71,540	\$55,858	\$162,622	\$97,201	\$65,421	1.2	
I3027	Demand Control Ventilation											Committed Tier: Tier 2
		5,925	6.0	0	0	0	\$632	\$6,704	\$1,422	\$5,282	8.4	
I3091	Monitoring Based Commissioning											Committed Tier: Tier 1
		309,927	35.0	0	16,011	0	\$47,929	\$133,365	\$90,393	\$42,972	0.9	
I3199	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install daylighting sensors where appropriate											Committed Tier: Backup
		26,892	0.0	0	0	0	\$2,869	\$44,688	\$6,454	\$38,234	13.3	
I3226	EF VFDs											Committed Tier: Backup
		520,588	30.0	0	0	0	\$55,541	\$87,239	\$124,941	\$17,448	0.3	
<b>Totals</b>		<b>1,510,160</b>	<b>122.0</b>	<b>3,081</b>	<b>43,517</b>	<b>184,824</b>	<b>\$248,907</b>	<b>\$674,335</b>	<b>\$479,953</b>	<b>\$254,303</b>	<b>1.0</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	4,919,479	117,100	62.4	1.5	787.1	N/A
Implement Partnership Projects	4,913,402	117,100	62.3	1.5	786.3	0.1%
Implement SEP Projects	3,255,383	35,071	41.3	0.4	467.1	40.6%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh 100 kBtu per th



# HIB

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9035  
**Funding Source:** STATE  
**Year Built:** 1997

**Basic Gross Area (sf):** 74,090  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Laboratory

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,166,900		4,400.0		1,111,900
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)

Metered Data Not Available

### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# HIB

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9035  
**Funding Source:** STATE  
**Year Built:** 1997

**Basic Gross Area (sf):** 74,090  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Laboratory

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	5,708		

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1014	AHU 1H - CAV to VAV & SP Reset											Committed Tier: Tier 2
		11,818	0.0	201	0	11,554	\$4,302	\$69,996	\$7,567	\$62,429	14.5	
I1015	AHU 2H, 3H - SP Reset											Committed Tier: Tier 1
		33,023	0.0	666	0	25,418	\$12,290	\$2,747	\$21,131	\$549	0.0	
I3016	Demand Control Ventilation											Committed Tier: Tier 2
		5,566	6.0	0	0	0	\$594	\$6,704	\$1,336	\$5,368	9.0	
I3078	Monitoring Based Commissioning											Committed Tier: Tier 1
		1,210	0.0	0	7,779	0	\$7,350	\$62,640	\$8,069	\$54,571	7.4	
I3188	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 1
		129,521	33.0	0	0	0	\$13,818	\$158,781	\$31,085	\$127,696	9.2	
<b>Totals</b>		<b>181,138</b>	<b>39.0</b>	<b>867</b>	<b>7,779</b>	<b>36,972</b>	<b>\$38,354</b>	<b>\$300,868</b>	<b>\$69,188</b>	<b>\$250,613</b>	<b>6.5</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	2,056,420	55,000	27.8	0.7	358.4	N/A
Implement Partnership Projects	2,050,712	55,000	27.7	0.7	357.6	0.2%
Implement SEP Projects	1,839,996	36,384	24.8	0.5	303.4	15.2%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10,239 kBtu per kWh    100 kBtu per th





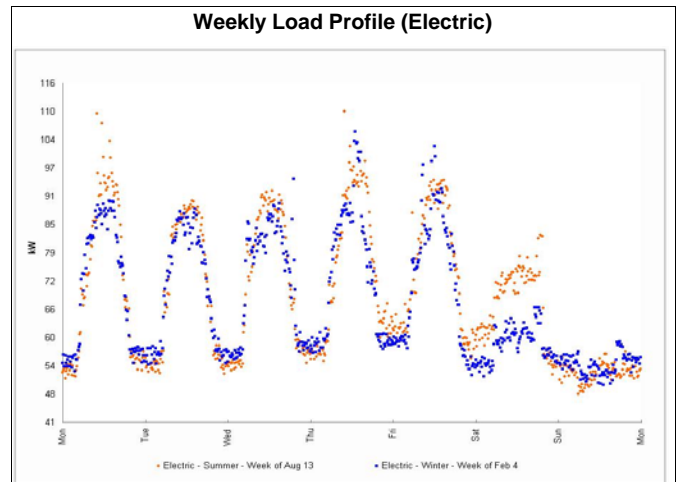
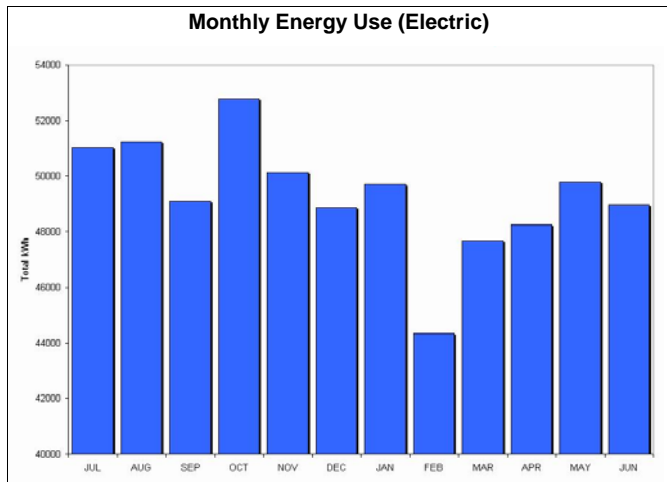
# IRVINE HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9132  
**Funding Source:** STATE  
**Year Built:** 1985

**Basic Gross Area (sf):** 54,620  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
591,898		6,500.0		1,639,400
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# IRVINE HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9132  
**Funding Source:** STATE  
**Year Built:** 1985

**Basic Gross Area (sf):** 54,620  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	4,208		

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1016	AHU 1, 5, 6, 7, 8, - SP Reset											Committed Tier: Tier 1
		57,520	0.0	1,159	0	35,265	\$20,481	\$104,400	\$35,063	\$69,337	3.4	
I1017	AHU 2,3,4A,4B, ATU 1,2,3 - SP Reset											Committed Tier: Tier 1
		107,345	0.0	841	0	22,404	\$21,538	\$303,270	\$40,577	\$262,693	12.2	
I3046	Zone DDC Upgrade											Committed Tier: Tier 1
		28,402	5.0	0	1,311	0	\$4,247	\$194,242	\$8,127	\$186,115	43.8	
I3102	Monitoring Based Commissioning											Committed Tier: Tier 1
		37,290	4.0	0	11,088	0	\$14,271	\$92,357	\$20,038	\$72,319	5.1	
I3211	Install occupancy and daylighting sensors where appropriate											Committed Tier: Backup
		17,572	3.0	0	0	0	\$1,875	\$39,780	\$4,217	\$35,563	19.0	
<b>Totals</b>		<b>248,129</b>	<b>12.0</b>	<b>2,000</b>	<b>12,399</b>	<b>57,669</b>	<b>\$62,412</b>	<b>\$734,050</b>	<b>\$108,022</b>	<b>\$626,027</b>	<b>10.0</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	1,903,418	81,250	34.8	1.5	505.6	N/A
Implement Partnership Projects	1,899,210	81,250	34.8	1.5	504.8	0.2%
Implement SEP Projects	1,604,946	43,851	29.4	0.8	381.1	24.5%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10,239 kBtu per kWh    100 kBtu per th



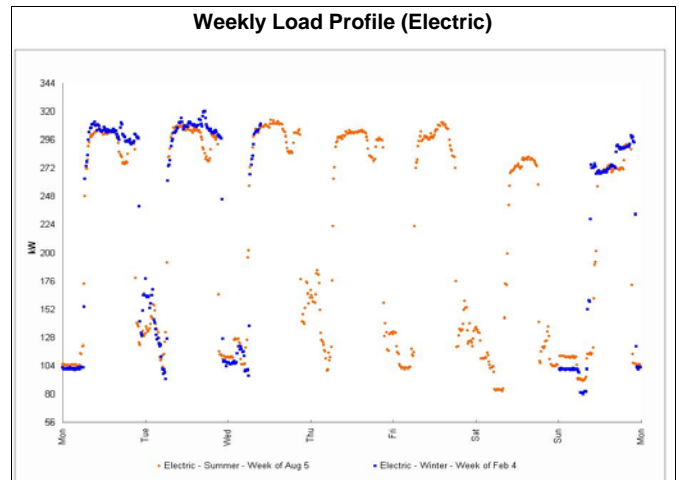
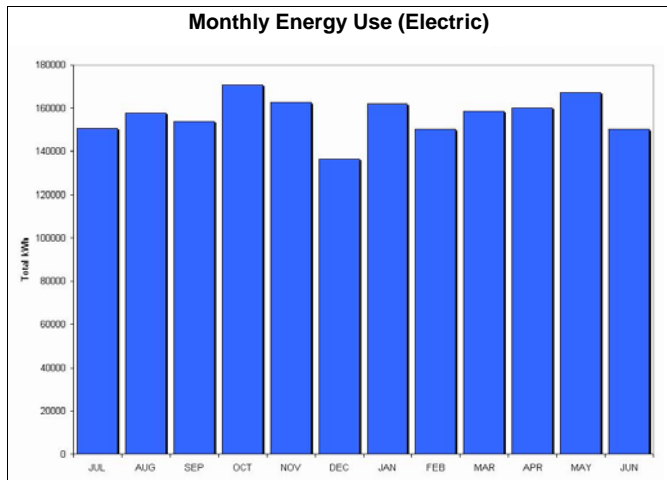
# LANGSON LIB

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9001  
**Funding Source:** STATE  
**Year Built:** 1965

**Basic Gross Area (sf):** 150,883  
**Building Type:** BASIC  
**Primary Asset Type:** Library  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,881,193		9,000.0		2,264,400
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# LANGSON LIB

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9001  
**Funding Source:** STATE  
**Year Built:** 1965

**Basic Gross Area (sf):** 150,883  
**Building Type:** BASIC  
**Primary Asset Type:** Library  
**Secondary Asset Type:** Office

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Langson Library - Install PC Management Software in 709 PCs	251,776	0	

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1018	AHU-3 thru AHU 16 - CAV to VAV and Economizers											Committed Tier: Tier 2
		271,799	-2.0	5,410	0	208,229	\$100,392	\$549,230	\$172,837	\$376,393	3.7	
I3011	Demand Control Ventilation											Committed Tier: Tier 2
		11,336	12.0	0	0	0	\$1,209	\$35,757	\$2,721	\$33,036	27.3	
I3012	Zone DDC Upgrade											Committed Tier: Tier 1
		78,459	13.0	0	3,621	0	\$11,732	\$539,877	\$22,451	\$517,426	44.1	
I3075	Monitoring Based Commissioning											Committed Tier: Tier 1
		131,684	15.0	0	15,843	0	\$28,756	\$127,566	\$47,447	\$80,119	2.8	
I3185	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas											Committed Tier: Tier 1
		134,334	36.0	0	0	0	\$14,332	\$147,810	\$32,240	\$115,570	8.1	
I3320	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		6,300	0.0	0	0	0	\$672	\$8,265	\$1,512	\$6,753	10.0	
<b>Totals</b>		<b>633,912</b>	<b>74.0</b>	<b>5,410</b>	<b>19,464</b>	<b>208,229</b>	<b>\$157,093</b>	<b>\$1,408,506</b>	<b>\$279,208</b>	<b>\$1,129,297</b>	<b>7.2</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	3,692,713	112,500	24.5	0.7	325.2	N/A
Implement Partnership Projects	3,440,937	112,500	22.8	0.7	308.1	5.3%
Implement SEP Projects	2,640,442	25,411	17.5	0.2	196.0	36.4%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh      100 kBtu per th



# M SCI & TECH

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9114  
**Funding Source:** STATE  
**Year Built:** 2000

**Basic Gross Area (sf):** 63,111  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Office

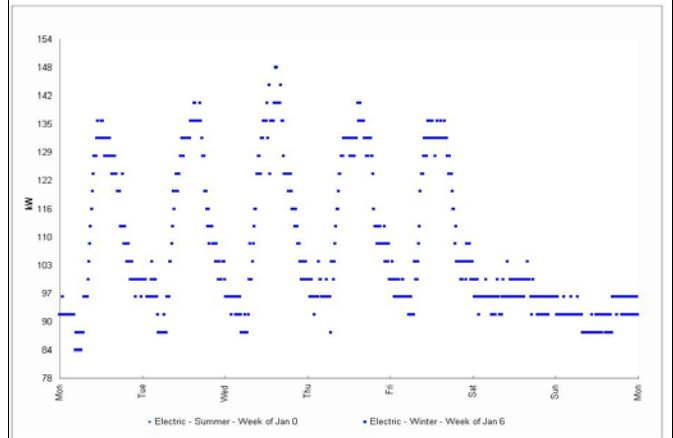
## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
993,900			36,416	947,100
Extrapolated	N/A	N/A	Metered	Extrapolated

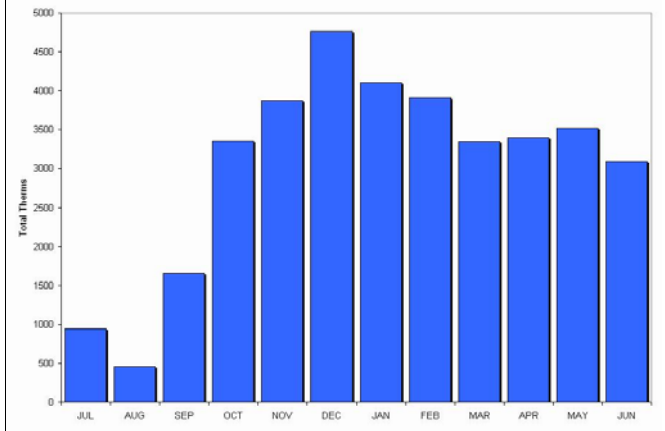
Monthly Energy Use (Electric)

Metered Data Not Available

Weekly Load Profile (Electric)



Monthly Energy Use (Gas/Heating Hot Water/Steam)



Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

Monthly Energy Use (Chilled Water)

Metered Data Not Available

Weekly Load Profile (Chilled Water)

Metered Data Not Available



# M SCI & TECH

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9114  
**Funding Source:** STATE  
**Year Built:** 2000

**Basic Gross Area (sf):** 63,111  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Office

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
1st & 2nd Floor FC-1-8 - Optimize controls	0	2,282	
Roof AHU 1&2 - Convert to fully networked DDC controls, replace VIV with VSDs, improve control sequences	299,316	3,960	

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1032	AHU 1,2 - VIV to VAV & SP Reset										Committed Tier: Tier 2
		77,833	5.0	0	11,130	52,375	\$23,961	\$36,396	\$39,866	\$7,279	0.3
I3037	Demand Control Ventilation										Committed Tier: Tier 2
		4,741	5.0	0	0	0	\$506	\$4,470	\$1,138	\$3,332	6.6
I3038	Zone DDC Upgrade										Committed Tier: Tier 2
		32,818	6.0	0	1,515	0	\$4,908	\$225,663	\$9,391	\$216,272	44.1
I3096	Monitoring Based Commissioning										Committed Tier: Tier 1
		11,831	1.0	0	3,824	0	\$4,812	\$53,357	\$6,663	\$46,694	9.7
I3205	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate										Committed Tier: Tier 1
		105,385	25.0	0	0	0	\$11,243	\$101,569	\$25,292	\$76,277	6.8
I3326	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors										Committed Tier: Backup
		2,100	0.0	0	0	0	\$224	\$2,755	\$504	\$2,251	10.0
<b>Totals</b>		<b>234,708</b>	<b>42.0</b>	<b>0</b>	<b>16,469</b>	<b>52,375</b>	<b>\$45,654</b>	<b>\$424,210</b>	<b>\$82,854</b>	<b>\$352,105</b>	<b>7.7</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	1,751,580	36,416	27.8	0.6	341.9	N/A
Implement Partnership Projects	1,452,264	30,174	23.0	0.5	283.4	17.1%
Implement SEP Projects	1,175,656	13,705	18.6	0.2	212.5	25.0%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



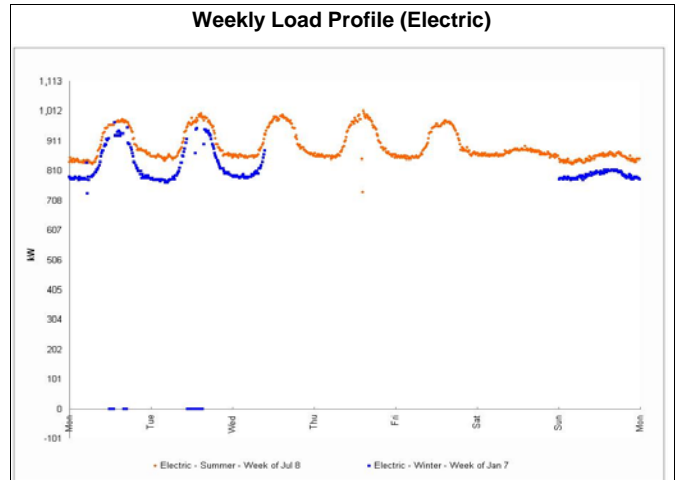
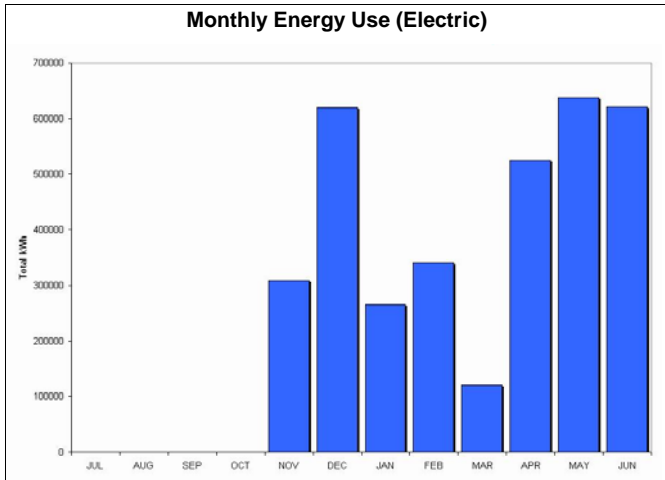
# MCGAUGH HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9084  
**Funding Source:** STATE  
**Year Built:** 1991

**Basic Gross Area (sf):** 213,717  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
5,156,940		25,400.0		6,414,700
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# MCGAUGH HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9084  
**Funding Source:** STATE  
**Year Built:** 1991

**Basic Gross Area (sf):** 213,717  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace fans on AHU 1 and 3, install VFDs, remove sound attenuators, replace cooling coils and controls valves	1,685,501	21,761	
Replace existing stairwell lighting with bi-level technology	16,465		

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1071	AHU 1, 2, 3 - Reduce ACH from 14 to 6										Committed Tier: Tier 2
		1,272,703	424.0	5,846	0	495,491	\$240,433	\$642,116	\$473,658	\$168,458	0.7
I3020	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc										Committed Tier: Backup
		746,949	0.0	12,285	0	285,296	\$222,741	\$658,233	\$387,607	\$270,626	1.2
I3021	Demand Control Ventilation										Committed Tier: Backup
		14,939	17.0	0	0	0	\$1,594	\$6,704	\$3,585	\$3,119	2.0
I3022	Zone DDC Upgrade										Committed Tier: Tier 1
		111,133	18.0	0	5,129	0	\$16,618	\$762,684	\$31,801	\$730,883	44.0
I3090	Compressor and control upgrades, walk-in refrigeration units in McGaugh Hall. (18 units)										Committed Tier: Tier 1
		128,788	22.0	0	0	0	\$13,740	\$596,119	\$30,909	\$565,210	41.1
I3198	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas										Committed Tier: Tier 1
		144,537	38.0	0	0	0	\$15,420	\$107,349	\$34,689	\$72,660	4.7
I3321	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors										Committed Tier: Backup
		6,300	0.0	0	0	0	\$672	\$8,265	\$1,512	\$6,753	10.0
I3346	Aircuity in Vivarium										Committed Tier: Backup
		400,000		0	12,000	0	\$53,815	\$325,000	\$108,000	\$217,000	4.0
I3347	Lowflow Fume Hoods										Committed Tier: Backup
		300,000		0	10,000	0	\$41,290	\$1,000,000	\$82,000	\$918,000	22.2
I3348	Vivarium Efficiency Measures										Committed Tier: Backup
		250,000		0	18,000	0	\$43,382	\$350,000	\$78,000	\$272,000	6.3
I3349	DM Component of Exhaust Fan Replacement										Committed Tier: Backup
		390,000		0	10,000	0	\$50,891	\$1,200,000	\$103,600	\$1,096,400	21.5
I3369	Air Curtain at Loading Dock										Committed Tier: Backup
		0		0	2,000	0	\$1,857	\$18,000	\$2,000	\$16,000	8.6
<b>Totals</b>		<b>3,765,349</b>	<b>519.0</b>	<b>18,131</b>	<b>57,129</b>	<b>780,787</b>	<b>\$702,452</b>	<b>\$5,674,471</b>	<b>\$1,337,361</b>	<b>\$4,337,109</b>	<b>6.2</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	10,288,700	317,500	48.1	1.5	641.5	N/A
Implement Partnership Projects	8,586,734	295,739	40.2	1.4	549.8	14.3%
Implement SEP Projects	4,196,755	11,973	19.6	0.1	206.7	62.4%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh 100 kBtu per th





# MED SCI A

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9325  
**Funding Source:** STATE  
**Year Built:** 1978

**Basic Gross Area (sf):** 13,418  
**Building Type:** COMPLEX  
**Primary Asset Type:** Animal Quarters  
**Secondary Asset Type:** Hospitals

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
359,562		1,600.0		402,700
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)

Metered Data Not Available

### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# MED SCI A

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9325  
**Funding Source:** STATE  
**Year Built:** 1978

**Basic Gross Area (sf):** 13,418  
**Building Type:** COMPLEX  
**Primary Asset Type:** Animal Quarters  
**Secondary Asset Type:** Hospitals

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1019	AHU A1,A2, - Reduce ACH from 13.72 to 8											Committed Tier: Tier 2
		86,245	29.0	387	0	32,837	\$16,133	\$40,315	\$31,841	\$8,474	0.5	
I3062	Zone DDC Upgrade											Committed Tier: Tier 1
		6,977	1.0	0	322	0	\$1,043	\$48,560	\$1,996	\$46,564	44.6	
I3115	Monitoring Based Commissioning											Committed Tier: Tier 1
		25,360	3.0	0	2,724	0	\$5,234	\$22,687	\$8,810	\$13,877	2.7	
I3322	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		2,100	0.0	0	0	0	\$224	\$2,755	\$504	\$2,251	10.0	
<b>Totals</b>		<b>120,682</b>	<b>33.0</b>	<b>387</b>	<b>3,046</b>	<b>32,837</b>	<b>\$22,634</b>	<b>\$114,317</b>	<b>\$43,151</b>	<b>\$71,166</b>	<b>3.1</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	681,722	20,000	50.8	1.5	669.3	N/A
Implement Partnership Projects	681,722	20,000	50.8	1.5	669.3	0.0%
Implement SEP Projects	534,770	12,117	39.9	0.9	498.4	25.5%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



## MED SCI B

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9328  
**Funding Source:** STATE  
**Year Built:** 1978

**Basic Gross Area (sf):** 35,864  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

### Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
961,047		2,100.0		538,200
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

#### Monthly Energy Use (Electric)

Metered Data Not Available

#### Weekly Load Profile (Electric)

Metered Data Not Available

#### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

#### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

#### Monthly Energy Use (Chilled Water)

Metered Data Not Available

#### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# MED SCI B

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9328  
**Funding Source:** STATE  
**Year Built:** 1978

**Basic Gross Area (sf):** 35,864  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1021	AHU B1 - SP Reset											Committed Tier: Tier 1
		18,653	0.0	202	0	9,536	\$4,835	\$21,380	\$8,833	\$12,547	2.6	
I1022	AHU B2, B3 - Reduce ACH from 7 to 6											Committed Tier: Tier 2
		173,486	20.0	678	0	35,150	\$28,377	\$120,776	\$56,860	\$63,916	2.3	
I3064	Zone DDC Upgrade											Committed Tier: Tier 1
		18,649	3.0	0	861	0	\$2,789	\$128,542	\$5,337	\$123,205	44.2	
I3116	Monitoring Based Commissioning											Committed Tier: Tier 1
		27,615	3.0	0	3,766	0	\$6,442	\$30,322	\$10,394	\$19,928	3.1	
I3222	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Backup
		4,987	1.0	0	0	0	\$532	\$11,216	\$1,197	\$10,019	18.8	
I3323	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		3,150	0.0	0	0	0	\$336	\$4,133	\$756	\$3,377	10.0	
<b>Totals</b>		<b>246,540</b>	<b>27.0</b>	<b>880</b>	<b>4,627</b>	<b>44,686</b>	<b>\$43,311</b>	<b>\$316,369</b>	<b>\$83,377</b>	<b>\$232,992</b>	<b>5.4</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	1,391,607	26,250	38.8	0.7	470.5	N/A
Implement Partnership Projects	1,391,607	26,250	38.8	0.7	470.5	0.0%
Implement SEP Projects	1,109,318	10,623	30.9	0.3	346.3	26.4%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



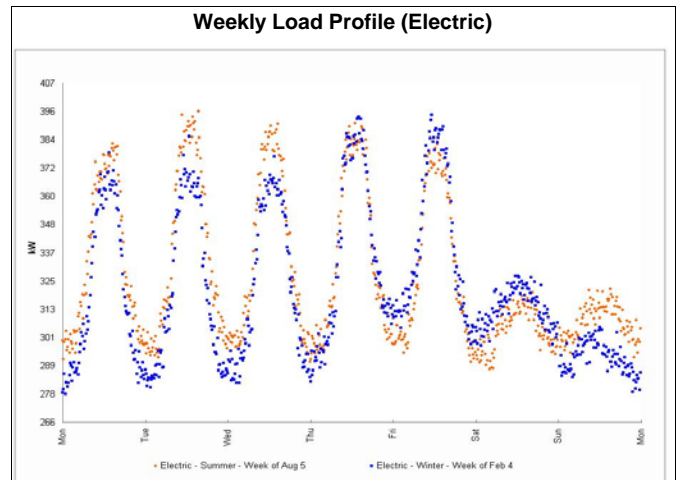
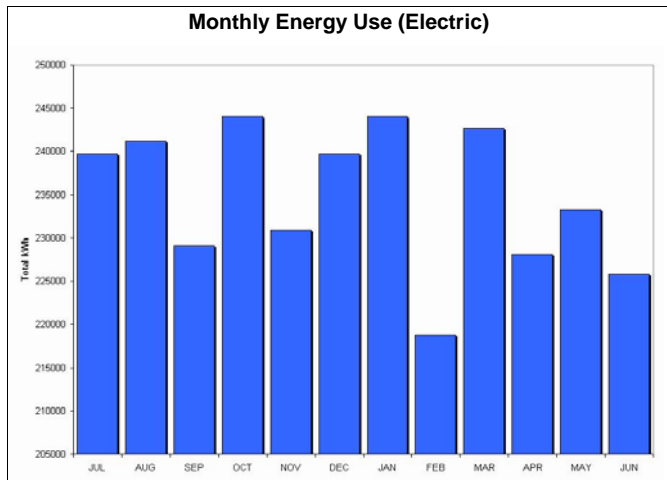
# MED SCI C

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9322  
**Funding Source:** STATE  
**Year Built:** 1978

**Basic Gross Area (sf):** 55,853  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,496,692		6,600.0		1,676,400
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# MED SCI C

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9322  
**Funding Source:** STATE  
**Year Built:** 1978

**Basic Gross Area (sf):** 55,853  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1023	AHU C1 - SP Reset											Committed Tier: Tier 1
		17,025	0.0	186	0	8,419	\$4,399	\$21,668	\$8,027	\$13,641	3.1	
I1024	AHU C2, C3 - Reduce ACH from 7 to 6											Committed Tier: Tier 2
		211,755	24.0	827	0	42,903	\$34,631	\$263,125	\$69,396	\$193,729	5.6	
I3058	Zone DDC Upgrade											Committed Tier: Tier 1
		29,044	5.0	0	1,341	0	\$4,344	\$199,955	\$8,312	\$191,643	44.1	
I3113	Monitoring Based Commissioning											Committed Tier: Tier 1
		177,490	20.0	0	11,338	0	\$29,461	\$94,443	\$53,936	\$40,507	1.4	
I3220	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Backup
		9,062	2.0	0	0	0	\$967	\$20,382	\$2,175	\$18,207	18.8	
I3324	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		3,150	0.0	0	0	0	\$336	\$4,133	\$756	\$3,377	10.0	
<b>Totals</b>		<b>447,526</b>	<b>51.0</b>	<b>1,013</b>	<b>12,679</b>	<b>51,322</b>	<b>\$74,138</b>	<b>\$603,706</b>	<b>\$142,602</b>	<b>\$461,104</b>	<b>6.2</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	2,837,812	82,500	50.8	1.5	667.9	N/A
Implement Partnership Projects	2,837,812	82,500	50.8	1.5	667.9	0.0%
Implement SEP Projects	2,349,228	57,159	42.1	1.0	533.0	20.2%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



# MED SCI D

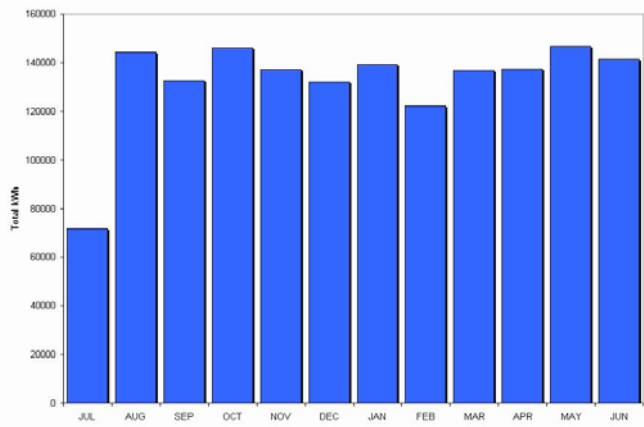
**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9323  
**Funding Source:** STATE  
**Year Built:** 1978

**Basic Gross Area (sf):** 71,959  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

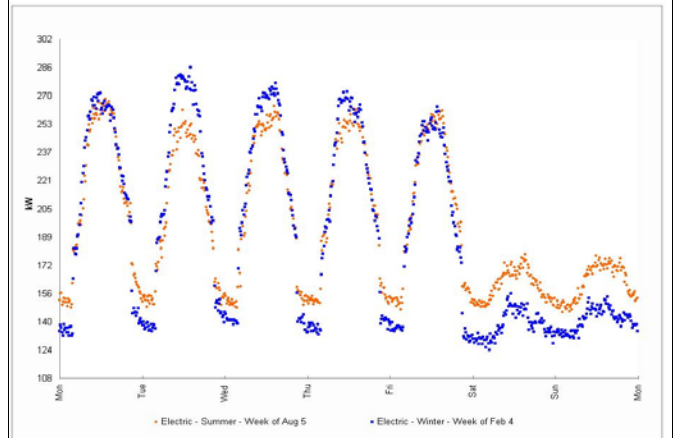
## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,587,459		8,500.0		2,159,800
Metered	N/A	Extrapolated	N/A	Extrapolated

Monthly Energy Use (Electric)



Weekly Load Profile (Electric)



Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

Monthly Energy Use (Chilled Water)

Metered Data Not Available

Weekly Load Profile (Chilled Water)

Metered Data Not Available



# MED SCI D

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9323  
**Funding Source:** STATE  
**Year Built:** 1978

**Basic Gross Area (sf):** 71,959  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1025	AHU D1 - SP Reset											Committed Tier: Tier 1
		18,167	0.0	216	0	9,399	\$4,899	\$21,957	\$8,865	\$13,092	2.7	
I1026	AHU D2, D3 - Reduce ACH from 7 to 6											Committed Tier: Tier 2
		252,120	29.0	985	0	51,082	\$41,236	\$234,288	\$82,629	\$151,659	3.7	
I3060	Zone DDC Upgrade											Committed Tier: Tier 1
		37,419	6.0	0	1,727	0	\$5,595	\$257,084	\$10,708	\$246,376	44.0	
I3114	Monitoring Based Commissioning											Committed Tier: Tier 1
		100,010	11.0	0	14,608	0	\$24,231	\$121,677	\$38,610	\$83,067	3.4	
I3221	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Backup
		11,071	2.0	0	0	0	\$1,181	\$24,923	\$2,657	\$22,266	18.9	
I3325	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		4,200	0.0	0	0	0	\$448	\$5,510	\$1,008	\$4,502	10.0	
<b>Totals</b>		<b>422,987</b>	<b>48.0</b>	<b>1,201</b>	<b>16,335</b>	<b>60,481</b>	<b>\$77,590</b>	<b>\$665,439</b>	<b>\$144,477</b>	<b>\$520,962</b>	<b>6.7</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	3,315,299	106,250	46.1	1.5	619.4	N/A
Implement Partnership Projects	3,315,299	106,250	46.1	1.5	619.4	0.0%
Implement SEP Projects	2,843,927	74,903	39.5	1.0	508.8	17.9%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th





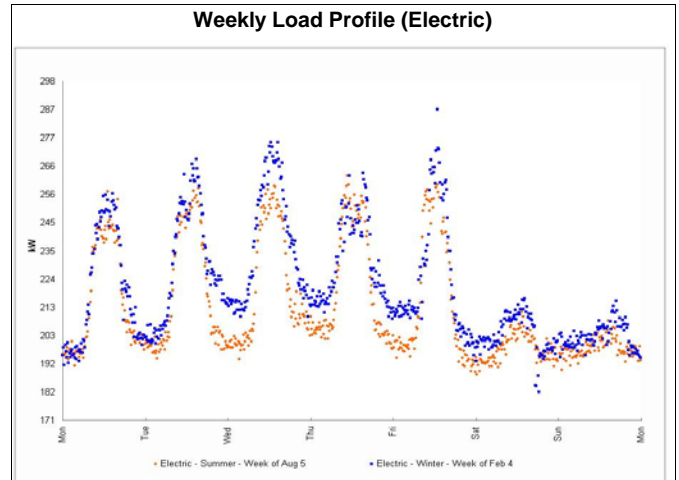
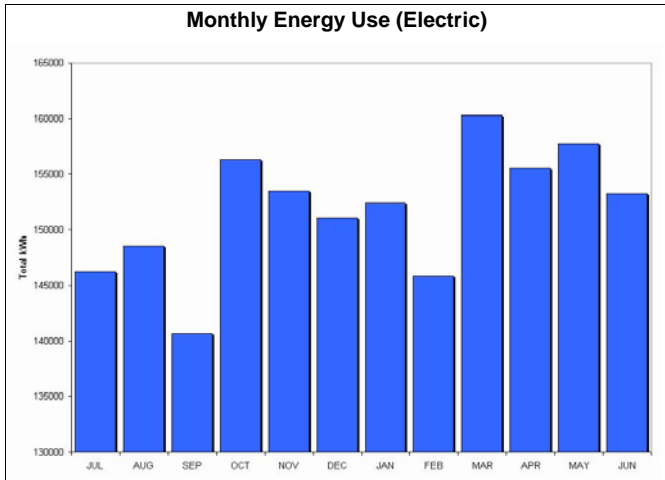
# MED SURG 2

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9329  
**Funding Source:** STATE  
**Year Built:** 1969

**Basic Gross Area (sf):** 60,238  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,821,492		7,200.0		1,808,000
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# MED SURG 2

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9329  
**Funding Source:** STATE  
**Year Built:** 1969

**Basic Gross Area (sf):** 60,238  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1027	AHU-3, 6 - SP reset											Committed Tier: Backup
		49,181	1.0	1,220	0	91,830	\$25,910	\$46,029	\$44,685	\$9,206	0.4	
I1028	AHU-5 - SP reset											Committed Tier: Backup
		8,022	0.0	161	0	4,673	\$2,826	\$20,899	\$4,835	\$16,064	5.7	
I1029	AHU-4 - SP reset											Committed Tier: Backup
		5,094	0.0	154	0	2,987	\$2,277	\$20,803	\$3,721	\$17,082	7.5	
I1030	AHU-7 - CAV to VAV and SP Reset											Committed Tier: Backup
		119,653	-1.0	1,842	0	158,480	\$45,979	\$443,081	\$82,170	\$360,911	7.8	
I1031	AHU 8 - SP reset											Committed Tier: Backup
		3,812	0.0	25	0	245	\$664	\$20,322	\$1,274	\$19,048	28.7	
I3066	Zone DDC Upgrade											Committed Tier: Backup
		31,324	5.0	0	1,446	0	\$4,684	\$214,237	\$8,964	\$205,273	43.8	
I3117	Monitoring Based Commissioning											Committed Tier: Tier 2
		114,754	13.0	0	12,228	0	\$23,594	\$101,859	\$39,769	\$62,090	2.6	
I3223	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Backup
		80,478	22.0	0	0	0	\$8,586	\$75,415	\$19,315	\$56,100	6.5	
<b>Totals</b>		<b>412,318</b>	<b>40.0</b>	<b>3,402</b>	<b>13,674</b>	<b>258,215</b>	<b>\$114,519</b>	<b>\$942,645</b>	<b>\$204,733</b>	<b>\$745,774</b>	<b>6.5</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	3,267,892	90,000	54.2	1.5	704.9	N/A
Implement Partnership Projects	3,267,892	90,000	54.2	1.5	704.9	0.0%
Implement SEP Projects	2,649,002	33,801	44.0	0.6	506.4	28.2%

**Assumed Incentives:**

Electricity	\$0.24 per annual kWh
Natural Gas	\$1 per annual therm
Cap	80% project cost

**Central Plant Efficiencies:**

th/MMBTU:	12.5
kWh/ton-hr:	0.8
th/ton-hr:	0.0

**Source Energy Use Conversion Factors:**

10.239 kBtu per kWh	100 kBtu per th
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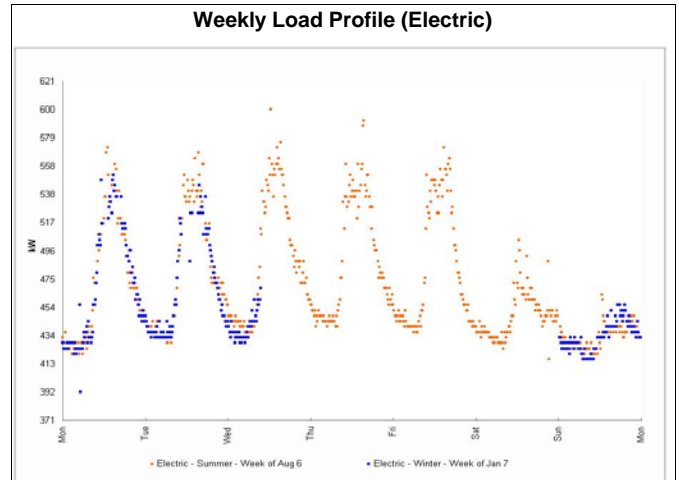
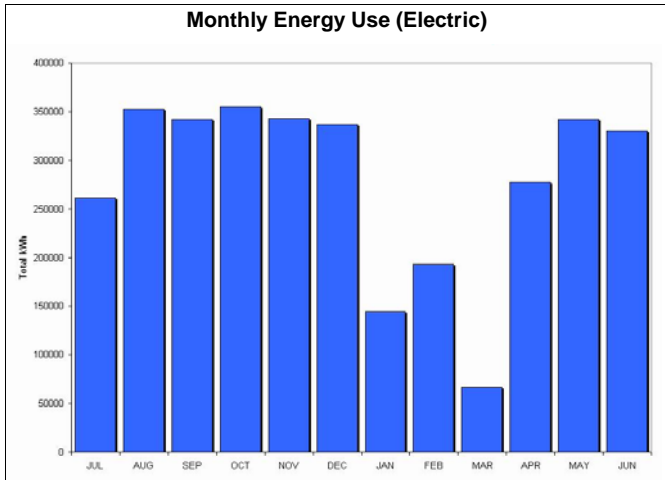
# NAT SCI 1

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9090  
**Funding Source:** STATE  
**Year Built:** 2002

**Basic Gross Area (sf):** 120,913  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
3,345,487		14,400.0		3,566,631
Metered	N/A	Extrapolated	N/A	Metered



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# NAT SCI 1

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9090  
**Funding Source:** STATE  
**Year Built:** 2002

**Basic Gross Area (sf):** 120,913  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	9,315		
Natural Sciences I MBCx	528,335	18,000	

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1033	AHU 1 - SP Reset											Committed Tier: Tier 1
		39,125	0.0	648	0	29,244	\$13,163	\$2,747	\$23,105	\$549	0.0	
I1073	AHU 2,3,4 - SP Reset & VFD on Exhaust											Committed Tier: Backup
		548,648	53.0	12	0	7,248	\$59,383	\$39,866	\$133,217	\$7,973	0.1	
I3028	Demand Control Ventilation											Committed Tier: Tier 2
		9,084	10.0	0	0	0	\$969	\$8,939	\$2,180	\$6,759	7.0	
I3200	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 1
		160,222	44.0	0	0	0	\$17,094	\$152,182	\$38,453	\$113,729	6.7	
I3352	Aircuity											Committed Tier: Backup
		400,000		0	65,000	0	\$103,015	\$650,000	\$161,000	\$489,000	4.7	
I3353	Exhaust Stack Discharge Reduction											Committed Tier: Backup
		90,000		0	850	0	\$10,391	\$135,000	\$22,450	\$112,550	10.8	
<b>Totals</b>		<b>1,247,079</b>	<b>107.0</b>	<b>660</b>	<b>65,850</b>	<b>36,492</b>	<b>\$204,015</b>	<b>\$988,734</b>	<b>\$380,405</b>	<b>\$730,560</b>	<b>3.6</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	6,198,792	180,000	51.3	1.5	673.8	N/A
Implement Partnership Projects	5,661,141	162,000	46.8	1.3	613.4	9.0%
Implement SEP Projects	4,384,869	87,900	36.3	0.7	444.0	27.6%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



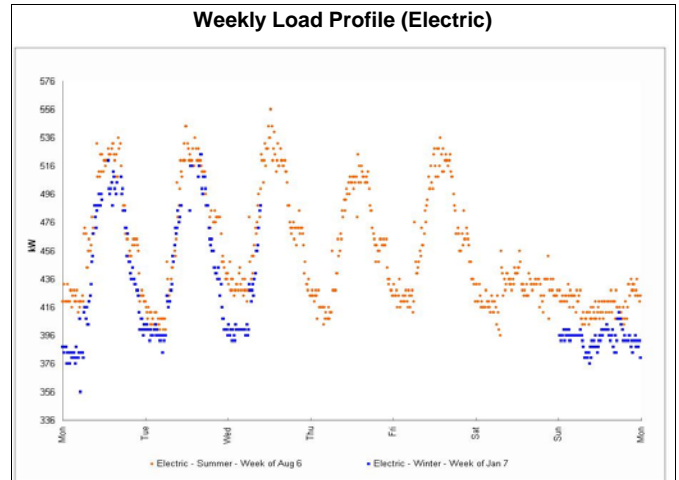
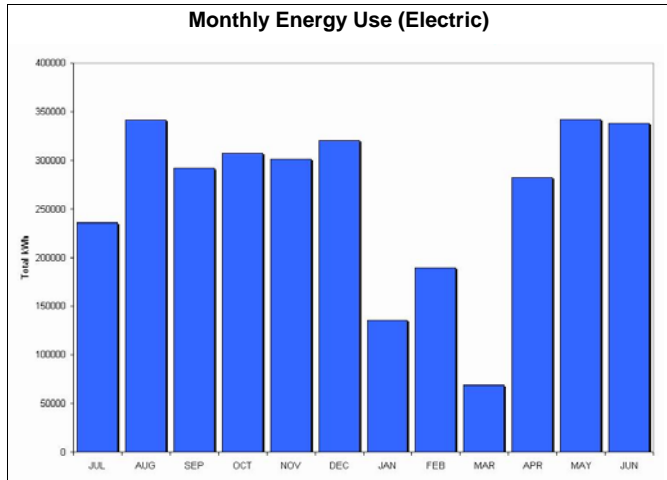
# NAT SCI 2

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9091  
**Funding Source:** STATE  
**Year Built:** 2003

**Basic Gross Area (sf):** 136,305  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
3,154,198		16,200.0		2,045,600
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



## NAT SCI 2

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9091  
**Funding Source:** STATE  
**Year Built:** 2003

**Basic Gross Area (sf):** 136,305  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

### Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1034	AHU 3 - SP Reset											Committed Tier: Tier 1
		69,560	0.0	828	0	42,372	\$19,416	\$2,747	\$35,180	\$549	0.0	
I1074	AHU 1,2,4 - SP Reset & VFD on Exhaust											Committed Tier: Backup
		689,808	-5.0	-12	0	11,077	\$74,609	\$52,018	\$167,531	\$10,404	0.1	
I3029	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc											Committed Tier: Tier 1
		377,870	0.0	6,215	0	144,327	\$112,683	\$332,989	\$196,087	\$136,902	1.2	
I3030	Demand Control Ventilation											Committed Tier: Tier 2
		10,240	11.0	0	0	0	\$1,092	\$8,939	\$2,458	\$6,481	5.9	
I3092	Monitoring Based Commissioning											Committed Tier: Tier 1
		220,794	25.0	0	14,312	0	\$36,842	\$115,242	\$67,303	\$47,939	1.3	
I3201	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 1
		105,987	33.0	0	0	0	\$11,308	\$101,720	\$25,437	\$76,283	6.7	
I3227	EF VFDs											Committed Tier: Backup
		34,366	2.0	0	0	0	\$3,666	\$11,243	\$8,248	\$2,995	0.8	
I3327	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		5,250	0.0	0	0	0	\$560	\$6,888	\$1,260	\$5,628	10.0	
I3354	Exhaust Stack Discharge Reduction											Committed Tier: Backup
		90,000		0	850	0	\$10,391	\$135,000	\$22,450	\$112,550	10.8	
<b>Totals</b>		<b>1,603,875</b>	<b>66.0</b>	<b>7,031</b>	<b>15,162</b>	<b>197,776</b>	<b>\$270,568</b>	<b>\$766,785</b>	<b>\$525,954</b>	<b>\$399,731</b>	<b>1.5</b>	

### Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	4,790,678	202,500	35.1	1.5	508.4	N/A
Implement Partnership Projects	4,790,678	202,500	35.1	1.5	508.4	0.0%
Implement SEP Projects	3,028,582	99,451	22.2	0.7	300.5	40.9%

#### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

#### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

#### Source Energy Use Conversion Factors:

10,239 kBtu per kWh    100 kBtu per th



# REINES HALL

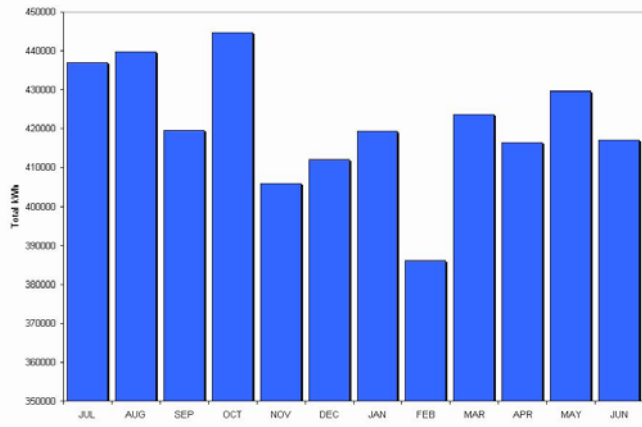
**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9108  
**Funding Source:** STATE  
**Year Built:** 1990

**Basic Gross Area (sf):** 156,514  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

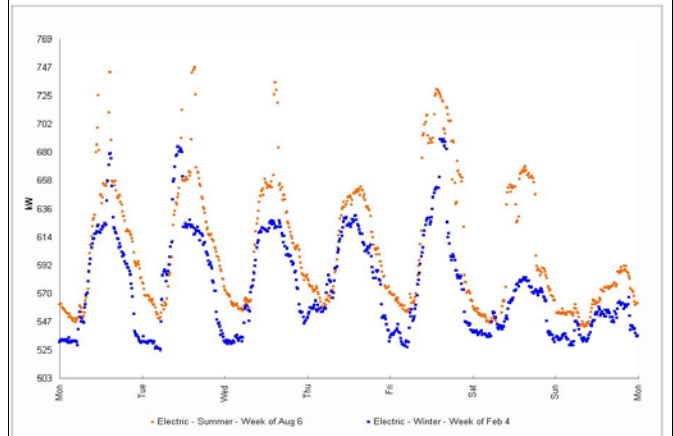
## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
5,051,088		18,600.0		4,697,700
Metered	N/A	Extrapolated	N/A	Extrapolated

Monthly Energy Use (Electric)



Weekly Load Profile (Electric)



Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

Monthly Energy Use (Chilled Water)

Metered Data Not Available

Weekly Load Profile (Chilled Water)

Metered Data Not Available



# REINES HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9108  
**Funding Source:** STATE  
**Year Built:** 1990

**Basic Gross Area (sf):** 156,514  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Office

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	12,058		
Install Phoenix Controls on Lab Fume Hoods and Supply Air VAVs - Reines Hall	679,391	30,981	

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1035	AHU 1,2 - Reduce ACH from 8.5 to 6											Committed Tier: Tier 1
		1,483,306	169.0	8,377	0	434,563	\$280,202	\$5,766,132	\$544,142	\$5,221,990	18.6	
I3034	Demand Control Ventilation											Committed Tier: Backup
		11,759	13.0	0	0	0	\$1,255	\$4,470	\$2,822	\$1,648	1.3	
I3035	Zone DDC Upgrade											Committed Tier: Tier 1
		81,387	14.0	0	3,756	0	\$12,170	\$559,873	\$23,289	\$536,584	44.1	
I3036	EF VFDs											Committed Tier: Backup
		6,264	0.0	0	0	0	\$668	\$11,738	\$1,503	\$10,235	15.3	
I3095	Monitoring Based Commissioning											Committed Tier: Tier 2
		318,219	36.0	0	31,772	0	\$63,444	\$264,653	\$108,145	\$156,508	2.5	
I3204	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas											Committed Tier: Tier 1
		110,221	29.0	0	0	0	\$11,759	\$87,876	\$26,453	\$61,423	5.2	
I3357	Aircuity											Committed Tier: Backup
		425,000		0	27,000	0	\$70,407	\$480,000	\$129,000	\$351,000	5.0	
I3358	Exhaust Stack Discharge Reduction											Committed Tier: Backup
		80,000		0	7,000	0	\$15,033	\$175,000	\$26,200	\$148,800	9.9	
<b>Totals</b>		<b>2,516,156</b>	<b>261.0</b>	<b>8,377</b>	<b>69,528</b>	<b>434,563</b>	<b>\$454,938</b>	<b>\$7,349,741</b>	<b>\$861,554</b>	<b>\$6,488,188</b>	<b>14.3</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	8,809,248	232,500	56.3	1.5	724.8	N/A
Implement Partnership Projects	8,117,799	201,519	51.9	1.3	659.8	9.0%
Implement SEP Projects	5,253,992	27,279	33.6	0.2	361.1	45.3%

**Assumed Incentives:**

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

**Central Plant Efficiencies:**

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Source Energy Use Conversion Factors:**

10,239 kBTU per kWh    100 kBTU per th





# ROWLAND HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9100  
**Funding Source:** STATE  
**Year Built:** 1968

**Basic Gross Area (sf):** 196,057  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
4,005,900		29,110.0		5,884,600
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)

Metered Data Not Available

### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# ROWLAND HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9100  
**Funding Source:** STATE  
**Year Built:** 1968

**Basic Gross Area (sf):** 196,057  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	15,105		

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1036	AHU 1,2,3,4 - DDC Upgrade, CAV to VAV Fume Hoods & SP Reset										Committed Tier: Tier 1
		3,161,005	-1.0	0	198,778	937,428	\$617,086	\$2,360,290	\$1,137,405	\$1,222,885	2.0
I3093	Monitoring Based Commissioning										Committed Tier: Tier 1
		370,548	42.0	0	39,800	0	\$76,480	\$331,516	\$128,732	\$202,784	2.7
I3202	Retrofit T12 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate										Committed Tier: Tier 1
		560,348	158.0	0	0	0	\$59,783	\$250,127	\$134,484	\$115,643	1.9
I3359	Exhaust Stack Discharge Reduction										Committed Tier: Backup
		82,000		0	7,100	0	\$15,339	\$185,000	\$26,780	\$158,220	10.3
I3360	Aircuity										Committed Tier: Backup
		475,000		0	34,000	0	\$82,239	\$600,000	\$148,000	\$452,000	5.5
<b>Totals</b>		<b>4,648,901</b>	<b>199.0</b>	<b>0</b>	<b>279,678</b>	<b>937,428</b>	<b>\$850,927</b>	<b>\$3,726,933</b>	<b>\$1,575,401</b>	<b>\$2,151,532</b>	<b>2.5</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	8,713,580	363,875	44.4	1.9	640.7	N/A
Implement Partnership Projects	8,698,475	363,875	44.4	1.9	639.9	0.1%
Implement SEP Projects	3,299,632	84,197	16.8	0.4	215.3	66.4%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10,239 kBtu per kWh      100 kBtu per th



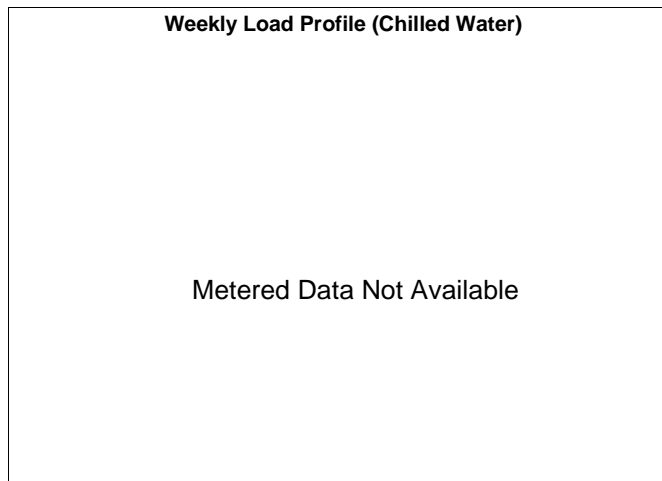
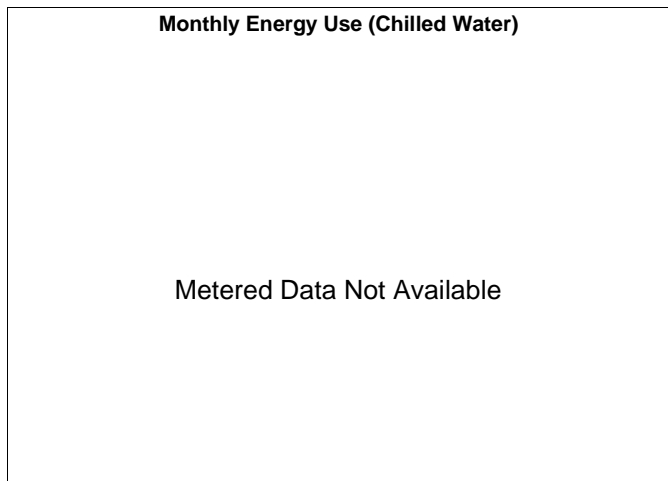
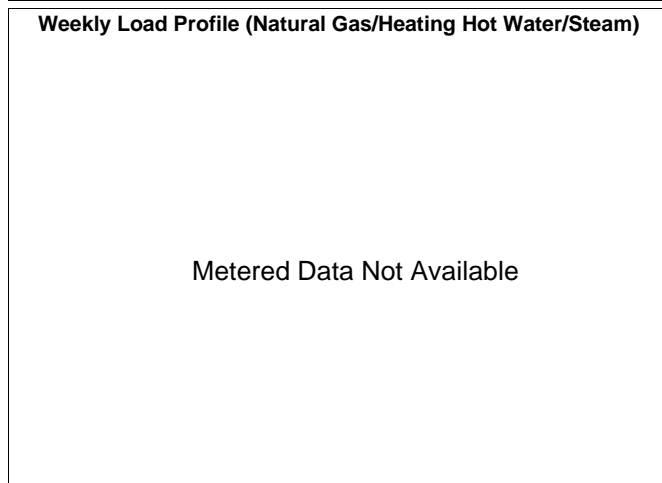
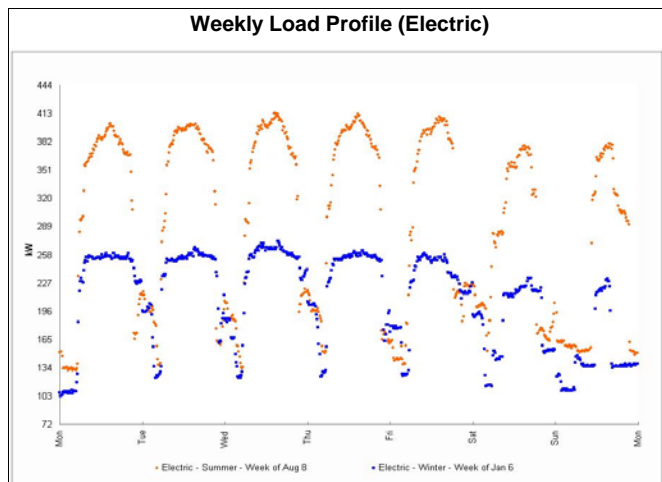
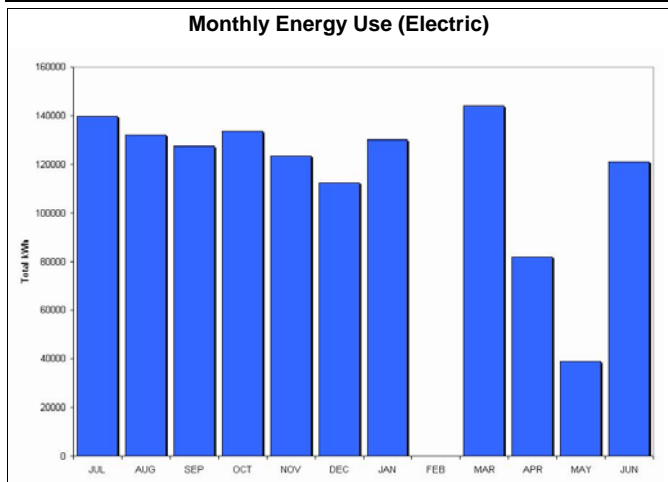
# SCILIBRARY

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9073  
**Funding Source:** STATE  
**Year Built:** 1994

**Basic Gross Area (sf):** 189,590  
**Building Type:** BASIC  
**Primary Asset Type:** Library  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,401,325		11,300.0		2,845,300
Metered	N/A	Extrapolated	N/A	Extrapolated





# SCILIBRARY

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9073  
**Funding Source:** STATE  
**Year Built:** 1994

**Basic Gross Area (sf):** 189,590  
**Building Type:** BASIC  
**Primary Asset Type:** Library  
**Secondary Asset Type:** Office

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	14,607		

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1075	AHU 1 thru 5 - SP Reset & DCV										Committed Tier: Tier 2
		219,460	-1.0	2,610	0	120,914	\$59,937	\$27,493	\$108,511	\$5,499	0.1
I3001	Elevator Retrofit - MG to VVVF										Committed Tier: Backup
		56,416	20.0	0	0	0	\$6,019	\$866,668	\$13,540	\$853,128	141.7
I3088	Monitoring Based Commissioning										Committed Tier: Tier 1
		89,918	10.0	0	19,907	0	\$28,073	\$160,290	\$41,487	\$118,803	4.2
I3196	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas										Committed Tier: Tier 1
		174,472	47.0	0	0	0	\$18,614	\$198,291	\$41,873	\$156,418	8.4
I6005	HHWP VFD Retrofit										Committed Tier: Tier 2
		7,237	0.0	0	0	0	\$772	\$6,180	\$1,737	\$4,443	5.8
<b>Totals</b>		<b>547,503</b>	<b>76.0</b>	<b>2,610</b>	<b>19,907</b>	<b>120,914</b>	<b>\$113,415</b>	<b>\$1,258,922</b>	<b>\$207,148</b>	<b>\$1,138,291</b>	<b>10.0</b>

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	3,677,565	141,250	19.4	0.7	273.1	N/A
Implement Partnership Projects	3,662,959	141,250	19.3	0.7	272.3	0.3%
Implement SEP Projects	3,018,725	88,718	15.9	0.5	209.8	23.0%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



# SOC ECOLOGY

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9128  
**Funding Source:** STATE  
**Year Built:** 1983

**Basic Gross Area (sf):** 55,000  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

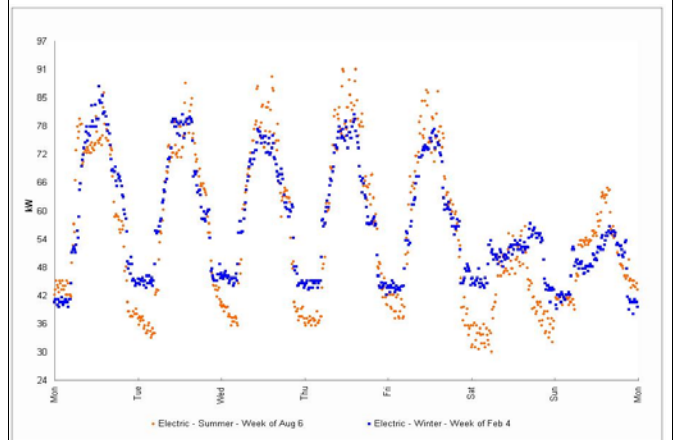
## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,123,800		6,500.0		1,650,800
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)



### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



## SOC ECOLOGY

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9128  
**Funding Source:** STATE  
**Year Built:** 1983

**Basic Gross Area (sf):** 55,000  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

### 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	4,237		

### Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1041	AHU 1 - SP Reset										Committed Tier: Tier 2
		6,048	0.0	0	0	1,023	\$749	\$2,747	\$1,648	\$1,099	1.5
I1042	AHU 2,3 - SP Reset										Committed Tier: Tier 2
		5,216	0.0	0	0	1,012	\$659	\$5,494	\$1,446	\$4,048	6.1
I1043	AHU 4 - Reduce ACH from 7 to 6										Committed Tier: Tier 2
		35,340	4.0	214	0	11,120	\$6,888	\$59,447	\$13,292	\$46,155	6.7
I3045	Demand Control Ventilation										Committed Tier: Tier 2
		4,132	4.0	0	0	0	\$441	\$8,939	\$992	\$7,947	18.0
I3101	Monitoring Based Commissioning										Committed Tier: Tier 2
		103,950	12.0	0	11,165	0	\$21,455	\$93,001	\$36,113	\$56,888	2.7
I3210	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas										Committed Tier: Tier 1
		53,804	13.0	0	0	0	\$5,740	\$63,199	\$12,913	\$50,286	8.8
I3361	Zone DDC Upgrade										Committed Tier: Backup
		55,000		0	1,800	0	\$7,539	\$300,000	\$15,000	\$285,000	37.8
<b>Totals</b>		<b>263,490</b>	<b>33.0</b>	<b>214</b>	<b>12,965</b>	<b>13,155</b>	<b>\$43,471</b>	<b>\$532,826</b>	<b>\$81,404</b>	<b>\$451,423</b>	<b>10.4</b>

### Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	2,444,440	81,250	44.4	1.5	602.8	N/A
Implement Partnership Projects	2,440,203	81,250	44.4	1.5	602.0	0.1%
Implement SEP Projects	2,166,189	65,610	39.4	1.2	522.6	13.2%

#### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

#### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

#### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



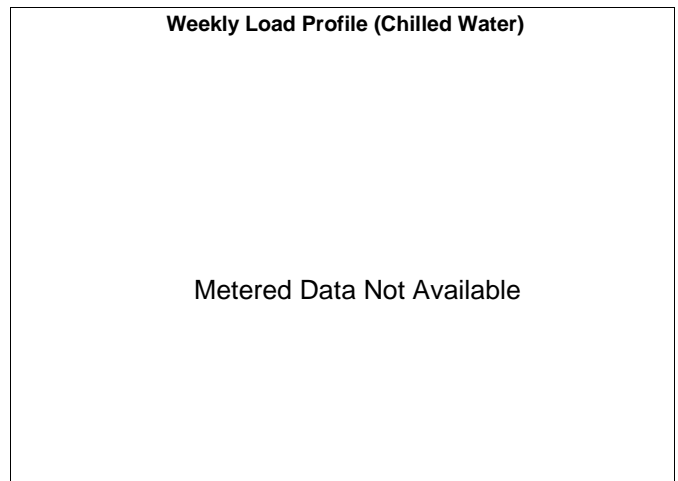
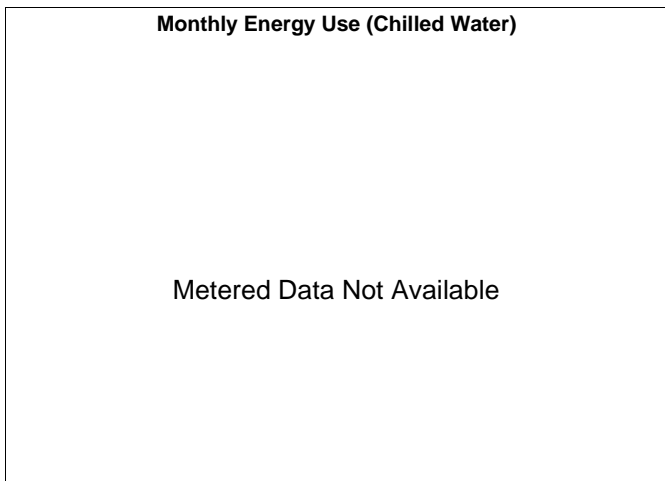
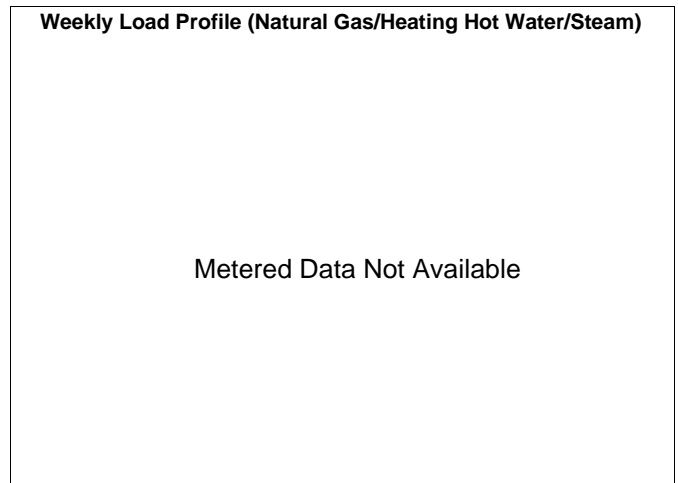
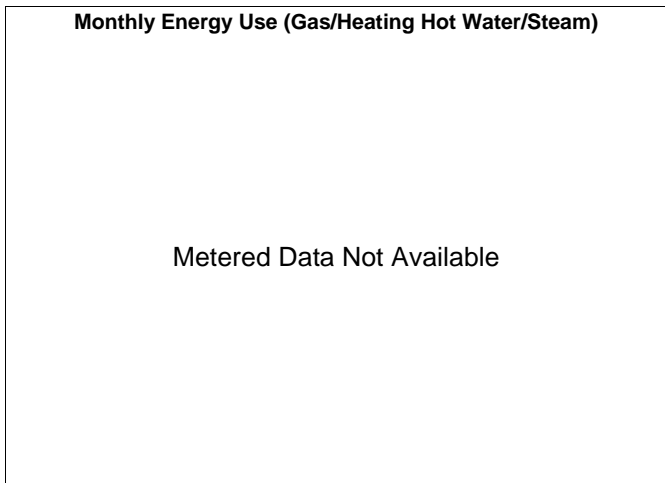
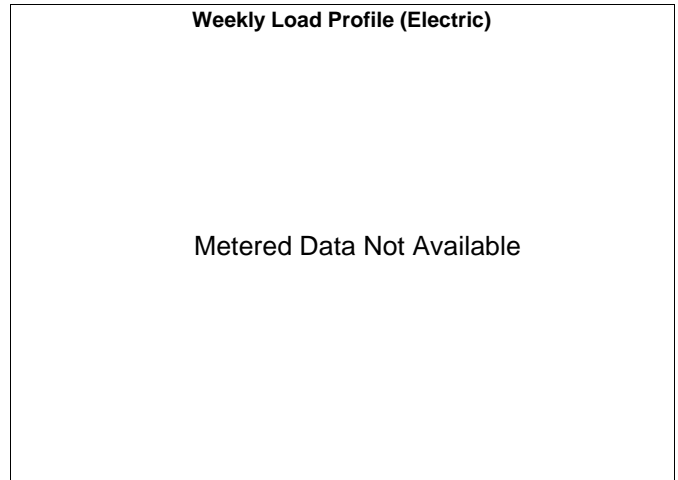
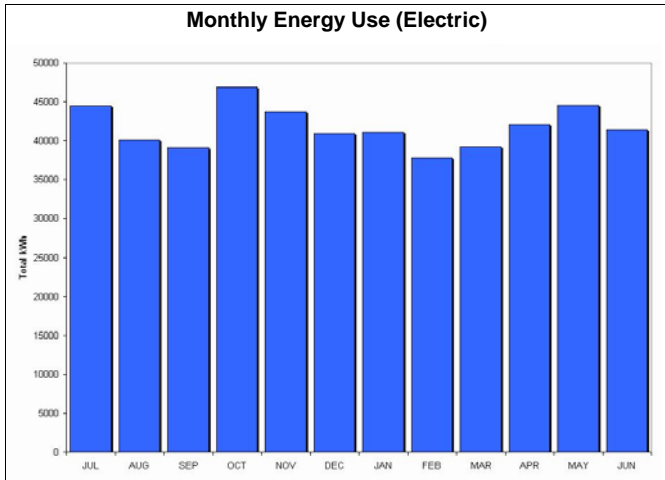
# SOC ECOLOGY2

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9222  
**Funding Source:** STATE  
**Year Built:** 1996

**Basic Gross Area (sf):** 35,753  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
501,539		4,500.0		536,600
Metered	N/A	Extrapolated	N/A	Extrapolated





## SOC ECOLOGY2

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9222  
**Funding Source:** STATE  
**Year Built:** 1996

**Basic Gross Area (sf):** 35,753  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

### Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1044	AHU 3C - SP Reset											Committed Tier: Tier 2
		40,985	0.0	269	0	1,263	\$6,998	\$25,130	\$13,441	\$11,689	1.7	
I1076	AHU 3H - Reduce ACH from 7 to 6											Committed Tier: Tier 2
		65,627	8.0	38	0	0	\$7,354	\$178,681	\$16,225	\$162,456	22.1	
I3055	Demand Control Ventilation											Committed Tier: Tier 2
		2,873	3.0	0	0	0	\$307	\$4,470	\$690	\$3,780	12.3	
I3108	Monitoring Based Commissioning											Committed Tier: Tier 2
		35,108	4.0	0	3,754	0	\$7,230	\$30,227	\$12,180	\$18,047	2.5	
I3216	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 1
		55,525	14.0	0	0	0	\$5,924	\$61,400	\$13,326	\$48,074	8.1	
I3362	Aircuity											Committed Tier: Backup
		185,000		0	19,000	0	\$37,375	\$275,000	\$63,400	\$211,600	5.7	
I3363	Exhaust Stack Discharge Reduction											Committed Tier: Backup
		50,000		0	5,000	0	\$9,976	\$125,000	\$17,000	\$108,000	10.8	
<b>Totals</b>		<b>435,118</b>	<b>29.0</b>	<b>307</b>	<b>27,754</b>	<b>1,263</b>	<b>\$75,164</b>	<b>\$699,907</b>	<b>\$136,262</b>	<b>\$563,646</b>	<b>7.5</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	930,819	56,250	26.0	1.6	423.9	N/A
Implement Partnership Projects	930,819	56,250	26.0	1.6	423.9	0.0%
Implement SEP Projects	494,690	24,659	13.8	0.7	210.6	50.3%

#### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

#### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

#### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th





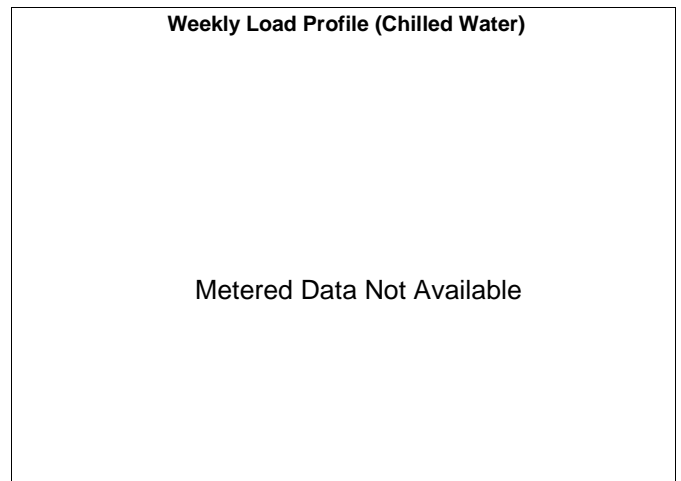
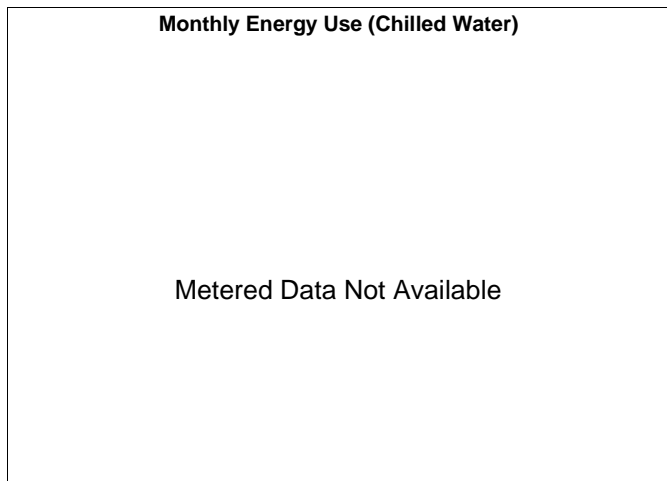
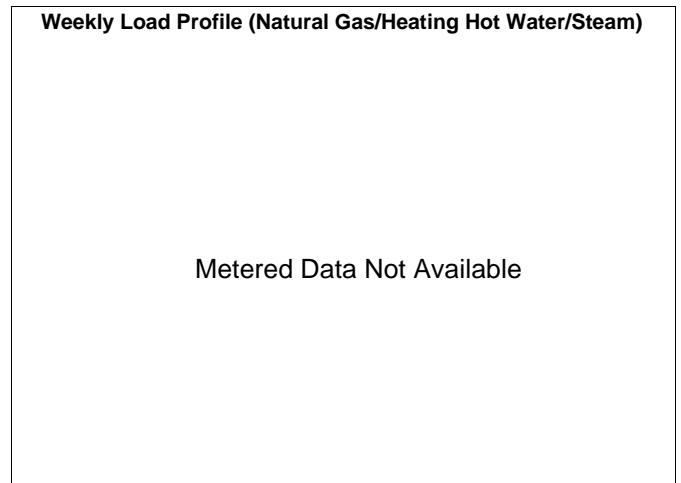
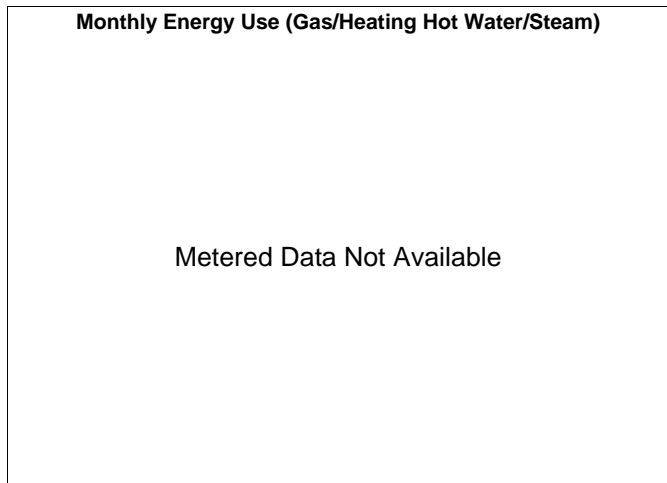
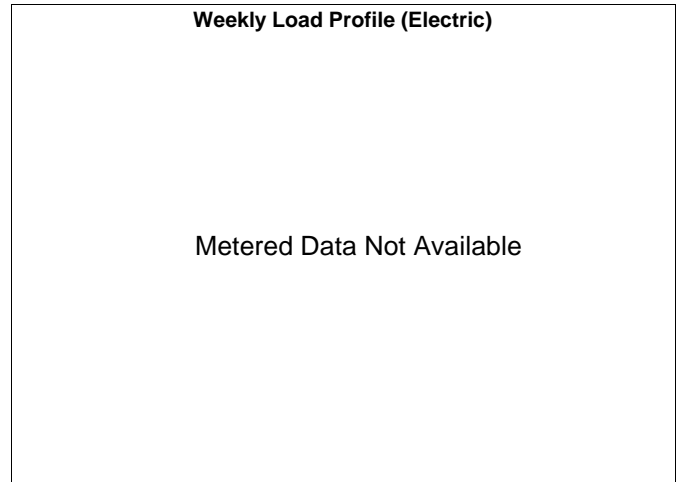
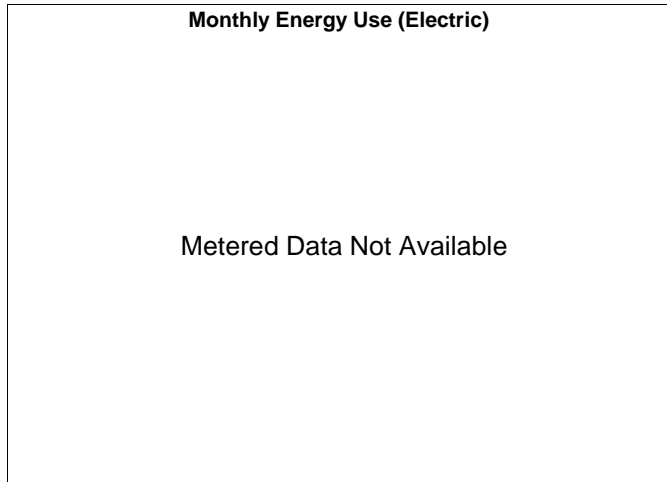
# SOC SCI PL A

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9212  
**Funding Source:** STATE  
**Year Built:** 1996

**Basic Gross Area (sf):** 46,479  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** College Lecture Cla

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
732,000		2,800.0		697,500
Extrapolated	N/A	Extrapolated	N/A	Extrapolated





# SOC SCI PL A

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9212  
**Funding Source:** STATE  
**Year Built:** 1996

**Basic Gross Area (sf):** 46,479  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** College Lecture Cla

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1045	AHU 1 - SP Reset											Committed Tier: Tier 1
		33,265	0.0	146	0	1,215	\$5,028	\$25,130	\$10,042	\$15,088	3.0	
I3051	Demand Control Ventilation											Committed Tier: Tier 2
		3,492	4.0	0	0	0	\$373	\$2,235	\$838	\$1,397	3.7	
I3052	Zone DDC Upgrade											Committed Tier: Tier 1
		24,169	4.0	0	1,116	0	\$3,615	\$165,677	\$6,917	\$158,760	43.9	
I3106	Monitoring Based Commissioning											Committed Tier: Tier 1
		35,789	4.0	0	4,880	0	\$8,348	\$39,296	\$13,469	\$25,827	3.1	
I3214	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 1
		81,270	21.0	0	0	0	\$8,671	\$99,741	\$19,505	\$80,236	9.3	
I3328	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		5,250	0.0	0	0	0	\$560	\$6,888	\$1,260	\$5,628	10.0	
<b>Totals</b>		<b>183,235</b>	<b>33.0</b>	<b>146</b>	<b>5,996</b>	<b>1,215</b>	<b>\$26,594</b>	<b>\$338,965</b>	<b>\$52,031</b>	<b>\$286,936</b>	<b>10.8</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	1,290,000	35,000	27.8	0.8	359.5	N/A
Implement Partnership Projects	1,290,000	35,000	27.8	0.8	359.5	0.0%
Implement SEP Projects	1,105,793	27,179	23.8	0.6	302.1	16.0%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



## SOC SCI PL B

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9221  
**Funding Source:** STATE  
**Year Built:** 1996

**Basic Gross Area (sf):** 49,078  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

### Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
772,900		2,900.0		736,500
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

#### Monthly Energy Use (Electric)

Metered Data Not Available

#### Weekly Load Profile (Electric)

Metered Data Not Available

#### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

#### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

#### Monthly Energy Use (Chilled Water)

Metered Data Not Available

#### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# SOC SCI PL B

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9221  
**Funding Source:** STATE  
**Year Built:** 1996

**Basic Gross Area (sf):** 49,078  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1046	AHU 2 - SP Reset											Committed Tier: Tier 1
		37,075	0.0	516	0	20,912	\$10,872	\$24,553	\$19,363	\$5,190	0.5	
I3053	Demand Control Ventilation											Committed Tier: Tier 2
		3,687	4.0	0	0	0	\$393	\$2,235	\$885	\$1,350	3.4	
I3054	Zone DDC Upgrade											Committed Tier: Tier 1
		25,521	4.0	0	1,178	0	\$3,816	\$174,246	\$7,303	\$166,943	43.7	
I3107	Monitoring Based Commissioning											Committed Tier: Tier 1
		37,790	4.0	0	5,153	0	\$8,815	\$41,493	\$14,223	\$27,270	3.1	
I3215	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 1
		86,390	22.0	0	0	0	\$9,217	\$106,345	\$20,734	\$85,611	9.3	
I3329	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		5,250	0.0	0	0	0	\$560	\$6,888	\$1,260	\$5,628	10.0	
<b>Totals</b>		<b>195,713</b>	<b>34.0</b>	<b>516</b>	<b>6,331</b>	<b>20,912</b>	<b>\$33,674</b>	<b>\$355,759</b>	<b>\$63,768</b>	<b>\$291,992</b>	<b>8.7</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	1,362,100	36,250	27.8	0.7	358.0	N/A
Implement Partnership Projects	1,362,100	36,250	27.8	0.7	358.0	0.0%
Implement SEP Projects	1,149,657	23,469	23.4	0.5	287.7	19.7%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



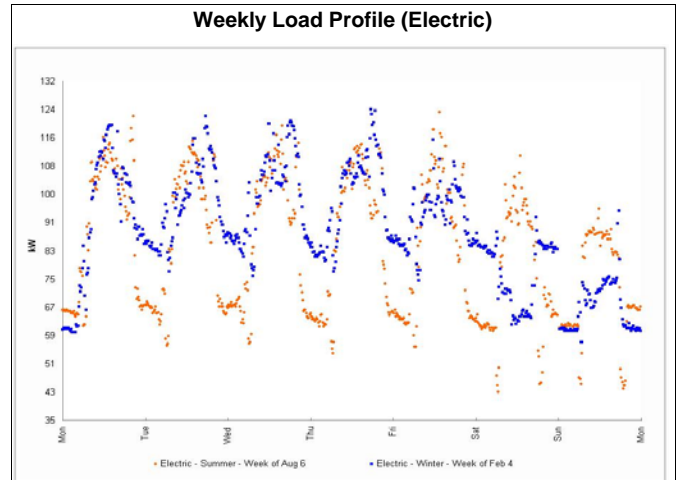
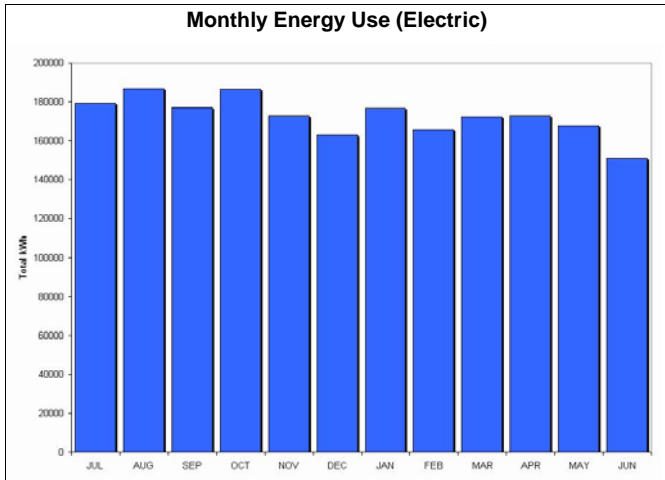
# SOCSCI TOWER

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9204  
**Funding Source:** STATE  
**Year Built:** 1971

**Basic Gross Area (sf):** 83,844  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
2,072,450		5,000.0		1,258,300
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# SOCSCI TOWER

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9204  
**Funding Source:** STATE  
**Year Built:** 1971

**Basic Gross Area (sf):** 83,844  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Office Support

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	6,460		

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1047	AHU-B1,B2,D1,D2 - SP Reset & Add Economizer											Committed Tier: Tier 2
		48,364	0.0	877	0	58,493	\$19,249	\$123,405	\$33,801	\$89,604	4.7	
I1048	AHU-B3, B4 - SP Reset & Add Economizer											Committed Tier: Tier 2
		33,157	1.0	629	0	30,522	\$12,480	\$61,126	\$21,680	\$39,446	3.2	
I1049	AHU C1 - CAV to VAV, DCV, SP Reset											Committed Tier: Tier 2
		19,197	0.0	138	0	7,212	\$4,062	\$40,860	\$7,717	\$33,143	8.2	
I3050	Zone DDC Upgrade											Committed Tier: Tier 1
		43,599	7.0	0	2,012	0	\$6,519	\$299,932	\$12,476	\$287,456	44.1	
I3104	Monitoring Based Commissioning											Committed Tier: Tier 1
		145,072	17.0	0	8,804	0	\$23,650	\$70,887	\$43,621	\$27,266	1.2	
I3213	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas											Committed Tier: Tier 1
		74,870	19.0	0	0	0	\$7,988	\$81,202	\$17,969	\$63,233	7.9	
<b>Totals</b>		<b>364,259</b>	<b>44.0</b>	<b>1,644</b>	<b>10,816</b>	<b>96,227</b>	<b>\$73,948</b>	<b>\$677,412</b>	<b>\$137,264</b>	<b>\$540,148</b>	<b>7.3</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	3,079,090	62,500	36.7	0.7	450.6	N/A
Implement Partnership Projects	3,072,631	62,500	36.6	0.7	449.8	0.2%
Implement SEP Projects	2,631,390	31,134	31.4	0.4	358.5	20.3%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10,239 kBtu per kWh    100 kBtu per th



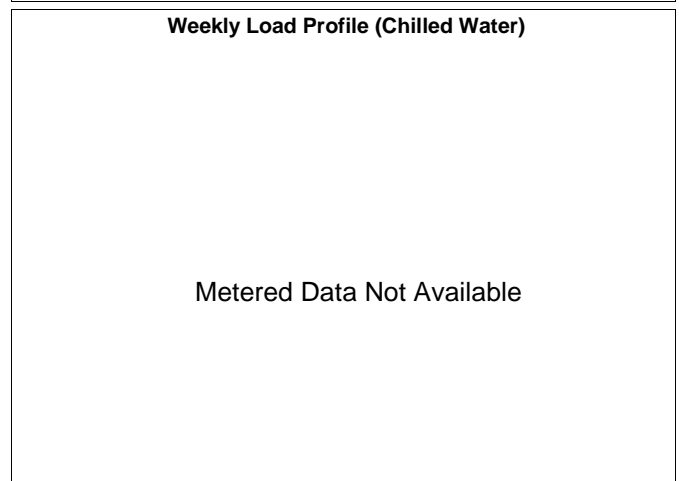
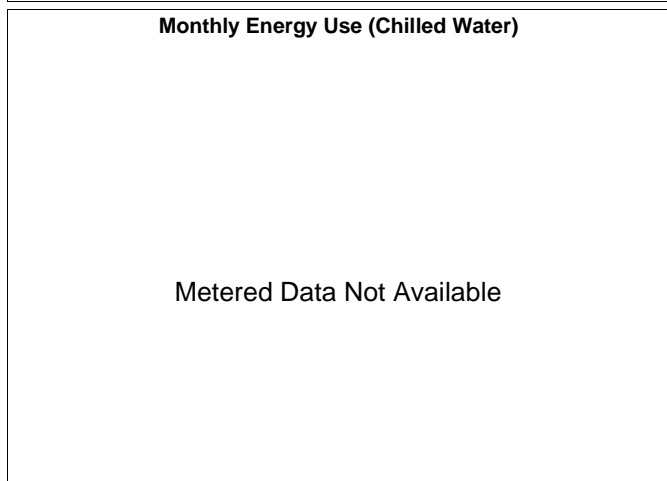
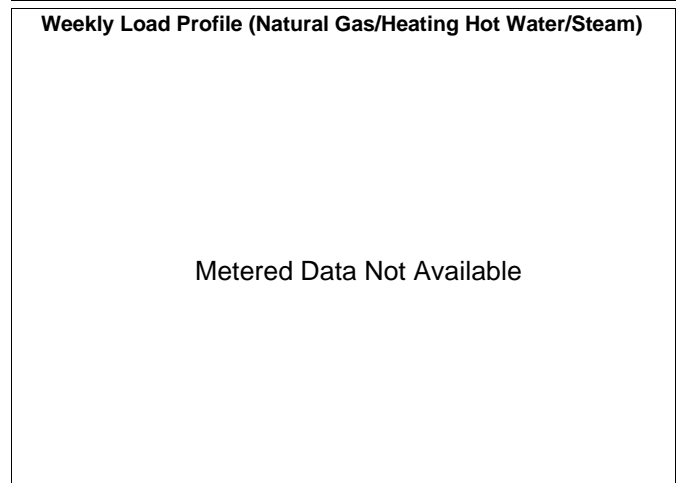
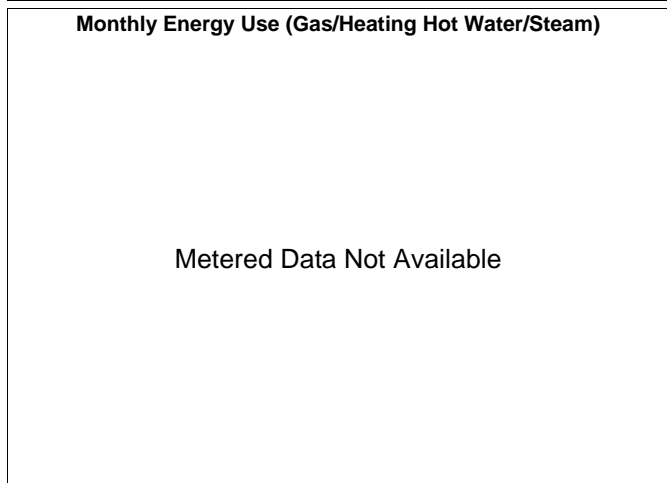
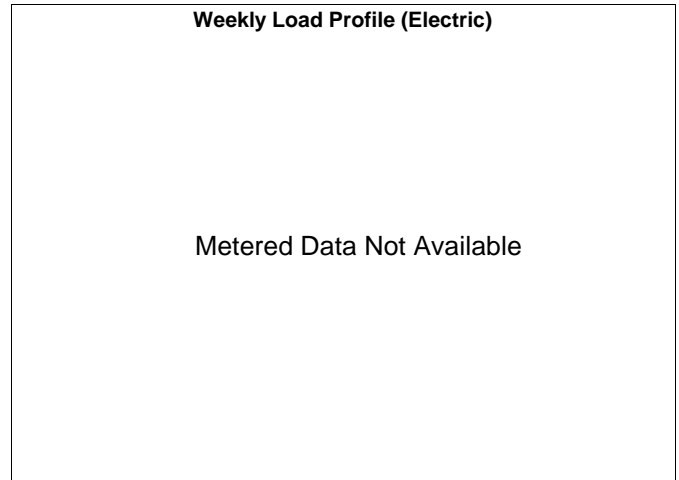
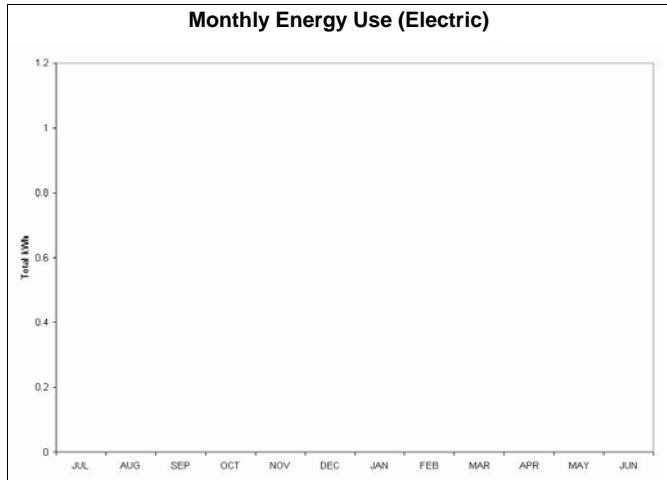
# SOTA ART STD

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9056  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 10,570  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Storage

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
173,939		600.0		158,600
Metered	N/A	Extrapolated	N/A	Extrapolated





# SOTA ART STD

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9056  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 10,570  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Storage

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1050	AHU-1- SP Reset										Committed Tier: Tier 2
		3,125	0.0	82	0	2,331	\$1,332	\$21,668	\$2,223	\$19,445	14.6
I3085	Monitoring Based Commissioning										Committed Tier: Tier 2
		12,176	1.0	0	1,110	0	\$2,329	\$8,937	\$4,032	\$4,905	2.1
I3194	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas										Committed Tier: Tier 1
		8,044	2.0	0	0	0	\$858	\$5,498	\$1,931	\$3,567	4.2
<b>Totals</b>		<b>23,345</b>	<b>3.0</b>	<b>82</b>	<b>1,110</b>	<b>2,331</b>	<b>\$4,519</b>	<b>\$36,103</b>	<b>\$8,186</b>	<b>\$27,917</b>	<b>6.2</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	300,819	7,500	28.5	0.7	362.4	N/A
Implement Partnership Projects	300,819	7,500	28.5	0.7	362.4	0.0%
Implement SEP Projects	275,609	5,365	26.1	0.5	317.7	12.3%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th





# SOTA DANCE

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9052  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 12,747  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** 01C1014 - Inactive

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
401,600		1,600.0		191,300
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)

Metered Data Not Available

### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# SOTA DANCE

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9052  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 12,747  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** 01C1014 - Inactive

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1061	AHU-1 SP reset										Committed Tier: Tier 2
		5,274	0.0	172	0	6,575	\$2,828	\$20,803	\$4,678	\$16,125	5.7
I3017	Retrofit 400W MH Low bays with 200W ceramic EHID low bays w/daylight controls										Committed Tier: Tier 1
		31,000	8.0	0	0	0	\$3,307	\$24,936	\$7,440	\$17,496	5.3
I3081	Monitoring Based Commissioning										Committed Tier: Tier 2
		9,815	1.0	0	1,338	0	\$2,289	\$10,778	\$3,694	\$7,084	3.1
<b>Totals</b>		<b>46,089</b>	<b>9.0</b>	<b>172</b>	<b>1,338</b>	<b>6,575</b>	<b>\$8,424</b>	<b>\$56,517</b>	<b>\$15,812</b>	<b>\$40,705</b>	<b>4.8</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	554,640	20,000	43.5	1.6	602.4	N/A
Implement Partnership Projects	554,640	20,000	43.5	1.6	602.4	0.0%
Implement SEP Projects	503,291	16,512	39.5	1.3	533.8	11.4%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



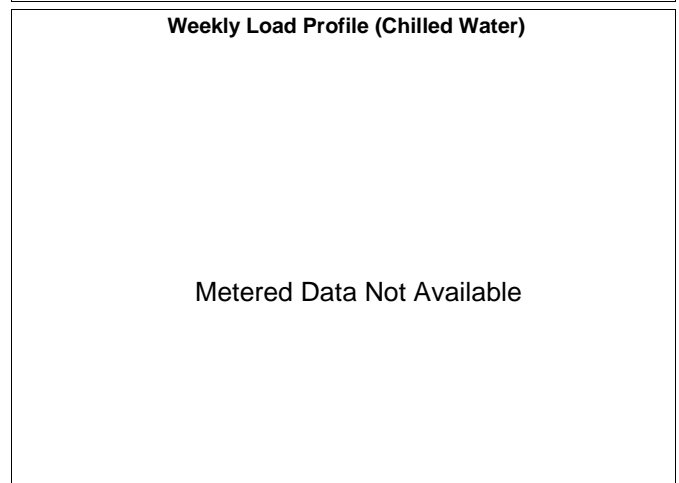
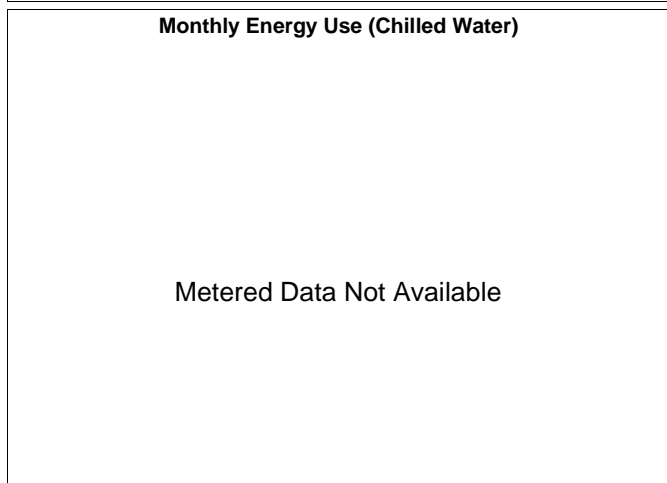
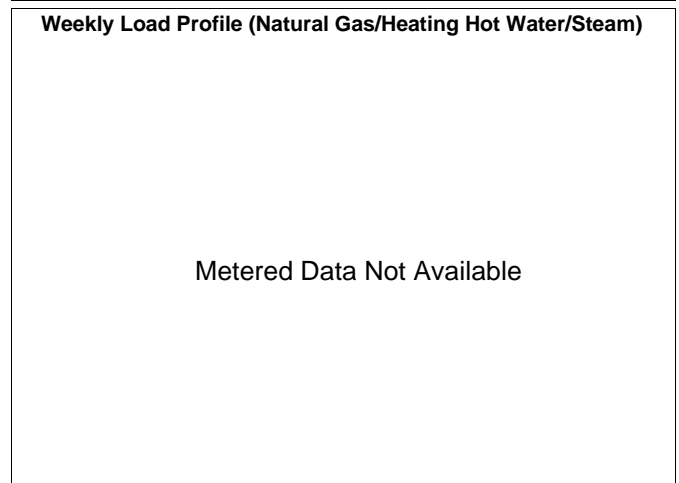
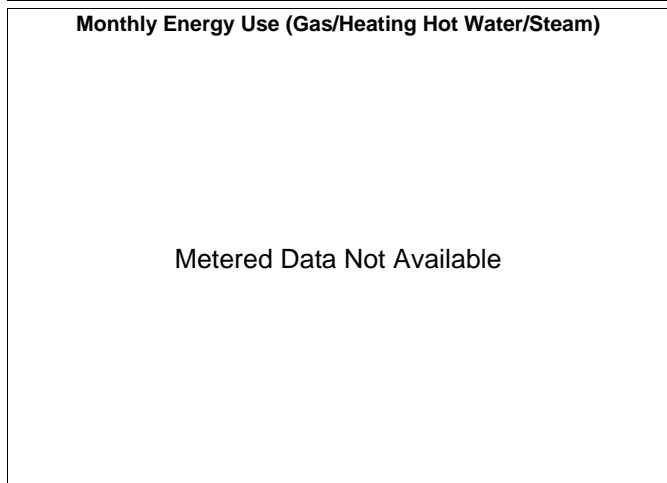
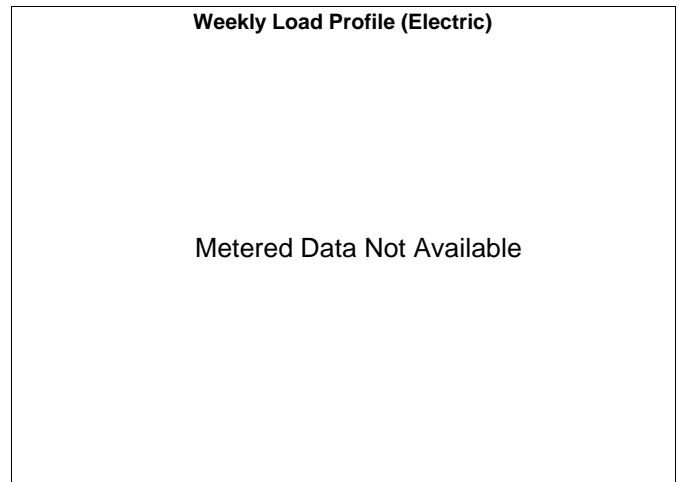
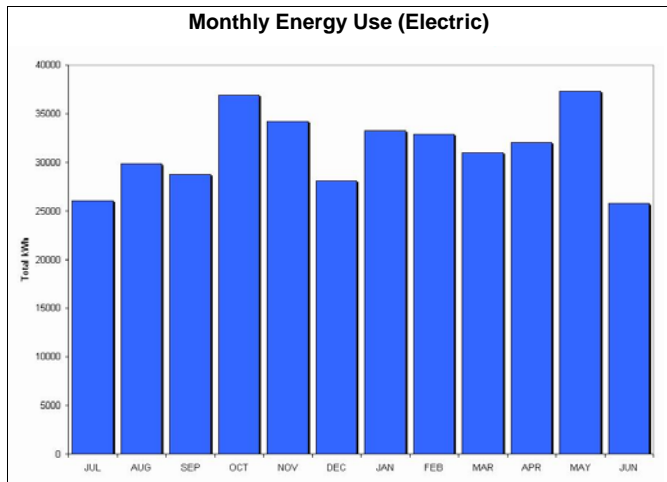
# SOTA DRAMA

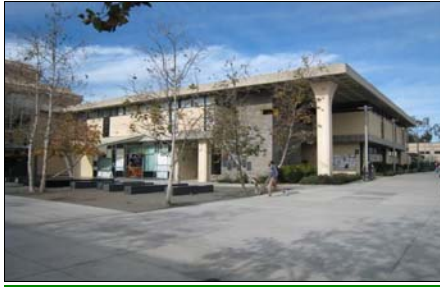
**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9054  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 8,772  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Storage

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
375,958		500.0		131,600
Metered	N/A	Extrapolated	N/A	Extrapolated





# SOTA DRAMA

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9054  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 8,772  
**Building Type:** BASIC  
**Primary Asset Type:** Office  
**Secondary Asset Type:** Storage

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1051	AHU-1- SP Reset										Committed Tier: Tier 2
		2,647	0.0	95	0	3,607	\$1,531	\$21,188	\$2,515	\$18,673	12.2
I3083	Monitoring Based Commissioning										Committed Tier: Tier 2
		26,317	3.0	0	921	0	\$3,663	\$7,416	\$7,237	\$1,483	0.4
I3192	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas										Committed Tier: Tier 1
		10,569	2.0	0	0	0	\$1,128	\$14,407	\$2,537	\$11,870	10.5
<b>Totals</b>		<b>39,533</b>	<b>5.0</b>	<b>95</b>	<b>921</b>	<b>3,607</b>	<b>\$6,321</b>	<b>\$43,011</b>	<b>\$12,289</b>	<b>\$32,026</b>	<b>5.1</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	481,238	6,250	54.9	0.7	633.0	N/A
Implement Partnership Projects	481,238	6,250	54.9	0.7	633.0	0.0%
Implement SEP Projects	438,819	4,142	50.0	0.5	559.4	11.6%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



# SOTA PROD ST

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9053  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 5,182  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Office

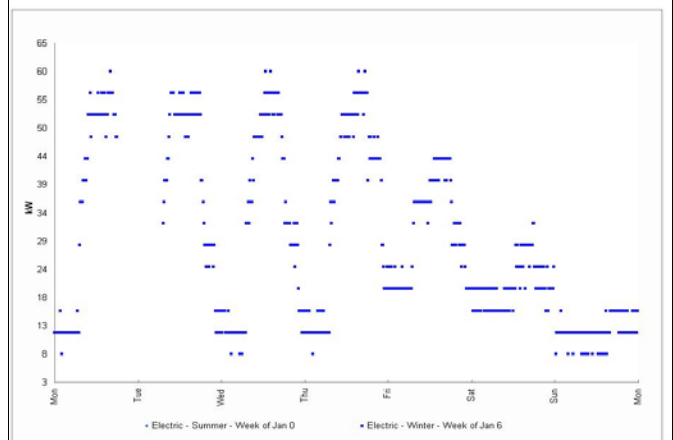
## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
		300.0		77,800
N/A	N/A	Extrapolated	N/A	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)



### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# SOTA PROD ST

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9053  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 5,182  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Office

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1052	AHU 1 - CAV to VAV & DCV											Committed Tier: Backup
		9,399	0.0	56	0	0	\$1,523	\$39,486	\$2,956	\$36,530	24.0	
I1053	AHU 1 - CAV to VAV, DCV, SP Reset											Committed Tier: Backup
		20,242	1.0	102	0	4,942	\$3,609	\$40,476	\$7,082	\$33,394	9.3	
I3082	Monitoring Based Commissioning											Committed Tier: Tier 2
		3,079	0.0	0	544	0	\$833	\$4,381	\$1,283	\$3,098	3.7	
I3191	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas											Committed Tier: Tier 1
		3,654	1.0	0	0	0	\$390	\$2,146	\$877	\$1,269	3.3	
<b>Totals</b>		<b>36,374</b>	<b>2.0</b>	<b>158</b>	<b>544</b>	<b>4,942</b>	<b>\$6,355</b>	<b>\$86,489</b>	<b>\$12,198</b>	<b>\$74,291</b>	<b>11.7</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	62,240	3,750	12.0	0.7	195.3	N/A
Implement Partnership Projects	62,240	3,750	12.0	0.7	195.3	0.0%
Implement SEP Projects	21,912	1,231	4.2	0.2	67.1	65.7%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh      100 kBtu per th



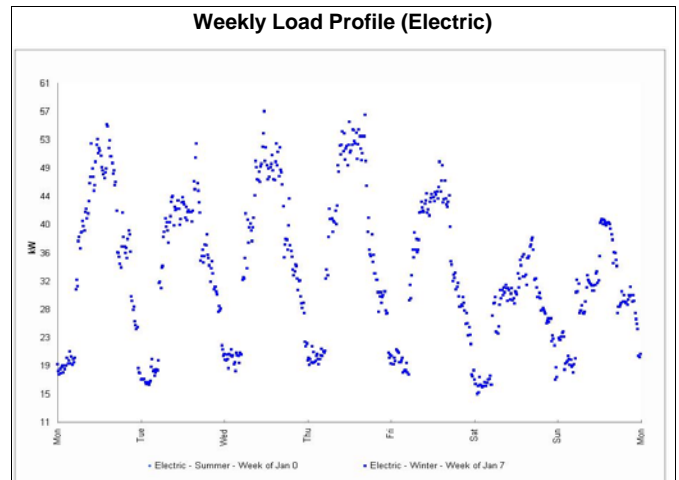
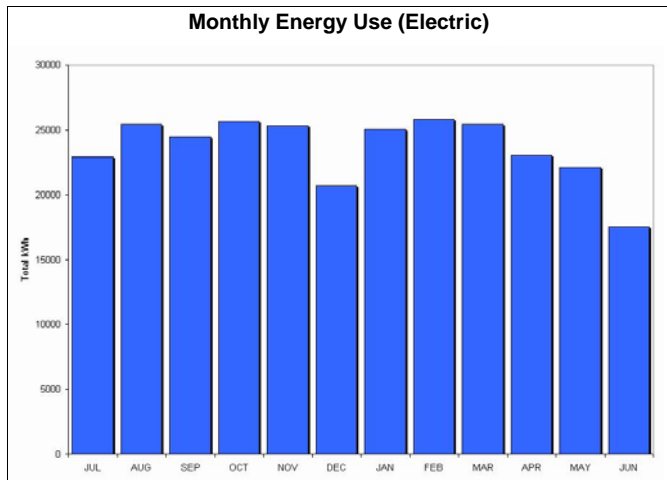
# SOTA SCULPTR

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9057  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 10,894  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Office

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
283,375		600.0		163,500
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# SOTA SCULPTR

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9057  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 10,894  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Office

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I3086	Monitoring Based Commissioning										Committed Tier: Tier 2
		19,836	2.0	0	1,144	0	\$3,178	\$9,210	\$5,905	\$3,305	1.0
I3195	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas										Committed Tier: Tier 1
		7,968	2.0	0	0	0	\$850	\$5,056	\$1,912	\$3,144	3.7
<b>Totals</b>		<b>27,804</b>	<b>4.0</b>	<b>0</b>	<b>1,144</b>	<b>0</b>	<b>\$4,028</b>	<b>\$14,265</b>	<b>\$7,817</b>	<b>\$6,449</b>	<b>1.6</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	414,175	7,500	38.0	0.7	458.1	N/A
Implement Partnership Projects	414,175	7,500	38.0	0.7	458.1	0.0%
Implement SEP Projects	386,371	6,356	35.5	0.6	421.5	8.0%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th





# SPRAGUE HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9087  
**Funding Source:** STATE  
**Year Built:** 2002

**Basic Gross Area (sf):** 90,211  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

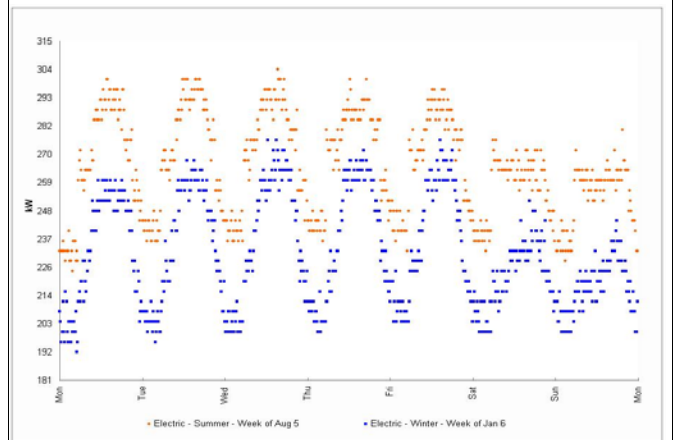
## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
1,843,200			133,900	2,707,700
Extrapolated	N/A	N/A	Extrapolated	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)



### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# SPRAGUE HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9087  
**Funding Source:** STATE  
**Year Built:** 2002

**Basic Gross Area (sf):** 90,211  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
MBCx	350,000	9,000	
Sprague Hall - Add occupancy sensors and change bulbs	188,001	0	

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1054	AHU 3 - SP Reset											Committed Tier: Tier 1
		17,240	0.0	0	1,832	4,315	\$3,979	\$2,747	\$6,798	\$549	0.1	
I1055	AHU 1,2- SP Reset & VFD exhaust											Committed Tier: Tier 1
		497,989	-4.0	-6	0	6,582	\$53,743	\$57,052	\$120,706	\$11,410	0.2	
I3023	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc											Committed Tier: Tier 1
		249,321	0.0	4,101	0	95,228	\$74,352	\$216,830	\$129,383	\$87,447	1.2	
I3024	Demand Control Ventilation											Committed Tier: Tier 2
		6,777	7.0	0	0	0	\$723	\$6,704	\$1,626	\$5,078	7.0	
I3025	EF VFDs											Committed Tier: Backup
		562,800	32.0	0	0	0	\$60,044	\$58,265	\$135,072	\$11,653	0.2	
I3330	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		4,200	0.0	0	0	0	\$448	\$5,510	\$1,008	\$4,502	10.0	
<b>Totals</b>		<b>1,338,327</b>	<b>35.0</b>	<b>4,095</b>	<b>1,832</b>	<b>106,125</b>	<b>\$193,289</b>	<b>\$347,109</b>	<b>\$394,593</b>	<b>\$120,639</b>	<b>0.6</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	4,009,360	133,900	44.4	1.5	603.5	N/A
Implement Partnership Projects	3,471,359	124,900	38.5	1.4	532.5	11.8%
Implement SEP Projects	2,048,132	71,881	22.7	0.8	312.1	41.4%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th



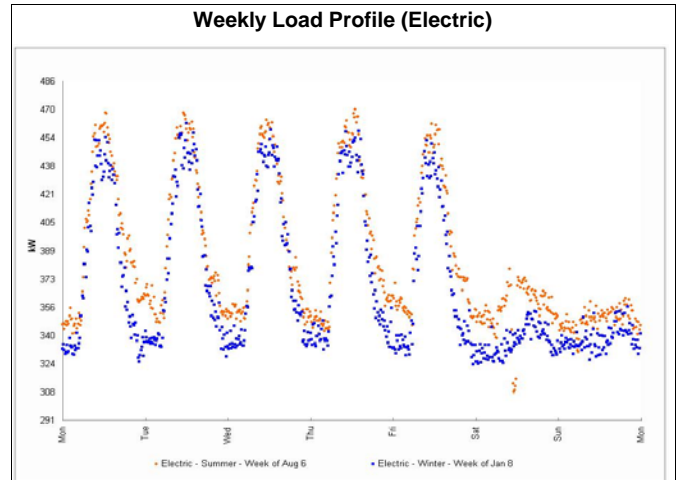
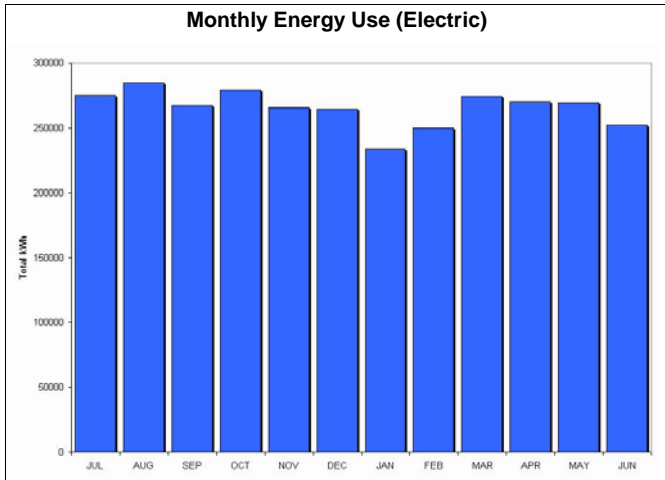
# STEINHAUS H

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9075  
**Funding Source:** STATE  
**Year Built:** 1965

**Basic Gross Area (sf):** 107,521  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
3,186,424		12,800.0		3,227,200
Metered	N/A	Extrapolated	N/A	Extrapolated



**Monthly Energy Use (Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)**

Metered Data Not Available

**Monthly Energy Use (Chilled Water)**

Metered Data Not Available

**Weekly Load Profile (Chilled Water)**

Metered Data Not Available



# STEINHAUS H

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9075  
**Funding Source:** STATE  
**Year Built:** 1965

**Basic Gross Area (sf):** 107,521  
**Building Type:** COMPLEX  
**Primary Asset Type:** Office Support  
**Secondary Asset Type:** Laboratory

## 2006-2008 Partnership Projects

Project Description	Planned Electric Savings (kWh/yr)	Planned Gas Savings (th/yr)	Cost (\$)
Replace existing stairwell lighting with bi-level technology	8,284		
Reduce air changes in Teaching Labs by installing dampers, controls, and occupancy sensors	463,966	26,347	

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1058	AHU 1,2 - Reduce ACH from 7 to 6											Committed Tier: Backup
		611,022	70.0	3,389	0	175,839	\$114,528	\$942,678	\$222,769	\$719,909	6.3	
I3002	Elevator Retrofit - MG to VVVF											Committed Tier: Backup
		20,500	10.0	0	0	0	\$2,187	\$433,334	\$4,920	\$428,414	195.9	
I3018	Zone DDC Upgrade											Committed Tier: Tier 1
		55,911	9.0	0	2,581	0	\$8,361	\$382,770	\$16,000	\$366,770	43.9	
I3089	Monitoring Based Commissioning											Committed Tier: Tier 1
		200,745	23.0	0	21,827	0	\$41,679	\$181,810	\$70,006	\$111,804	2.7	
I3197	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas											Committed Tier: Tier 1
		80,032	21.0	0	0	0	\$8,538	\$69,568	\$19,208	\$50,360	5.9	
I3364	Aircuity											Committed Tier: Backup
		400,000		0	20,000	0	\$61,241	\$425,000	\$116,000	\$309,000	5.0	
<b>Totals</b>		<b>1,368,210</b>	<b>133.0</b>	<b>3,389</b>	<b>44,408</b>	<b>175,839</b>	<b>\$236,535</b>	<b>\$2,435,160</b>	<b>\$448,903</b>	<b>\$1,986,257</b>	<b>8.4</b>	

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	5,768,184	160,000	53.6	1.5	698.1	N/A
Implement Partnership Projects	5,295,934	133,653	49.3	1.2	628.6	10.0%
Implement SEP Projects	3,787,053	46,883	35.2	0.4	404.2	35.7%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10,239 kBtu per kWh      100 kBtu per th



# UCI STU CNTR

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9005  
**Funding Source:** STATE  
**Year Built:** 1990

**Basic Gross Area (sf):** 164,042  
**Building Type:** BASIC  
**Primary Asset Type:** 01C1016 - Alteratio  
**Secondary Asset Type:** Retail

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
2,583,500		9,700.0		2,461,800
Extrapolated	N/A	Extrapolated	N/A	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)

Metered Data Not Available

### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# UCI STU CNTR

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9005  
**Funding Source:** STATE  
**Year Built:** 1990

**Basic Gross Area (sf):** 164,042  
**Building Type:** BASIC  
**Primary Asset Type:** 01C1016 - Alteratio  
**Secondary Asset Type:** Retail

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)	
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)		
I1059	AHU 1 SP reset											Committed Tier: Tier 2
		34,684	0.0	254	0	7,302	\$6,801	\$2,747	\$12,901	\$549	0.1	
I1060	AHU 2,3 SP reset											Committed Tier: Tier 2
		58,264	0.0	465	0	16,613	\$12,222	\$5,494	\$22,986	\$1,099	0.1	
I3015	Demand Control Ventilation											Committed Tier: Tier 2
		12,324	13.0	0	0	0	\$1,315	\$6,704	\$2,958	\$3,746	2.8	
I3077	Monitoring Based Commissioning											Committed Tier: Tier 2
		126,312	14.0	0	17,224	0	\$29,465	\$138,690	\$47,539	\$91,151	3.1	
I3187	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate											Committed Tier: Tier 2
		245,322	64.0	0	0	0	\$26,173	\$91,968	\$58,877	\$33,091	1.3	
I3299	Replace 5 Rooftop DX units											Committed Tier: Tier 2
		25,000	0.0	0	0	0	\$2,667	\$34,650	\$6,000	\$28,650	10.7	
I3300	DM - 9 Complete Chilled Water AHU replacements											Committed Tier: Backup
		0	0.0	0	0	0	\$0	\$0	\$0	\$0	#Error	
I3331	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors											Committed Tier: Backup
		4,200	0.0	0	0	0	\$448	\$5,510	\$1,008	\$4,502	10.0	
<b>Totals</b>		<b>506,106</b>	<b>91.0</b>	<b>719</b>	<b>17,224</b>	<b>23,915</b>	<b>\$79,091</b>	<b>\$285,763</b>	<b>\$152,269</b>	<b>\$162,788</b>	<b>2.1</b>	

Building Benchmarking	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	4,552,940	121,250	27.8	0.7	358.1	N/A
Implement Partnership Projects	4,552,940	121,250	27.8	0.7	358.1	0.0%
Implement SEP Projects	4,027,702	95,039	24.6	0.6	309.3	13.6%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBTU per kWh    100 kBTU per th



# UNIV ART GAL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9055  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 8,920  
**Building Type:** BASIC  
**Primary Asset Type:** Museums  
**Secondary Asset Type:** Food Service

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
		500.0		133,900
N/A	N/A	Extrapolated	N/A	Extrapolated

### Monthly Energy Use (Electric)

Metered Data Not Available

### Weekly Load Profile (Electric)

Metered Data Not Available

### Monthly Energy Use (Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Weekly Load Profile (Natural Gas/Heating Hot Water/Steam)

Metered Data Not Available

### Monthly Energy Use (Chilled Water)

Metered Data Not Available

### Weekly Load Profile (Chilled Water)

Metered Data Not Available



# UNIV ART GAL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9055  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 8,920  
**Building Type:** BASIC  
**Primary Asset Type:** Museums  
**Secondary Asset Type:** Food Service

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1063	AHU 1 - CAV to VAV, SP Reset and DCV										Committed Tier: Tier 2
		30,493	0.0	-29	0	3,656	\$3,356	\$37,254	\$7,658	\$29,596	8.8
I3084	Monitoring Based Commissioning										Committed Tier: Tier 2
		6,868	1.0	0	937	0	\$1,603	\$7,541	\$2,585	\$4,956	3.1
I3193	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate										Committed Tier: Tier 1
		10,488	3.0	0	0	0	\$1,119	\$9,052	\$2,517	\$6,535	5.8
<b>Totals</b>		<b>47,849</b>	<b>4.0</b>	<b>-29</b>	<b>937</b>	<b>3,656</b>	<b>\$6,077</b>	<b>\$53,848</b>	<b>\$12,760</b>	<b>\$41,087</b>	<b>6.8</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	107,120	6,250	12.0	0.7	193.0	N/A
Implement Partnership Projects	107,120	6,250	12.0	0.7	193.0	0.0%
Implement SEP Projects	56,346	5,676	6.3	0.6	128.3	33.5%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th





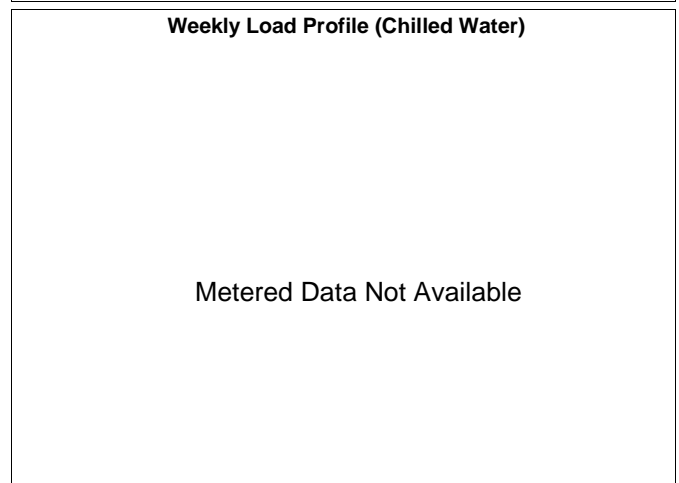
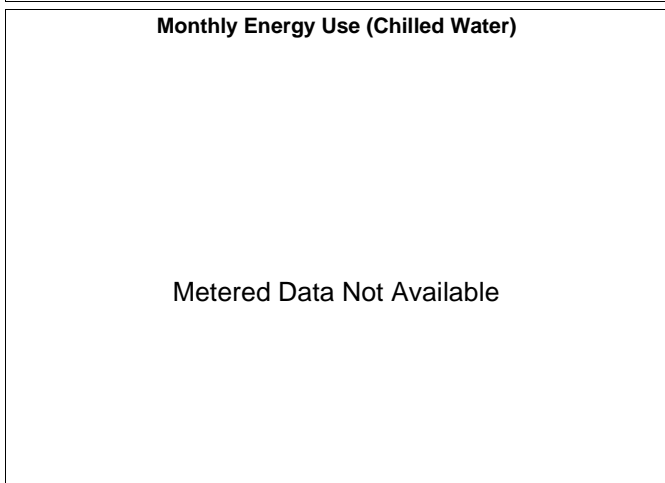
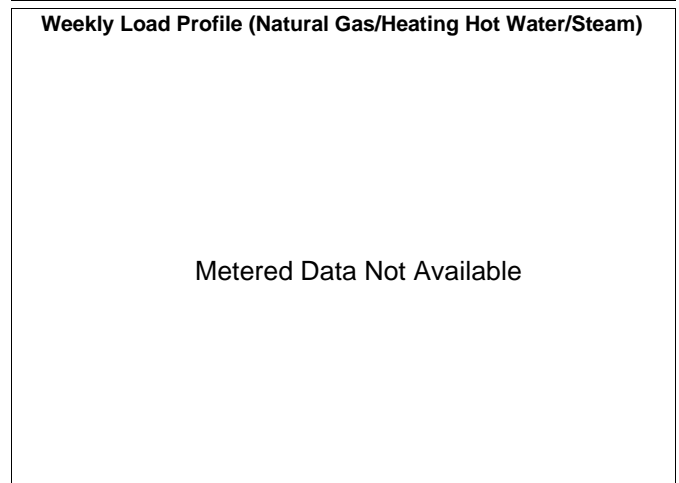
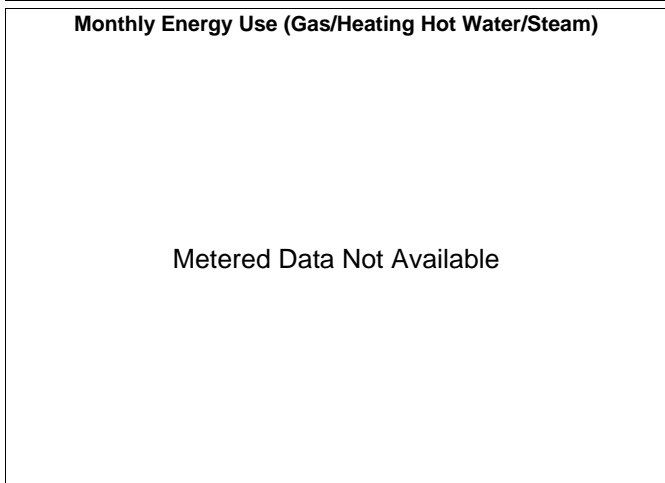
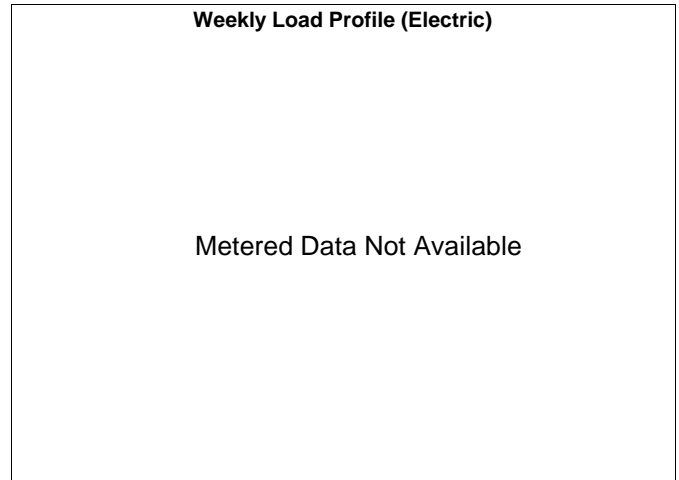
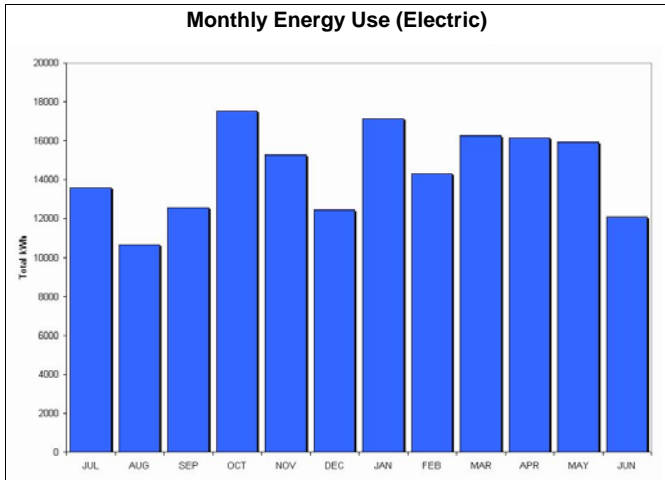
# W SMITH HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9050  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 9,458  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Auditorium

## Historical Energy Use (06/07)

Electricity (kWh/yr)	Steam (MMBTU/yr)	Hot Water (MMBTU/yr)	Natural Gas (th/yr)	Chilled Water (ton-hr/yr)
173,939		600.0		141,900
Metered	N/A	Extrapolated	N/A	Extrapolated





# W SMITH HALL

**Campus:** IRVINE  
**Location:** IRVINE  
**Building Key:** 09C9050  
**Funding Source:** STATE  
**Year Built:** 1970

**Basic Gross Area (sf):** 9,458  
**Building Type:** BASIC  
**Primary Asset Type:** Laboratory  
**Secondary Asset Type:** Auditorium

## Strategic Energy Plan Projects

SEP ID Number	Project Name	Building Savings					Purchased Utility Cost Savings (\$/yr)	Cost			Simple Payback (yr)
		Electric (kWh/yr)	Peak Demand (kW)	HW/Steam (MMBTU/yr)	Gas (th/yr)	Chilled Water (ton-hr/yr)		Project Cost (\$)	Gross Potential Incentive (\$)	Net Cost (\$)	
I1064	AHU 1 - CAV to VAV										Committed Tier: Tier 2
		67,674	0.0	274	0	72,992	\$17,185	\$155,304	\$33,681	\$121,623	7.1
I3079	Monitoring Based Commissioning										Committed Tier: Tier 2
		12,176	1.0	0	993	0	\$2,221	\$7,996	\$3,915	\$4,081	1.8
I3189	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate										Committed Tier: Tier 1
		15,263	4.0	0	0	0	\$1,628	\$14,130	\$3,663	\$10,467	6.4
<b>Totals</b>		<b>95,113</b>	<b>5.0</b>	<b>274</b>	<b>993</b>	<b>72,992</b>	<b>\$21,035</b>	<b>\$177,430</b>	<b>\$41,259</b>	<b>\$136,171</b>	<b>6.5</b>

## Building Benchmarking

	Equivalent Electricity (kWh/yr)	Equivalent Natural Gas (th/yr)	Equivalent Electric Energy Use Index (kWh/sf-yr)	Equivalent Natural Gas Energy Use Index (th/sf-yr)	Source Energy Use Index (kBtu/sf-yr)	Percent Savings (%)
Baseline	287,459	7,500	30.4	0.8	390.5	N/A
Implement Partnership Projects	287,459	7,500	30.4	0.8	390.5	0.0%
Implement SEP Projects	133,952	3,082	14.2	0.3	177.6	54.5%

### Assumed Incentives:

Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Cap 80% project cost

### Central Plant Efficiencies:

th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

### Source Energy Use Conversion Factors:

10.239 kBtu per kWh    100 kBtu per th

## 10. PROJECT SUMMARIES

The following pages provide a concise project summary for each SEP project. The section, organized alphabetically by building name, includes the following summary information, and additional information for each project can be found in the Appendices.

- Basic information including the project SEP ID Number, name, and project location.
- Project prioritization, as committed to by the campus upon review of the preliminary project list. Tier 1 projects formed a committed energy savings level to the Investor Owned Utilities. Tier 2 projects reflect the campus' planned projects to achieve approximately 150% of the committed energy savings. Backup projects serve as potential projects the campus may consider or substitute for other projects at any time. It should be noted that energy savings for select projects may have been refined since the preliminary project list, as discussed in Section 2 of this report.
- The Calculation File Name provides a reference for the file name, and path if applicable, of the energy calculation which is included as a soft copy in the appendix of this report.
- The Project Description Reference provides the titles of the projects (Air Handler Project 1, Lighting Project 3, etc) as defined in the Energy Efficiency Project Description section earlier in this report.
- Building Energy Savings. The project energy savings are summarized at the building level, which include chilled water and heating hot water or steam, if supplied from a central plant, as well as the direct gas or electric savings. The total cost savings are estimated based on the purchased utility savings (including central plant and cogeneration impacts) and campus recharge rates.
- Incentive Calculation Basis. The projected utility incentive is provided using the equivalent electric and gas savings, which convert chilled water and heating hot water or steam savings to electric or gas savings using the central plant efficiencies. The incentive shown in this section is the gross potential incentive, without consideration of a project cost cap.
- Project Cost Summary. Details are displayed for the cost buildup, including appropriate multipliers and soft costs. If the source of a cost is the construction cost, contingency, engineering, construction management and project management is added. If the bare costs are known, the applicable city multipliers, tax, and O&P included obtaining the estimated construction cost, to which the soft costs are added.
- Project Economics Summary. The project costs, savings and resulting simple payback are calculated. The utility incentive stated here takes into consideration the project cost cap, and is highlighted if it is capped by the project cost. The monetary savings is based on the purchased utility savings and campus recharge rate.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1001**

**Project: AHU-1 (S-1) Spot Cooling and SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ADMIN BLDG

**Building Key:** 09C9003

**Basic Gross Area (sf):** 101,022

**Calculation File:** \1. Administration\1. UC Irvine MZ-DD Administration AC-1 Spot Cooling.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers & Air Handler Project 5. Reduce Air Handler Operating Hours.

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	113,874
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	46,056
<b>HW/Steam (MMBTu/yr):</b>	2,280

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 150,719

**Equivalent Gas Savings (th/yr):** 28,500

**Anticipated Gross Incentive:** \$64,673

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Package Units for Spot Cooling	3	\$20,000.00	\$61,560	\$10,000.00	\$33,180
SAV with InCITe-Licence (est per 1000 cfm)	42	\$0.00	\$0	\$56.00	\$2,601
Raw Costs:			\$66,177		\$43,689
City: Anaheim		Sales Tax: 8.25%	\$5,460		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$8,596		\$5,243
City Index Labor Multiplier: 110.6%		Subtotals:	\$80,233		\$48,932
		Contingency: 10.00%	\$8,023		\$4,893
		Totals:	\$88,256		\$53,825
		Engineering: 15.00%	\$21,312		
		Construction Phase: 5.00%	\$7,104		
		Project Management: 6.00%	\$8,525		
		Total Project Cost:	\$179,023		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$179,023	<b>Total Purchased Electricity Savings (kWh/yr):</b>	128,757
<b>Rebate/Incentive*:</b>	\$64,673	<b>Total Purchased Gas Savings (th/yr):</b>	25,611
<b>Net Project Cost:</b>	\$114,350	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$37,997
<b>Net Simple Payback Period (yrs):</b>	3.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1002**

**Project: AHU-2 (S-2) SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ADMIN BLDG

**Building Key:** 09C9003

**Basic Gross Area (sf):** 101,022

**Calculation File:** \1. Administration\2. UC Irvine MZ-DD Administration AC-2 SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,234
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	2,295
<b>HW/Steam (MMBTu/yr):</b>	39

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 13,070

**Equivalent Gas Savings (th/yr):** 488

**Anticipated Gross Incentive:** \$3,624

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITe-Licence (est per 1000 cfm)	50	\$0.00	\$0	\$56.00	\$3,097
Raw Costs:			\$4,617		\$11,005
City: Anaheim	Sales Tax: 8.25%		\$381		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$600		\$1,321
Subtotals:			\$5,598		\$12,325
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$560		\$1,233
Totals:			\$6,157		\$13,558
Engineering: 15.00%			\$2,957		
Construction Phase: 5.00%			\$986		
Project Management: 6.00%			\$1,183		
Total Project Cost:			\$24,841		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$24,841	<b>Total Purchased Electricity Savings (kWh/yr):</b>	6,846
<b>Rebate/Incentive*:</b>	\$3,624	<b>Total Purchased Gas Savings (th/yr):</b>	1,086
<b>Net Project Cost:</b>	\$21,217	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,794
<b>Net Simple Payback Period (yrs):</b>	11.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1003**

**Project: AHU-3 (AC-3) SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ADMIN BLDG

**Building Key:** 09C9003

**Basic Gross Area (sf):** 101,022

**Calculation File:** \1. Administration\3. UC Irvine MZ-DD Administration AC-3 SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	17,159
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	4,123
<b>HW/Steam (MMBTu/yr):</b>	78

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 20,457

**Equivalent Gas Savings (th/yr):** 975

**Anticipated Gross Incentive:** \$5,885

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITe-Licence (est per 1000 cfm)	72	\$0.00	\$0	\$56.00	\$4,459
Raw Costs:			\$4,617		\$12,367
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,484
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$13,851
		Contingency: 10.00%	\$560		\$1,385
		Totals:	\$6,157		\$15,237
		Engineering: 15.00%	\$3,209		
		Construction Phase: 5.00%	\$1,070		
		Project Management: 6.00%	\$1,284		
		Total Project Cost:	\$26,956		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$26,956	<b>Total Purchased Electricity Savings (kWh/yr):</b>	11,037
<b>Rebate/Incentive*:</b>	\$5,885	<b>Total Purchased Gas Savings (th/yr):</b>	1,850
<b>Net Project Cost:</b>	\$21,071	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,974
<b>Net Simple Payback Period (yrs):</b>	7.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1004**

**Project: AHU 1 SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CROUL HALL

**Building Key:** 09C9115

**Basic Gross Area (sf):** 66,170

**Calculation File:** \10. Croul Hall\1. UC Irvine CVRH\_VAV Croul Hall AHU-1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers & UCI Laboratory Air Handler Project 4. Variable Drives on Exhaust Fans .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	10,591
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	7,490
<b>HW/Steam (MMBTu/yr):</b>	139

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 16,583

**Equivalent Gas Savings (th/yr):** 1,738

**Anticipated Gross Incentive:** \$5,717

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$0		\$1,770
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$212
Subtotals:			\$0		\$1,982
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$0		\$198
Totals:			\$0		\$2,180
		Engineering: 15.00%	\$327		
		Construction Phase: 5.00%	\$109		
		Project Management: 6.00%	\$131		
Total Project Cost:			\$2,747		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,747	<b>Total Purchased Electricity Savings (kWh/yr):</b>	9,674
<b>Rebate/Incentive*:</b>	\$2,198	<b>Total Purchased Gas Savings (th/yr):</b>	2,323
<b>Net Project Cost:</b>	\$549	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,182
<b>Net Simple Payback Period (yrs):</b>	0.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1005**

**Project: AHU 1 and 2 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG GATEWAY

**Building Key:** 09C9140

**Basic Gross Area (sf):** 132,090

**Calculation File:** \11. Engineering Gateway\1. UC Irvine CVRH\_VAV Engg Gateway AHU-1,2 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,496
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	8,989
<b>HW/Steam (MMBTu/yr):</b>	177

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 18,687

**Equivalent Gas Savings (th/yr):** 2,213

**Anticipated Gross Incentive:** \$6,697

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$0		\$1,770
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$212
Subtotals:			\$0		\$1,982
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$0		\$198
Totals:			\$0		\$2,180
		Engineering: 15.00%	\$327		
		Construction Phase: 5.00%	\$109		
		Project Management: 6.00%	\$131		
Total Project Cost:			\$2,747		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,747	<b>Total Purchased Electricity Savings (kWh/yr):</b>	11,324
<b>Rebate/Incentive*:</b>	\$2,198	<b>Total Purchased Gas Savings (th/yr):</b>	2,791
<b>Net Project Cost:</b>	\$549	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,784
<b>Net Simple Payback Period (yrs):</b>	0.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1006**

**Project: AHU 3 thru 8 - Reduce ACH from 7 to 6 for 20 Hoods**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	ENG GATEWAY	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09C9140	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>	132,090	<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	\\11. Engineering Gateway\2A. UC Irvine HVAC Lab Engg Gateway AHU 3 to 8 - CAV to VAV - rev April 8		
<b>Project Description Reference(s):</b>	Laboratory Air Handler Project 1. Convert Laboratory Air Handlers and Fume Hoods to Variable Air Volume.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	440,149
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	94,077
<b>HW/Steam (MMBTu/yr):</b>	2,471

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	515,411
<b>Equivalent Gas Savings (th/yr):</b>	30,888
<b>Anticipated Gross Incentive:</b>	\$154,586

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Fume Hood - CAV to VAV	20	\$11,250.00	\$230,850	\$11,250.00	\$248,850
Autosash closure	20	\$2,700.00	\$55,404	\$1,800.00	\$39,816
AHU DDC Upgrade: CAV - RH to VAV - RH (102 points)	6	\$8,776.29	\$54,027	\$5,368.42	\$35,625
75 hp VFD	2	\$11,500.00	\$23,598	\$1,600.00	\$3,539
60 hp VFD	1	\$8,375.00	\$8,593	\$1,600.00	\$1,770
15 hp VFD	1	\$2,275.00	\$2,334	\$820.00	\$907
40 hp VFD	2	\$7,025.00	\$14,415	\$1,100.00	\$2,433
Raw Costs:			\$389,221		\$332,940
City: Anaheim		Sales Tax: 8.25%	\$32,111		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$50,560		\$39,953
City Index Labor Multiplier: 110.6%		Subtotals:	\$471,892		\$372,893
		Contingency: 10.00%	\$47,189		\$37,289
		Totals:	\$519,081		\$410,182
		Engineering: 15.00%	\$139,389		
		Construction Phase: 5.00%	\$46,463		
		Project Management: 6.00%	\$55,756		
		Total Project Cost:	\$1,170,871		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,170,871	<b>Total Purchased Electricity Savings (kWh/yr):</b>	297,911
<b>Rebate/Incentive*:</b>	\$154,586	<b>Total Purchased Gas Savings (th/yr):</b>	48,949
<b>Net Project Cost:</b>	\$1,016,285	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$79,463
<b>Net Simple Payback Period (yrs):</b>	12.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1007**

**Project: AHU 10 SP Reset & DCV**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG GATEWAY

**Building Key:** 09C9140

**Basic Gross Area (sf):** 132,090

**Calculation File:** \11. Engineering Gateway\3. UC Irvine SZ Engg Gateway AHU 10 - SP Reset and DCV.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	1,330
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	-60
<b>HW/Steam (MMBTu/yr):</b>	-3

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 1,282

**Equivalent Gas Savings (th/yr):** -38

**Anticipated Gross Incentive:** \$270

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	8	\$0.00	\$0	\$100.00	\$885
CO2 sensor	1	\$400.00	\$410	\$100.00	\$111
Raw Costs:			\$410		\$995
City: Anaheim	Sales Tax: 8.25%		\$34		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$53		\$119
Subtotals:			\$498		\$1,115
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$50		\$111
Totals:			\$547		\$1,226
Engineering: 15.00%			\$266		
Construction Phase: 5.00%			\$89		
Project Management: 6.00%			\$106		
Total Project Cost:			\$2,235		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,235	<b>Total Purchased Electricity Savings (kWh/yr):</b>	571
<b>Rebate/Incentive*:</b>	\$270	<b>Total Purchased Gas Savings (th/yr):</b>	40
<b>Net Project Cost:</b>	\$1,965	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$108
<b>Net Simple Payback Period (yrs):</b>	18.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1008**

**Project: AHU-1,2 - CAV to VAV, SP Reset & Add Economizer**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG TOWER

**Building Key:** 09C9125

**Basic Gross Area (sf):** 113,941

**Calculation File:** \12. Engineering Tower\1. UC Irvine MZ-DD Engg Tower AHU-1,2 - CAV to VAV.xls

**Project Description Reference(s):** Air Handler Project 1. Convert Constant Volume Air Handlers and Terminal Boxes to Variable Air Volume, Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers & UCI Air Handler Project 9. Add Air Side Economizer.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	109,263
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	306,276
<b>HW/Steam (MMBTu/yr):</b>	2,729

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 354,284

**Equivalent Gas Savings (th/yr):** 34,113

**Anticipated Gross Incentive:** \$119,141

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Zone Level Controller & DDC - multi zone	130	\$4,216.87	\$562,446	\$2,568.81	\$369,344
Add Economizer & Controls	2	\$15,000.00	\$30,780	\$15,000.00	\$33,180
40 hp VFD	2	\$7,025.00	\$14,415	\$1,100.00	\$2,433
AHU DDC Upgrade: MZ CAV to VAV (46 points)	2	\$12,469.88	\$25,588	\$7,596.33	\$16,803
Raw Costs:			\$633,230		\$421,760
City: Anaheim		Sales Tax: 8.25%	\$52,241		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$82,257		\$50,611
City Index Labor Multiplier: 110.6%		Subtotals:	\$767,728		\$472,371
		Contingency: 10.00%	\$76,773		\$47,237
		Totals:	\$844,500		\$519,608
		Engineering: 15.00%	\$204,616		
		Construction Phase: 5.00%	\$68,205		
		Project Management: 6.00%	\$81,847		
		Total Project Cost:	\$1,718,777		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,718,777	<b>Total Purchased Electricity Savings (kWh/yr):</b>	140,595
<b>Rebate/Incentive*:</b>	\$119,141	<b>Total Purchased Gas Savings (th/yr):</b>	60,456
<b>Net Project Cost:</b>	\$1,599,636	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$68,133
<b>Net Simple Payback Period (yrs):</b>	23.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1009**

**Project: AHU 10 and 20 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG TOWER

**Building Key:** 09C9125

**Basic Gross Area (sf):** 113,941

**Calculation File:** \12. Engineering Tower\2. UC Irvine CVRH\_VAV Engg Tower AHU-10,20 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	42,080
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	576
<b>HW/Steam (MMBTu/yr):</b>	56

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 42,541

**Equivalent Gas Savings (th/yr):** 700

**Anticipated Gross Incentive:** \$10,910

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	2	\$4,500.00	\$9,234	\$7,150.00	\$15,816
SAV with InCITe-Licence (est per 1000 cfm)	80	\$0.00	\$0	\$56.00	\$4,955
Raw Costs:			\$9,234		\$20,771
City: Anaheim	Sales Tax: 8.25%		\$762		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$1,199		\$2,492
City Index Labor Multiplier: 110.6%	Subtotals:		\$11,195		\$23,263
Contingency: 10.00%			\$1,120		\$2,326
Totals:			\$12,315		\$25,589
Engineering: 15.00%			\$5,686		
Construction Phase: 5.00%			\$1,895		
Project Management: 6.00%			\$2,274		
Total Project Cost:			\$47,759		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$47,759	<b>Total Purchased Electricity Savings (kWh/yr):</b>	22,804
<b>Rebate/Incentive*:</b>	\$10,910	<b>Total Purchased Gas Savings (th/yr):</b>	2,509
<b>Net Project Cost:</b>	\$36,849	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$5,068
<b>Net Simple Payback Period (yrs):</b>	7.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1010**

**Project: AHU 2 - Reduce ACH from 15 to 8 for 5 Hoods in Vivarium**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	GILLESPIE BLD	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09C9082	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	82,920	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	\\13. Gillespie (GNRF)\1. UC Irvine HVAC Lab Gillespie AHU 2 - Vivarium rebalance.xls		
<b>Project Description Reference(s):</b>	Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	302,452
<b>Peak Demand (kW):</b>	34.0
<b>Gas (th/yr):</b>	24,030
<b>Chilled Water (ton-hr/yr):</b>	99,730
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	382,236
<b>Equivalent Gas Savings (th/yr):</b>	24,030
<b>Anticipated Gross Incentive:</b>	\$115,767

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Rebalance (\$1.75 per square foot)	82,920	\$0.00	\$0	\$1.75	\$160,492
			Raw Costs:		\$160,492
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$19,259
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$179,751
		Contingency: 10.00%	\$0		\$17,975
		Totals:	\$0		\$197,726
		Engineering: 15.00%	\$29,659		
		Construction Phase: 5.00%	\$9,886		
		Project Management: 6.00%	\$11,864		
		Total Project Cost:	\$249,134		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$249,134	<b>Total Purchased Electricity Savings (kWh/yr):</b>	226,921
<b>Rebate/Incentive*:</b>	\$115,767	<b>Total Purchased Gas Savings (th/yr):</b>	42,393
<b>Net Project Cost:</b>	\$133,367	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$64,716
<b>Net Simple Payback Period (yrs):</b>	2.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1011**

**Project: AHU 1 - VAV Aircurity (4 ACH Occ & 2 Unocc)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** GILLESPIE BLD

**Building Key:** 09C9082

**Basic Gross Area (sf):** 82,920

**Calculation File:** \13. Gillespie (GNRF)\2. UC Irvine HVAC Lab Gillespie AHU 1 - VAV using Aircurity - March 20.xls

**Project Description Reference(s):** Laboratory Air Handler Project 3. Reduce Minimum Air Change Requirements through Continuous Monitoring.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	657,113
<b>Peak Demand (kW):</b>	61.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	195,662
<b>HW/Steam (MMBTu/yr):</b>	4,265

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 813,643

**Equivalent Gas Savings (th/yr):** 53,313

**Anticipated Gross Incentive:** \$248,587

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
AIRCURITY COST	1	\$65,000.00	\$66,690	\$40,000.00	\$44,240
Raw Costs:			\$66,690		\$44,240
City: Anaheim		Sales Tax: 8.25%	\$5,502		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$8,663		\$5,309
City Index Labor Multiplier: 110.6%		Subtotals:	\$80,855		\$49,549
		Contingency: 10.00%	\$8,085		\$4,955
		Totals:	\$88,940		\$54,504
		Engineering: 15.00%	\$21,517		
		Construction Phase: 5.00%	\$7,172		
		Project Management: 6.00%	\$8,607		
		Total Project Cost:	\$180,740		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$180,740	<b>Total Purchased Electricity Savings (kWh/yr):</b>	462,904
<b>Rebate/Incentive*:</b>	\$144,592	<b>Total Purchased Gas Savings (th/yr):</b>	83,524
<b>Net Project Cost:</b>	\$36,148	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$129,593
<b>Net Simple Payback Period (yrs):</b>	0.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I1012

**Project:** AHU 1, 2 - Reduce ACH from 15 to 8 for 5 Hoods in Vivarium (Overall AHU goes from 8.36 to 6.52)

**Campus:** IRVINE

**Location:** IRVINE

**Building:** HEWITT HALL

**Building Key:** 09C9088

**Basic Gross Area (sf):** 78,871

**Calculation File:** \14. Hewitt Hall\1. UC Irvine HVAC Lab Hewitt Hall AHU 1, 2 - Vivarium rebalance.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	446,068
<b>Peak Demand (kW):</b>	51.0
<b>Gas (th/yr):</b>	25,331
<b>Chilled Water (ton-hr/yr):</b>	105,131
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	530,173
<b>Equivalent Gas Savings (th/yr):</b>	25,331
<b>Anticipated Gross Incentive:</b>	\$152,572
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Rebalance (\$1.75 per square foot)	78,871	\$0.00	\$0	\$1.75	\$152,655
Raw Costs:			\$0		\$152,655
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$18,319
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$170,973
		Contingency: 10.00%	\$0		\$17,097
		Totals:	\$0		\$188,071
		Engineering: 15.00%	\$28,211		
		Construction Phase: 5.00%	\$9,404		
		Project Management: 6.00%	\$11,284		
		Total Project Cost:	\$236,969		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$236,969	<b>Total Purchased Electricity Savings (kWh/yr):</b>	302,827
<b>Rebate/Incentive*:</b>	\$152,572	<b>Total Purchased Gas Savings (th/yr):</b>	51,002
<b>Net Project Cost:</b>	\$84,397	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$81,795
<b>Net Simple Payback Period (yrs):</b>	1.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1013**

**Project: AHU 3 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** HEWITT HALL

**Building Key:** 09C9088

**Basic Gross Area (sf):** 78,871

**Calculation File:** \14. Hewitt Hall\2. UC Irvine CVRH\_VAV Hewitt Hall AHU 3 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	13,458
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	2,175
<b>Chilled Water (ton-hr/yr):</b>	8,153
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 19,980

**Equivalent Gas Savings (th/yr):** 2,175

**Anticipated Gross Incentive:** \$6,970

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$0		\$1,770
City: Anaheim	Sales Tax: 8.25%		\$0		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$0		\$212
Subtotals:			\$0		\$1,982
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$0		\$198
Totals:			\$0		\$2,180
Engineering: 15.00%			\$327		
Construction Phase: 5.00%			\$109		
Project Management: 6.00%			\$131		
Total Project Cost:			\$2,747		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,747	<b>Total Purchased Electricity Savings (kWh/yr):</b>	13,580
<b>Rebate/Incentive*:</b>	\$2,198	<b>Total Purchased Gas Savings (th/yr):</b>	3,038
<b>Net Project Cost:</b>	\$549	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,284
<b>Net Simple Payback Period (yrs):</b>	0.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1014**

**Project: AHU 1H - CAV to VAV & SP Reset**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** HIB  
**Building Key:** 09C9035  
**Basic Gross Area (sf):** 74,090  
**Calculation File:** \15. Humanities Building\1. UC Irvine CVRH\_VAV HIB AHU 1H - CAV to VAV.xls

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

**Project Description Reference(s):** Air Handler Project 1. Convert Constant Volume Air Handlers and Terminal Boxes to Variable Air Volume & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,818
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	11,554
<b>HW/Steam (MMBTu/yr):</b>	201

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 21,061  
**Equivalent Gas Savings (th/yr):** 2,513  
**Anticipated Gross Incentive:** \$7,567

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Zone Level Controller & DDC - cooling with re-heat	4	\$3,373.49	\$13,845	\$2,055.05	\$9,092
7.5 hp VFD	1	\$1,975.00	\$2,026	\$545.00	\$603
AHU DDC Upgrade: CAV - RH to VAV - RH (17 points)	1	\$9,216.87	\$9,457	\$5,614.68	\$6,210
Raw Costs:			\$25,328		\$17,674
City: Anaheim		Sales Tax: 8.25%	\$2,090		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,290		\$2,121
City Index Labor Multiplier: 110.6%		Subtotals:	\$30,707		\$19,795
		Contingency: 10.00%	\$3,071		\$1,979
		Totals:	\$33,778		\$21,774
		Engineering: 15.00%	\$8,333		
		Construction Phase: 5.00%	\$2,778		
		Project Management: 6.00%	\$3,333		
		Total Project Cost:	\$69,996		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$69,996	<b>Total Purchased Electricity Savings (kWh/yr):</b>	12,241
<b>Rebate/Incentive*:</b>	\$7,567	<b>Total Purchased Gas Savings (th/yr):</b>	3,275
<b>Net Project Cost:</b>	\$62,429	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,302
<b>Net Simple Payback Period (yrs):</b>	14.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1015**

**Project: AHU 2H, 3H - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** HIB

**Building Key:** 09C9035

**Basic Gross Area (sf):** 74,090

**Calculation File:** \15. Humanities Building\2. UC Irvine CVRH\_VAV HIB AHU 2H, 3H - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	33,023
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	25,418
<b>HW/Steam (MMBTu/yr):</b>	666

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 53,357

**Equivalent Gas Savings (th/yr):** 8,325

**Anticipated Gross Incentive:** \$21,131

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$0		\$1,770
City: Anaheim	Sales Tax: 8.25%		\$0		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$0		\$212
Subtotals:			\$0		\$1,982
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$0		\$198
Totals:			\$0		\$2,180
Engineering: 15.00%			\$327		
Construction Phase: 5.00%			\$109		
Project Management: 6.00%			\$131		
Total Project Cost:			\$2,747		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,747	<b>Total Purchased Electricity Savings (kWh/yr):</b>	37,491
<b>Rebate/Incentive*:</b>	\$2,198	<b>Total Purchased Gas Savings (th/yr):</b>	8,953
<b>Net Project Cost:</b>	\$549	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,290
<b>Net Simple Payback Period (yrs):</b>	0.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1016**

**Project: AHU 1, 5, 6, 7, 8, - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** IRVINE HALL

**Building Key:** 09C9132

**Basic Gross Area (sf):** 54,620

**Calculation File:** \16. Irvine Hall\1. UC Irvine CVRH\_VAV Irvine Hall AHU 1, 5 thru 8 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	57,520
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	35,265
<b>HW/Steam (MMBTu/yr):</b>	1,159

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 85,732

**Equivalent Gas Savings (th/yr):** 14,488

**Anticipated Gross Incentive:** \$35,063

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	5	\$4,500.00	\$23,085	\$7,150.00	\$39,540
SAV with InCITe-Licence (est per 1000 cfm)	44	\$0.00	\$0	\$56.00	\$2,725
Raw Costs:			\$23,085		\$42,265
City: Anaheim Sales Tax: 8.25%			\$1,905		N/A
City Index Material Multiplier: 102.6%			\$2,999		\$5,072
City Index Labor Multiplier: 110.6%			\$27,988		\$47,336
Contingency: 10.00%			\$2,799		\$4,734
Totals:			\$30,787		\$52,070
Engineering: 15.00%			\$12,429		
Construction Phase: 5.00%			\$4,143		
Project Management: 6.00%			\$4,971		
Total Project Cost:			\$104,400		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$104,400	<b>Total Purchased Electricity Savings (kWh/yr):</b>	65,269
<b>Rebate/Incentive*:</b>	\$35,063	<b>Total Purchased Gas Savings (th/yr):</b>	14,471
<b>Net Project Cost:</b>	\$69,337	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$20,481
<b>Net Simple Payback Period (yrs):</b>	3.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1017**

**Project: AHU 2,3,4A,4B, ATU 1,2,3 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** IRVINE HALL

**Building Key:** 09C9132

**Basic Gross Area (sf):** 54,620

**Calculation File:** \16. Irvine Hall\2. UC Irvine CVRH\_VAV Irvine Hall AHU 2 thru 4, ATU 1,2,3 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	107,345
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	22,404
<b>HW/Steam (MMBTu/yr):</b>	841

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 125,268

**Equivalent Gas Savings (th/yr):** 10,513

**Anticipated Gross Incentive:** \$40,577

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Autosash closure	17	\$2,700.00	\$47,093	\$1,800.00	\$33,844
SAV with InCITe	7	\$4,500.00	\$32,319	\$7,150.00	\$55,355
SAV with InCITe-Licence (est per 1000 cfm)	30	\$0.00	\$0	\$56.00	\$1,858
1 hp VFD	8	\$350.00	\$2,873	\$400.00	\$3,539
2 hp VFD	8	\$700.00	\$5,746	\$400.00	\$3,539
0.25 hp VFD	4	\$87.50	\$359	\$350.00	\$1,548
Raw Costs:			\$88,390		\$99,684
City: Anaheim		Sales Tax: 8.25%	\$7,292		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$11,482		\$11,962
City Index Labor Multiplier: 110.6%		Subtotals:	\$107,164		\$111,646
		Contingency: 10.00%	\$10,716		\$11,165
		Totals:	\$117,880		\$122,810
		Engineering: 15.00%	\$36,104		
		Construction Phase: 5.00%	\$12,035		
		Project Management: 6.00%	\$14,441		
		Total Project Cost:	\$303,270		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$303,270	<b>Total Purchased Electricity Savings (kWh/yr):</b>	80,164
<b>Rebate/Incentive*:</b>	\$40,577	<b>Total Purchased Gas Savings (th/yr):</b>	13,361
<b>Net Project Cost:</b>	\$262,693	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$21,538
<b>Net Simple Payback Period (yrs):</b>	12.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1018**

**Project: AHU-3 thru AHU 16 - CAV to VAV and Economizers**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** LANGSON LIB

**Building Key:** 09C9001

**Basic Gross Area (sf):** 150,883

**Calculation File:** \17. Langson Library\1. UC Irvine MZ-DD Langson Library AHU 3 thru 16 - CAV to VAV.xls

**Project Description Reference(s):** Air Handler Project 1. Convert Constant Volume Air Handlers and Terminal Boxes to Variable Air Volume & UCI Air Handler Project 9. Add Air Side Economizer.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	271,799
<b>Peak Demand (kW):</b>	-2.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	208,229
<b>HW/Steam (MMBTu/yr):</b>	5,410

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 438,382

**Equivalent Gas Savings (th/yr):** 67,625

**Anticipated Gross Incentive:** \$172,837

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
15 hp VFD	2	\$2,275.00	\$4,668	\$820.00	\$1,814
AHU DDC Upgrade: DD CAV to VAV (253 points)	11	\$12,469.88	\$140,735	\$7,596.33	\$92,417
10 hp VFD	7	\$1,975.00	\$14,184	\$545.00	\$4,219
7.5 hp VFD	1	\$1,975.00	\$2,026	\$545.00	\$603
3 hp VFD	1	\$1,525.00	\$1,565	\$455.00	\$503
Economizer	14	\$3,000.00	\$43,092	\$2,000.00	\$30,968
Raw Costs:			\$206,271		\$130,524
City: Anaheim	Sales Tax: 8.25%		\$17,017		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$26,795		\$15,663
City Index Labor Multiplier: 110.6%	Subtotals:		\$250,083		\$146,187
Contingency: 10.00%			\$25,008		\$14,619
Totals:			\$275,091		\$160,806
Engineering: 15.00%			\$65,385		
Construction Phase: 5.00%			\$21,795		
Project Management: 6.00%			\$26,154		
Total Project Cost:			\$549,230		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$549,230	<b>Total Purchased Electricity Savings (kWh/yr):</b>	306,315
<b>Rebate/Incentive*:</b>	\$172,837	<b>Total Purchased Gas Savings (th/yr):</b>	73,120
<b>Net Project Cost:</b>	\$376,393	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$100,392
<b>Net Simple Payback Period (yrs):</b>	3.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1019**

**Project: AHU A1,A2, - Reduce ACH from 13.72 to 8**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI A

**Building Key:** 09C9325

**Basic Gross Area (sf):** 13,418

**Calculation File:** V19. Med Science A\1A. UC Irvine HVAC Lab Med Sci A - Vivarium rebalance - added March 24.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	86,245
<b>Peak Demand (kW):</b>	29.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	32,837
<b>HW/Steam (MMBTu/yr):</b>	387

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 112,515

**Equivalent Gas Savings (th/yr):** 4,838

**Anticipated Gross Incentive:** \$31,841

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Rebalance (\$1.75 per square foot)	13,418	\$0.00	\$0	\$1.75	\$25,971
Raw Costs:			\$0		\$25,971
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$3,116
Subtotals:			\$0		\$29,087
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$0		\$2,909
Totals:			\$0		\$31,996
		Engineering: 15.00%	\$4,799		
		Construction Phase: 5.00%	\$1,600		
		Project Management: 6.00%	\$1,920		
Total Project Cost:			\$40,315		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$40,315	<b>Total Purchased Electricity Savings (kWh/yr):</b>	55,313
<b>Rebate/Incentive*:</b>	\$31,841	<b>Total Purchased Gas Savings (th/yr):</b>	10,770
<b>Net Project Cost:</b>	\$8,474	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$16,133
<b>Net Simple Payback Period (yrs):</b>	0.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1020**

**Project: DCV & Scheduling Controls for a VAV system (1A, 1B, 2 and 6)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ANT REC CTR

**Building Key:** 09C9299

**Basic Gross Area (sf):** 89,320

**Calculation File:** \2. Ant Rec Center\2. UC Irvine SZ Anteatr Rec Center AHU 1A,1B,2,6 - DCV - Rev March 18.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation & Air Handler Project 5. Reduce Air Handler Operating Hours.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	103,098
<b>Peak Demand (kW):</b>	31.0
<b>Gas (th/yr):</b>	19,190
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 103,098

**Equivalent Gas Savings (th/yr):** 19,190

**Anticipated Gross Incentive:** \$43,934

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 sensor	4	\$400.00	\$1,642	\$100.00	\$442
Zone Thermostats w/ Override	30	\$200.00	\$6,156	\$1,000.00	\$33,180
Programming	32	\$0.00	\$0	\$100.00	\$3,539
Raw Costs:			\$7,798		\$37,162
City: Anaheim	Sales Tax: 8.25%		\$643		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$1,013		\$4,459
City Index Labor Multiplier: 110.6%	Subtotals:		\$9,454		\$41,621
Contingency: 10.00%			\$945		\$4,162
Totals:			\$10,399		\$45,783
Engineering: 15.00%			\$8,427		
Construction Phase: 5.00%			\$2,809		
Project Management: 6.00%			\$3,371		
Total Project Cost:			\$70,790		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$70,790	<b>Total Purchased Electricity Savings (kWh/yr):</b>	111,998
<b>Rebate/Incentive*:</b>	\$43,934	<b>Total Purchased Gas Savings (th/yr):</b>	17,109
<b>Net Project Cost:</b>	\$26,856	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$28,813
<b>Net Simple Payback Period (yrs):</b>	0.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1021**

**Project: AHU B1 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI B

**Building Key:** 09C9328

**Basic Gross Area (sf):** 35,864

**Calculation File:** \20. Med Science B\1. UC Irvine CVRH\_VAV Med Sci B - AHU B1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	18,653
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	9,536
<b>HW/Steam (MMBTu/yr):</b>	202

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 26,282

**Equivalent Gas Savings (th/yr):** 2,525

**Anticipated Gross Incentive:** \$8,833

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe-Licence (est per 1000 cfm)	14	\$0.00	\$0	\$56.00	\$867
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Raw Costs:			\$4,617		\$8,775
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,053
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$9,828
		Contingency: 10.00%	\$560		\$983
		Totals:	\$6,157		\$10,811
		Engineering: 15.00%	\$2,545		
		Construction Phase: 5.00%	\$848		
		Project Management: 6.00%	\$1,018		
		Total Project Cost:	\$21,380		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$21,380	<b>Total Purchased Electricity Savings (kWh/yr):</b>	15,690
<b>Rebate/Incentive*:</b>	\$8,833	<b>Total Purchased Gas Savings (th/yr):</b>	3,371
<b>Net Project Cost:</b>	\$12,547	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,835
<b>Net Simple Payback Period (yrs):</b>	2.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1022**

**Project: AHU B2, B3 - Reduce ACH from 7 to 6**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI B

**Building Key:** 09C9328

**Basic Gross Area (sf):** 35,864

**Calculation File:** \20. Med Science B\2. UC Irvine HVAC Lab Med Sci C - AHU B2, B3 - Lab rebalance.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	173,486
<b>Peak Demand (kW):</b>	20.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	35,150
<b>HW/Steam (MMBTu/yr):</b>	678

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 201,606

**Equivalent Gas Savings (th/yr):** 8,475

**Anticipated Gross Incentive:** \$56,860

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
7.5 hp VFD	3	\$1,975.00	\$6,079	\$545.00	\$1,808
Rebalance (\$1.75 per square foot)	35,864	\$0.00	\$0	\$1.75	\$69,415
Raw Costs:			\$6,079		\$71,223
City: Anaheim Sales Tax: 8.25%			\$502		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$790	\$8,547
City Index Labor Multiplier: 110.6%			Subtotals:	\$7,370	\$79,770
Contingency: 10.00%			\$737		\$7,977
Totals:			\$8,107		\$87,747
Engineering: 15.00%			\$14,378		
Construction Phase: 5.00%			\$4,793		
Project Management: 6.00%			\$5,751		
Total Project Cost:			\$120,776		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$120,776	<b>Total Purchased Electricity Savings (kWh/yr):</b>	108,100
<b>Rebate/Incentive*:</b>	\$56,860	<b>Total Purchased Gas Savings (th/yr):</b>	17,204
<b>Net Project Cost:</b>	\$63,916	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$28,377
<b>Net Simple Payback Period (yrs):</b>	2.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1023**

**Project: AHU C1 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI C

**Building Key:** 09C9322

**Basic Gross Area (sf):** 55,853

**Calculation File:** \21. Med Science C\1. UC Irvine CVRH\_VAV Med Sci C - AHU C1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	17,025
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	8,419
<b>HW/Steam (MMBTu/yr):</b>	186

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 23,760

**Equivalent Gas Savings (th/yr):** 2,325

**Anticipated Gross Incentive:** \$8,027

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITe-Licence (est per 1000 cfm)	17	\$0.00	\$0	\$56.00	\$1,053
Raw Costs:			\$4,617		\$8,961
City: Anaheim	Sales Tax: 8.25%		\$381		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$600		\$1,075
City Index Labor Multiplier: 110.6%	Subtotals:		\$5,598		\$10,036
Contingency: 10.00%			\$560		\$1,004
Totals:			\$6,157		\$11,040
Engineering: 15.00%			\$2,580		
Construction Phase: 5.00%			\$860		
Project Management: 6.00%			\$1,032		
Total Project Cost:			\$21,668		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$21,668	<b>Total Purchased Electricity Savings (kWh/yr):</b>	14,372
<b>Rebate/Incentive*:</b>	\$8,027	<b>Total Purchased Gas Savings (th/yr):</b>	3,051
<b>Net Project Cost:</b>	\$13,641	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,399
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1024**

**Project: AHU C2, C3 - Reduce ACH from 7 to 6**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI C

**Building Key:** 09C9322

**Basic Gross Area (sf):** 55,853

**Calculation File:** \21. Med Science C\2. UC Irvine HVAC Lab Med Sci C - AHU C2, C3 - Lab rebalance.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	211,755
<b>Peak Demand (kW):</b>	24.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	42,903
<b>HW/Steam (MMBTu/yr):</b>	827

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 246,077

**Equivalent Gas Savings (th/yr):** 10,338

**Anticipated Gross Incentive:** \$69,396

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Autosash closure	10	\$2,700.00	\$27,702	\$1,800.00	\$19,908
Rebalance (\$1.75 per square foot)	55,853	\$0.00	\$0	\$1.75	\$108,103
5 hp VFD	4	\$1,675.00	\$6,874	\$455.00	\$2,013
2 hp VFD	1	\$700.00	\$718	\$400.00	\$442
1 hp VFD	1	\$350.00	\$359	\$400.00	\$442
Raw Costs:			\$35,654		\$130,909
City: Anaheim	Sales Tax: 8.25%		\$2,941		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$4,631		\$15,709
Subtotals:			\$43,226		\$146,618
Contingency: 10.00%			\$4,323		\$14,662
Totals:			\$47,549		\$161,280
Engineering: 15.00%			\$31,324		
Construction Phase: 5.00%			\$10,441		
Project Management: 6.00%			\$12,530		
Total Project Cost:			\$263,125		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$263,125	<b>Total Purchased Electricity Savings (kWh/yr):</b>	131,928
<b>Rebate/Incentive*:</b>	\$69,396	<b>Total Purchased Gas Savings (th/yr):</b>	20,996
<b>Net Project Cost:</b>	\$193,729	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$34,631
<b>Net Simple Payback Period (yrs):</b>	5.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1025**

**Project: AHU D1 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI D

**Building Key:** 09C9323

**Basic Gross Area (sf):** 71,959

**Calculation File:** \22. Med Science D\1. UC Irvine CVRH\_VAV Med Sci D - AHU D1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	18,167
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	9,399
<b>HW/Steam (MMBTu/yr):</b>	216

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 25,686

**Equivalent Gas Savings (th/yr):** 2,700

**Anticipated Gross Incentive:** \$8,865

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITe-Licence (est per 1000 cfm)	20	\$0.00	\$0	\$56.00	\$1,239
Raw Costs:			\$4,617		\$9,147
City: Anaheim	Sales Tax: 8.25%		\$381		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$600		\$1,098
City Index Labor Multiplier: 110.6%	Subtotals:		\$5,598		\$10,244
Contingency: 10.00%			\$560		\$1,024
Totals:			\$6,157		\$11,269
Engineering: 15.00%			\$2,614		
Construction Phase: 5.00%			\$871		
Project Management: 6.00%			\$1,046		
Total Project Cost:			\$21,957		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$21,957	<b>Total Purchased Electricity Savings (kWh/yr):</b>	15,888
<b>Rebate/Incentive*:</b>	\$8,865	<b>Total Purchased Gas Savings (th/yr):</b>	3,417
<b>Net Project Cost:</b>	\$13,092	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,899
<b>Net Simple Payback Period (yrs):</b>	2.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1026**

**Project: AHU D2, D3 - Reduce ACH from 7 to 6**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI D

**Building Key:** 09C9323

**Basic Gross Area (sf):** 71,959

**Calculation File:** \22. Med Science D\2. UC Irvine HVAC Lab Med Sci D - AHU D2, D3 - Lab rebalance.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	252,120
<b>Peak Demand (kW):</b>	29.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	51,082
<b>HW/Steam (MMBTu/yr):</b>	985

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 292,986

**Equivalent Gas Savings (th/yr):** 12,313

**Anticipated Gross Incentive:** \$82,629

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
5 hp VFD	4	\$1,675.00	\$6,874	\$455.00	\$2,013
Rebalance (\$1.75 per square foot)	71,959	\$0.00	\$0	\$1.75	\$139,277
3 hp VFD	1	\$1,525.00	\$1,565	\$455.00	\$503
Raw Costs:			\$8,439		\$141,793
City: Anaheim Sales Tax: 8.25%			\$696		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$1,096	\$17,015
City Index Labor Multiplier: 110.6%			Subtotals:	\$10,231	\$158,808
Contingency: 10.00%			\$1,023		\$15,881
Totals:			\$11,254		\$174,689
Engineering: 15.00%			\$27,891		
Construction Phase: 5.00%			\$9,297		
Project Management: 6.00%			\$11,157		
Total Project Cost:			\$234,288		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$234,288	<b>Total Purchased Electricity Savings (kWh/yr):</b>	157,088
<b>Rebate/Incentive*:</b>	\$82,629	<b>Total Purchased Gas Savings (th/yr):</b>	25,001
<b>Net Project Cost:</b>	\$151,659	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$41,236
<b>Net Simple Payback Period (yrs):</b>	3.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1027**

**Project: AHU-3, 6 - SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SURG 2

**Building Key:** 09C9329

**Basic Gross Area (sf):** 60,238

**Calculation File:** \23. Med Surge 2\1. UC Irvine MZ-DD Med Surge 2 AHU-3,6 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	49,181
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	91,830
<b>HW/Steam (MMBTu/yr):</b>	1,220

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>		<b>Central Plant Efficiencies:</b>	
Electricity	\$0.24 per annual kWh	th/MMBTU:	12.5
Natural Gas	\$1 per annual therm	kWh/ton-hr:	0.8
		th/ton-hr:	0.0

**Equivalent Electric Savings (kWh/yr):** 122,645

**Equivalent Gas Savings (th/yr):** 15,250

**Anticipated Gross Incentive:** \$44,685

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe-Licence (est per 1000 cfm)	62	\$0.00	\$0	\$56.00	\$3,840
SAV with InCITe	2	\$4,500.00	\$9,234	\$7,150.00	\$15,816
Raw Costs:			\$9,234		\$19,656
City: Anaheim		Sales Tax: 8.25%	\$762		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,199		\$2,359
City Index Labor Multiplier: 110.6%		Subtotals:	\$11,195		\$22,015
		Contingency: 10.00%	\$1,120		\$2,201
		Totals:	\$12,315		\$24,216
		Engineering: 15.00%	\$5,480		
		Construction Phase: 5.00%	\$1,827		
		Project Management: 6.00%	\$2,192		
		Total Project Cost:	\$46,029		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$46,029	<b>Total Purchased Electricity Savings (kWh/yr):</b>	63,021
<b>Rebate/Incentive*:</b>	\$36,823	<b>Total Purchased Gas Savings (th/yr):</b>	21,452
<b>Net Project Cost:</b>	\$9,206	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$25,910
<b>Net Simple Payback Period (yrs):</b>	0.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1028**

**Project: AHU-5 - SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SURG 2

**Building Key:** 09C9329

**Basic Gross Area (sf):** 60,238

**Calculation File:** \23. Med Surge \2. UC Irvine MZ-DD Med Surge 2 AHU-5 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	8,022
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	4,673
<b>HW/Steam (MMBTu/yr):</b>	161

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 11,760

**Equivalent Gas Savings (th/yr):** 2,013

**Anticipated Gross Incentive:** \$4,835

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITe-Licence (est per 1000 cfm)	9	\$0.00	\$0	\$56.00	\$557
Raw Costs:			\$4,617		\$8,465
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,016
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$9,481
		Contingency: 10.00%	\$560		\$948
		Totals:	\$6,157		\$10,429
		Engineering: 15.00%	\$2,488		
		Construction Phase: 5.00%	\$829		
		Project Management: 6.00%	\$995		
		Total Project Cost:	\$20,899		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$20,899	<b>Total Purchased Electricity Savings (kWh/yr):</b>	9,083
<b>Rebate/Incentive*:</b>	\$4,835	<b>Total Purchased Gas Savings (th/yr):</b>	1,984
<b>Net Project Cost:</b>	\$16,064	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,826
<b>Net Simple Payback Period (yrs):</b>	5.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1029**

**Project: AHU-4 - SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SURG 2

**Building Key:** 09C9329

**Basic Gross Area (sf):** 60,238

**Calculation File:** \23. Med Surge 2\3. UC Irvine MZ-DD Med Surge 2 AHU-4 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,094
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	2,987
<b>HW/Steam (MMBTu/yr):</b>	154

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 7,484

**Equivalent Gas Savings (th/yr):** 1,925

**Anticipated Gross Incentive:** \$3,721

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITE	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITE-Licence (est per 1000 cfm)	8	\$0.00	\$0	\$56.00	\$495
Raw Costs:			\$4,617		\$8,403
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,008
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$9,412
		Contingency: 10.00%	\$560		\$941
		Totals:	\$6,157		\$10,353
		Engineering: 15.00%	\$2,477		
		Construction Phase: 5.00%	\$826		
		Project Management: 6.00%	\$991		
		Total Project Cost:	\$20,803		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$20,803	<b>Total Purchased Electricity Savings (kWh/yr):</b>	7,398
<b>Rebate/Incentive*:</b>	\$3,721	<b>Total Purchased Gas Savings (th/yr):</b>	1,586
<b>Net Project Cost:</b>	\$17,082	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,277
<b>Net Simple Payback Period (yrs):</b>	7.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1030**

**Project: AHU-7 - CAV to VAV and SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SURG 2

**Building Key:** 09C9329

**Basic Gross Area (sf):** 60,238

**Calculation File:** \23. Med Surge 2\4. UC Irvine MZ-DD Med Surge 2 AHU-7 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 1. Convert Constant Volume Air Handlers and Terminal Boxes to Variable Air Volume & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	119,653
<b>Peak Demand (kW):</b>	-1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	158,480
<b>HW/Steam (MMBTu/yr):</b>	1,842

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 246,437

**Equivalent Gas Savings (th/yr):** 23,025

**Anticipated Gross Incentive:** \$82,170

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Zone Level Controller & DDC - dual duct	34	\$4,216.87	\$147,101	\$2,568.81	\$96,598
25 hp VFD	1	\$3,925.00	\$4,027	\$1,100.00	\$1,217
AHU DDC Upgrade: DD CAV to VAV (23 points)	1	\$12,469.88	\$12,794	\$7,596.33	\$8,402
Raw Costs:			\$163,922		\$107,985
City: Anaheim		Sales Tax: 8.25%	\$13,524		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$21,294		\$12,958
City Index Labor Multiplier: 110.6%		Subtotals:	\$198,740		\$120,944
		Contingency: 10.00%	\$19,874		\$12,094
		Totals:	\$218,614		\$133,038
		Engineering: 15.00%	\$52,748		
		Construction Phase: 5.00%	\$17,583		
		Project Management: 6.00%	\$21,099		
		Total Project Cost:	\$443,081		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$443,081	<b>Total Purchased Electricity Savings (kWh/yr):</b>	117,850
<b>Rebate/Incentive*:</b>	\$82,170	<b>Total Purchased Gas Savings (th/yr):</b>	37,101
<b>Net Project Cost:</b>	\$360,911	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$45,979
<b>Net Simple Payback Period (yrs):</b>	7.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1031**

**Project: AHU 8 - SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SURG 2

**Building Key:** 09C9329

**Basic Gross Area (sf):** 60,238

**Calculation File:** \23. Med Surge 2\5. UC Irvine SZ Med SURge 2 AHU 8 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	3,812
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	245
<b>HW/Steam (MMBTu/yr):</b>	25

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,008

**Equivalent Gas Savings (th/yr):** 313

**Anticipated Gross Incentive:** \$1,274

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITE-Licence (est per 1000 cfm)	3	\$0.00	\$0	\$56.00	\$186
SAV with InCITE	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Raw Costs:			\$4,617		\$8,094
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$971
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$9,065
		Contingency: 10.00%	\$560		\$906
		Totals:	\$6,157		\$9,971
		Engineering: 15.00%	\$2,419		
		Construction Phase: 5.00%	\$806		
		Project Management: 6.00%	\$968		
Total Project Cost:			\$20,322		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$20,322	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,694
<b>Rebate/Incentive*:</b>	\$1,274	<b>Total Purchased Gas Savings (th/yr):</b>	376
<b>Net Project Cost:</b>	\$19,048	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$664
<b>Net Simple Payback Period (yrs):</b>	28.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1032**

**Project: AHU 1,2 - VIV to VAV & SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** M SCI & TECH

**Building Key:** 09C9114

**Basic Gross Area (sf):** 63,111

**Calculation File:** \24. Multipurpose Sc and Tech Building\1. UC Irvine CVRH\_VAV MPST AHU 1,2 - VIV to VAV.xls

**Project Description Reference(s):** Air Handler Project 1. Convert Constant Volume Air Handlers and Terminal Boxes to Variable Air Volume & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	77,833
<b>Peak Demand (kW):</b>	5.0
<b>Gas (th/yr):</b>	11,130
<b>Chilled Water (ton-hr/yr):</b>	52,375
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 119,733

**Equivalent Gas Savings (th/yr):** 11,130

**Anticipated Gross Incentive:** \$39,866

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
30 hp VFD	2	\$4,775.00	\$9,798	\$1,100.00	\$2,433
15 hp VFD	2	\$2,275.00	\$4,668	\$820.00	\$1,814
Program SP Reset	32	\$0.00	\$0	\$100.00	\$3,539
Raw Costs:			\$14,467		\$7,786
City: Anaheim	Sales Tax: 8.25%		\$1,193		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$1,879		\$934
Subtotals:			\$17,539		\$8,721
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$1,754		\$872
Totals:			\$19,293		\$9,593
Engineering: 15.00%			\$4,333		
Construction Phase: 5.00%			\$1,444		
Project Management: 6.00%			\$1,733		
Total Project Cost:			\$36,396		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$36,396	<b>Total Purchased Electricity Savings (kWh/yr):</b>	73,976
<b>Rebate/Incentive*:</b>	\$29,117	<b>Total Purchased Gas Savings (th/yr):</b>	17,313
<b>Net Project Cost:</b>	\$7,279	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,961
<b>Net Simple Payback Period (yrs):</b>	0.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1033**

**Project: AHU 1 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** NAT SCI 1

**Building Key:** 09C9090

**Basic Gross Area (sf):** 120,913

**Calculation File:** \25. Natural Science 1\1. UC Irvine CVRH\_VAV Natural Science I - AHU 1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	39,125
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	29,244
<b>HW/Steam (MMBTu/yr):</b>	648

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 62,520

**Equivalent Gas Savings (th/yr):** 8,100

**Anticipated Gross Incentive:** \$23,105

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$0		\$1,770
City: Anaheim	Sales Tax: 8.25%		\$0		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$0		\$212
Subtotals:			\$0		\$1,982
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$0		\$198
Totals:			\$0		\$2,180
Engineering: 15.00%			\$327		
Construction Phase: 5.00%			\$109		
Project Management: 6.00%			\$131		
Total Project Cost:			\$2,747		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,747	<b>Total Purchased Electricity Savings (kWh/yr):</b>	39,975
<b>Rebate/Incentive*:</b>	\$2,198	<b>Total Purchased Gas Savings (th/yr):</b>	9,618
<b>Net Project Cost:</b>	\$549	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$13,163
<b>Net Simple Payback Period (yrs):</b>	0.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1034**

**Project: AHU 3 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** NAT SCI 2

**Building Key:** 09C9091

**Basic Gross Area (sf):** 136,305

**Calculation File:** \26. Natural Science 2\1. UC Irvine CVRH\_VAV Natural Science II - AHU 3 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	69,560
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	42,372
<b>HW/Steam (MMBTu/yr):</b>	828

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 103,458

**Equivalent Gas Savings (th/yr):** 10,350

**Anticipated Gross Incentive:** \$35,180

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$0		\$1,770
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$212
Subtotals:			\$0		\$1,982
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$0		\$198
Totals:			\$0		\$2,180
		Engineering: 15.00%	\$327		
		Construction Phase: 5.00%	\$109		
		Project Management: 6.00%	\$131		
Total Project Cost:			\$2,747		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,747	<b>Total Purchased Electricity Savings (kWh/yr):</b>	60,862
<b>Rebate/Incentive*:</b>	\$2,198	<b>Total Purchased Gas Savings (th/yr):</b>	13,881
<b>Net Project Cost:</b>	\$549	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$19,416
<b>Net Simple Payback Period (yrs):</b>	0.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1035**

**Project: AHU 1,2 - Reduce ACH from 8.5 to 6**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** REINES HALL

**Building Key:** 09C9108

**Basic Gross Area (sf):** 156,514

**Calculation File:** \27. Reines Hall\2. UC Irvine HVAC Lab Reines Hall - AHU 1,2 - Lab rebalance.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	1,483,306
<b>Peak Demand (kW):</b>	169.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	434,563
<b>HW/Steam (MMBTu/yr):</b>	8,377

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 1,830,956

**Equivalent Gas Savings (th/yr):** 104,713

**Anticipated Gross Incentive:** \$544,142

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Fume Hood Conversion - CAV to VAV	120	\$11,250.00	\$1,385,100	\$11,250.00	\$1,493,100
Autosash closure	84	\$2,700.00	\$232,697	\$1,800.00	\$167,227
Rebalance (\$1.75 per square foot)	156,514	\$0.00	\$0	\$1.75	\$302,933
Raw Costs:			\$1,617,797		\$1,963,260
City: Anaheim Sales Tax: 8.25%			\$133,468		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$210,152	\$235,591
City Index Labor Multiplier: 110.6%			Subtotals:	\$1,961,417	\$2,198,851
Contingency: 10.00%			\$196,142		\$219,885
Totals:			\$2,157,559		\$2,418,736
Engineering: 15.00%			\$686,444		
Construction Phase: 5.00%			\$228,815		
Project Management: 6.00%			\$274,578		
Total Project Cost:			\$5,766,132		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$5,766,132	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,005,529
<b>Rebate/Incentive*:</b>	\$544,142	<b>Total Purchased Gas Savings (th/yr):</b>	179,844
<b>Net Project Cost:</b>	\$5,221,990	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$280,202
<b>Net Simple Payback Period (yrs):</b>	18.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1036**

**Project: AHU 1,2,3,4 - DDC Upgrade, CAV to VAV Fume Hoods & SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ROWLAND HALL

**Building Key:** 09C9100

**Basic Gross Area (sf):** 196,057

**Calculation File:** \28. Rowland Hall\1 UC IRVINE MZ\_DD\_VAV Rowland Hall AHU 1, 2, 3, 4 - CAV to VAV.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	3,161,005
<b>Peak Demand (kW):</b>	-1.0
<b>Gas (th/yr):</b>	198,778
<b>Chilled Water (ton-hr/yr):</b>	937,428
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 3,910,947

**Equivalent Gas Savings (th/yr):** 198,778

**Anticipated Gross Incentive:** \$1,137,405

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Zone DDC Upgrade: Typical Terminal Box	160	\$4,030.12	\$661,585	\$3,041.28	\$538,186
AHU DDC Upgrade: CAV - RH to VAV - RH (68 points)	4	\$9,217.00	\$37,827	\$5,614.68	\$24,839
Integrate Phoenix Valves	181	\$200.00	\$37,141	\$800.00	\$160,149
Raw Costs:			\$736,552		\$723,174
City: Anaheim		Sales Tax: 8.25%	\$60,766		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$95,678		\$86,781
City Index Labor Multiplier: 110.6%		Subtotals:	\$892,996		\$809,955
		Contingency: 10.00%	\$89,300		\$80,995
		Totals:	\$982,296		\$890,950
		Engineering: 15.00%	\$280,987		
		Construction Phase: 5.00%	\$93,662		
		Project Management: 6.00%	\$112,395		
		Total Project Cost:	\$2,360,290		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,360,290	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,206,653
<b>Rebate/Incentive*:</b>	\$1,137,405	<b>Total Purchased Gas Savings (th/yr):</b>	397,326
<b>Net Project Cost:</b>	\$1,222,885	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$617,086
<b>Net Simple Payback Period (yrs):</b>	2.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1037**

**Project: AC-1 SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BERKELEY PL

**Building Key:** 09C9107

**Basic Gross Area (sf):** 114,000

**Calculation File:** \3. Berkeley Place\1. UC Irvine CVRH\_VAV Berkeley Place AC-1 South - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,323
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	1,333
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 5,323

**Equivalent Gas Savings (th/yr):** 1,333

**Anticipated Gross Incentive:** \$2,611

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITe-Licence (est per 1000 cfm)	11	\$0.00	\$0	\$56.00	\$681
Raw Costs:			\$4,617		\$8,589
City: Anaheim	Sales Tax: 8.25%		\$381		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$600		\$1,031
City Index Labor Multiplier: 110.6%	Subtotals:		\$5,598		\$9,620
Contingency: 10.00%			\$560		\$962
Totals:			\$6,157		\$10,582
Engineering: 15.00%			\$2,511		
Construction Phase: 5.00%			\$837		
Project Management: 6.00%			\$1,004		
Total Project Cost:			\$21,092		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$21,092	<b>Total Purchased Electricity Savings (kWh/yr):</b>	6,860
<b>Rebate/Incentive*:</b>	\$2,611	<b>Total Purchased Gas Savings (th/yr):</b>	1,097
<b>Net Project Cost:</b>	\$18,481	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,805
<b>Net Simple Payback Period (yrs):</b>	10.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1038**

**Project: South Wing -AC-2,3,4 SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BERKELEY PL

**Building Key:** 09C9107

**Basic Gross Area (sf):** 114,000

**Calculation File:** \3. Berkeley Place\2. UC Irvine CVRH\_VAV Berkeley Place AC-2,3,4 South - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	15,264
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	3,628
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 15,264

**Equivalent Gas Savings (th/yr):** 3,628

**Anticipated Gross Incentive:** \$7,291

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	3	\$4,500.00	\$13,851	\$7,150.00	\$23,724
SAV with InCITe-Licence (est per 1000 cfm)	36	\$0.00	\$0	\$56.00	\$2,230
Raw Costs:			\$13,851		\$25,953
City: Anaheim		Sales Tax: 8.25%	\$1,143		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,799		\$3,114
Subtotals:			\$16,793		\$29,068
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$1,679		\$2,907
Totals:			\$18,472		\$31,975
		Engineering: 15.00%	\$7,567		
		Construction Phase: 5.00%	\$2,522		
		Project Management: 6.00%	\$3,027		
Total Project Cost:			\$63,563		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$63,563	<b>Total Purchased Electricity Savings (kWh/yr):</b>	19,060
<b>Rebate/Incentive*:</b>	\$7,291	<b>Total Purchased Gas Savings (th/yr):</b>	3,025
<b>Net Project Cost:</b>	\$56,272	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,996
<b>Net Simple Payback Period (yrs):</b>	11.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1039**

**Project: North AC-1 SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BERKELEY PL

**Building Key:** 09C9107

**Basic Gross Area (sf):** 114,000

**Calculation File:** \3. Berkeley Place\3. UC Irvine CVRH\_VAV Berkeley Place AC-1 North - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	7,955
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	2,085
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 7,955

**Equivalent Gas Savings (th/yr):** 2,085

**Anticipated Gross Incentive:** \$3,994

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe-Licence (est per 1000 cfm)	16	\$0.00	\$0	\$56.00	\$991
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Raw Costs:			\$4,617		\$8,899
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,068
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$9,967
		Contingency: 10.00%	\$560		\$997
		Totals:	\$6,157		\$10,963
		Engineering: 15.00%	\$2,568		
		Construction Phase: 5.00%	\$856		
		Project Management: 6.00%	\$1,027		
		Total Project Cost:	\$21,572		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$21,572	<b>Total Purchased Electricity Savings (kWh/yr):</b>	10,545
<b>Rebate/Incentive*:</b>	\$3,994	<b>Total Purchased Gas Savings (th/yr):</b>	1,698
<b>Net Project Cost:</b>	\$17,578	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,784
<b>Net Simple Payback Period (yrs):</b>	6.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1040**

**Project: North Wing -AC-2,3 SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BERKELEY PL

**Building Key:** 09C9107

**Basic Gross Area (sf):** 114,000

**Calculation File:** \3. Berkeley Place\4. UC Irvine CVRH\_VAV Berkeley Place AC-2,3,4 North - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	25,421
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	5,937
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 25,421

**Equivalent Gas Savings (th/yr):** 5,937

**Anticipated Gross Incentive:** \$12,038

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITE-Licence (est per 1000 cfm)	32	\$0.00	\$0	\$56.00	\$1,982
SAV with InCITE	2	\$4,500.00	\$9,234	\$7,150.00	\$15,816
Raw Costs:			\$9,234		\$17,798
City: Anaheim		Sales Tax: 8.25%	\$762		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,199		\$2,136
City Index Labor Multiplier: 110.6%		Subtotals:	\$11,195		\$19,933
		Contingency: 10.00%	\$1,120		\$1,993
		Totals:	\$12,315		\$21,927
		Engineering: 15.00%	\$5,136		
		Construction Phase: 5.00%	\$1,712		
		Project Management: 6.00%	\$2,054		
		Total Project Cost:	\$43,144		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$43,144	<b>Total Purchased Electricity Savings (kWh/yr):</b>	31,412
<b>Rebate/Incentive*:</b>	\$12,038	<b>Total Purchased Gas Savings (th/yr):</b>	4,972
<b>Net Project Cost:</b>	\$31,106	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,223
<b>Net Simple Payback Period (yrs):</b>	3.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1041**

**Project: AHU 1 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY

**Building Key:** 09C9128

**Basic Gross Area (sf):** 55,000

**Calculation File:** \30. Social Ecology 1\1. UC Irvine CVRH\_VAV No Htg - Social Ecology - AHU 1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,048
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	1,023
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,866

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,648

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$0		\$1,770
City: Anaheim	Sales Tax: 8.25%		\$0		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$0		\$212
Subtotals:			\$0		\$1,982
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$0		\$198
Totals:			\$0		\$2,180
Engineering: 15.00%			\$327		
Construction Phase: 5.00%			\$109		
Project Management: 6.00%			\$131		
Total Project Cost:			\$2,747		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,747	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,024
<b>Rebate/Incentive*:</b>	\$1,648	<b>Total Purchased Gas Savings (th/yr):</b>	427
<b>Net Project Cost:</b>	\$1,099	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$749
<b>Net Simple Payback Period (yrs):</b>	1.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1042**

**Project: AHU 2,3 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY

**Building Key:** 09C9128

**Basic Gross Area (sf):** 55,000

**Calculation File:** \30. Social Ecology 1\2. UC Irvine CVRH\_VAV No Htg - Social Ecology - AHU 2,3 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,216
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	1,012
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,026

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,446

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	32	\$0.00	\$0	\$100.00	\$3,539
Raw Costs:			\$0		\$3,539
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$425
Subtotals:			\$0		\$3,964
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$0		\$396
Totals:			\$0		\$4,360
		Engineering: 15.00%	\$654		
		Construction Phase: 5.00%	\$218		
		Project Management: 6.00%	\$262		
Total Project Cost:			\$5,494		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$5,494	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,608
<b>Rebate/Incentive*:</b>	\$1,446	<b>Total Purchased Gas Savings (th/yr):</b>	384
<b>Net Project Cost:</b>	\$4,048	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$659
<b>Net Simple Payback Period (yrs):</b>	6.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1043**

**Project: AHU 4 - Reduce ACH from 7 to 6**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY

**Building Key:** 09C9128

**Basic Gross Area (sf):** 55,000

**Calculation File:** \\30. Social Ecology 1\3. UC Irvine HVAC Lab Social Ecology - AHU 4 - Lab rebalance.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	35,340
<b>Peak Demand (kW):</b>	4.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	11,120
<b>HW/Steam (MMBTu/yr):</b>	214

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 44,236

**Equivalent Gas Savings (th/yr):** 2,675

**Anticipated Gross Incentive:** \$13,292

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Rebalance (\$1.75 per square foot)	12,052	\$0.00	\$0	\$1.75	\$23,327
Autosash closure	3	\$2,700.00	\$8,311	\$1,800.00	\$5,972
Raw Costs:			\$8,311		\$29,299
City: Anaheim	Sales Tax: 8.25%		\$686		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$1,080		\$3,516
Subtotals:			\$10,076		\$32,815
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$1,008		\$3,281
Totals:			\$11,083		\$36,096
Engineering: 15.00%			\$7,077		
Construction Phase: 5.00%			\$2,359		
Project Management: 6.00%			\$2,831		
Total Project Cost:			\$59,447		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$59,447	<b>Total Purchased Electricity Savings (kWh/yr):</b>	24,411
<b>Rebate/Incentive*:</b>	\$13,292	<b>Total Purchased Gas Savings (th/yr):</b>	4,470
<b>Net Project Cost:</b>	\$46,155	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,888
<b>Net Simple Payback Period (yrs):</b>	6.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1044**

**Project: AHU 3C - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY2

**Building Key:** 09C9222

**Basic Gross Area (sf):** 35,753

**Calculation File:** \31. Social Ecology 2\1. UC Irvine CVRH\_VAV Social Ecology 2 - AHU 3C - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	40,985
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	1,263
<b>HW/Steam (MMBTu/yr):</b>	269

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 41,995

**Equivalent Gas Savings (th/yr):** 3,363

**Anticipated Gross Incentive:** \$13,441

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITe-Licence (est per 1000 cfm)	53	\$0.00	\$0	\$56.00	\$3,283
Raw Costs:			\$4,617		\$11,191
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,343
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$12,533
		Contingency: 10.00%	\$560		\$1,253
		Totals:	\$6,157		\$13,787
		Engineering: 15.00%	\$2,992		
		Construction Phase: 5.00%	\$997		
		Project Management: 6.00%	\$1,197		
		Total Project Cost:	\$25,130		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$25,130	<b>Total Purchased Electricity Savings (kWh/yr):</b>	28,966
<b>Rebate/Incentive*:</b>	\$13,441	<b>Total Purchased Gas Savings (th/yr):</b>	3,872
<b>Net Project Cost:</b>	\$11,689	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,998
<b>Net Simple Payback Period (yrs):</b>	1.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1045**

**Project: AHU 1 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL A

**Building Key:** 09C9212

**Basic Gross Area (sf):** 46,479

**Calculation File:** \32. Social Science Plaza A\1. UC Irvine CVRH\_VAV Social Science Plaza A - AHU 1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	33,265
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	1,215
<b>HW/Steam (MMBTu/yr):</b>	146

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 34,237

**Equivalent Gas Savings (th/yr):** 1,825

**Anticipated Gross Incentive:** \$10,042

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITE	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITE-Licence (est per 1000 cfm)	53	\$0.00	\$0	\$56.00	\$3,283
Raw Costs:			\$4,617		\$11,191
City: Anaheim	Sales Tax: 8.25%		\$381		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$600		\$1,343
City Index Labor Multiplier: 110.6%	Subtotals:		\$5,598		\$12,533
Contingency: 10.00%			\$560		\$1,253
Totals:			\$6,157		\$13,787
Engineering: 15.00%			\$2,992		
Construction Phase: 5.00%			\$997		
Project Management: 6.00%			\$1,197		
Total Project Cost:			\$25,130		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$25,130	<b>Total Purchased Electricity Savings (kWh/yr):</b>	21,232
<b>Rebate/Incentive*:</b>	\$10,042	<b>Total Purchased Gas Savings (th/yr):</b>	2,714
<b>Net Project Cost:</b>	\$15,088	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$5,028
<b>Net Simple Payback Period (yrs):</b>	3.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1046**

**Project: AHU 2 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL B

**Building Key:** 09C9221

**Basic Gross Area (sf):** 49,078

**Calculation File:** \33. Social Science Plaza B\1. UC Irvine CVRH\_VAV Social Science Plaza B - AHU 2 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

**Electric (kWh/yr):** 37,075  
**Peak Demand (kW):** 0.0  
**Gas (th/yr):** 0  
**Chilled Water (ton-hr/yr):** 20,912  
**HW/Steam (MMBTu/yr):** 516

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 53,805

**Equivalent Gas Savings (th/yr):** 6,450

**Anticipated Gross Incentive:** \$19,363

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe-Licence (est per 1000 cfm)	47	\$0.00	\$0	\$56.00	\$2,911
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Raw Costs:			\$4,617		\$10,819
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,298
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$12,117
		Contingency: 10.00%	\$560		\$1,212
		Totals:	\$6,157		\$13,329
		Engineering: 15.00%	\$2,923		
		Construction Phase: 5.00%	\$974		
		Project Management: 6.00%	\$1,169		
		Total Project Cost:	\$24,553		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

**Total Project Cost:** \$24,553      **Total Purchased Electricity Savings (kWh/yr):** 34,792  
**Rebate/Incentive\*:** \$19,363      **Total Purchased Gas Savings (th/yr):** 7,658  
**Net Project Cost:** \$5,190      **Total Purchased Annual Cost Savings (\$/yr):** \$10,872  
**Net Simple Payback Period (yrs):** 0.5

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1047**

**Project: AHU-B1,B2,D1,D2 - SP Reset & Add Economizer**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOCSCI TOWER

**Building Key:** 09C9204

**Basic Gross Area (sf):** 83,844

**Calculation File:** \34. Social Science Tower\1. UC Irvine MZ-DD SocSci Tower AHU B1,B2,D1,D2 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers & UCI Air Handler Project 9. Add Air Side Economizer.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	48,364
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	58,493
<b>HW/Steam (MMBTu/yr):</b>	877

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 95,158

**Equivalent Gas Savings (th/yr):** 10,963

**Anticipated Gross Incentive:** \$33,801

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Economizer	4	\$3,000.00	\$12,312	\$2,000.00	\$8,848
SAV with InCITe-Licence (est per 1000 cfm)	92	\$0.00	\$0	\$56.00	\$5,698
SAV with InCITe	4	\$4,500.00	\$18,468	\$7,150.00	\$31,632
Raw Costs:			\$30,780		\$46,178
City: Anaheim		Sales Tax: 8.25%	\$2,539		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,998		\$5,541
City Index Labor Multiplier: 110.6%		Subtotals:	\$37,318		\$51,719
		Contingency: 10.00%	\$3,732		\$5,172
		Totals:	\$41,049		\$56,891
		Engineering: 15.00%	\$14,691		
		Construction Phase: 5.00%	\$4,897		
		Project Management: 6.00%	\$5,876		
		Total Project Cost:	\$123,405		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$123,405	<b>Total Purchased Electricity Savings (kWh/yr):</b>	51,808
<b>Rebate/Incentive*:</b>	\$33,801	<b>Total Purchased Gas Savings (th/yr):</b>	15,134
<b>Net Project Cost:</b>	\$89,604	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$19,249
<b>Net Simple Payback Period (yrs):</b>	4.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1048**

**Project: AHU-B3, B4 - SP Reset & Add Economizer**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOCSCI TOWER

**Building Key:** 09C9204

**Basic Gross Area (sf):** 83,844

**Calculation File:** \34. Social Science Tower\2. UC Irvine MZ-DD SocSci Tower AHU B3,B4 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers & UCI Air Handler Project 9. Add Air Side Economizer.

## Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	33,157
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	30,522
<b>HW/Steam (MMBTu/yr):</b>	629

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 57,575

**Equivalent Gas Savings (th/yr):** 7,863

**Anticipated Gross Incentive:** \$21,680

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Economizer	2	\$3,000.00	\$6,156	\$2,000.00	\$4,424
SAV with InCITe-Licence (est per 1000 cfm)	40	\$0.00	\$0	\$56.00	\$2,477
SAV with InCITe	2	\$4,500.00	\$9,234	\$7,150.00	\$15,816
Raw Costs:			\$15,390		\$22,717
City: Anaheim		Sales Tax: 8.25%	\$1,270		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,999		\$2,726
City Index Labor Multiplier: 110.6%		Subtotals:	\$18,659		\$25,443
		Contingency: 10.00%	\$1,866		\$2,544
		Totals:	\$20,525		\$27,988
		Engineering: 15.00%	\$7,277		
		Construction Phase: 5.00%	\$2,426		
		Project Management: 6.00%	\$2,911		
		Total Project Cost:	\$61,126		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$61,126	<b>Total Purchased Electricity Savings (kWh/yr):</b>	36,392
<b>Rebate/Incentive*:</b>	\$21,680	<b>Total Purchased Gas Savings (th/yr):</b>	9,361
<b>Net Project Cost:</b>	\$39,446	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,480
<b>Net Simple Payback Period (yrs):</b>	3.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1049**

**Project: AHU C1 - CAV to VAV, DCV, SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOCSCI TOWER

**Building Key:** 09C9204

**Basic Gross Area (sf):** 83,844

**Calculation File:** \34. Social Science Tower\3. UC Irvine SZ SocSci Tower AHU C1 - CAV to VAV.xls

**Project Description Reference(s):** Air Handler Project 2. Convert Constant Volume Air Handlers to Variable Air Volume, Air Handler Project 3. Demand Control Ventilation & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	19,197
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	7,212
<b>HW/Steam (MMBTu/yr):</b>	138

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 24,967

**Equivalent Gas Savings (th/yr):** 1,725

**Anticipated Gross Incentive:** \$7,717

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
AHU DDC Upgrade: SZ CAV to VAV (21 points)	1	\$11,385.54	\$11,682	\$6,935.78	\$7,671
DCV Programming	8	\$0.00	\$0	\$100.00	\$885
CO2 sensor	1	\$400.00	\$410	\$100.00	\$111
10 hp VFD	1	\$1,975.00	\$2,026	\$545.00	\$603
SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$14,118		\$11,039
City: Anaheim	Sales Tax: 8.25%		\$1,165		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$1,834		\$1,325
City Index Labor Multiplier: 110.6%	Subtotals:		\$17,117		\$12,363
Contingency: 10.00%			\$1,712		\$1,236
Totals:			\$18,829		\$13,600
Engineering: 15.00%			\$4,864		
Construction Phase: 5.00%			\$1,621		
Project Management: 6.00%			\$1,946		
Total Project Cost:			\$40,860		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$40,860	<b>Total Purchased Electricity Savings (kWh/yr):</b>	13,946
<b>Rebate/Incentive*:</b>	\$7,717	<b>Total Purchased Gas Savings (th/yr):</b>	2,709
<b>Net Project Cost:</b>	\$33,143	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,062
<b>Net Simple Payback Period (yrs):</b>	8.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1050**

**Project: AHU-1- SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA ART STD

**Building Key:** 09C9056

**Basic Gross Area (sf):** 10,570

**Calculation File:** \\35. SOTA Art Studio\1. UC Irvine MZ-DD SOTA Art Studio AHU 1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

**Electric (kWh/yr):** 3,125  
**Peak Demand (kW):** 0.0  
**Gas (th/yr):** 0  
**Chilled Water (ton-hr/yr):** 2,331  
**HW/Steam (MMBTu/yr):** 82

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,990

**Equivalent Gas Savings (th/yr):** 1,025

**Anticipated Gross Incentive:** \$2,223

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe-Licence (est per 1000 cfm)	17	\$0.00	\$0	\$56.00	\$1,053
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Raw Costs:			\$4,617		\$8,961
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,075
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$10,036
		Contingency: 10.00%	\$560		\$1,004
		Totals:	\$6,157		\$11,040
		Engineering: 15.00%	\$2,580		
		Construction Phase: 5.00%	\$860		
		Project Management: 6.00%	\$1,032		
		Total Project Cost:	\$21,668		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

**Total Project Cost:** \$21,668      **Total Purchased Electricity Savings (kWh/yr):** 4,146  
**Rebate/Incentive\*:** \$2,223      **Total Purchased Gas Savings (th/yr):** 957  
**Net Project Cost:** \$19,445      **Total Purchased Annual Cost Savings (\$/yr):** \$1,332  
**Net Simple Payback Period (yrs):** 14.6

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1051**

**Project: AHU-1- SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA DRAMA

**Building Key:** 09C9054

**Basic Gross Area (sf):** 8,772

**Calculation File:** \\36. SOTA Drama\1. UC Irvine MZ-DD SOTA Drama AHU 1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

**Electric (kWh/yr):** 2,647  
**Peak Demand (kW):** 0.0  
**Gas (th/yr):** 0  
**Chilled Water (ton-hr/yr):** 3,607  
**HW/Steam (MMBTu/yr):** 95

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 5,533

**Equivalent Gas Savings (th/yr):** 1,188

**Anticipated Gross Incentive:** \$2,515

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITE	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
SAV with InCITE-Licence (est per 1000 cfm)	12	\$0.00	\$0	\$56.00	\$743
Raw Costs:			\$4,617		\$8,651
City: Anaheim	Sales Tax: 8.25%		\$381		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$600		\$1,038
City Index Labor Multiplier: 110.6%	Subtotals:		\$5,598		\$9,689
Contingency: 10.00%			\$560		\$969
Totals:			\$6,157		\$10,658
Engineering: 15.00%			\$2,522		
Construction Phase: 5.00%			\$841		
Project Management: 6.00%			\$1,009		
Total Project Cost:			\$21,188		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

**Total Project Cost:** \$21,188  
**Rebate/Incentive\*:** \$2,515  
**Net Project Cost:** \$18,673  
**Net Simple Payback Period (yrs):** 12.2

**Total Purchased Electricity Savings (kWh/yr):** 4,316  
**Total Purchased Gas Savings (th/yr):** 1,172  
**Total Purchased Annual Cost Savings (\$/yr):** \$1,531

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1052**

**Project: AHU 1 - CAV to VAV & DCV**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA PROD ST

**Building Key:** 09C9053

**Basic Gross Area (sf):** 5,182

**Calculation File:** \37. SOTA Prod St\1. UC Irvine SZ\_VAV No Clg - SOTA Prod St - AHU 1 - CAV to VAV & DCV.xls

**Project Description Reference(s):** Air Handler Project 2. Convert Constant Volume Air Handlers to Variable Air Volume & Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	9,399
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	56

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 9,399

**Equivalent Gas Savings (th/yr):** 700

**Anticipated Gross Incentive:** \$2,956

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
AHU DDC Upgrade: SZ CAV to VAV (21 points)	1	\$11,385.54	\$11,682	\$6,935.78	\$7,671
10 hp VFD	1	\$1,975.00	\$2,026	\$545.00	\$603
CO2 sensor	1	\$400.00	\$410	\$100.00	\$111
Proram SP Reset	1	\$0.00	\$0	\$1,600.00	\$1,770
			<b>Raw Costs:</b>		<b>\$10,154</b>
City: Anaheim			Sales Tax: 8.25%	\$1,165	N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$1,834	\$1,218
City Index Labor Multiplier: 110.6%			<b>Subtotals:</b>	<b>\$17,117</b>	<b>\$11,372</b>
			Contingency: 10.00%	\$1,712	\$1,137
			<b>Totals:</b>	<b>\$18,829</b>	<b>\$12,510</b>
			Engineering: 15.00%	\$4,701	
			Construction Phase: 5.00%	\$1,567	
			Project Management: 6.00%	\$1,880	
			<b>Total Project Cost:</b>	<b>\$39,486</b>	

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$39,486	<b>Total Purchased Electricity Savings (kWh/yr):</b>	6,464
<b>Rebate/Incentive*:</b>	\$2,956	<b>Total Purchased Gas Savings (th/yr):</b>	816
<b>Net Project Cost:</b>	\$36,530	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,523
<b>Net Simple Payback Period (yrs):</b>	24.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1053**

**Project: AHU 1 - CAV to VAV, DCV, SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA PROD ST

**Building Key:** 09C9053

**Basic Gross Area (sf):** 5,182

**Calculation File:** \38. SOTA Sculpture St\3. UC Irvine SZ SOTA Sculpture St - AHU 1 - CAV to VAV.xls

**Project Description Reference(s):** Air Handler Project 2. Convert Constant Volume Air Handlers to Variable Air Volume, Air Handler Project 3. Demand Control Ventilation & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	20,242
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	4,942
<b>HW/Steam (MMBTu/yr):</b>	102

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 24,196

**Equivalent Gas Savings (th/yr):** 1,275

**Anticipated Gross Incentive:** \$7,082

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
AHU DDC Upgrade: SZ CAV to VAV (21 points)	1	\$11,385.54	\$11,682	\$6,935.78	\$7,671
15 hp VFD	1	\$2,275.00	\$2,334	\$820.00	\$907
CO2 sensor	1	\$400.00	\$410	\$100.00	\$111
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$14,426		\$10,458
City: Anaheim	Sales Tax: 8.25%		\$1,190		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$1,874		\$1,255
City Index Labor Multiplier: 110.6%	Subtotals:		\$17,490		\$11,713
Contingency: 10.00%			\$1,749		\$1,171
Totals:			\$19,239		\$12,884
Engineering: 15.00%			\$4,819		
Construction Phase: 5.00%			\$1,606		
Project Management: 6.00%			\$1,927		
Total Project Cost:			\$40,476		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$40,476	<b>Total Purchased Electricity Savings (kWh/yr):</b>	13,334
<b>Rebate/Incentive*:</b>	\$7,082	<b>Total Purchased Gas Savings (th/yr):</b>	2,255
<b>Net Project Cost:</b>	\$33,394	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,609
<b>Net Simple Payback Period (yrs):</b>	9.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1054**

**Project: AHU 3 - SP Reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SPRAGUE HALL

**Building Key:** 09C9087

**Basic Gross Area (sf):** 90,211

**Calculation File:** \39. Sprague Hall\1. UC Irvine CVRH\_VAV Sprague Hall - AHU 3 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	17,240
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	1,832
<b>Chilled Water (ton-hr/yr):</b>	4,315
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 20,692

**Equivalent Gas Savings (th/yr):** 1,832

**Anticipated Gross Incentive:** \$6,798

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SP Reset Programming	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$0		\$1,770
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$212
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$1,982
		Contingency: 10.00%	\$0		\$198
		Totals:	\$0		\$2,180
		Engineering: 15.00%	\$327		
		Construction Phase: 5.00%	\$109		
		Project Management: 6.00%	\$131		
		Total Project Cost:	\$2,747		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,747	<b>Total Purchased Electricity Savings (kWh/yr):</b>	14,391
<b>Rebate/Incentive*:</b>	\$2,198	<b>Total Purchased Gas Savings (th/yr):</b>	2,536
<b>Net Project Cost:</b>	\$549	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,979
<b>Net Simple Payback Period (yrs):</b>	0.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1055**

**Project: AHU 1,2- SP Reset & VFD exhaust**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SPRAGUE HALL

**Building Key:** 09C9087

**Basic Gross Area (sf):** 90,211

**Calculation File:** \39. Sprague Hall\2. UC Irvine CVRH\_VAV Sprague - AHU 1,2 - SP Reset - added March 18.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

**Electric (kWh/yr):** 497,989  
**Peak Demand (kW):** -4.0  
**Gas (th/yr):** 0  
**Chilled Water (ton-hr/yr):** 6,582  
**HW/Steam (MMBTu/yr):** -6

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 503,255

**Equivalent Gas Savings (th/yr):** -75

**Anticipated Gross Incentive:** \$120,706

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
60 hp VFD	3	\$8,375.00	\$25,778	\$1,600.00	\$5,309
Program SP Reset	32	\$0.00	\$0	\$100.00	\$3,539
Raw Costs:			\$25,778		\$8,848
City: Anaheim	Sales Tax: 8.25%		\$2,127		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$3,349		\$1,062
City Index Labor Multiplier: 110.6%	Subtotals:		\$31,254		\$9,910
Contingency: 10.00%			\$3,125		\$991
Totals:			\$34,379		\$10,901
Engineering: 15.00%			\$6,792		
Construction Phase: 5.00%			\$2,264		
Project Management: 6.00%			\$2,717		
Total Project Cost:			\$57,052		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

**Total Project Cost:** \$57,052      **Total Purchased Electricity Savings (kWh/yr):** 248,806  
**Rebate/Incentive\*:** \$45,642      **Total Purchased Gas Savings (th/yr):** 25,489  
**Net Project Cost:** \$11,410      **Total Purchased Annual Cost Savings (\$/yr):** \$53,743  
**Net Simple Payback Period (yrs):** 0.2

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1056**

**Project: AHU 1 and 3 - Convert to VAV and SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BREN EVENTS

**Building Key:** 09C9314

**Basic Gross Area (sf):** 97,259

**Calculation File:** \4. Bren Event Center\1. UC Irvine MZ\_DD Bren Events Center AHU 1,3 - CAV to VAV.xls

**Project Description Reference(s):** Air Handler Project 1. Convert Constant Volume Air Handlers and Terminal Boxes to Variable Air Volume & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	410,592
<b>Peak Demand (kW):</b>	-4.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	241,322
<b>HW/Steam (MMBTu/yr):</b>	3,246

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 603,650

**Equivalent Gas Savings (th/yr):** 40,575

**Anticipated Gross Incentive:** \$185,451

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
50 hp VFD	4	\$7,650.00	\$31,396	\$1,375.00	\$6,083
Typical MZ Damper, incl. Zone Level DDC Controller	24	\$5,716.87	\$140,772	\$4,068.81	\$108,002
AHU DDC Upgrade: MZ CAV to VAV (46 points)	2	\$12,469.88	\$25,588	\$7,596.33	\$16,803
25 hp VFD	4	\$3,925.00	\$16,108	\$1,100.00	\$4,866
Raw Costs:			\$213,864		\$135,755
City: Anaheim		Sales Tax: 8.25%	\$17,644		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$27,781		\$16,291
City Index Labor Multiplier: 110.6%		Subtotals:	\$259,289		\$152,046
		Contingency: 10.00%	\$25,929		\$15,205
		Totals:	\$285,218		\$167,250
		Engineering: 15.00%	\$67,870		
		Construction Phase: 5.00%	\$22,623		
		Project Management: 6.00%	\$27,148		
		Total Project Cost:	\$570,110		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$570,110	<b>Total Purchased Electricity Savings (kWh/yr):</b>	307,545
<b>Rebate/Incentive*:</b>	\$185,451	<b>Total Purchased Gas Savings (th/yr):</b>	70,585
<b>Net Project Cost:</b>	\$384,659	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$98,476
<b>Net Simple Payback Period (yrs):</b>	3.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1057**

**Project: DCV for a CAV system - AHU 2 and AHU 5**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BREN EVENTS

**Building Key:** 09C9314

**Basic Gross Area (sf):** 97,259

**Calculation File:** \\4. Bren Event Center\2. UC Irvine SZ Bren Events Center AHU 2,5 - CAV to VAV and DCV.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	33,445
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	4,655
<b>HW/Steam (MMBTu/yr):</b>	169

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 37,169

**Equivalent Gas Savings (th/yr):** 2,113

**Anticipated Gross Incentive:** \$11,033

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
1 hp VFD	1	\$350.00	\$359	\$400.00	\$442
3 hp VFD	1	\$1,525.00	\$1,565	\$455.00	\$503
CO2 sensor	2	\$400.00	\$821	\$100.00	\$221
5 hp VFD	1	\$1,675.00	\$1,719	\$455.00	\$503
AHU DDC Upgrade: SZ CAV to VAV (42 points)	2	\$11,385.54	\$23,363	\$6,935.78	\$15,342
Raw Costs:			\$27,826		\$17,012
City: Anaheim		Sales Tax: 8.25%	\$2,296		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,615		\$2,041
City Index Labor Multiplier: 110.6%		Subtotals:	\$33,737		\$19,053
		Contingency: 10.00%	\$3,374		\$1,905
		Totals:	\$37,110		\$20,959
		Engineering: 15.00%	\$8,710		
		Construction Phase: 5.00%	\$2,903		
		Project Management: 6.00%	\$3,484		
		Total Project Cost:	\$73,167		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$73,167	<b>Total Purchased Electricity Savings (kWh/yr):</b>	22,046
<b>Rebate/Incentive*:</b>	\$11,033	<b>Total Purchased Gas Savings (th/yr):</b>	3,293
<b>Net Project Cost:</b>	\$62,134	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$5,610
<b>Net Simple Payback Period (yrs):</b>	11.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1058**

**Project: AHU 1,2 - Reduce ACH from 7 to 6**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** STEINHAUS H

**Building Key:** 09C9075

**Basic Gross Area (sf):** 107,521

**Calculation File:** \40. Steinhaus Hall\1. UC Irvine HVAC Lab Steinhaus Hall - AHU 1,2 - Lab rebalance.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	611,022
<b>Peak Demand (kW):</b>	70.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	175,839
<b>HW/Steam (MMBTu/yr):</b>	3,389

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 751,693

**Equivalent Gas Savings (th/yr):** 42,363

**Anticipated Gross Incentive:** \$222,769

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Rebalance (\$1.75 per square foot)	107,521	\$0.00	\$0	\$1.75	\$208,107
Autosash closure	80	\$2,700.00	\$221,616	\$1,800.00	\$159,264
Raw Costs:			\$221,616		\$367,371
City: Anaheim		Sales Tax: 8.25%	\$18,283		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$28,788		\$44,085
City Index Labor Multiplier: 110.6%		Subtotals:	\$268,687		\$411,455
		Contingency: 10.00%	\$26,869		\$41,146
		Totals:	\$295,556		\$452,601
		Engineering: 15.00%	\$112,224		
		Construction Phase: 5.00%	\$37,408		
		Project Management: 6.00%	\$44,889		
		Total Project Cost:	\$942,678		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$942,678	<b>Total Purchased Electricity Savings (kWh/yr):</b>	412,265
<b>Rebate/Incentive*:</b>	\$222,769	<b>Total Purchased Gas Savings (th/yr):</b>	73,304
<b>Net Project Cost:</b>	\$719,909	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$114,528
<b>Net Simple Payback Period (yrs):</b>	6.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1059**

**Project: AHU 1 SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** UCI STU CNTR

**Building Key:** 09C9005

**Basic Gross Area (sf):** 164,042

**Calculation File:** \41. UCI Student Center\1. UC Irvine MZ-DD UCI Student Center AHU-1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	34,684
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	7,302
<b>HW/Steam (MMBTu/yr):</b>	254

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 40,526

**Equivalent Gas Savings (th/yr):** 3,175

**Anticipated Gross Incentive:** \$12,901

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$0		\$1,770
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$212
Subtotals:			\$0		\$1,982
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$0		\$198
Totals:			\$0		\$2,180
		Engineering: 15.00%	\$327		
		Construction Phase: 5.00%	\$109		
		Project Management: 6.00%	\$131		
Total Project Cost:			\$2,747		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,747	<b>Total Purchased Electricity Savings (kWh/yr):</b>	25,343
<b>Rebate/Incentive*:</b>	\$2,198	<b>Total Purchased Gas Savings (th/yr):</b>	4,214
<b>Net Project Cost:</b>	\$549	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,801
<b>Net Simple Payback Period (yrs):</b>	0.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I1060

Project: AHU 2,3 SP reset

Campus: IRVINE

Location: IRVINE

Building: UCI STU CNTR

Building Key: 09C9005

Basic Gross Area (sf): 164,042

Calculation File: \41. UCI Student Center\2. UC Irvine MZ-DD UCI Student Center AHU-2,3 - SP Reset.xls

Project Description Reference(s): Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

### Campus Prioritization and Schedule

Project Tier: Tier 2  
 Start Preliminary Engineering: 6/1/2009  
 Scheduled Completion: 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

Electric (kWh/yr):	58,264
Peak Demand (kW):	0.0
Gas (th/yr):	0
Chilled Water (ton-hr/yr):	16,613
HW/Steam (MMBTu/yr):	465

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

Equivalent Electric Savings (kWh/yr): 71,554

Equivalent Gas Savings (th/yr): 5,813

Anticipated Gross Incentive: \$22,986

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	32	\$0.00	\$0	\$100.00	\$3,539
Raw Costs:			\$0		\$3,539
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$425
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$3,964
		Contingency: 10.00%	\$0		\$396
		Totals:	\$0		\$4,360
		Engineering: 15.00%	\$654		
		Construction Phase: 5.00%	\$218		
		Project Management: 6.00%	\$262		
		Total Project Cost:	\$5,494		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

Total Project Cost:	\$5,494	Total Purchased Electricity Savings (kWh/yr):	43,780
Rebate/Incentive*:	\$4,395	Total Purchased Gas Savings (th/yr):	7,857
Net Project Cost:	\$1,099	Total Purchased Annual Cost Savings (\$/yr):	\$12,222
Net Simple Payback Period (yrs):	0.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1061**

**Project: AHU-1 SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA DANCE

**Building Key:** 09C9052

**Basic Gross Area (sf):** 12,747

**Calculation File:** \42. SOTA Dance\1. UC Irvine MZ-DD SOTA Dance AHU-1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

## Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,274
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	6,575
<b>HW/Steam (MMBTu/yr):</b>	172

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 10,534

**Equivalent Gas Savings (th/yr):** 2,150

**Anticipated Gross Incentive:** \$4,678

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITE-Licence (est per 1000 cfm)	8	\$0.00	\$0	\$56.00	\$495
SAV with InCITE	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Raw Costs:			\$4,617		\$8,403
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,008
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$9,412
		Contingency: 10.00%	\$560		\$941
		Totals:	\$6,157		\$10,353
		Engineering: 15.00%	\$2,477		
		Construction Phase: 5.00%	\$826		
		Project Management: 6.00%	\$991		
		Total Project Cost:	\$20,803		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$20,803	<b>Total Purchased Electricity Savings (kWh/yr):</b>	8,055
<b>Rebate/Incentive*:</b>	\$4,678	<b>Total Purchased Gas Savings (th/yr):</b>	2,152
<b>Net Project Cost:</b>	\$16,125	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,828
<b>Net Simple Payback Period (yrs):</b>	5.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1063**

**Project: AHU 1 - CAV to VAV, SP Reset and DCV**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** UNIV ART GAL

**Building Key:** 09C9055

**Basic Gross Area (sf):** 8,920

**Calculation File:** \\44. Univ Art Gal\1. UC Irvine SZ Univ Art Gallery AHU 1 - CAV to VAV, SP Reset and DCV.xls

**Project Description Reference(s):** Air Handler Project 2. Convert Constant Volume Air Handlers to Variable Air Volume, Air Handler Project 3. Demand Control Ventilation & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	30,493
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	3,656
<b>HW/Steam (MMBTu/yr):</b>	-29

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 33,418

**Equivalent Gas Savings (th/yr):** -363

**Anticipated Gross Incentive:** \$7,658

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
AHU DDC Upgrade: SZ CAV to VAV (21 points)	1	\$11,385.54	\$11,682	\$6,935.78	\$7,671
CO2 sensor	1	\$400.00	\$410	\$0.00	\$0
7.5 hp VFD	1	\$1,975.00	\$2,026	\$545.00	\$603
Programming	4	\$0.00	\$0	\$100.00	\$442
Raw Costs:			\$14,118		\$8,716
City: Anaheim		Sales Tax: 8.25%	\$1,165		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,834		\$1,046
Subtotals:			\$17,117		\$9,762
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$1,712		\$976
Totals:			\$18,829		\$10,738
		Engineering: 15.00%	\$4,435		
		Construction Phase: 5.00%	\$1,478		
		Project Management: 6.00%	\$1,774		
Total Project Cost:			\$37,254		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$37,254	<b>Total Purchased Electricity Savings (kWh/yr):</b>	14,333
<b>Rebate/Incentive*:</b>	\$7,658	<b>Total Purchased Gas Savings (th/yr):</b>	1,785
<b>Net Project Cost:</b>	\$29,596	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,356
<b>Net Simple Payback Period (yrs):</b>	8.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1064**

**Project: AHU 1 - CAV to VAV**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** W SMITH HALL

**Building Key:** 09C9050

**Basic Gross Area (sf):** 9,458

**Calculation File:** \45. W Smith Hall\1A. UC Irvine CVRH\_VAV W Smith Hall - AHU 1 - CAV to VAV - rev March 24.xls

**Project Description Reference(s):** Air Handler Project 1. Convert Constant Volume Air Handlers and Terminal Boxes to Variable Air Volume. HW/Steam savings adjusted to 15%

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	67,674
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	72,992
<b>HW/Steam (MMBTu/yr):</b>	274

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 126,068

**Equivalent Gas Savings (th/yr):** 3,425

**Anticipated Gross Incentive:** \$33,681

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
AHU DDC Upgrade: CAV - RH to VAV - RH (17 points)	1	\$9,216.87	\$9,457	\$5,614.68	\$6,210
Typical Terminal Box (Single), incl. Zone Level DDC Controller	10	\$4,030.12	\$41,349	\$3,041.28	\$33,637
Program SP Reset	16	\$0.00	\$0	\$100.00	\$1,770
15 hp VFD	1	\$2,275.00	\$2,334	\$820.00	\$907
Raw Costs:			\$53,140		\$42,523
City: Anaheim		Sales Tax: 8.25%	\$4,384		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$6,903		\$5,103
City Index Labor Multiplier: 110.6%		Subtotals:	\$64,427		\$47,626
		Contingency: 10.00%	\$6,443		\$4,763
		Totals:	\$70,869		\$52,388
		Engineering: 15.00%	\$18,489		
		Construction Phase: 5.00%	\$6,163		
		Project Management: 6.00%	\$7,395		
		Total Project Cost:	\$155,304		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$155,304	<b>Total Purchased Electricity Savings (kWh/yr):</b>	42,468
<b>Rebate/Incentive*:</b>	\$33,681	<b>Total Purchased Gas Savings (th/yr):</b>	14,121
<b>Net Project Cost:</b>	\$121,623	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$17,185
<b>Net Simple Payback Period (yrs):</b>	7.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1065**

**Project: AHU 5,6,7 SP Reset**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** CAL (IT)2  
**Building Key:** 09C9118  
**Basic Gross Area (sf):** 119,860  
**Calculation File:** \6. Cal (IT) 2\1. UC Irvine CVRH\_VAV Cal (IT) 2 AHU 5,6,7 - SP Reset.xls  
**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	38,463
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	8,757
<b>HW/Steam (MMBTu/yr):</b>	283

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 45,469

**Equivalent Gas Savings (th/yr):** 3,538

**Anticipated Gross Incentive:** \$14,450

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe-Licence (est per 1000 cfm)	76	\$0.00	\$0	\$56.00	\$4,707
SAV with InCITe	3	\$4,500.00	\$13,851	\$7,150.00	\$23,724
Raw Costs:			\$13,851		\$28,431
City: Anaheim		Sales Tax: 8.25%	\$1,143		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,799		\$3,412
City Index Labor Multiplier: 110.6%		Subtotals:	\$16,793		\$31,843
		Contingency: 10.00%	\$1,679		\$3,184
		Totals:	\$18,472		\$35,027
		Engineering: 15.00%	\$8,025		
		Construction Phase: 5.00%	\$2,675		
		Project Management: 6.00%	\$3,210		
		Total Project Cost:	\$67,409		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$67,409	<b>Total Purchased Electricity Savings (kWh/yr):</b>	28,146
<b>Rebate/Incentive*:</b>	\$14,450	<b>Total Purchased Gas Savings (th/yr):</b>	4,763
<b>Net Project Cost:</b>	\$52,959	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,621
<b>Net Simple Payback Period (yrs):</b>	6.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1066**

**Project: AHU-1 SP reset & Add Economizer Controls**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** COMP SCI BLD

**Building Key:** 09C9126

**Basic Gross Area (sf):** 60,678

**Calculation File:** \8. Computer Science\1. UC Irvine MZ-DD Computer Science AHU 1 SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers & UCI Air Handler Project 9. Add Air Side Economizer.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	26,761
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	39,630
<b>HW/Steam (MMBTu/yr):</b>	293

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 58,465

**Equivalent Gas Savings (th/yr):** 3,663

**Anticipated Gross Incentive:** \$17,694

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Add Economizer & Controls	1	\$15,000.00	\$15,390	\$15,000.00	\$16,590
SAV with InCITe-Licence (est per 1000 cfm)	44	\$0.00	\$0	\$56.00	\$2,725
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Raw Costs:			\$20,007		\$27,223
City: Anaheim		Sales Tax: 8.25%	\$1,651		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$2,599		\$3,267
City Index Labor Multiplier: 110.6%		Subtotals:	\$24,256		\$30,490
		Contingency: 10.00%	\$2,426		\$3,049
		Totals:	\$26,682		\$33,539
		Engineering: 15.00%	\$9,033		
		Construction Phase: 5.00%	\$3,011		
		Project Management: 6.00%	\$3,613		
		Total Project Cost:	\$75,878		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$75,878	<b>Total Purchased Electricity Savings (kWh/yr):</b>	22,610
<b>Rebate/Incentive*:</b>	\$17,694	<b>Total Purchased Gas Savings (th/yr):</b>	8,073
<b>Net Project Cost:</b>	\$58,184	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,605
<b>Net Simple Payback Period (yrs):</b>	6.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1067**

**Project: AHU-2 SP reset & VIV to VAV & Add Economizer**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** COMP SCI BLD

**Building Key:** 09C9126

**Basic Gross Area (sf):** 60,678

**Calculation File:** \8. Computer Science\2. UC Irvine MZ-DD Computer Science AHU 2 VIV to VAV & SP Reset.xls

**Project Description Reference(s):** Air Handler Project 2. Convert Constant Volume Air Handlers to Variable Air Volume, Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers & UCI Air Handler Project 9. Add Air Side Economizer.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	18,201
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	14,906
<b>HW/Steam (MMBTu/yr):</b>	65

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 30,126

**Equivalent Gas Savings (th/yr):** 813

**Anticipated Gross Incentive:** \$8,043

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
15 hp VFD	1	\$2,275.00	\$2,334	\$820.00	\$907
SAV with InCITe-Licence (est per 1000 cfm)	14	\$0.00	\$0	\$56.00	\$867
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Raw Costs:			\$6,951		\$9,682
City: Anaheim		Sales Tax: 8.25%	\$573		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$903		\$1,162
City Index Labor Multiplier: 110.6%		Subtotals:	\$8,428		\$10,844
		Contingency: 10.00%	\$843		\$1,084
		Totals:	\$9,270		\$11,928
		Engineering: 15.00%	\$3,180		
		Construction Phase: 5.00%	\$1,060		
		Project Management: 6.00%	\$1,272		
		Total Project Cost:	\$26,710		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$26,710	<b>Total Purchased Electricity Savings (kWh/yr):</b>	11,148
<b>Rebate/Incentive*:</b>	\$8,043	<b>Total Purchased Gas Savings (th/yr):</b>	3,158
<b>Net Project Cost:</b>	\$18,667	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,061
<b>Net Simple Payback Period (yrs):</b>	4.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1068**

**Project: DCV for a CAV system - AHU 1, 3 and 4**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CRAWFORD HAL

**Building Key:** 09C9300

**Basic Gross Area (sf):** 57,437

**Calculation File:** \9. Crawford Hall\1. UC Irvine SZ\_VAV No Clg - Crawford Hall AHU 1,3,4 - CAV to VAV & DCV.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	133,563
<b>Peak Demand (kW):</b>	-1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	328

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 133,563

**Equivalent Gas Savings (th/yr):** 4,100

**Anticipated Gross Incentive:** \$36,155

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
5 hp VFD	2	\$1,675.00	\$3,437	\$455.00	\$1,006
3 hp VFD	1	\$1,525.00	\$1,565	\$455.00	\$503
2 hp VFD	1	\$700.00	\$718	\$400.00	\$442
7.5 hp VFD	1	\$1,975.00	\$2,026	\$545.00	\$603
25 hp VFD	1	\$3,925.00	\$4,027	\$1,100.00	\$1,217
AHU DDC Upgrade: SZ CAV to VAV (63 points)	3	\$11,385.54	\$35,045	\$6,935.78	\$23,013
CO2 sensor	3	\$400.00	\$1,231	\$100.00	\$332
Raw Costs:			\$48,049		\$27,116
City: Anaheim	Sales Tax: 8.25%		\$3,964		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$6,242		\$3,254
City Index Labor Multiplier: 110.6%	Subtotals:		\$58,255		\$30,370
Contingency: 10.00%			\$5,825		\$3,037
Totals:			\$64,080		\$33,407
Engineering: 15.00%			\$14,623		
Construction Phase: 5.00%			\$4,874		
Project Management: 6.00%			\$5,849		
Total Project Cost:			\$122,834		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$122,834	<b>Total Purchased Electricity Savings (kWh/yr):</b>	77,114
<b>Rebate/Incentive*:</b>	\$36,155	<b>Total Purchased Gas Savings (th/yr):</b>	8,677
<b>Net Project Cost:</b>	\$86,679	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$17,294
<b>Net Simple Payback Period (yrs):</b>	5.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1069**

**Project: AHU 2 - CAV to VAV**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CRAWFORD HAL

**Building Key:** 09C9300

**Basic Gross Area (sf):** 57,437

**Calculation File:** \9. Crawford Hall\2. UC Irvine MZ\_DD\_NoClg Crawford Hall AHU 2 - CAV to VAV.rLCK.xls

**Project Description Reference(s):** Air Handler Project 2. Convert Constant Volume Air Handlers to Variable Air Volume.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	4,238
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	54

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,238

**Equivalent Gas Savings (th/yr):** 675

**Anticipated Gross Incentive:** \$1,692

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
DART Controls	1	\$8,710.00	\$8,936	\$2,900.00	\$3,207
5 hp VFD	1	\$1,675.00	\$1,719	\$455.00	\$503
DART Controls at Zone	4	\$440.00	\$1,806	\$128.00	\$566
3 hp VFD	1	\$1,525.00	\$1,565	\$455.00	\$503
Raw Costs:			\$14,025		\$4,780
City: Anaheim		Sales Tax: 8.25%	\$1,157		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,822		\$574
Subtotals:			\$17,004		\$5,354
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$1,700		\$535
Totals:			\$18,705		\$5,889
		Engineering: 15.00%	\$3,689		
		Construction Phase: 5.00%	\$1,230		
		Project Management: 6.00%	\$1,476		
Total Project Cost:			\$30,988		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$30,988	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,820
<b>Rebate/Incentive*:</b>	\$1,692	<b>Total Purchased Gas Savings (th/yr):</b>	548
<b>Net Project Cost:</b>	\$29,296	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$953
<b>Net Simple Payback Period (yrs):</b>	30.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I1071**

**Project: AHU 1, 2, 3 - Reduce ACH from 14 to 6**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MCGAUGH HALL

**Building Key:** 09C9084

**Basic Gross Area (sf):** 213,717

**Calculation File:** \\18. McGough Hall\1A. UC Irvine HVAC Lab McGaugh Hall\ AHU 1, 2, 3 - Lab rebalance - added March 24.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	1,272,703
<b>Peak Demand (kW):</b>	424.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	495,491
<b>HW/Steam (MMBTu/yr):</b>	5,846

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 1,669,096

**Equivalent Gas Savings (th/yr):** 73,075

**Anticipated Gross Incentive:** \$473,658

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Rebalance (\$1.75 per square foot)	213,717	\$0.00	\$0	\$1.75	\$413,649
Raw Costs:			\$0		\$413,649
City: Anaheim		Sales Tax: 8.25%	\$0		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$0		\$49,638
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$463,287
		Contingency: 10.00%	\$0		\$46,329
		Totals:	\$0		\$509,616
		Engineering: 15.00%	\$76,442		
		Construction Phase: 5.00%	\$25,481		
		Project Management: 6.00%	\$30,577		
		Total Project Cost:	\$642,116		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$642,116	<b>Total Purchased Electricity Savings (kWh/yr):</b>	820,501
<b>Rebate/Incentive*:</b>	\$473,658	<b>Total Purchased Gas Savings (th/yr):</b>	161,130
<b>Net Project Cost:</b>	\$168,458	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$240,433
<b>Net Simple Payback Period (yrs):</b>	0.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1072**

**Project: AHU3,4,5,7 Convert to VAV & DCV from CAV system**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ANT REC CTR

**Building Key:** 09C9299

**Basic Gross Area (sf):** 89,320

**Calculation File:** \2. Ant Rec Center\1. UC Irvine SZ Anteatr Rec Center AHU 3,4,5,7 - CAV to VAV and DCV - Rev March 18.xls

**Project Description Reference(s):** Air Handler Project 1. Convert Constant Volume Air Handlers and Terminal Boxes to Variable Air Volume & Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	121,474
<b>Peak Demand (kW):</b>	-10.0
<b>Gas (th/yr):</b>	-388
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 121,474

**Equivalent Gas Savings (th/yr):** -388

**Anticipated Gross Incentive:** \$28,766

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 sensor	4	\$400.00	\$1,642	\$100.00	\$442
AHU DDC Upgrade: SZ CAV to VAV (84 points)	4	\$11,385.54	\$46,726	\$6,935.78	\$30,684
20 hp VFD	2	\$3,375.00	\$6,926	\$820.00	\$1,814
10 hp VFD	2	\$1,975.00	\$4,053	\$545.00	\$1,206
Raw Costs:			\$59,346		\$34,146
City: Anaheim	Sales Tax: 8.25%		\$4,896		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$7,709		\$4,097
City Index Labor Multiplier: 110.6%	Subtotals:		\$71,951		\$38,243
Contingency: 10.00%			\$7,195		\$3,824
Totals:			\$79,146		\$42,067
Engineering: 15.00%			\$18,182		
Construction Phase: 5.00%			\$6,061		
Project Management: 6.00%			\$7,273		
Total Project Cost:			\$152,729		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$152,729	<b>Total Purchased Electricity Savings (kWh/yr):</b>	59,515
<b>Rebate/Incentive*:</b>	\$28,766	<b>Total Purchased Gas Savings (th/yr):</b>	5,785
<b>Net Project Cost:</b>	\$123,963	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,600
<b>Net Simple Payback Period (yrs):</b>	9.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1073**

**Project: AHU 2,3,4 - SP Reset & VFD on Exhaust**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** NAT SCI 1

**Building Key:** 09C9090

**Basic Gross Area (sf):** 120,913

**Calculation File:** \25. Natural Science 1\2. UC Irvine CVRH\_VAV NS I - AHU 2,3,4 - SP Reset, VFD Exhaust - March 18.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	548,648
<b>Peak Demand (kW):</b>	53.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	7,248
<b>HW/Steam (MMBTu/yr):</b>	12

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 554,446

**Equivalent Gas Savings (th/yr):** 150

**Anticipated Gross Incentive:** \$133,217

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	32	\$0.00	\$0	\$100.00	\$3,539
60 hp VFD	2	\$8,375.00	\$17,186	\$1,600.00	\$3,539
Raw Costs:			\$17,186		\$7,078
City: Anaheim		Sales Tax: 8.25%	\$1,418		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$2,232		\$849
Subtotals:			\$20,836		\$7,928
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$2,084		\$793
Totals:			\$22,919		\$8,721
		Engineering: 15.00%	\$4,746		
		Construction Phase: 5.00%	\$1,582		
		Project Management: 6.00%	\$1,898		
Total Project Cost:			\$39,866		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$39,866	<b>Total Purchased Electricity Savings (kWh/yr):</b>	274,702
<b>Rebate/Incentive*:</b>	\$31,893	<b>Total Purchased Gas Savings (th/yr):</b>	28,198
<b>Net Project Cost:</b>	\$7,973	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$59,383
<b>Net Simple Payback Period (yrs):</b>	0.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1074**

**Project: AHU 1,2,4 - SP Reset & VFD on Exhaust**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** NAT SCI 2

**Building Key:** 09C9091

**Basic Gross Area (sf):** 136,305

**Calculation File:** \26. Natural Science 2\2. UC Irvine CVRH\_VAV NS II - AHU 1,2,4 - SP Reset, VFD Exhaust - added March 18.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	689,808
<b>Peak Demand (kW):</b>	-5.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	11,077
<b>HW/Steam (MMBTu/yr):</b>	-12

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 698,670

**Equivalent Gas Savings (th/yr):** -150

**Anticipated Gross Incentive:** \$167,531

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Program SP Reset	32	\$0.00	\$0	\$100.00	\$3,539
100 hp VFD	2	\$11,700.00	\$24,008	\$1,800.00	\$3,982
Raw Costs:			\$24,008		\$7,521
City: Anaheim		Sales Tax: 8.25%	\$1,981		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,119		\$902
City Index Labor Multiplier: 110.6%		Subtotals:	\$29,108		\$8,423
		Contingency: 10.00%	\$2,911		\$842
		Totals:	\$32,019		\$9,266
		Engineering: 15.00%	\$6,193		
		Construction Phase: 5.00%	\$2,064		
		Project Management: 6.00%	\$2,477		
		Total Project Cost:	\$52,018		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$52,018	<b>Total Purchased Electricity Savings (kWh/yr):</b>	344,526
<b>Rebate/Incentive*:</b>	\$41,614	<b>Total Purchased Gas Savings (th/yr):</b>	35,527
<b>Net Project Cost:</b>	\$10,404	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$74,609
<b>Net Simple Payback Period (yrs):</b>	0.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1075**

**Project: AHU 1 thru 5 - SP Reset & DCV**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SCILIBRARY

**Building Key:** 09C9073

**Basic Gross Area (sf):** 189,590

**Calculation File:** \29. Science Library (Info & Comp Sci)\1. UC Irvine CVRH\_VAV Science Library - AHU 1 thru 5 - SP Reset & DCV.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	219,460
<b>Peak Demand (kW):</b>	-1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	120,914
<b>HW/Steam (MMBTu/yr):</b>	2,610

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 316,191

**Equivalent Gas Savings (th/yr):** 32,625

**Anticipated Gross Incentive:** \$108,511

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	40	\$0.00	\$0	\$100.00	\$4,424
CO2 Sensors	8	\$400.00	\$3,283	\$100.00	\$885
Program SP Reset	80	\$0.00	\$0	\$100.00	\$8,848
Raw Costs:			\$3,283		\$14,157
City: Anaheim	Sales Tax: 8.25%		\$271		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$426		\$1,699
City Index Labor Multiplier: 110.6%	Subtotals:		\$3,981		\$15,856
Contingency: 10.00%			\$398		\$1,586
Totals:			\$4,379		\$17,441
Engineering: 15.00%			\$3,273		
Construction Phase: 5.00%			\$1,091		
Project Management: 6.00%			\$1,309		
Total Project Cost:			\$27,493		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$27,493	<b>Total Purchased Electricity Savings (kWh/yr):</b>	191,945
<b>Rebate/Incentive*:</b>	\$21,994	<b>Total Purchased Gas Savings (th/yr):</b>	42,195
<b>Net Project Cost:</b>	\$5,499	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$59,937
<b>Net Simple Payback Period (yrs):</b>	0.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1076**

**Project: AHU 3H - Reduce ACH from 7 to 6**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY2

**Building Key:** 09C9222

**Basic Gross Area (sf):** 35,753

**Calculation File:** \31. Social Ecology 2\2. UC Irvine HVAC Lab No Clg - Social Ecology 2 - AHU 3H - Lab rebalance.xls

**Project Description Reference(s):** Laboratory Air Handler Project 2. Rebalance Variable Air Volume Laboratory (or Vivarium) Air Handlers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	65,627
<b>Peak Demand (kW):</b>	8.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	38

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 65,627

**Equivalent Gas Savings (th/yr):** 475

**Anticipated Gross Incentive:** \$16,225

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Autosash closure	13	\$2,700.00	\$36,013	\$1,800.00	\$25,880
Rebalance (\$1.75 per square foot)	25,958	\$0.00	\$0	\$1.75	\$50,242
Raw Costs:			\$36,013		\$76,122
City: Anaheim		Sales Tax: 8.25%	\$2,971		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$4,678		\$9,135
City Index Labor Multiplier: 110.6%		Subtotals:	\$43,662		\$85,257
		Contingency: 10.00%	\$4,366		\$8,526
		Totals:	\$48,028		\$93,782
		Engineering: 15.00%	\$21,272		
		Construction Phase: 5.00%	\$7,091		
		Project Management: 6.00%	\$8,509		
		Total Project Cost:	\$178,681		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$178,681	<b>Total Purchased Electricity Savings (kWh/yr):</b>	34,011
<b>Rebate/Incentive*:</b>	\$16,225	<b>Total Purchased Gas Savings (th/yr):</b>	3,494
<b>Net Project Cost:</b>	\$162,456	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,354
<b>Net Simple Payback Period (yrs):</b>	22.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1077**

**Project: AHU 4 and 6 - VIV to VAV and SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BREN EVENTS

**Building Key:** 09C9314

**Basic Gross Area (sf):** 97,259

**Calculation File:** \\4. Bren Event Center\3. UC Irvine CVRH\_VAV Bren Events Center AHu 4, 6 - VIV to VAV & SP reset.xls

**Project Description Reference(s):** Air Handler Project 2. Convert Constant Volume Air Handlers to Variable Air Volume & Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	25,964
<b>Peak Demand (kW):</b>	-1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	19,108
<b>HW/Steam (MMBTu/yr):</b>	239

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 41,250

**Equivalent Gas Savings (th/yr):** 2,988

**Anticipated Gross Incentive:** \$12,888

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
AHU DDC Upgrade: CAV - RH to VAV - RH (34 points)	2	\$9,216.87	\$18,913	\$5,614.68	\$12,420
15 hp VFD	1	\$2,275.00	\$2,334	\$820.00	\$907
7.5 hp VFD	1	\$1,975.00	\$2,026	\$545.00	\$603
3 hp VFD	1	\$1,525.00	\$1,565	\$455.00	\$503
1 hp VFD	1	\$350.00	\$359	\$400.00	\$442
SAV with InCITe-Licence (est per 1000 cfm)	20	\$0.00	\$0	\$56.00	\$1,239
SAV with InCITe	2	\$4,500.00	\$9,234	\$7,150.00	\$15,816
Raw Costs:			\$34,431		\$31,930
City: Anaheim	Sales Tax: 8.25%		\$2,841		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$4,473		\$3,832
Subtotals:			\$41,744		\$35,761
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$4,174		\$3,576
Totals:			\$45,919		\$39,337
Engineering: 15.00%			\$12,788		
Construction Phase: 5.00%			\$4,263		
Project Management: 6.00%			\$5,115		
Total Project Cost:			\$107,423		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$107,423	<b>Total Purchased Electricity Savings (kWh/yr):</b>	20,511
<b>Rebate/Incentive*:</b>	\$12,888	<b>Total Purchased Gas Savings (th/yr):</b>	5,151
<b>Net Project Cost:</b>	\$94,535	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,932
<b>Net Simple Payback Period (yrs):</b>	13.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I1078**

**Project: AHU-1 (AC-1) - SP reset**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CTB THEATRE

**Building Key:** 09C9051

**Basic Gross Area (sf):** 20,377

**Calculation File:** \43. CTB Theatre\1. UC Irvine MZ-DD CTB Theatre AHU 1 - SP Reset.xls

**Project Description Reference(s):** Air Handler Project 4. Static Pressure Reset on Variable Air Volume Air Handlers & Air Handler Project 5. Reduce Air Handler Operating Hours.

## Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	18,172
<b>Peak Demand (kW):</b>	-1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	34,210
<b>HW/Steam (MMBTu/yr):</b>	915

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 45,540

**Equivalent Gas Savings (th/yr):** 11,438

**Anticipated Gross Incentive:** \$22,367

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
SAV with InCITe-Licence (est per 1000 cfm)	45	\$0.00	\$0	\$56.00	\$2,787
SAV with InCITe	1	\$4,500.00	\$4,617	\$7,150.00	\$7,908
Raw Costs:			\$4,617		\$10,695
City: Anaheim		Sales Tax: 8.25%	\$381		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$600		\$1,283
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,598		\$11,978
		Contingency: 10.00%	\$560		\$1,198
		Totals:	\$6,157		\$13,176
		Engineering: 15.00%	\$2,900		
		Construction Phase: 5.00%	\$967		
		Project Management: 6.00%	\$1,160		
		Total Project Cost:	\$24,360		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$24,360	<b>Total Purchased Electricity Savings (kWh/yr):</b>	37,909
<b>Rebate/Incentive*:</b>	\$19,488	<b>Total Purchased Gas Savings (th/yr):</b>	10,862
<b>Net Project Cost:</b>	\$4,872	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$13,911
<b>Net Simple Payback Period (yrs):</b>	0.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3001**

**Project: Elevator Retrofit - MG to VVVF**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** SCILIBRARY  
**Building Key:** 09C9073  
**Basic Gross Area (sf):** 189,590  
**Calculation File:** 09C9073 UCI Sci Lib Elevator Upgrade.xls  
**Project Description Reference(s):** UCI Custom Project 5. Elevator Upgrade to VVVF.

**Campus Prioritization and Schedule**

**Project Tier:** Backup  
**Start Preliminary Engineering:**  
**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	56,416
<b>Peak Demand (kW):</b>	20.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 56,416

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$13,540

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Elevator Upgrade	4	\$83,333.33	\$342,000	\$42,515.83	\$188,090
Raw Costs:			\$342,000		\$188,090
City: Anaheim		Sales Tax: 8.25%	\$28,215		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$44,426		\$22,571
City Index Labor Multiplier: 110.6%		Subtotals:	\$414,641		\$210,661
		Contingency: 10.00%	\$41,464		\$21,066
		Totals:	\$456,105		\$231,727
		Engineering: 15.00%	\$103,175		
		Construction Phase: 5.00%	\$34,392		
		Project Management: 6.00%	\$41,270		
		Total Project Cost:	\$866,668		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$866,668	<b>Total Purchased Electricity Savings (kWh/yr):</b>	28,208
<b>Rebate/Incentive*:</b>	\$13,540	<b>Total Purchased Gas Savings (th/yr):</b>	2,799
<b>Net Project Cost:</b>	\$853,128	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,019
<b>Net Simple Payback Period (yrs):</b>	141.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3002**

**Project: Elevator Retrofit - MG to VVVF**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** STEINHAUS H  
**Building Key:** 09C9075  
**Basic Gross Area (sf):** 107,521  
**Calculation File:** 09C9075 UCI Steinhaus Elevator Upgrade.xls  
**Project Description Reference(s):** UCI Custom Project 5. Elevator Upgrade to VVVF.

**Campus Prioritization and Schedule**

**Project Tier:** Backup  
**Start Preliminary Engineering:**  
**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	20,500
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 20,500

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$4,920

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Elevator Upgrade	2	\$83,333.33	\$171,000	\$42,515.83	\$94,045
Raw Costs:			\$171,000		\$94,045
City: Anaheim		Sales Tax: 8.25%	\$14,107		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$22,213		\$11,285
City Index Labor Multiplier: 110.6%		Subtotals:	\$207,320		\$105,330
		Contingency: 10.00%	\$20,732		\$10,533
		Totals:	\$228,052		\$115,863
		Engineering: 15.00%	\$51,587		
		Construction Phase: 5.00%	\$17,196		
		Project Management: 6.00%	\$20,635		
		Total Project Cost:	\$433,334		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$433,334	<b>Total Purchased Electricity Savings (kWh/yr):</b>	10,250
<b>Rebate/Incentive*:</b>	\$4,920	<b>Total Purchased Gas Savings (th/yr):</b>	1,017
<b>Net Project Cost:</b>	\$428,414	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,187
<b>Net Simple Payback Period (yrs):</b>	195.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3003**

**Project:** Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	MESA PKG STR	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9013	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	325,000	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI Parking Garage Lighting Calculation.xls		
<b>Project Description Reference(s):</b>	Lighting Project 4. Interior High Bay Lighting .		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	256,887
<b>Peak Demand (kW):</b>	19.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	256,887
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$61,653

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
300-watt PSMH kit	20	\$125.00	\$2,565	\$125.00	\$2,765
Estimated Construction Cost (based on existing quote)	1				
Occupancy Sensors	300	\$120.00	\$36,936	\$50.00	\$16,590
		<b>Raw Costs:</b>	<b>\$39,501</b>		<b>\$19,355</b>
City: Anaheim		Sales Tax: 8.25%	\$3,259		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$5,131		\$2,323
City Index Labor Multiplier: 110.6%		<b>Subtotals:</b>	<b>\$47,891</b>		<b>\$21,678</b>
		Contingency: 10.00%	\$4,789		\$2,168
		<b>Totals:</b>	<b>\$52,680</b>		<b>\$23,845</b>
		Engineering: 15.00%	\$11,479		
		Construction Phase: 5.00%	\$3,826		
		Project Management: 6.00%	\$4,592		
		<b>Total Project Cost:</b>	<b>\$96,422</b>		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,422	<b>Total Purchased Electricity Savings (kWh/yr):</b>	128,444
<b>Rebate/Incentive*:</b>	\$61,653	<b>Total Purchased Gas Savings (th/yr):</b>	12,747
<b>Net Project Cost:</b>	\$34,769	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$27,407
<b>Net Simple Payback Period (yrs):</b>	1.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3004**

**Project:** Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	PARK STRUC 1	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9012	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	321,000	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI Parking Garage Lighting Calculation.xls		
<b>Project Description Reference(s):</b>	Lighting Project 4. Interior High Bay Lighting .		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	321,630
<b>Peak Demand (kW):</b>	31.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 321,630

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$77,191

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost (based on existing quote)	1				
Occupancy Sensors	255	\$120.00	\$31,396	\$50.00	\$14,102
300-watt PSMH kit	16	\$125.00	\$2,052	\$125.00	\$2,212
		<b>Raw Costs:</b>	<b>\$33,448</b>		<b>\$16,314</b>
City: Anaheim		Sales Tax: 8.25%	\$2,759		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$4,345		\$1,958
City Index Labor Multiplier: 110.6%		<b>Subtotals:</b>	<b>\$40,552</b>		<b>\$18,271</b>
		Contingency: 10.00%	\$4,055		\$1,827
		<b>Totals:</b>	<b>\$44,607</b>		<b>\$20,098</b>
		Engineering: 15.00%	\$9,706		
		Construction Phase: 5.00%	\$3,235		
		Project Management: 6.00%	\$3,882		
		<b>Total Project Cost:</b>	<b>\$81,529</b>		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$81,529	<b>Total Purchased Electricity Savings (kWh/yr):</b>	160,815
<b>Rebate/Incentive*:</b>	\$65,223	<b>Total Purchased Gas Savings (th/yr):</b>	15,959
<b>Net Project Cost:</b>	\$16,306	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$34,314
<b>Net Simple Payback Period (yrs):</b>	0.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3005**

**Project:** Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SS PRKING ST

**Building Key:** 09C9022

**Basic Gross Area (sf):** 554,554

**Calculation File:** UCI Parking Garage Lighting Calculation.xls

**Project Description Reference(s):** Lighting Project 4. Interior High Bay Lighting .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	584,003
<b>Peak Demand (kW):</b>	49.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	584,003
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$140,161
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
300-watt PSMH kit	51	\$125.00	\$6,541	\$125.00	\$7,051
Estimated Construction Cost (based on existing quote)	1				
Occupancy Sensors	528	\$120.00	\$65,007	\$50.00	\$29,198
Raw Costs:			\$71,548		\$36,249
City: Anaheim		Sales Tax: 8.25%	\$5,903		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$9,294		\$4,350
City Index Labor Multiplier: 110.6%		Subtotals:	\$86,745		\$40,599
		Contingency: 10.00%	\$8,674		\$4,060
		Totals:	\$95,419		\$44,659
		Engineering: 15.00%	\$21,012		
		Construction Phase: 5.00%	\$7,004		
		Project Management: 6.00%	\$8,405		
		Total Project Cost:	\$176,499		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$176,499	<b>Total Purchased Electricity Savings (kWh/yr):</b>	292,002
<b>Rebate/Incentive*:</b>	\$140,161	<b>Total Purchased Gas Savings (th/yr):</b>	28,978
<b>Net Project Cost:</b>	\$36,338	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$62,306
<b>Net Simple Payback Period (yrs):</b>	0.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3006**

**Project:** Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	ENG PARK STR	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9256	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>	571,118	<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	UCI Parking Garage Lighting Calculation.xls		
<b>Project Description Reference(s):</b>	Lighting Project 4. Interior High Bay Lighting .		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	522,236
<b>Peak Demand (kW):</b>	54.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 522,236

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$125,337

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost (based on existing quote)	1				
300-watt PSMH kit	24	\$125.00	\$3,078	\$125.00	\$3,318
Occupancy Sensors	432	\$120.00	\$53,188	\$50.00	\$23,890
		<b>Raw Costs:</b>	\$56,266		\$27,208
City: Anaheim		Sales Tax: 8.25%	\$4,642		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$7,309		\$3,265
City Index Labor Multiplier: 110.6%		<b>Subtotals:</b>	\$68,217		\$30,473
		Contingency: 10.00%	\$6,822		\$3,047
		<b>Totals:</b>	\$75,038		\$33,520
		Engineering: 15.00%	\$16,284		
		Construction Phase: 5.00%	\$5,428		
		Project Management: 6.00%	\$6,513		
		<b>Total Project Cost:</b>	\$136,783		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$136,783	<b>Total Purchased Electricity Savings (kWh/yr):</b>	261,118
<b>Rebate/Incentive*:</b>	\$109,427	<b>Total Purchased Gas Savings (th/yr):</b>	25,913
<b>Net Project Cost:</b>	\$27,357	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$55,717
<b>Net Simple Payback Period (yrs):</b>	0.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3007**

**Project: Retrofit existing HID roof lights with PSMH kits**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG PARK STR

**Building Key:** 09C9256

**Basic Gross Area (sf):** 571,118

**Calculation File:** UC Irvine Engineering PS UC SEP Custom Calculation.xls

**Project Description Reference(s):** Lighting Project 4. Interior High Bay Lighting .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	14,086
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 14,086

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$3,381

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
300-watt PSMH kit	24	\$125.00	\$3,078	\$125.00	\$3,318
Raw Costs:			\$3,078		\$3,318
City: Anaheim	Sales Tax: 8.25%		\$254		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$400		\$398
City Index Labor Multiplier: 110.6%	Subtotals:		\$3,732		\$3,716
Contingency: 10.00%			\$373		\$372
Totals:			\$4,105		\$4,088
Engineering: 15.00%			\$1,229		
Construction Phase: 5.00%			\$410		
Project Management: 6.00%			\$492		
Total Project Cost:			\$10,323		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$10,323	<b>Total Purchased Electricity Savings (kWh/yr):</b>	7,043
<b>Rebate/Incentive*:</b>	\$3,381	<b>Total Purchased Gas Savings (th/yr):</b>	699
<b>Net Project Cost:</b>	\$6,942	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,503
<b>Net Simple Payback Period (yrs):</b>	4.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3008**

**Project: Retrofit existing HID roof lights with PSMH kits**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MESA PKG STR

**Building Key:** 09C9013

**Basic Gross Area (sf):** 325,000

**Calculation File:** UC Irvine Mesa Parking Roof UC SEP Custom Calculation.xls

**Project Description Reference(s):** Lighting Project 4. Interior High Bay Lighting .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,738
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 11,738

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,817

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
300-watt PSMH kit	20	\$125.00	\$2,565	\$125.00	\$2,765
Raw Costs:			\$2,565		\$2,765
City: Anaheim	Sales Tax: 8.25%		\$212		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$333		\$332
Subtotals:			\$3,110		\$3,097
Contingency: 10.00%			\$311		\$310
Totals:			\$3,421		\$3,406
Engineering: 15.00%			\$1,024		
Construction Phase: 5.00%			\$341		
Project Management: 6.00%			\$410		
Total Project Cost:			\$8,602		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,602	<b>Total Purchased Electricity Savings (kWh/yr):</b>	5,869
<b>Rebate/Incentive*:</b>	\$2,817	<b>Total Purchased Gas Savings (th/yr):</b>	582
<b>Net Project Cost:</b>	\$5,785	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,252
<b>Net Simple Payback Period (yrs):</b>	4.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3009**

**Project: Retrofit existing HID roof lights with PSMH kits**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SS PRKING ST

**Building Key:** 09C9022

**Basic Gross Area (sf):** 554,554

**Calculation File:** UC Irvine Social Sciences PS UC SEP Custom Calculation.xls

**Project Description Reference(s):** Lighting Project 4. Interior High Bay Lighting .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	29,933
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 29,933

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$7,184

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
300-watt PSMH kit	51	\$125.00	\$6,541	\$125.00	\$7,051
Raw Costs:			\$6,541		\$7,051
City: Anaheim	Sales Tax: 8.25%		\$540		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$850		\$846
City Index Labor Multiplier: 110.6%	Subtotals:		\$7,930		\$7,897
Contingency: 10.00%			\$793		\$790
Totals:			\$8,723		\$8,687
Engineering: 15.00%			\$2,611		
Construction Phase: 5.00%			\$870		
Project Management: 6.00%			\$1,045		
Total Project Cost:			\$21,936		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$21,936	<b>Total Purchased Electricity Savings (kWh/yr):</b>	14,967
<b>Rebate/Incentive*:</b>	\$7,184	<b>Total Purchased Gas Savings (th/yr):</b>	1,485
<b>Net Project Cost:</b>	\$14,752	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,194
<b>Net Simple Payback Period (yrs):</b>	4.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3010

**Project:** Retrofit existing HID roof lights with PSMH kits

**Campus:** IRVINE

**Location:** IRVINE

**Building:** PARK STRUC 1

**Building Key:** 09C9012

**Basic Gross Area (sf):** 321,000

**Calculation File:** UC Irvine Student Center PS UC SEP Custom Calculation.xls

**Project Description Reference(s):** Lighting Project 4. Interior High Bay Lighting .

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	9,391
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 9,391

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,254

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
300-watt PSMH kit	16	\$125.00	\$2,052	\$125.00	\$2,212
Raw Costs:			\$2,052		\$2,212
City: Anaheim		Sales Tax: 8.25%	\$169		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$267		\$265
City Index Labor Multiplier: 110.6%		Subtotals:	\$2,488		\$2,477
		Contingency: 10.00%	\$249		\$248
		Totals:	\$2,737		\$2,725
		Engineering: 15.00%	\$819		
		Construction Phase: 5.00%	\$273		
		Project Management: 6.00%	\$328		
		Total Project Cost:	\$6,882		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,882	<b>Total Purchased Electricity Savings (kWh/yr):</b>	4,696
<b>Rebate/Incentive*:</b>	\$2,254	<b>Total Purchased Gas Savings (th/yr):</b>	466
<b>Net Project Cost:</b>	\$4,628	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,002
<b>Net Simple Payback Period (yrs):</b>	4.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3011

## Project: Demand Control Ventilation

Campus: IRVINE  
 Location: IRVINE  
 Building: LANGSON LIB  
 Building Key: 09C9001  
 Basic Gross Area (sf): 150,883  
 Calculation File: UCI DCV Projects - Checked MZ 032808.xls  
 Project Description Reference(s): Air Handler Project 3. Demand Control Ventilation.

### Campus Prioritization and Schedule

Project Tier: Tier 2  
 Start Preliminary Engineering: 6/1/2010  
 Scheduled Completion: 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

Electric (kWh/yr):	11,336
Peak Demand (kW):	12.0
Gas (th/yr):	0
Chilled Water (ton-hr/yr):	0
HW/Steam (MMBTu/yr):	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

Equivalent Electric Savings (kWh/yr): 11,336  
 Equivalent Gas Savings (th/yr): 0  
 Anticipated Gross Incentive: \$2,721

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	128	\$0.00	\$0	\$100.00	\$14,157
CO2 Sensor	16	\$400.00	\$6,566	\$100.00	\$1,770
Raw Costs:			\$6,566		\$15,926
City: Anaheim	Sales Tax: 8.25%		\$542		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$853		\$1,911
City Index Labor Multiplier: 110.6%	Subtotals:		\$7,961		\$17,838
Contingency: 10.00%			\$796		\$1,784
Totals:			\$8,757		\$19,621
Engineering: 15.00%			\$4,257		
Construction Phase: 5.00%			\$1,419		
Project Management: 6.00%			\$1,703		
Total Project Cost:			\$35,757		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

Total Project Cost:	\$35,757	Total Purchased Electricity Savings (kWh/yr):	5,668
Rebate/Incentive*:	\$2,721	Total Purchased Gas Savings (th/yr):	562
Net Project Cost:	\$33,036	Total Purchased Annual Cost Savings (\$/yr):	\$1,209
Net Simple Payback Period (yrs):	27.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3012**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** LANGSON LIB

**Building Key:** 09C9001

**Basic Gross Area (sf):** 150,883

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	78,459
<b>Peak Demand (kW):</b>	13.0
<b>Gas (th/yr):</b>	3,621
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 78,459

**Equivalent Gas Savings (th/yr):** 3,621

**Anticipated Gross Incentive:** \$22,451

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	189	\$841.50	\$163,179	\$818.75	\$171,147
Raw Costs:			\$163,179		\$171,147
City: Anaheim		Sales Tax: 8.25%	\$13,462		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$21,197		\$20,538
City Index Labor Multiplier: 110.6%		Subtotals:	\$197,838		\$191,684
		Contingency: 10.00%	\$19,784		\$19,168
		Totals:	\$217,622		\$210,853
		Engineering: 15.00%	\$64,271		
		Construction Phase: 5.00%	\$21,424		
		Project Management: 6.00%	\$25,708		
		Total Project Cost:	\$539,877		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$539,877	<b>Total Purchased Electricity Savings (kWh/yr):</b>	50,636
<b>Rebate/Incentive*:</b>	\$22,451	<b>Total Purchased Gas Savings (th/yr):</b>	6,156
<b>Net Project Cost:</b>	\$517,426	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$11,732
<b>Net Simple Payback Period (yrs):</b>	44.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3013

**Project:** Demand Control Ventilation

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ADMIN BLDG

**Building Key:** 09C9003

**Basic Gross Area (sf):** 101,022

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	7,590
<b>Peak Demand (kW):</b>	8.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 7,590

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,822

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	24	\$0.00	\$0	\$100.00	\$2,654
CO2 Sensor	3	\$400.00	\$1,231	\$100.00	\$332
Raw Costs:			\$1,231		\$2,986
City: Anaheim	Sales Tax: 8.25%		\$102		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$160		\$358
Subtotals:			\$1,493		\$3,345
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$149		\$334
Totals:			\$1,642		\$3,679
Engineering: 15.00%			\$798		
Construction Phase: 5.00%			\$266		
Project Management: 6.00%			\$319		
Total Project Cost:			\$6,704		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,704	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,795
<b>Rebate/Incentive*:</b>	\$1,822	<b>Total Purchased Gas Savings (th/yr):</b>	377
<b>Net Project Cost:</b>	\$4,882	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$810
<b>Net Simple Payback Period (yrs):</b>	6.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3014**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ADMIN BLDG

**Building Key:** 09C9003

**Basic Gross Area (sf):** 101,022

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	52,531
<b>Peak Demand (kW):</b>	9.0
<b>Gas (th/yr):</b>	2,425
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 52,531

**Equivalent Gas Savings (th/yr):** 2,425

**Anticipated Gross Incentive:** \$15,032

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	126	\$841.50	\$108,786	\$818.75	\$114,098
Raw Costs:			\$108,786		\$114,098
City: Anaheim		Sales Tax: 8.25%	\$8,975		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$14,131		\$13,692
City Index Labor Multiplier: 110.6%		Subtotals:	\$131,892		\$127,789
		Contingency: 10.00%	\$13,189		\$12,779
		Totals:	\$145,081		\$140,568
		Engineering: 15.00%	\$42,847		
		Construction Phase: 5.00%	\$14,282		
		Project Management: 6.00%	\$17,139		
		Total Project Cost:	\$359,918		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$359,918	<b>Total Purchased Electricity Savings (kWh/yr):</b>	33,904
<b>Rebate/Incentive*:</b>	\$15,032	<b>Total Purchased Gas Savings (th/yr):</b>	4,122
<b>Net Project Cost:</b>	\$344,886	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,856
<b>Net Simple Payback Period (yrs):</b>	43.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3015**

**Project: Demand Control Ventilation**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** UCI STU CNTR  
**Building Key:** 09C9005  
**Basic Gross Area (sf):** 164,042  
**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls  
**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	12,324
<b>Peak Demand (kW):</b>	13.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 12,324

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,958

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	3	\$400.00	\$1,231	\$100.00	\$332
Programming	24	\$0.00	\$0	\$100.00	\$2,654
Raw Costs:			\$1,231		\$2,986
City: Anaheim	Sales Tax: 8.25%		\$102		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$160		\$358
City Index Labor Multiplier: 110.6%	Subtotals:		\$1,493		\$3,345
Contingency: 10.00%			\$149		\$334
Totals:			\$1,642		\$3,679
Engineering: 15.00%			\$798		
Construction Phase: 5.00%			\$266		
Project Management: 6.00%			\$319		
Total Project Cost:			\$6,704		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,704	<b>Total Purchased Electricity Savings (kWh/yr):</b>	6,162
<b>Rebate/Incentive*:</b>	\$2,958	<b>Total Purchased Gas Savings (th/yr):</b>	612
<b>Net Project Cost:</b>	\$3,746	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,315
<b>Net Simple Payback Period (yrs):</b>	2.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3016

**Project:** Demand Control Ventilation

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** HIB  
**Building Key:** 09C9035  
**Basic Gross Area (sf):** 74,090  
**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls  
**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,566
<b>Peak Demand (kW):</b>	6.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 5,566  
**Equivalent Gas Savings (th/yr):** 0  
**Anticipated Gross Incentive:** \$1,336

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	24	\$0.00	\$0	\$100.00	\$2,654
CO2 Sensor	3	\$400.00	\$1,231	\$100.00	\$332
Raw Costs:			\$1,231		\$2,986
City: Anaheim	Sales Tax: 8.25%		\$102		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$160		\$358
Subtotals:			\$1,493		\$3,345
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$149		\$334
Totals:			\$1,642		\$3,679
Engineering: 15.00%			\$798		
Construction Phase: 5.00%			\$266		
Project Management: 6.00%			\$319		
Total Project Cost:			\$6,704		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,704	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,783
<b>Rebate/Incentive*:</b>	\$1,336	<b>Total Purchased Gas Savings (th/yr):</b>	276
<b>Net Project Cost:</b>	\$5,368	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$594
<b>Net Simple Payback Period (yrs):</b>	9.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

SEP Project ID Number: I3017

**Project:** Retrofit 400W MH Low bays with 200W ceramic EHID low bays w/daylight controls

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA DANCE

**Building Key:** 09C9052

**Basic Gross Area (sf):** 12,747

**Calculation File:** UC Irvine Dance Custom Lighting Calc MZ Checked AML.xls

**Project Description Reference(s):** Lighting Project 4. Interior High Bay Lighting .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	31,000
<b>Peak Demand (kW):</b>	8.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 31,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$7,440

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
200-watt ceramic EHID low bays w/ daylight controls	25	\$232.00	\$5,951	\$348.00	\$9,622
Raw Costs:			\$5,951		\$9,622
City: Anaheim		Sales Tax: 8.25%	\$491		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$773		\$1,155
City Index Labor Multiplier: 110.6%		Subtotals:	\$7,215		\$10,777
		Contingency: 10.00%	\$721		\$1,078
		Totals:	\$7,936		\$11,855
		Engineering: 15.00%	\$2,969		
		Construction Phase: 5.00%	\$990		
		Project Management: 6.00%	\$1,187		
		Total Project Cost:	\$24,936		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$24,936	<b>Total Purchased Electricity Savings (kWh/yr):</b>	15,500
<b>Rebate/Incentive*:</b>	\$7,440	<b>Total Purchased Gas Savings (th/yr):</b>	1,538
<b>Net Project Cost:</b>	\$17,496	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,307
<b>Net Simple Payback Period (yrs):</b>	5.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3018**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** STEINHAUS H

**Building Key:** 09C9075

**Basic Gross Area (sf):** 107,521

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	55,911
<b>Peak Demand (kW):</b>	9.0
<b>Gas (th/yr):</b>	2,581
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 55,911

**Equivalent Gas Savings (th/yr):** 2,581

**Anticipated Gross Incentive:** \$16,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	134	\$841.50	\$115,693	\$818.75	\$121,342
Raw Costs:			\$115,693		\$121,342
City: Anaheim		Sales Tax: 8.25%	\$9,545		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$15,028		\$14,561
City Index Labor Multiplier: 110.6%		Subtotals:	\$140,266		\$135,903
		Contingency: 10.00%	\$14,027		\$13,590
		Totals:	\$154,293		\$149,493
		Engineering: 15.00%	\$45,568		
		Construction Phase: 5.00%	\$15,189		
		Project Management: 6.00%	\$18,227		
		Total Project Cost:	\$382,770		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$382,770	<b>Total Purchased Electricity Savings (kWh/yr):</b>	36,086
<b>Rebate/Incentive*:</b>	\$16,000	<b>Total Purchased Gas Savings (th/yr):</b>	4,387
<b>Net Project Cost:</b>	\$366,770	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,361
<b>Net Simple Payback Period (yrs):</b>	43.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3019**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** GILLESPIE BLD

**Building Key:** 09C9082

**Basic Gross Area (sf):** 82,920

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,230
<b>Peak Demand (kW):</b>	7.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,230

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,495

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	2	\$400.00	\$821	\$100.00	\$221
Programming	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$821		\$1,991
City: Anaheim	Sales Tax: 8.25%		\$68		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$107		\$239
City Index Labor Multiplier: 110.6%	Subtotals:		\$995		\$2,230
Contingency: 10.00%			\$100		\$223
Totals:			\$1,095		\$2,453
Engineering: 15.00%			\$532		
Construction Phase: 5.00%			\$177		
Project Management: 6.00%			\$213		
Total Project Cost:			\$4,470		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,470	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,115
<b>Rebate/Incentive*:</b>	\$1,495	<b>Total Purchased Gas Savings (th/yr):</b>	309
<b>Net Project Cost:</b>	\$2,975	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$665
<b>Net Simple Payback Period (yrs):</b>	4.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3020**

**Project: Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MCGAUGH HALL

**Building Key:** 09C9084

**Basic Gross Area (sf):** 213,717

**Calculation File:** UCI Aircuity Extrapolation Calculation - Checked MZ 032708.xls

**Project Description Reference(s):** Laboratory Air Handler Project 3. Reduce Minimum Air Change Requirements through Continuous Monitoring.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	746,949
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	285,296
<b>HW/Steam (MMBTu/yr):</b>	12,285

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 975,186

**Equivalent Gas Savings (th/yr):** 153,563

**Anticipated Gross Incentive:** \$387,607

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Aircuity, per sensor	85	\$2,500.00	\$218,025	\$2,000.00	\$188,020
Raw Costs:			\$218,025		\$188,020
City: Anaheim		Sales Tax: 8.25%	\$17,987		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$28,321		\$22,562
City Index Labor Multiplier: 110.6%		Subtotals:	\$264,334		\$210,582
		Contingency: 10.00%	\$26,433		\$21,058
		Totals:	\$290,767		\$231,641
		Engineering: 15.00%	\$78,361		
		Construction Phase: 5.00%	\$26,120		
		Project Management: 6.00%	\$31,344		
		Total Project Cost:	\$658,233		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$658,233	<b>Total Purchased Electricity Savings (kWh/yr):</b>	760,452
<b>Rebate/Incentive*:</b>	\$387,607	<b>Total Purchased Gas Savings (th/yr):</b>	149,222
<b>Net Project Cost:</b>	\$270,626	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$222,741
<b>Net Simple Payback Period (yrs):</b>	1.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3021

**Project:** Demand Control Ventilation

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** MCGAUGH HALL  
**Building Key:** 09C9084  
**Basic Gross Area (sf):** 213,717  
**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls  
**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Backup  
**Start Preliminary Engineering:**  
**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	14,939
<b>Peak Demand (kW):</b>	17.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 14,939

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$3,585

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	24	\$0.00	\$0	\$100.00	\$2,654
CO2 Sensor	3	\$400.00	\$1,231	\$100.00	\$332
Raw Costs:			\$1,231		\$2,986
City: Anaheim	Sales Tax: 8.25%		\$102		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$160		\$358
City Index Labor Multiplier: 110.6%	Subtotals:		\$1,493		\$3,345
Contingency: 10.00%			\$149		\$334
Totals:			\$1,642		\$3,679
Engineering: 15.00%			\$798		
Construction Phase: 5.00%			\$266		
Project Management: 6.00%			\$319		
Total Project Cost:			\$6,704		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,704	<b>Total Purchased Electricity Savings (kWh/yr):</b>	7,470
<b>Rebate/Incentive*:</b>	\$3,585	<b>Total Purchased Gas Savings (th/yr):</b>	741
<b>Net Project Cost:</b>	\$3,119	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,594
<b>Net Simple Payback Period (yrs):</b>	2.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3022

**Project:** Zone DDC Upgrade

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MCGAUGH HALL

**Building Key:** 09C9084

**Basic Gross Area (sf):** 213,717

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	111,133
<b>Peak Demand (kW):</b>	18.0
<b>Gas (th/yr):</b>	5,129
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 111,133

**Equivalent Gas Savings (th/yr):** 5,129

**Anticipated Gross Incentive:** \$31,801

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	267	\$841.50	\$230,522	\$818.75	\$241,779
Raw Costs:			\$230,522		\$241,779
City: Anaheim		Sales Tax: 8.25%	\$19,018		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$29,945		\$29,013
City Index Labor Multiplier: 110.6%		Subtotals:	\$279,485		\$270,792
		Contingency: 10.00%	\$27,949		\$27,079
		Totals:	\$307,434		\$297,871
		Engineering: 15.00%	\$90,796		
		Construction Phase: 5.00%	\$30,265		
		Project Management: 6.00%	\$36,318		
		Total Project Cost:	\$762,684		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$762,684	<b>Total Purchased Electricity Savings (kWh/yr):</b>	71,723
<b>Rebate/Incentive*:</b>	\$31,801	<b>Total Purchased Gas Savings (th/yr):</b>	8,720
<b>Net Project Cost:</b>	\$730,883	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$16,618
<b>Net Simple Payback Period (yrs):</b>	44.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3023**

**Project: Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SPRAGUE HALL

**Building Key:** 09C9087

**Basic Gross Area (sf):** 90,211

**Calculation File:** UCI Aircuity Extrapolation Calculation - Checked MZ 032708.xls

**Project Description Reference(s):** Laboratory Air Handler Project 3. Reduce Minimum Air Change Requirements through Continuous Monitoring.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1

**Start Preliminary Engineering:** 6/1/2010

**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	249,321
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	95,228
<b>HW/Steam (MMBTu/yr):</b>	4,101

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 325,503

**Equivalent Gas Savings (th/yr):** 51,263

**Anticipated Gross Incentive:** \$129,383

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Aircuity, per sensor	28	\$2,500.00	\$71,820	\$2,000.00	\$61,936
Raw Costs:			\$71,820		\$61,936
City: Anaheim		Sales Tax: 8.25%	\$5,925		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$9,329		\$7,432
City Index Labor Multiplier: 110.6%		Subtotals:	\$87,075		\$69,368
		Contingency: 10.00%	\$8,707		\$6,937
		Totals:	\$95,782		\$76,305
		Engineering: 15.00%	\$25,813		
		Construction Phase: 5.00%	\$8,604		
		Project Management: 6.00%	\$10,325		
		Total Project Cost:	\$216,830		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$216,830	<b>Total Purchased Electricity Savings (kWh/yr):</b>	253,842
<b>Rebate/Incentive*:</b>	\$129,383	<b>Total Purchased Gas Savings (th/yr):</b>	49,811
<b>Net Project Cost:</b>	\$87,447	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$74,352
<b>Net Simple Payback Period (yrs):</b>	1.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3024**

**Project: Demand Control Ventilation**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** SPRAGUE HALL  
**Building Key:** 09C9087  
**Basic Gross Area (sf):** 90,211  
**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls  
**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,777
<b>Peak Demand (kW):</b>	7.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,777

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,626

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	24	\$0.00	\$0	\$100.00	\$2,654
CO2 Sensor	3	\$400.00	\$1,231	\$100.00	\$332
Raw Costs:			\$1,231		\$2,986
City: Anaheim	Sales Tax: 8.25%		\$102		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$160		\$358
Subtotals:			\$1,493		\$3,345
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$149		\$334
Totals:			\$1,642		\$3,679
Engineering: 15.00%			\$798		
Construction Phase: 5.00%			\$266		
Project Management: 6.00%			\$319		
Total Project Cost:			\$6,704		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,704	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,389
<b>Rebate/Incentive*:</b>	\$1,626	<b>Total Purchased Gas Savings (th/yr):</b>	336
<b>Net Project Cost:</b>	\$5,078	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$723
<b>Net Simple Payback Period (yrs):</b>	7.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3025**

**Project: EF VFDs**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SPRAGUE HALL

**Building Key:** 09C9087

**Basic Gross Area (sf):** 90,211

**Calculation File:** UCI EF VFD Calculation-Sprague.xls

**Project Description Reference(s):** UCI Laboratory Air Handler Project 4. Variable Drives on Exhaust Fans .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	562,800
<b>Peak Demand (kW):</b>	32.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 562,800

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$135,072

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
60 hp VFD	3	\$8,375.00	\$25,778	\$1,600.00	\$5,309
Programming	3	\$500.00	\$1,539	\$800.00	\$2,654
Raw Costs:			\$27,317		\$7,963
City: Anaheim		Sales Tax: 8.25%	\$2,254		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,549		\$956
City Index Labor Multiplier: 110.6%		Subtotals:	\$33,119		\$8,919
		Contingency: 10.00%	\$3,312		\$892
		Totals:	\$36,431		\$9,811
		Engineering: 15.00%	\$6,936		
		Construction Phase: 5.00%	\$2,312		
		Project Management: 6.00%	\$2,775		
		Total Project Cost:	\$58,265		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$58,265	<b>Total Purchased Electricity Savings (kWh/yr):</b>	281,400
<b>Rebate/Incentive*:</b>	\$46,612	<b>Total Purchased Gas Savings (th/yr):</b>	27,926
<b>Net Project Cost:</b>	\$11,653	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$60,044
<b>Net Simple Payback Period (yrs):</b>	0.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3026**

**Project: Aircuity - Reduce Vivarium from 15 to 8 ACH, Labs from 6 ACH to 4 & 2 ACH**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** HEWITT HALL

**Building Key:** 09C9088

**Basic Gross Area (sf):** 78,871

**Calculation File:** UCI Aircuity Extrapolation Calculation - Checked MZ 032708.xls

**Project Description Reference(s):** Laboratory Air Handler Project 3. Reduce Minimum Air Change Requirements through Continuous Monitoring.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	187,302
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	71,540
<b>HW/Steam (MMBTu/yr):</b>	3,081

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 244,534

**Equivalent Gas Savings (th/yr):** 38,513

**Anticipated Gross Incentive:** \$97,201

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Aircuity, per sensor	21	\$2,500.00	\$53,865	\$2,000.00	\$46,452
Raw Costs:			\$53,865		\$46,452
City: Anaheim		Sales Tax: 8.25%	\$4,444		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$6,997		\$5,574
City Index Labor Multiplier: 110.6%		Subtotals:	\$65,306		\$52,026
		Contingency: 10.00%	\$6,531		\$5,203
		Totals:	\$71,837		\$57,229
		Engineering: 15.00%	\$19,360		
		Construction Phase: 5.00%	\$6,453		
		Project Management: 6.00%	\$7,744		
		Total Project Cost:	\$162,622		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$162,622	<b>Total Purchased Electricity Savings (kWh/yr):</b>	190,703
<b>Rebate/Incentive*:</b>	\$97,201	<b>Total Purchased Gas Savings (th/yr):</b>	37,421
<b>Net Project Cost:</b>	\$65,421	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$55,858
<b>Net Simple Payback Period (yrs):</b>	1.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3027**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** HEWITT HALL

**Building Key:** 09C9088

**Basic Gross Area (sf):** 78,871

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation & UCI Laboratory Air Handler Project 4. Variable Drives on Exhaust Fans .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,925
<b>Peak Demand (kW):</b>	6.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 5,925

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,422

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	3	\$400.00	\$1,231	\$100.00	\$332
Programming	24	\$0.00	\$0	\$100.00	\$2,654
Raw Costs:			\$1,231		\$2,986
City: Anaheim	Sales Tax: 8.25%		\$102		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$160		\$358
Subtotals:			\$1,493		\$3,345
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$149		\$334
Totals:			\$1,642		\$3,679
Engineering: 15.00%			\$798		
Construction Phase: 5.00%			\$266		
Project Management: 6.00%			\$319		
Total Project Cost:			\$6,704		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,704	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,963
<b>Rebate/Incentive*:</b>	\$1,422	<b>Total Purchased Gas Savings (th/yr):</b>	294
<b>Net Project Cost:</b>	\$5,282	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$632
<b>Net Simple Payback Period (yrs):</b>	8.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3028**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** NAT SCI 1

**Building Key:** 09C9090

**Basic Gross Area (sf):** 120,913

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation & UCI Laboratory Air Handler Project 4. Variable Drives on Exhaust Fans .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	9,084
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 9,084

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,180

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	4	\$400.00	\$1,642	\$100.00	\$442
Programming	32	\$0.00	\$0	\$100.00	\$3,539
Raw Costs:			\$1,642		\$3,982
City: Anaheim	Sales Tax: 8.25%		\$135		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$213		\$478
Subtotals:			\$1,990		\$4,459
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$199		\$446
Totals:			\$2,189		\$4,905
Engineering: 15.00%			\$1,064		
Construction Phase: 5.00%			\$355		
Project Management: 6.00%			\$426		
Total Project Cost:			\$8,939		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,939	<b>Total Purchased Electricity Savings (kWh/yr):</b>	4,542
<b>Rebate/Incentive*:</b>	\$2,180	<b>Total Purchased Gas Savings (th/yr):</b>	451
<b>Net Project Cost:</b>	\$6,759	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$969
<b>Net Simple Payback Period (yrs):</b>	7.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3029**

**Project: Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	NAT SCI 2	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9091	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>	136,305	<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	UCI Aircuity Extrapolation Calculation - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Laboratory Air Handler Project 3. Reduce Minimum Air Change Requirements through Continuous Monitoring.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	377,870
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	144,327
<b>HW/Steam (MMBTu/yr):</b>	6,215

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	493,332
<b>Equivalent Gas Savings (th/yr):</b>	77,688
<b>Anticipated Gross Incentive:</b>	\$196,087

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Aircuity, per sensor	43	\$2,500.00	\$110,295	\$2,000.00	\$95,116
Raw Costs:			\$110,295		\$95,116
City: Anaheim		Sales Tax: 8.25%	\$9,099		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$14,327		\$11,414
City Index Labor Multiplier: 110.6%		Subtotals:	\$133,722		\$106,530
		Contingency: 10.00%	\$13,372		\$10,653
		Totals:	\$147,094		\$117,183
		Engineering: 15.00%	\$39,642		
		Construction Phase: 5.00%	\$13,214		
		Project Management: 6.00%	\$15,857		
		Total Project Cost:	\$332,989		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$332,989	<b>Total Purchased Electricity Savings (kWh/yr):</b>	384,708
<b>Rebate/Incentive*:</b>	\$196,087	<b>Total Purchased Gas Savings (th/yr):</b>	75,490
<b>Net Project Cost:</b>	\$136,902	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$112,683
<b>Net Simple Payback Period (yrs):</b>	1.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3030**

**Project: Demand Control Ventilation**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** NAT SCI 2  
**Building Key:** 09C9091  
**Basic Gross Area (sf):** 136,305  
**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls  
**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	10,240
<b>Peak Demand (kW):</b>	11.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 10,240

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,458

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	4	\$400.00	\$1,642	\$100.00	\$442
Programming	32	\$0.00	\$0	\$100.00	\$3,539
Raw Costs:			\$1,642		\$3,982
City: Anaheim Sales Tax: 8.25%			\$135		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$213	\$478
City Index Labor Multiplier: 110.6%			Subtotals:	\$1,990	\$4,459
Contingency: 10.00%			\$199		\$446
Totals:			\$2,189		\$4,905
Engineering: 15.00%			\$1,064		
Construction Phase: 5.00%			\$355		
Project Management: 6.00%			\$426		
Total Project Cost:			\$8,939		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,939	<b>Total Purchased Electricity Savings (kWh/yr):</b>	5,120
<b>Rebate/Incentive*:</b>	\$2,458	<b>Total Purchased Gas Savings (th/yr):</b>	508
<b>Net Project Cost:</b>	\$6,481	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,092
<b>Net Simple Payback Period (yrs):</b>	5.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3032**

**Project: Demand Control Ventilation**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** BERKELEY PL  
**Building Key:** 09C9107  
**Basic Gross Area (sf):** 114,000  
**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls  
**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	8,565
<b>Peak Demand (kW):</b>	9.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 8,565

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,056

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	8	\$400.00	\$3,283	\$100.00	\$885
Programming	64	\$0.00	\$0	\$100.00	\$7,078
Raw Costs:			\$3,283		\$7,963
City: Anaheim	Sales Tax: 8.25%		\$271		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$426		\$956
Subtotals:			\$3,981		\$8,919
Contingency: 10.00%			\$398		\$892
Totals:			\$4,379		\$9,811
Engineering: 15.00%			\$2,128		
Construction Phase: 5.00%			\$709		
Project Management: 6.00%			\$851		
Total Project Cost:			\$17,878		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$17,878	<b>Total Purchased Electricity Savings (kWh/yr):</b>	4,283
<b>Rebate/Incentive*:</b>	\$2,056	<b>Total Purchased Gas Savings (th/yr):</b>	425
<b>Net Project Cost:</b>	\$15,822	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$914
<b>Net Simple Payback Period (yrs):</b>	17.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3033**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BERKELEY PL

**Building Key:** 09C9107

**Basic Gross Area (sf):** 114,000

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	59,280
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	2,736
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 59,280

**Equivalent Gas Savings (th/yr):** 2,736

**Anticipated Gross Incentive:** \$16,963

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	143	\$841.50	\$123,463	\$818.75	\$129,492
Raw Costs:			\$123,463		\$129,492
City: Anaheim		Sales Tax: 8.25%	\$10,186		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$16,038		\$15,539
City Index Labor Multiplier: 110.6%		Subtotals:	\$149,687		\$145,031
		Contingency: 10.00%	\$14,969		\$14,503
		Totals:	\$164,655		\$159,534
		Engineering: 15.00%	\$48,628		
		Construction Phase: 5.00%	\$16,209		
		Project Management: 6.00%	\$19,451		
		Total Project Cost:	\$408,479		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$408,479	<b>Total Purchased Electricity Savings (kWh/yr):</b>	38,258
<b>Rebate/Incentive*:</b>	\$16,963	<b>Total Purchased Gas Savings (th/yr):</b>	4,651
<b>Net Project Cost:</b>	\$391,516	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,864
<b>Net Simple Payback Period (yrs):</b>	44.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3034**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** REINES HALL

**Building Key:** 09C9108

**Basic Gross Area (sf):** 156,514

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,759
<b>Peak Demand (kW):</b>	13.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 11,759

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,822

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	2	\$400.00	\$821	\$100.00	\$221
Programming	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$821		\$1,991
City: Anaheim	Sales Tax: 8.25%		\$68		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$107		\$239
Subtotals:			\$995		\$2,230
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$100		\$223
Totals:			\$1,095		\$2,453
Engineering: 15.00%			\$532		
Construction Phase: 5.00%			\$177		
Project Management: 6.00%			\$213		
Total Project Cost:			\$4,470		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,470	<b>Total Purchased Electricity Savings (kWh/yr):</b>	5,880
<b>Rebate/Incentive*:</b>	\$2,822	<b>Total Purchased Gas Savings (th/yr):</b>	583
<b>Net Project Cost:</b>	\$1,648	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,255
<b>Net Simple Payback Period (yrs):</b>	1.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3035**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** REINES HALL

**Building Key:** 09C9108

**Basic Gross Area (sf):** 156,514

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	81,387
<b>Peak Demand (kW):</b>	14.0
<b>Gas (th/yr):</b>	3,756
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 81,387

**Equivalent Gas Savings (th/yr):** 3,756

**Anticipated Gross Incentive:** \$23,289

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	196	\$841.50	\$169,222	\$818.75	\$177,485
Raw Costs:			\$169,222		\$177,485
City: Anaheim		Sales Tax: 8.25%	\$13,961		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$21,982		\$21,298
City Index Labor Multiplier: 110.6%		Subtotals:	\$205,165		\$198,784
		Contingency: 10.00%	\$20,517		\$19,878
		Totals:	\$225,682		\$218,662
		Engineering: 15.00%	\$66,652		
		Construction Phase: 5.00%	\$22,217		
		Project Management: 6.00%	\$26,661		
		Total Project Cost:	\$559,873		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$559,873	<b>Total Purchased Electricity Savings (kWh/yr):</b>	52,525
<b>Rebate/Incentive*:</b>	\$23,289	<b>Total Purchased Gas Savings (th/yr):</b>	6,386
<b>Net Project Cost:</b>	\$536,584	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,170
<b>Net Simple Payback Period (yrs):</b>	44.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3036**

**Project: EF VFDs**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** REINES HALL

**Building Key:** 09C9108

**Basic Gross Area (sf):** 156,514

**Calculation File:** UCI EF VFD Calculation-Reines.xls

**Project Description Reference(s):** UCI Laboratory Air Handler Project 4. Variable Drives on Exhaust Fans .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,264
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,264

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,503

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	4	\$500.00	\$2,052	\$800.00	\$3,539
2 hp VFD	1	\$700.00	\$718	\$400.00	\$442
0.5 hp VFD	1	\$175.00	\$180	\$350.00	\$387
Raw Costs:			\$2,950		\$4,369
City: Anaheim	Sales Tax: 8.25%		\$243		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$383		\$524
City Index Labor Multiplier: 110.6%	Subtotals:		\$3,576		\$4,893
Contingency: 10.00%			\$358		\$489
Totals:			\$3,934		\$5,382
Engineering: 15.00%			\$1,397		
Construction Phase: 5.00%			\$466		
Project Management: 6.00%			\$559		
Total Project Cost:			\$11,738		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$11,738	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,132
<b>Rebate/Incentive*:</b>	\$1,503	<b>Total Purchased Gas Savings (th/yr):</b>	311
<b>Net Project Cost:</b>	\$10,235	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$668
<b>Net Simple Payback Period (yrs):</b>	15.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3037**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** M SCI & TECH

**Building Key:** 09C9114

**Basic Gross Area (sf):** 63,111

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	4,741
<b>Peak Demand (kW):</b>	5.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,741

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,138

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	2	\$400.00	\$821	\$100.00	\$221
Programming	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$821		\$1,991
City: Anaheim	Sales Tax: 8.25%		\$68		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$107		\$239
Subtotals:			\$995		\$2,230
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$100		\$223
Totals:			\$1,095		\$2,453
Engineering: 15.00%			\$532		
Construction Phase: 5.00%			\$177		
Project Management: 6.00%			\$213		
Total Project Cost:			\$4,470		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,470	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,371
<b>Rebate/Incentive*:</b>	\$1,138	<b>Total Purchased Gas Savings (th/yr):</b>	235
<b>Net Project Cost:</b>	\$3,332	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$506
<b>Net Simple Payback Period (yrs):</b>	6.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3038**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** M SCI & TECH

**Building Key:** 09C9114

**Basic Gross Area (sf):** 63,111

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	32,818
<b>Peak Demand (kW):</b>	6.0
<b>Gas (th/yr):</b>	1,515
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 32,818

**Equivalent Gas Savings (th/yr):** 1,515

**Anticipated Gross Incentive:** \$9,391

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	79	\$841.50	\$68,207	\$818.75	\$71,537
Raw Costs:			\$68,207		\$71,537
City: Anaheim		Sales Tax: 8.25%	\$5,627		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$8,860		\$8,584
City Index Labor Multiplier: 110.6%		Subtotals:	\$82,694		\$80,122
		Contingency: 10.00%	\$8,269		\$8,012
		Totals:	\$90,964		\$88,134
		Engineering: 15.00%	\$26,865		
		Construction Phase: 5.00%	\$8,955		
		Project Management: 6.00%	\$10,746		
		Total Project Cost:	\$225,663		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$225,663	<b>Total Purchased Electricity Savings (kWh/yr):</b>	21,181
<b>Rebate/Incentive*:</b>	\$9,391	<b>Total Purchased Gas Savings (th/yr):</b>	2,575
<b>Net Project Cost:</b>	\$216,272	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,908
<b>Net Simple Payback Period (yrs):</b>	44.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3039**

**Project: Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** CAL (IT)2  
**Building Key:** 09C9118  
**Basic Gross Area (sf):** 119,860  
**Calculation File:** UCI Aircuity Extrapolation Calculation - Checked MZ 032708.xls  
**Project Description Reference(s):** Laboratory Air Handler Project 3. Reduce Minimum Air Change Requirements through Continuous Monitoring.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	339,437
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	129,648
<b>HW/Steam (MMBTu/yr):</b>	5,583

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 443,155

**Equivalent Gas Savings (th/yr):** 69,788

**Anticipated Gross Incentive:** \$176,145

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Aircuity, per sensor	38	\$2,500.00	\$97,470	\$2,000.00	\$84,056
Raw Costs:			\$97,470		\$84,056
City: Anaheim		Sales Tax: 8.25%	\$8,041		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$12,661		\$10,087
City Index Labor Multiplier: 110.6%		Subtotals:	\$118,173		\$94,143
		Contingency: 10.00%	\$11,817		\$9,414
		Totals:	\$129,990		\$103,557
		Engineering: 15.00%	\$35,032		
		Construction Phase: 5.00%	\$11,677		
		Project Management: 6.00%	\$14,013		
		Total Project Cost:	\$294,269		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$294,269	<b>Total Purchased Electricity Savings (kWh/yr):</b>	345,583
<b>Rebate/Incentive*:</b>	\$176,145	<b>Total Purchased Gas Savings (th/yr):</b>	67,813
<b>Net Project Cost:</b>	\$118,124	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$101,224
<b>Net Simple Payback Period (yrs):</b>	1.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3040**

**Project: Demand Control Ventilation**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** CAL (IT)2  
**Building Key:** 09C9118  
**Basic Gross Area (sf):** 119,860  
**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls  
**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	9,005
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 9,005

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,161

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	56	\$0.00	\$0	\$100.00	\$6,194
CO2 Sensor	7	\$400.00	\$2,873	\$100.00	\$774
Raw Costs:			\$2,873		\$6,968
City: Anaheim	Sales Tax: 8.25%		\$237		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$373		\$836
City Index Labor Multiplier: 110.6%	Subtotals:		\$3,483		\$7,804
Contingency: 10.00%			\$348		\$780
Totals:			\$3,831		\$8,584
Engineering: 15.00%			\$1,862		
Construction Phase: 5.00%			\$621		
Project Management: 6.00%			\$745		
Total Project Cost:			\$15,644		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$15,644	<b>Total Purchased Electricity Savings (kWh/yr):</b>	4,503
<b>Rebate/Incentive*:</b>	\$2,161	<b>Total Purchased Gas Savings (th/yr):</b>	447
<b>Net Project Cost:</b>	\$13,483	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$961
<b>Net Simple Payback Period (yrs):</b>	14.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3041**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG TOWER

**Building Key:** 09C9125

**Basic Gross Area (sf):** 113,941

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	8,560
<b>Peak Demand (kW):</b>	9.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 8,560

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,054

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Programming	32	\$0.00	\$0	\$100.00	\$3,539
CO2 Sensor	4	\$400.00	\$1,642	\$100.00	\$442
Raw Costs:			\$1,642		\$3,982
City: Anaheim	Sales Tax: 8.25%		\$135		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$213		\$478
Subtotals:			\$1,990		\$4,459
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$199		\$446
Totals:			\$2,189		\$4,905
Engineering: 15.00%			\$1,064		
Construction Phase: 5.00%			\$355		
Project Management: 6.00%			\$426		
Total Project Cost:			\$8,939		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,939	<b>Total Purchased Electricity Savings (kWh/yr):</b>	4,280
<b>Rebate/Incentive*:</b>	\$2,054	<b>Total Purchased Gas Savings (th/yr):</b>	425
<b>Net Project Cost:</b>	\$6,885	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$913
<b>Net Simple Payback Period (yrs):</b>	7.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3042**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG TOWER

**Building Key:** 09C9125

**Basic Gross Area (sf):** 113,941

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	59,249
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	2,735
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 59,249

**Equivalent Gas Savings (th/yr):** 2,735

**Anticipated Gross Incentive:** \$16,955

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	142	\$841.50	\$122,600	\$818.75	\$128,586
Raw Costs:			\$122,600		\$128,586
City: Anaheim		Sales Tax: 8.25%	\$10,114		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$15,926		\$15,430
City Index Labor Multiplier: 110.6%		Subtotals:	\$148,640		\$144,017
		Contingency: 10.00%	\$14,864		\$14,402
		Totals:	\$163,504		\$158,418
		Engineering: 15.00%	\$48,288		
		Construction Phase: 5.00%	\$16,096		
		Project Management: 6.00%	\$19,315		
		Total Project Cost:	\$405,622		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$405,622	<b>Total Purchased Electricity Savings (kWh/yr):</b>	38,240
<b>Rebate/Incentive*:</b>	\$16,955	<b>Total Purchased Gas Savings (th/yr):</b>	4,649
<b>Net Project Cost:</b>	\$388,667	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,860
<b>Net Simple Payback Period (yrs):</b>	43.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3043**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** COMP SCI BLD

**Building Key:** 09C9126

**Basic Gross Area (sf):** 60,678

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	4,559
<b>Peak Demand (kW):</b>	5.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,559

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,094

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	2	\$400.00	\$821	\$100.00	\$221
Programming	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$821		\$1,991
City: Anaheim Sales Tax: 8.25%			\$68		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$107	\$239
City Index Labor Multiplier: 110.6%			Subtotals:	\$995	\$2,230
Contingency: 10.00%			\$100		\$223
Totals:			\$1,095		\$2,453
Engineering: 15.00%			\$532		
Construction Phase: 5.00%			\$177		
Project Management: 6.00%			\$213		
Total Project Cost:			\$4,470		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,470	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,280
<b>Rebate/Incentive*:</b>	\$1,094	<b>Total Purchased Gas Savings (th/yr):</b>	226
<b>Net Project Cost:</b>	\$3,376	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$486
<b>Net Simple Payback Period (yrs):</b>	6.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3044**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** COMP SCI BLD

**Building Key:** 09C9126

**Basic Gross Area (sf):** 60,678

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	31,553
<b>Peak Demand (kW):</b>	5.0
<b>Gas (th/yr):</b>	1,456
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 31,553

**Equivalent Gas Savings (th/yr):** 1,456

**Anticipated Gross Incentive:** \$9,029

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	76	\$841.50	\$65,617	\$818.75	\$68,821
Raw Costs:			\$65,617		\$68,821
City: Anaheim		Sales Tax: 8.25%	\$5,413		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$8,524		\$8,259
City Index Labor Multiplier: 110.6%		Subtotals:	\$79,554		\$77,079
		Contingency: 10.00%	\$7,955		\$7,708
		Totals:	\$87,509		\$84,787
		Engineering: 15.00%	\$25,844		
		Construction Phase: 5.00%	\$8,615		
		Project Management: 6.00%	\$10,338		
		Total Project Cost:	\$217,094		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$217,094	<b>Total Purchased Electricity Savings (kWh/yr):</b>	20,363
<b>Rebate/Incentive*:</b>	\$9,029	<b>Total Purchased Gas Savings (th/yr):</b>	2,476
<b>Net Project Cost:</b>	\$208,065	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,718
<b>Net Simple Payback Period (yrs):</b>	44.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3045**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY

**Building Key:** 09C9128

**Basic Gross Area (sf):** 55,000

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	4,132
<b>Peak Demand (kW):</b>	4.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,132

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$992

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	4	\$400.00	\$1,642	\$100.00	\$442
Programming	32	\$0.00	\$0	\$100.00	\$3,539
Raw Costs:			\$1,642		\$3,982
City: Anaheim	Sales Tax: 8.25%		\$135		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$213		\$478
Subtotals:			\$1,990		\$4,459
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$199		\$446
Totals:			\$2,189		\$4,905
Engineering: 15.00%			\$1,064		
Construction Phase: 5.00%			\$355		
Project Management: 6.00%			\$426		
Total Project Cost:			\$8,939		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,939	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,066
<b>Rebate/Incentive*:</b>	\$992	<b>Total Purchased Gas Savings (th/yr):</b>	205
<b>Net Project Cost:</b>	\$7,947	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$441
<b>Net Simple Payback Period (yrs):</b>	18.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3046**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** IRVINE HALL

**Building Key:** 09C9132

**Basic Gross Area (sf):** 54,620

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	28,402
<b>Peak Demand (kW):</b>	5.0
<b>Gas (th/yr):</b>	1,311
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 28,402

**Equivalent Gas Savings (th/yr):** 1,311

**Anticipated Gross Incentive:** \$8,127

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	68	\$841.50	\$58,710	\$818.75	\$61,577
Raw Costs:			\$58,710		\$61,577
City: Anaheim		Sales Tax: 8.25%	\$4,844		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$7,626		\$7,389
City Index Labor Multiplier: 110.6%		Subtotals:	\$71,180		\$68,966
		Contingency: 10.00%	\$7,118		\$6,897
		Totals:	\$78,298		\$75,862
		Engineering: 15.00%	\$23,124		
		Construction Phase: 5.00%	\$7,708		
		Project Management: 6.00%	\$9,250		
		Total Project Cost:	\$194,242		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$194,242	<b>Total Purchased Electricity Savings (kWh/yr):</b>	18,331
<b>Rebate/Incentive*:</b>	\$8,127	<b>Total Purchased Gas Savings (th/yr):</b>	2,229
<b>Net Project Cost:</b>	\$186,115	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,247
<b>Net Simple Payback Period (yrs):</b>	43.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3048**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG GATEWAY

**Building Key:** 09C9140

**Basic Gross Area (sf):** 132,090

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	68,687
<b>Peak Demand (kW):</b>	11.0
<b>Gas (th/yr):</b>	3,170
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 68,687

**Equivalent Gas Savings (th/yr):** 3,170

**Anticipated Gross Incentive:** \$19,655

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	165	\$841.50	\$142,458	\$818.75	\$149,414
Raw Costs:			\$142,458		\$149,414
City: Anaheim		Sales Tax: 8.25%	\$11,753		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$18,505		\$17,930
City Index Labor Multiplier: 110.6%		Subtotals:	\$172,716		\$167,343
		Contingency: 10.00%	\$17,272		\$16,734
		Totals:	\$189,987		\$184,078
		Engineering: 15.00%	\$56,110		
		Construction Phase: 5.00%	\$18,703		
		Project Management: 6.00%	\$22,444		
		Total Project Cost:	\$471,322		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$471,322	<b>Total Purchased Electricity Savings (kWh/yr):</b>	44,329
<b>Rebate/Incentive*:</b>	\$19,655	<b>Total Purchased Gas Savings (th/yr):</b>	5,389
<b>Net Project Cost:</b>	\$451,667	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$10,271
<b>Net Simple Payback Period (yrs):</b>	44.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3050**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOCSCI TOWER

**Building Key:** 09C9204

**Basic Gross Area (sf):** 83,844

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	43,599
<b>Peak Demand (kW):</b>	7.0
<b>Gas (th/yr):</b>	2,012
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 43,599

**Equivalent Gas Savings (th/yr):** 2,012

**Anticipated Gross Incentive:** \$12,476

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	105	\$841.50	\$90,655	\$818.75	\$95,081
Raw Costs:			\$90,655		\$95,081
City: Anaheim		Sales Tax: 8.25%	\$7,479		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$11,776		\$11,410
City Index Labor Multiplier: 110.6%		Subtotals:	\$109,910		\$106,491
		Contingency: 10.00%	\$10,991		\$10,649
		Totals:	\$120,901		\$117,140
		Engineering: 15.00%	\$35,706		
		Construction Phase: 5.00%	\$11,902		
		Project Management: 6.00%	\$14,282		
		Total Project Cost:	\$299,932		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$299,932	<b>Total Purchased Electricity Savings (kWh/yr):</b>	28,137
<b>Rebate/Incentive*:</b>	\$12,476	<b>Total Purchased Gas Savings (th/yr):</b>	3,421
<b>Net Project Cost:</b>	\$287,456	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,519
<b>Net Simple Payback Period (yrs):</b>	44.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3051

## Project: Demand Control Ventilation

Campus: IRVINE  
 Location: IRVINE  
 Building: SOC SCI PL A  
 Building Key: 09C9212  
 Basic Gross Area (sf): 46,479  
 Calculation File: UCI DCV Projects - Checked MZ 032808.xls  
 Project Description Reference(s): Air Handler Project 3. Demand Control Ventilation.

### Campus Prioritization and Schedule

Project Tier: Tier 2  
 Start Preliminary Engineering: 6/1/2010  
 Scheduled Completion: 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

Electric (kWh/yr):	3,492
Peak Demand (kW):	4.0
Gas (th/yr):	0
Chilled Water (ton-hr/yr):	0
HW/Steam (MMBTu/yr):	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

Equivalent Electric Savings (kWh/yr): 3,492

Equivalent Gas Savings (th/yr): 0

Anticipated Gross Incentive: \$838

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	1	\$400.00	\$410	\$100.00	\$111
Programming	8	\$0.00	\$0	\$100.00	\$885
Raw Costs:			\$410		\$995
City: Anaheim	Sales Tax: 8.25%		\$34		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$53		\$119
City Index Labor Multiplier: 110.6%	Subtotals:		\$498		\$1,115
Contingency: 10.00%			\$50		\$111
Totals:			\$547		\$1,226
Engineering: 15.00%			\$266		
Construction Phase: 5.00%			\$89		
Project Management: 6.00%			\$106		
Total Project Cost:			\$2,235		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

Total Project Cost:	\$2,235	Total Purchased Electricity Savings (kWh/yr):	1,746
Rebate/Incentive*:	\$838	Total Purchased Gas Savings (th/yr):	173
Net Project Cost:	\$1,397	Total Purchased Annual Cost Savings (\$/yr):	\$373
Net Simple Payback Period (yrs):	3.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3052**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL A

**Building Key:** 09C9212

**Basic Gross Area (sf):** 46,479

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	24,169
<b>Peak Demand (kW):</b>	4.0
<b>Gas (th/yr):</b>	1,116
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 24,169

**Equivalent Gas Savings (th/yr):** 1,116

**Anticipated Gross Incentive:** \$6,917

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	58	\$841.50	\$50,076	\$818.75	\$52,521
Raw Costs:			\$50,076		\$52,521
City: Anaheim		Sales Tax: 8.25%	\$4,131		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$6,505		\$6,303
City Index Labor Multiplier: 110.6%		Subtotals:	\$60,712		\$58,824
		Contingency: 10.00%	\$6,071		\$5,882
		Totals:	\$66,783		\$64,706
		Engineering: 15.00%	\$19,723		
		Construction Phase: 5.00%	\$6,574		
		Project Management: 6.00%	\$7,889		
		Total Project Cost:	\$165,677		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$165,677	<b>Total Purchased Electricity Savings (kWh/yr):</b>	15,600
<b>Rebate/Incentive*:</b>	\$6,917	<b>Total Purchased Gas Savings (th/yr):</b>	1,897
<b>Net Project Cost:</b>	\$158,760	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,615
<b>Net Simple Payback Period (yrs):</b>	43.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3053**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL B

**Building Key:** 09C9221

**Basic Gross Area (sf):** 49,078

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	3,687
<b>Peak Demand (kW):</b>	4.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 3,687

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$885

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	1	\$400.00	\$410	\$100.00	\$111
Programming	8	\$0.00	\$0	\$100.00	\$885
Raw Costs:			\$410		\$995
City: Anaheim	Sales Tax: 8.25%		\$34		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$53		\$119
Subtotals:			\$498		\$1,115
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$50		\$111
Totals:			\$547		\$1,226
Engineering: 15.00%			\$266		
Construction Phase: 5.00%			\$89		
Project Management: 6.00%			\$106		
Total Project Cost:			\$2,235		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,235	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,844
<b>Rebate/Incentive*:</b>	\$885	<b>Total Purchased Gas Savings (th/yr):</b>	183
<b>Net Project Cost:</b>	\$1,350	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$393
<b>Net Simple Payback Period (yrs):</b>	3.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3054**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL B

**Building Key:** 09C9221

**Basic Gross Area (sf):** 49,078

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	25,521
<b>Peak Demand (kW):</b>	4.0
<b>Gas (th/yr):</b>	1,178
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 25,521

**Equivalent Gas Savings (th/yr):** 1,178

**Anticipated Gross Incentive:** \$7,303

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	61	\$841.50	\$52,666	\$818.75	\$55,238
Raw Costs:			\$52,666		\$55,238
City: Anaheim		Sales Tax: 8.25%	\$4,345		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$6,841		\$6,629
City Index Labor Multiplier: 110.6%		Subtotals:	\$63,852		\$61,866
		Contingency: 10.00%	\$6,385		\$6,187
		Totals:	\$70,238		\$68,053
		Engineering: 15.00%	\$20,744		
		Construction Phase: 5.00%	\$6,915		
		Project Management: 6.00%	\$8,297		
		Total Project Cost:	\$174,246		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$174,246	<b>Total Purchased Electricity Savings (kWh/yr):</b>	16,471
<b>Rebate/Incentive*:</b>	\$7,303	<b>Total Purchased Gas Savings (th/yr):</b>	2,003
<b>Net Project Cost:</b>	\$166,943	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,816
<b>Net Simple Payback Period (yrs):</b>	43.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3055**

**Project: Demand Control Ventilation**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** SOC ECOLOGY2  
**Building Key:** 09C9222  
**Basic Gross Area (sf):** 35,753  
**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls  
**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	2,873
<b>Peak Demand (kW):</b>	3.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 2,873

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$690

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	2	\$400.00	\$821	\$100.00	\$221
Programming	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$821		\$1,991
City: Anaheim	Sales Tax: 8.25%		\$68		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$107		\$239
Subtotals:			\$995		\$2,230
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$100		\$223
Totals:			\$1,095		\$2,453
Engineering: 15.00%			\$532		
Construction Phase: 5.00%			\$177		
Project Management: 6.00%			\$213		
Total Project Cost:			\$4,470		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,470	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,437
<b>Rebate/Incentive*:</b>	\$690	<b>Total Purchased Gas Savings (th/yr):</b>	143
<b>Net Project Cost:</b>	\$3,780	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$307
<b>Net Simple Payback Period (yrs):</b>	12.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3056

**Project:** Gym Lighting Retrofit - Implement recommendations in AEI Lighting Survey, with occupancy sensors

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CRAWFORD HAL	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9300	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	57,437	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UC Irvine Crawford Gym Custom Lighting Calc MZ Checked AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 4. Interior High Bay Lighting .		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	77,280
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 77,280

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$18,547

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
2-IOP4P32HLSC, 8-F32T8/ADV841/ALTO	44	\$40.00	\$1,806	\$60.00	\$2,920
Occupany Sensor	17	\$120.00	\$2,093	\$50.00	\$940
1-IOP4P32HLSC, 4-F32T8/ADV841/ALTO	16	\$26.00	\$427	\$39.00	\$690
8-Lamp 32-watt HBF 4x4	12	\$158.00	\$1,945	\$237.00	\$3,145
Raw Costs:			\$6,271		\$7,696
City: Anaheim	Sales Tax: 8.25%		\$517		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$815		\$923
City Index Labor Multiplier: 110.6%	Subtotals:		\$7,603		\$8,619
Contingency: 10.00%			\$760		\$862
Totals:			\$8,363		\$9,481
Engineering: 15.00%			\$2,677		
Construction Phase: 5.00%			\$892		
Project Management: 6.00%			\$1,071		
Total Project Cost:			\$22,484		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$22,484	<b>Total Purchased Electricity Savings (kWh/yr):</b>	38,640
<b>Rebate/Incentive*:</b>	\$17,987	<b>Total Purchased Gas Savings (th/yr):</b>	3,835
<b>Net Project Cost:</b>	\$4,497	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,245
<b>Net Simple Payback Period (yrs):</b>	0.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3057**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BREN EVENTS

**Building Key:** 09C9314

**Basic Gross Area (sf):** 97,259

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	50,575
<b>Peak Demand (kW):</b>	8.0
<b>Gas (th/yr):</b>	2,334
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 50,575

**Equivalent Gas Savings (th/yr):** 2,334

**Anticipated Gross Incentive:** \$14,472

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	122	\$841.50	\$105,332	\$818.75	\$110,476
Raw Costs:			\$105,332		\$110,476
City: Anaheim		Sales Tax: 8.25%	\$8,690		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$13,683		\$13,257
City Index Labor Multiplier: 110.6%		Subtotals:	\$127,705		\$123,733
		Contingency: 10.00%	\$12,770		\$12,373
		Totals:	\$140,475		\$136,106
		Engineering: 15.00%	\$41,487		
		Construction Phase: 5.00%	\$13,829		
		Project Management: 6.00%	\$16,595		
		Total Project Cost:	\$348,492		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$348,492	<b>Total Purchased Electricity Savings (kWh/yr):</b>	32,640
<b>Rebate/Incentive*:</b>	\$14,472	<b>Total Purchased Gas Savings (th/yr):</b>	3,968
<b>Net Project Cost:</b>	\$334,020	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,562
<b>Net Simple Payback Period (yrs):</b>	44.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3058**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI C

**Building Key:** 09C9322

**Basic Gross Area (sf):** 55,853

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	29,044
<b>Peak Demand (kW):</b>	5.0
<b>Gas (th/yr):</b>	1,341
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 29,044  
**Equivalent Gas Savings (th/yr):** 1,341  
**Anticipated Gross Incentive:** \$8,312

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	70	\$841.50	\$60,437	\$818.75	\$63,388
Raw Costs:			\$60,437		\$63,388
City: Anaheim		Sales Tax: 8.25%	\$4,986		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$7,851		\$7,607
Subtotals:			\$73,273		\$70,994
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$7,327		\$7,099
Totals:			\$80,601		\$78,094
		Engineering: 15.00%	\$23,804		
		Construction Phase: 5.00%	\$7,935		
		Project Management: 6.00%	\$9,522		
Total Project Cost:			\$199,955		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$199,955	<b>Total Purchased Electricity Savings (kWh/yr):</b>	18,746
<b>Rebate/Incentive*:</b>	\$8,312	<b>Total Purchased Gas Savings (th/yr):</b>	2,279
<b>Net Project Cost:</b>	\$191,643	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,344
<b>Net Simple Payback Period (yrs):</b>	44.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3060**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI D

**Building Key:** 09C9323

**Basic Gross Area (sf):** 71,959

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	37,419
<b>Peak Demand (kW):</b>	6.0
<b>Gas (th/yr):</b>	1,727
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 37,419

**Equivalent Gas Savings (th/yr):** 1,727

**Anticipated Gross Incentive:** \$10,708

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	90	\$841.50	\$77,704	\$818.75	\$81,498
Raw Costs:			\$77,704		\$81,498
City: Anaheim		Sales Tax: 8.25%	\$6,411		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$10,094		\$9,780
City Index Labor Multiplier: 110.6%		Subtotals:	\$94,208		\$91,278
		Contingency: 10.00%	\$9,421		\$9,128
		Totals:	\$103,629		\$100,406
		Engineering: 15.00%	\$30,605		
		Construction Phase: 5.00%	\$10,202		
		Project Management: 6.00%	\$12,242		
		Total Project Cost:	\$257,084		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$257,084	<b>Total Purchased Electricity Savings (kWh/yr):</b>	24,150
<b>Rebate/Incentive*:</b>	\$10,708	<b>Total Purchased Gas Savings (th/yr):</b>	2,936
<b>Net Project Cost:</b>	\$246,376	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$5,595
<b>Net Simple Payback Period (yrs):</b>	44.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



## PROJECT DETAIL REPORT

SEP Project ID Number: I3062

**Project:** Zone DDC Upgrade

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI A

**Building Key:** 09C9325

**Basic Gross Area (sf):** 13,418

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,977
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	322
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,977

**Equivalent Gas Savings (th/yr):** 322

**Anticipated Gross Incentive:** \$1,996

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	17	\$841.50	\$14,677	\$818.75	\$15,394
Raw Costs:			\$14,677		\$15,394
City: Anaheim		Sales Tax: 8.25%	\$1,211		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,907		\$1,847
Subtotals:			\$17,795		\$17,241
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$1,779		\$1,724
Totals:			\$19,574		\$18,966
		Engineering: 15.00%	\$5,781		
		Construction Phase: 5.00%	\$1,927		
		Project Management: 6.00%	\$2,312		
Total Project Cost:			\$48,560		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$48,560	<b>Total Purchased Electricity Savings (kWh/yr):</b>	4,503
<b>Rebate/Incentive*:</b>	\$1,996	<b>Total Purchased Gas Savings (th/yr):</b>	547
<b>Net Project Cost:</b>	\$46,564	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,043
<b>Net Simple Payback Period (yrs):</b>	44.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3064**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI B

**Building Key:** 09C9328

**Basic Gross Area (sf):** 35,864

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	18,649
<b>Peak Demand (kW):</b>	3.0
<b>Gas (th/yr):</b>	861
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 18,649

**Equivalent Gas Savings (th/yr):** 861

**Anticipated Gross Incentive:** \$5,337

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	45	\$841.50	\$38,852	\$818.75	\$40,749
Raw Costs:			\$38,852		\$40,749
City: Anaheim		Sales Tax: 8.25%	\$3,205		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$5,047		\$4,890
City Index Labor Multiplier: 110.6%		Subtotals:	\$47,104		\$45,639
		Contingency: 10.00%	\$4,710		\$4,564
		Totals:	\$51,815		\$50,203
		Engineering: 15.00%	\$15,303		
		Construction Phase: 5.00%	\$5,101		
		Project Management: 6.00%	\$6,121		
		Total Project Cost:	\$128,542		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$128,542	<b>Total Purchased Electricity Savings (kWh/yr):</b>	12,037
<b>Rebate/Incentive*:</b>	\$5,337	<b>Total Purchased Gas Savings (th/yr):</b>	1,463
<b>Net Project Cost:</b>	\$123,205	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,789
<b>Net Simple Payback Period (yrs):</b>	44.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3066**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SURG 2

**Building Key:** 09C9329

**Basic Gross Area (sf):** 60,238

**Calculation File:** UCI DDC Upgrades.xls

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	31,324
<b>Peak Demand (kW):</b>	5.0
<b>Gas (th/yr):</b>	1,446
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 31,324

**Equivalent Gas Savings (th/yr):** 1,446

**Anticipated Gross Incentive:** \$8,964

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
800 CFM Terminal Box	75	\$841.50	\$64,753	\$818.75	\$67,915
Raw Costs:			\$64,753		\$67,915
City: Anaheim		Sales Tax: 8.25%	\$5,342		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$8,411		\$8,150
City Index Labor Multiplier: 110.6%		Subtotals:	\$78,507		\$76,065
		Contingency: 10.00%	\$7,851		\$7,607
		Totals:	\$86,358		\$83,672
		Engineering: 15.00%	\$25,504		
		Construction Phase: 5.00%	\$8,501		
		Project Management: 6.00%	\$10,202		
		Total Project Cost:	\$214,237		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$214,237	<b>Total Purchased Electricity Savings (kWh/yr):</b>	20,217
<b>Rebate/Incentive*:</b>	\$8,964	<b>Total Purchased Gas Savings (th/yr):</b>	2,458
<b>Net Project Cost:</b>	\$205,273	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,684
<b>Net Simple Payback Period (yrs):</b>	43.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3067**

**Project: Demand Control Ventilation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BREN HALL

**Building Key:** 09CTBD1

**Basic Gross Area (sf):** 147,975

**Calculation File:** UCI DCV Projects - Checked MZ 032808.xls

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,117
<b>Peak Demand (kW):</b>	12.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 11,117

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,668

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
CO2 Sensor	2	\$400.00	\$821	\$100.00	\$221
Programming	16	\$0.00	\$0	\$100.00	\$1,770
Raw Costs:			\$821		\$1,991
City: Anaheim Sales Tax: 8.25%			\$68		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$107	\$239
City Index Labor Multiplier: 110.6%			Subtotals:	\$995	\$2,230
Contingency: 10.00%			\$100		\$223
Totals:			\$1,095		\$2,453
Engineering: 15.00%			\$532		
Construction Phase: 5.00%			\$177		
Project Management: 6.00%			\$213		
Total Project Cost:			\$4,470		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,470	<b>Total Purchased Electricity Savings (kWh/yr):</b>	5,559
<b>Rebate/Incentive*:</b>	\$2,668	<b>Total Purchased Gas Savings (th/yr):</b>	552
<b>Net Project Cost:</b>	\$1,802	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,186
<b>Net Simple Payback Period (yrs):</b>	1.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3068**

**Project: Variable Speed Circulation Pump - Anteater Pool**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ANT REC CTR

**Building Key:** 09C9299

**Basic Gross Area (sf):** 89,320

**Calculation File:** UC Irvine Pools TLH.xls

**Project Description Reference(s):** Pool Project 1. Variable Speed Drives and High Efficiency Motors for Filter Pumps.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	35,513
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 35,513

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$8,523

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
VSD and Controls	1	\$9,600.00	\$9,850	\$1,391.25	\$1,539
Premium Efficiency Motor	1	\$0.00	\$0	\$0.00	\$0
Raw Costs:			\$9,850		\$1,539
City: Anaheim	Sales Tax: 8.25%		\$813		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$1,279		\$185
Subtotals:			\$11,942		\$1,723
City Index Labor Multiplier: 110.6%	Contingency: 10.00%		\$1,194		\$172
Totals:			\$13,136		\$1,896
Engineering: 15.00%			\$2,255		
Construction Phase: 5.00%			\$752		
Project Management: 6.00%			\$902		
Total Project Cost:			\$18,940		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$18,940	<b>Total Purchased Electricity Savings (kWh/yr):</b>	17,757
<b>Rebate/Incentive*:</b>	\$8,523	<b>Total Purchased Gas Savings (th/yr):</b>	1,762
<b>Net Project Cost:</b>	\$10,417	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,789
<b>Net Simple Payback Period (yrs):</b>	2.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3070**

**Project: Solar Pool Water Heater - Anteater Pool**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ANT REC CTR

**Building Key:** 09C9299

**Basic Gross Area (sf):** 89,320

**Calculation File:** UC Irvine Pools TLH.xls

**Project Description Reference(s):** Pool Project 3. Solar Water Heating .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	13,908
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0  
**Equivalent Gas Savings (th/yr):** 13,908  
**Anticipated Gross Incentive:** \$13,908

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Solar Water Heating System	1	\$36,317.25	\$37,261	\$47,267.33	\$52,278
Raw Costs:			\$37,261		\$52,278
City: Anaheim		Sales Tax: 8.25%	\$3,074		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$4,840		\$6,273
City Index Labor Multiplier: 110.6%		Subtotals:	\$45,176		\$58,551
		Contingency: 10.00%	\$4,518		\$5,855
		Totals:	\$49,693		\$64,406
		Engineering: 15.00%	\$17,115		
		Construction Phase: 5.00%	\$5,705		
		Project Management: 6.00%	\$6,846		
		Total Project Cost:	\$143,765		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$143,765	<b>Total Purchased Electricity Savings (kWh/yr):</b>	43,810
<b>Rebate/Incentive*:</b>	\$13,908	<b>Total Purchased Gas Savings (th/yr):</b>	8,693
<b>Net Project Cost:</b>	\$129,857	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,911
<b>Net Simple Payback Period (yrs):</b>	10.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3071

**Project:** Solar Pool Water Heater - Crawford Pool

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** UC Irvine Pools TLH.xls

**Project Description Reference(s):** Pool Project 3. Solar Water Heating .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	27,815
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 27,815

**Anticipated Gross Incentive:** \$27,815

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Solar Water Heating System	1	\$72,634.50	\$74,523	\$94,534.65	\$104,555
		Raw Costs:	\$74,523		\$104,555
City: Anaheim		Sales Tax: 8.25%	\$6,148		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$9,681		\$12,547
City Index Labor Multiplier: 110.6%		Subtotals:	\$90,352		\$117,102
		Contingency: 10.00%	\$9,035		\$11,710
		Totals:	\$99,387		\$128,812
		Engineering: 15.00%	\$34,230		
		Construction Phase: 5.00%	\$11,410		
		Project Management: 6.00%	\$13,692		
		Total Project Cost:	\$287,531		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$287,531	<b>Total Purchased Electricity Savings (kWh/yr):</b>	87,617
<b>Rebate/Incentive*:</b>	\$27,815	<b>Total Purchased Gas Savings (th/yr):</b>	17,384
<b>Net Project Cost:</b>	\$259,716	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$25,821
<b>Net Simple Payback Period (yrs):</b>	10.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3072**

**Project: High Efficiency Boiler Replacement - Anteater Pool**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** ANT REC CTR  
**Building Key:** 09C9299  
**Basic Gross Area (sf):** 89,320  
**Calculation File:** UC Irvine Pools TLH.xls  
**Project Description Reference(s):** Pool Project 4. Boiler Replacement.

**Campus Prioritization and Schedule**

**Project Tier:** Backup  
**Start Preliminary Engineering:**  
**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	4,459
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 4,459

**Anticipated Gross Incentive:** \$4,459

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
High Efficiency Condensing Boiler	1	\$49,506.00	\$50,793	\$18,812.28	\$20,806
Raw Costs:			\$50,793		\$20,806
City: Anaheim		Sales Tax: 8.25%	\$4,190		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$6,598		\$2,497
City Index Labor Multiplier: 110.6%		Subtotals:	\$61,582		\$23,303
		Contingency: 10.00%	\$6,158		\$2,330
		Totals:	\$67,740		\$25,633
		Engineering: 15.00%	\$14,006		
		Construction Phase: 5.00%	\$4,669		
		Project Management: 6.00%	\$5,602		
		Total Project Cost:	\$117,650		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$117,650	<b>Total Purchased Electricity Savings (kWh/yr):</b>	14,046
<b>Rebate/Incentive*:</b>	\$4,459	<b>Total Purchased Gas Savings (th/yr):</b>	2,787
<b>Net Project Cost:</b>	\$113,191	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,139
<b>Net Simple Payback Period (yrs):</b>	27.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3073**

**Project: Install controller on vending machine (e.g. Vending Miser)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Vending Machine Energy Savings by Campus 20080327 JCR.xls

**Project Description Reference(s):** Campus Wide Project 5. Install Controllers on Vending Machines .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	92,724
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 92,724

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$22,254

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Vending Miser-Uncooled Snack Machine	31				
Cooling Miser - Uncooled Self Serve Sliding Door	15				
Vending Miser - Refrigerated Unit	39				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$11,913		\$2,914
		Contingency: 10.00%	\$1,191		\$291
		Totals:	\$13,105		\$3,205
		Engineering: 15.00%	\$2,447		
		Construction Phase: 5.00%	\$816		
		Project Management: 6.00%	\$979		
		Total Project Cost:	\$20,551		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$20,551	<b>Total Purchased Electricity Savings (kWh/yr):</b>	46,362
<b>Rebate/Incentive*:</b>	\$16,441	<b>Total Purchased Gas Savings (th/yr):</b>	4,601
<b>Net Project Cost:</b>	\$4,110	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,893
<b>Net Simple Payback Period (yrs):</b>	0.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3074

**Project:** Retrofit existing 1000-watt HID's with fluorescent high bays, multiple switching

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BREN EVENTS

**Building Key:** 09C9314

**Basic Gross Area (sf):** 97,259

**Calculation File:** UC Irvine Bren Events Center Lighting Calc BW - Checked MZ 032708.xls

**Project Description Reference(s):** Lighting Project 4. Interior High Bay Lighting .

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	110,160
<b>Peak Demand (kW):</b>	37.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 110,160

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$26,438

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
8-lamp T5HO high bay (or T8)	60	\$300.00	\$18,468	\$300.00	\$19,908
Raw Costs:			\$18,468		\$19,908
City: Anaheim		Sales Tax: 8.25%	\$1,524		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$2,399		\$2,389
Subtotals:			\$22,391		\$22,297
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$2,239		\$2,230
Totals:			\$24,630		\$24,527
		Engineering: 15.00%	\$7,373		
		Construction Phase: 5.00%	\$2,458		
		Project Management: 6.00%	\$2,949		
Total Project Cost:			\$61,937		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$61,937	<b>Total Purchased Electricity Savings (kWh/yr):</b>	55,080
<b>Rebate/Incentive*:</b>	\$26,438	<b>Total Purchased Gas Savings (th/yr):</b>	5,466
<b>Net Project Cost:</b>	\$35,499	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$11,753
<b>Net Simple Payback Period (yrs):</b>	3.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3075**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** LANGSON LIB

**Building Key:** 09C9001

**Basic Gross Area (sf):** 150,883

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	131,684
<b>Peak Demand (kW):</b>	15.0
<b>Gas (th/yr):</b>	15,843
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 131,684

**Equivalent Gas Savings (th/yr):** 15,843

**Anticipated Gross Incentive:** \$47,447

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$23,010		\$69,029
		Contingency: 10.00%	\$2,301		\$6,903
		Totals:	\$25,311		\$75,932
		Engineering: 15.00%	\$15,186		
		Construction Phase: 5.00%	\$5,062		
		Project Management: 6.00%	\$6,075		
		Total Project Cost:	\$127,566		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$127,566	<b>Total Purchased Electricity Savings (kWh/yr):</b>	115,747
<b>Rebate/Incentive*:</b>	\$47,447	<b>Total Purchased Gas Savings (th/yr):</b>	16,436
<b>Net Project Cost:</b>	\$80,119	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$28,756
<b>Net Simple Payback Period (yrs):</b>	2.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3076**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** ADMIN BLDG  
**Building Key:** 09C9003  
**Basic Gross Area (sf):** 101,022  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	98,167
<b>Peak Demand (kW):</b>	11.0
<b>Gas (th/yr):</b>	10,607
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 98,167  
**Equivalent Gas Savings (th/yr):** 10,607  
**Anticipated Gross Incentive:** \$34,167

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$15,406		\$46,218
		Contingency: 10.00%	\$1,541		\$4,622
		Totals:	\$16,947		\$50,840
		Engineering: 15.00%	\$10,168		
		Construction Phase: 5.00%	\$3,389		
		Project Management: 6.00%	\$4,067		
		Total Project Cost:	\$85,411		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$85,411	<b>Total Purchased Electricity Savings (kWh/yr):</b>	82,496
<b>Rebate/Incentive*:</b>	\$34,167	<b>Total Purchased Gas Savings (th/yr):</b>	11,500
<b>Net Project Cost:</b>	\$51,244	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$20,320
<b>Net Simple Payback Period (yrs):</b>	2.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3077**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** UCI STU CNTR

**Building Key:** 09C9005

**Basic Gross Area (sf):** 164,042

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	126,312
<b>Peak Demand (kW):</b>	14.0
<b>Gas (th/yr):</b>	17,224
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 126,312

**Equivalent Gas Savings (th/yr):** 17,224

**Anticipated Gross Incentive:** \$47,539

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$25,016		\$75,049
		Contingency: 10.00%	\$2,502		\$7,505
		Totals:	\$27,518		\$82,554
		Engineering: 15.00%	\$16,511		
		Construction Phase: 5.00%	\$5,504		
		Project Management: 6.00%	\$6,604		
		Total Project Cost:	\$138,690		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$138,690	<b>Total Purchased Electricity Savings (kWh/yr):</b>	117,412
<b>Rebate/Incentive*:</b>	\$47,539	<b>Total Purchased Gas Savings (th/yr):</b>	17,033
<b>Net Project Cost:</b>	\$91,151	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$29,465
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: **I3078**

**Project:** Monitoring Based Commissioning

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** HIB  
**Building Key:** 09C9035  
**Basic Gross Area (sf):** 74,090  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

**Electric (kWh/yr):** 1,210  
**Peak Demand (kW):** 0.0  
**Gas (th/yr):** 7,779  
**Chilled Water (ton-hr/yr):** 0  
**HW/Steam (MMBTu/yr):** 0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 1,210

**Equivalent Gas Savings (th/yr):** 7,779

**Anticipated Gross Incentive:** \$8,069

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$11,299		\$33,896
		Contingency: 10.00%	\$1,130		\$3,390
		Totals:	\$12,429		\$37,286
		Engineering: 15.00%	\$7,457		
		Construction Phase: 5.00%	\$2,486		
		Project Management: 6.00%	\$2,983		
		Total Project Cost:	\$62,640		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

**Total Project Cost:** \$62,640      **Total Purchased Electricity Savings (kWh/yr):** 25,109  
**Rebate/Incentive\*:** \$8,069      **Total Purchased Gas Savings (th/yr):** 4,922  
**Net Project Cost:** \$54,571      **Total Purchased Annual Cost Savings (\$/yr):** \$7,350  
**Net Simple Payback Period (yrs):** 7.4

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3079**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** W SMITH HALL

**Building Key:** 09C9050

**Basic Gross Area (sf):** 9,458

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	12,176
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	993
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 12,176

**Equivalent Gas Savings (th/yr):** 993

**Anticipated Gross Incentive:** \$3,915

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,442		\$4,327
		Contingency: 10.00%	\$144		\$433
		Totals:	\$1,586		\$4,760
		Engineering: 15.00%	\$952		
		Construction Phase: 5.00%	\$317		
		Project Management: 6.00%	\$381		
		Total Project Cost:	\$7,996		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$7,996	<b>Total Purchased Electricity Savings (kWh/yr):</b>	9,216
<b>Rebate/Incentive*:</b>	\$3,915	<b>Total Purchased Gas Savings (th/yr):</b>	1,225
<b>Net Project Cost:</b>	\$4,081	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,221
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

**SEP Project ID Number: I3080**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CTB THEATRE

**Building Key:** 09C9051

**Basic Gross Area (sf):** 20,377

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

### Campus Prioritization and Schedule

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2009

**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	15,690
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	2,140
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 15,690

**Equivalent Gas Savings (th/yr):** 2,140

**Anticipated Gross Incentive:** \$5,906

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$3,107		\$9,322
		Contingency: 10.00%	\$311		\$932
		Totals:	\$3,418		\$10,254
		Engineering: 15.00%	\$2,051		
		Construction Phase: 5.00%	\$684		
		Project Management: 6.00%	\$820		
		Total Project Cost:	\$17,227		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$17,227	<b>Total Purchased Electricity Savings (kWh/yr):</b>	14,586
<b>Rebate/Incentive*:</b>	\$5,906	<b>Total Purchased Gas Savings (th/yr):</b>	2,116
<b>Net Project Cost:</b>	\$11,321	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,661
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3081**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA DANCE

**Building Key:** 09C9052

**Basic Gross Area (sf):** 12,747

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	9,815
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	1,338
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 9,815

**Equivalent Gas Savings (th/yr):** 1,338

**Anticipated Gross Incentive:** \$3,694

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,944		\$5,832
		Contingency: 10.00%	\$194		\$583
		Totals:	\$2,138		\$6,415
		Engineering: 15.00%	\$1,283		
		Construction Phase: 5.00%	\$428		
		Project Management: 6.00%	\$513		
		Total Project Cost:	\$10,778		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$10,778	<b>Total Purchased Electricity Savings (kWh/yr):</b>	9,122
<b>Rebate/Incentive*:</b>	\$3,694	<b>Total Purchased Gas Savings (th/yr):</b>	1,323
<b>Net Project Cost:</b>	\$7,084	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,289
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3082**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA PROD ST

**Building Key:** 09C9053

**Basic Gross Area (sf):** 5,182

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	3,079
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	544
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 3,079

**Equivalent Gas Savings (th/yr):** 544

**Anticipated Gross Incentive:** \$1,283

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$790		\$2,371
		Contingency: 10.00%	\$79		\$237
		Totals:	\$869		\$2,608
		Engineering: 15.00%	\$522		
		Construction Phase: 5.00%	\$174		
		Project Management: 6.00%	\$209		
		Total Project Cost:	\$4,381		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,381	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,253
<b>Rebate/Incentive*:</b>	\$1,283	<b>Total Purchased Gas Savings (th/yr):</b>	493
<b>Net Project Cost:</b>	\$3,098	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$833
<b>Net Simple Payback Period (yrs):</b>	3.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3083**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** SOTA DRAMA  
**Building Key:** 09C9054  
**Basic Gross Area (sf):** 8,772  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	26,317
<b>Peak Demand (kW):</b>	3.0
<b>Gas (th/yr):</b>	921
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 26,317  
**Equivalent Gas Savings (th/yr):** 921  
**Anticipated Gross Incentive:** \$7,237

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,338		\$4,013
		Contingency: 10.00%	\$134		\$401
		Totals:	\$1,472		\$4,414
		Engineering: 15.00%	\$883		
		Construction Phase: 5.00%	\$294		
		Project Management: 6.00%	\$353		
		Total Project Cost:	\$7,416		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$7,416	<b>Total Purchased Electricity Savings (kWh/yr):</b>	16,060
<b>Rebate/Incentive*:</b>	\$5,933	<b>Total Purchased Gas Savings (th/yr):</b>	1,881
<b>Net Project Cost:</b>	\$1,483	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,663
<b>Net Simple Payback Period (yrs):</b>	0.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3084**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** UNIV ART GAL

**Building Key:** 09C9055

**Basic Gross Area (sf):** 8,920

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,868
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	937
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,868

**Equivalent Gas Savings (th/yr):** 937

**Anticipated Gross Incentive:** \$2,585

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,360		\$4,081
		Contingency: 10.00%	\$136		\$408
		Totals:	\$1,496		\$4,489
		Engineering: 15.00%	\$898		
		Construction Phase: 5.00%	\$299		
		Project Management: 6.00%	\$359		
		Total Project Cost:	\$7,541		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$7,541	<b>Total Purchased Electricity Savings (kWh/yr):</b>	6,386
<b>Rebate/Incentive*:</b>	\$2,585	<b>Total Purchased Gas Savings (th/yr):</b>	926
<b>Net Project Cost:</b>	\$4,956	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,603
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3085**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA ART STD

**Building Key:** 09C9056

**Basic Gross Area (sf):** 10,570

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	12,176
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	1,110
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 12,176

**Equivalent Gas Savings (th/yr):** 1,110

**Anticipated Gross Incentive:** \$4,032

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,612		\$4,836
		Contingency: 10.00%	\$161		\$484
		Totals:	\$1,773		\$5,320
		Engineering: 15.00%	\$1,064		
		Construction Phase: 5.00%	\$355		
		Project Management: 6.00%	\$426		
		Total Project Cost:	\$8,937		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,937	<b>Total Purchased Electricity Savings (kWh/yr):</b>	9,585
<b>Rebate/Incentive*:</b>	\$4,032	<b>Total Purchased Gas Savings (th/yr):</b>	1,298
<b>Net Project Cost:</b>	\$4,905	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,329
<b>Net Simple Payback Period (yrs):</b>	2.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3086**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA SCULPTR

**Building Key:** 09C9057

**Basic Gross Area (sf):** 10,894

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	19,836
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	1,144
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 19,836

**Equivalent Gas Savings (th/yr):** 1,144

**Anticipated Gross Incentive:** \$5,905

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,661		\$4,984
		Contingency: 10.00%	\$166		\$498
		Totals:	\$1,827		\$5,482
		Engineering: 15.00%	\$1,096		
		Construction Phase: 5.00%	\$365		
		Project Management: 6.00%	\$439		
		Total Project Cost:	\$9,210		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$9,210	<b>Total Purchased Electricity Savings (kWh/yr):</b>	13,522
<b>Rebate/Incentive*:</b>	\$5,905	<b>Total Purchased Gas Savings (th/yr):</b>	1,699
<b>Net Project Cost:</b>	\$3,305	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,178
<b>Net Simple Payback Period (yrs):</b>	1.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3087**

**Project: SBD, New/Renov - Arts Building**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ARTS TECH

**Building Key:** 09C9058

**Basic Gross Area (sf):** 11,443

**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls

**Project Description Reference(s):** New Construction and Renovation from Capital Program.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	189,810
<b>Peak Demand (kW):</b>	22.0
<b>Gas (th/yr):</b>	17,784
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 189,810

**Equivalent Gas Savings (th/yr):** 17,784

**Anticipated Gross Incentive:** \$63,338

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$138,733		\$138,733
		Contingency: 10.00%	\$13,873		\$13,873
		Totals:	\$152,606		\$152,606
		Engineering: 15.00%	\$45,782		
		Construction Phase: 5.00%	\$15,261		
		Project Management: 6.00%	\$18,313		
		Total Project Cost:	\$384,568		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$384,568	<b>Total Purchased Electricity Savings (kWh/yr):</b>	150,925
<b>Rebate/Incentive*:</b>	\$63,338	<b>Total Purchased Gas Savings (th/yr):</b>	20,533
<b>Net Project Cost:</b>	\$321,230	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$36,759
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3088**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** SCILIBRARY  
**Building Key:** 09C9073  
**Basic Gross Area (sf):** 189,590  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	89,918
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	19,907
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 89,918

**Equivalent Gas Savings (th/yr):** 19,907

**Anticipated Gross Incentive:** \$41,487

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$28,912		\$86,737
		Contingency: 10.00%	\$2,891		\$8,674
		Totals:	\$31,803		\$95,411
		Engineering: 15.00%	\$19,082		
		Construction Phase: 5.00%	\$6,361		
		Project Management: 6.00%	\$7,633		
		Total Project Cost:	\$160,290		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$160,290	<b>Total Purchased Electricity Savings (kWh/yr):</b>	107,666
<b>Rebate/Incentive*:</b>	\$41,487	<b>Total Purchased Gas Savings (th/yr):</b>	16,904
<b>Net Project Cost:</b>	\$118,803	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$28,073
<b>Net Simple Payback Period (yrs):</b>	4.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3089**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** STEINHAUS H

**Building Key:** 09C9075

**Basic Gross Area (sf):** 107,521

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	200,745
<b>Peak Demand (kW):</b>	23.0
<b>Gas (th/yr):</b>	21,827
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 200,745

**Equivalent Gas Savings (th/yr):** 21,827

**Anticipated Gross Incentive:** \$70,006

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$32,794		\$98,382
		Contingency: 10.00%	\$3,279		\$9,838
		Totals:	\$36,073		\$108,220
		Engineering: 15.00%	\$21,644		
		Construction Phase: 5.00%	\$7,215		
		Project Management: 6.00%	\$8,658		
		Total Project Cost:	\$181,810		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$181,810	<b>Total Purchased Electricity Savings (kWh/yr):</b>	169,128
<b>Rebate/Incentive*:</b>	\$70,006	<b>Total Purchased Gas Savings (th/yr):</b>	23,603
<b>Net Project Cost:</b>	\$111,804	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$41,679
<b>Net Simple Payback Period (yrs):</b>	2.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3090

**Project:** Compressor and control upgrades, walk-in refrigeration units in McGaugh Hall. (18 units)

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MCGAUGH HALL

**Building Key:** 09C9084

**Basic Gross Area (sf):** 213,717

**Calculation File:** UCI\_EnergyProjects-Master03-19-08 - Checked MZ 032808.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	128,788
<b>Peak Demand (kW):</b>	22.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 128,788

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$30,909

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$301,070		\$129,030
		Contingency: 10.00%	\$30,107		\$12,903
		Totals:	\$331,177		\$141,933
		Engineering: 15.00%	\$70,967		
		Construction Phase: 5.00%	\$23,656		
		Project Management: 6.00%	\$28,387		
		Total Project Cost:	\$596,119		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$596,119	<b>Total Purchased Electricity Savings (kWh/yr):</b>	64,394
<b>Rebate/Incentive*:</b>	\$30,909	<b>Total Purchased Gas Savings (th/yr):</b>	6,390
<b>Net Project Cost:</b>	\$565,210	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$13,740
<b>Net Simple Payback Period (yrs):</b>	41.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3091**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** HEWITT HALL

**Building Key:** 09C9088

**Basic Gross Area (sf):** 78,871

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	309,927
<b>Peak Demand (kW):</b>	35.0
<b>Gas (th/yr):</b>	16,011
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 309,927

**Equivalent Gas Savings (th/yr):** 16,011

**Anticipated Gross Incentive:** \$90,393

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$24,056		\$72,167
		Contingency: 10.00%	\$2,406		\$7,217
		Totals:	\$26,462		\$79,384
		Engineering: 15.00%	\$15,877		
		Construction Phase: 5.00%	\$5,292		
		Project Management: 6.00%	\$6,351		
		Total Project Cost:	\$133,365		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$133,365	<b>Total Purchased Electricity Savings (kWh/yr):</b>	205,398
<b>Rebate/Incentive*:</b>	\$90,393	<b>Total Purchased Gas Savings (th/yr):</b>	25,385
<b>Net Project Cost:</b>	\$42,972	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$47,929
<b>Net Simple Payback Period (yrs):</b>	0.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3092**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** NAT SCI 2  
**Building Key:** 09C9091  
**Basic Gross Area (sf):** 136,305  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	220,794
<b>Peak Demand (kW):</b>	25.0
<b>Gas (th/yr):</b>	14,312
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 220,794  
**Equivalent Gas Savings (th/yr):** 14,312  
**Anticipated Gross Incentive:** \$67,303

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$20,787		\$62,360
		Contingency: 10.00%	\$2,079		\$6,236
		Totals:	\$22,866		\$68,596
		Engineering: 15.00%	\$13,719		
		Construction Phase: 5.00%	\$4,573		
		Project Management: 6.00%	\$5,488		
		Total Project Cost:	\$115,242		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$115,242	<b>Total Purchased Electricity Savings (kWh/yr):</b>	155,480
<b>Rebate/Incentive*:</b>	\$67,303	<b>Total Purchased Gas Savings (th/yr):</b>	19,901
<b>Net Project Cost:</b>	\$47,939	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$36,842
<b>Net Simple Payback Period (yrs):</b>	1.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3093**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ROWLAND HALL

**Building Key:** 09C9100

**Basic Gross Area (sf):** 196,057

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	370,548
<b>Peak Demand (kW):</b>	42.0
<b>Gas (th/yr):</b>	39,800
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 370,548

**Equivalent Gas Savings (th/yr):** 39,800

**Anticipated Gross Incentive:** \$128,732

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$59,797		\$179,392
		Contingency: 10.00%	\$5,980		\$17,939
		Totals:	\$65,777		\$197,331
		Engineering: 15.00%	\$39,466		
		Construction Phase: 5.00%	\$13,155		
		Project Management: 6.00%	\$15,786		
		Total Project Cost:	\$331,516		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$331,516	<b>Total Purchased Electricity Savings (kWh/yr):</b>	310,644
<b>Rebate/Incentive*:</b>	\$128,732	<b>Total Purchased Gas Savings (th/yr):</b>	43,262
<b>Net Project Cost:</b>	\$202,784	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$76,480
<b>Net Simple Payback Period (yrs):</b>	2.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3094**

**Project: Replace air handlers in Berkeley Place (Deferred Maintenance, to be combined with other retrofits)**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	BERKELEY PL	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09C9107	<b>Start Preliminary Engineering:</b>	6/1/2010
<b>Basic Gross Area (sf):</b>	114,000	<b>Scheduled Completion:</b>	12/15/2011
<b>Calculation File:</b>	UCI_EnergyProjects-Master03-19-08 - Checked MZ 032808.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	278,788
<b>Peak Demand (kW):</b>	56.0
<b>Gas (th/yr):</b>	11,220
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	278,788
<b>Equivalent Gas Savings (th/yr):</b>	11,220
<b>Anticipated Gross Incentive:</b>	\$78,129
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$500,500		\$214,500
		Contingency: 10.00%	\$50,050		\$21,450
		Totals:	\$550,550		\$235,950
		Engineering: 15.00%	\$117,975		
		Construction Phase: 5.00%	\$39,325		
		Project Management: 6.00%	\$47,190		
		Total Project Cost:	\$990,990		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$990,990	<b>Total Purchased Electricity Savings (kWh/yr):</b>	174,737
<b>Rebate/Incentive*:</b>	\$78,129	<b>Total Purchased Gas Savings (th/yr):</b>	20,846
<b>Net Project Cost:</b>	\$912,861	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$40,159
<b>Net Simple Payback Period (yrs):</b>	22.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3095**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** REINES HALL

**Building Key:** 09C9108

**Basic Gross Area (sf):** 156,514

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	318,219
<b>Peak Demand (kW):</b>	36.0
<b>Gas (th/yr):</b>	31,772
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 318,219

**Equivalent Gas Savings (th/yr):** 31,772

**Anticipated Gross Incentive:** \$108,145

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$47,737		\$143,210
		Contingency: 10.00%	\$4,774		\$14,321
		Totals:	\$52,511		\$157,531
		Engineering: 15.00%	\$31,506		
		Construction Phase: 5.00%	\$10,502		
		Project Management: 6.00%	\$12,603		
		Total Project Cost:	\$264,653		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$264,653	<b>Total Purchased Electricity Savings (kWh/yr):</b>	259,191
<b>Rebate/Incentive*:</b>	\$108,145	<b>Total Purchased Gas Savings (th/yr):</b>	35,648
<b>Net Project Cost:</b>	\$156,508	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$63,444
<b>Net Simple Payback Period (yrs):</b>	2.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3096

**Project:** Monitoring Based Commissioning

**Campus:** IRVINE

**Location:** IRVINE

**Building:** M SCI & TECH

**Building Key:** 09C9114

**Basic Gross Area (sf):** 63,111

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,831
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	3,824
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 11,831

**Equivalent Gas Savings (th/yr):** 3,824

**Anticipated Gross Incentive:** \$6,663

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$9,624		\$28,873
		Contingency: 10.00%	\$962		\$2,887
		Totals:	\$10,586		\$31,760
		Engineering: 15.00%	\$6,352		
		Construction Phase: 5.00%	\$2,117		
		Project Management: 6.00%	\$2,541		
		Total Project Cost:	\$53,357		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$53,357	<b>Total Purchased Electricity Savings (kWh/yr):</b>	17,961
<b>Rebate/Incentive*:</b>	\$6,663	<b>Total Purchased Gas Savings (th/yr):</b>	2,977
<b>Net Project Cost:</b>	\$46,694	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,812
<b>Net Simple Payback Period (yrs):</b>	9.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3097**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CROUL HALL

**Building Key:** 09C9115

**Basic Gross Area (sf):** 66,170

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	112,640
<b>Peak Demand (kW):</b>	13.0
<b>Gas (th/yr):</b>	13,433
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 112,640

**Equivalent Gas Savings (th/yr):** 13,433

**Anticipated Gross Incentive:** \$40,467

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$20,182		\$60,546
		Contingency: 10.00%	\$2,018		\$6,055
		Totals:	\$22,200		\$66,601
		Engineering: 15.00%	\$13,320		
		Construction Phase: 5.00%	\$4,440		
		Project Management: 6.00%	\$5,328		
		Total Project Cost:	\$111,889		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$111,889	<b>Total Purchased Electricity Savings (kWh/yr):</b>	98,634
<b>Rebate/Incentive*:</b>	\$40,467	<b>Total Purchased Gas Savings (th/yr):</b>	13,985
<b>Net Project Cost:</b>	\$71,422	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$24,487
<b>Net Simple Payback Period (yrs):</b>	2.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3098**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** CAL (IT)2  
**Building Key:** 09C9118  
**Basic Gross Area (sf):** 119,860  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	141,864
<b>Peak Demand (kW):</b>	16.0
<b>Gas (th/yr):</b>	24,332
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 141,864  
**Equivalent Gas Savings (th/yr):** 24,332  
**Anticipated Gross Incentive:** \$58,379

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$36,557		\$109,672
		Contingency: 10.00%	\$3,656		\$10,967
		Totals:	\$40,213		\$120,639
		Engineering: 15.00%	\$24,128		
		Construction Phase: 5.00%	\$8,043		
		Project Management: 6.00%	\$9,651		
		Total Project Cost:	\$202,673		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$202,673	<b>Total Purchased Electricity Savings (kWh/yr):</b>	147,578
<b>Rebate/Incentive*:</b>	\$58,379	<b>Total Purchased Gas Savings (th/yr):</b>	22,247
<b>Net Project Cost:</b>	\$144,294	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$37,723
<b>Net Simple Payback Period (yrs):</b>	3.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3099**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** ENG TOWER  
**Building Key:** 09C9125  
**Basic Gross Area (sf):** 113,941  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	92,453
<b>Peak Demand (kW):</b>	11.0
<b>Gas (th/yr):</b>	23,130
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 92,453

**Equivalent Gas Savings (th/yr):** 23,130

**Anticipated Gross Incentive:** \$45,319

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$34,752		\$104,256
		Contingency: 10.00%	\$3,475		\$10,426
		Totals:	\$38,227		\$114,682
		Engineering: 15.00%	\$22,936		
		Construction Phase: 5.00%	\$7,645		
		Project Management: 6.00%	\$9,175		
		Total Project Cost:	\$192,665		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$192,665	<b>Total Purchased Electricity Savings (kWh/yr):</b>	119,086
<b>Rebate/Incentive*:</b>	\$45,319	<b>Total Purchased Gas Savings (th/yr):</b>	19,044
<b>Net Project Cost:</b>	\$147,346	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$31,335
<b>Net Simple Payback Period (yrs):</b>	4.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3100**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** COMP SCI BLD

**Building Key:** 09C9126

**Basic Gross Area (sf):** 60,678

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	114,681
<b>Peak Demand (kW):</b>	13.0
<b>Gas (th/yr):</b>	12,318
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 114,681

**Equivalent Gas Savings (th/yr):** 12,318

**Anticipated Gross Incentive:** \$39,841

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$18,507		\$55,520
		Contingency: 10.00%	\$1,851		\$5,552
		Totals:	\$20,358		\$61,072
		Engineering: 15.00%	\$12,214		
		Construction Phase: 5.00%	\$4,071		
		Project Management: 6.00%	\$4,886		
		Total Project Cost:	\$102,601		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$102,601	<b>Total Purchased Electricity Savings (kWh/yr):</b>	96,142
<b>Rebate/Incentive*:</b>	\$39,841	<b>Total Purchased Gas Savings (th/yr):</b>	13,389
<b>Net Project Cost:</b>	\$62,760	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,670
<b>Net Simple Payback Period (yrs):</b>	2.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3101**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** SOC ECOLOGY  
**Building Key:** 09C9128  
**Basic Gross Area (sf):** 55,000  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	103,950
<b>Peak Demand (kW):</b>	12.0
<b>Gas (th/yr):</b>	11,165
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 103,950  
**Equivalent Gas Savings (th/yr):** 11,165  
**Anticipated Gross Incentive:** \$36,113

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$16,775		\$50,325
		Contingency: 10.00%	\$1,678		\$5,033
		Totals:	\$18,453		\$55,358
		Engineering: 15.00%	\$11,072		
		Construction Phase: 5.00%	\$3,691		
		Project Management: 6.00%	\$4,429		
		Total Project Cost:	\$93,001		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$93,001	<b>Total Purchased Electricity Savings (kWh/yr):</b>	87,145
<b>Rebate/Incentive*:</b>	\$36,113	<b>Total Purchased Gas Savings (th/yr):</b>	12,136
<b>Net Project Cost:</b>	\$56,888	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$21,455
<b>Net Simple Payback Period (yrs):</b>	2.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3102

**Project:** Monitoring Based Commissioning

**Campus:** IRVINE

**Location:** IRVINE

**Building:** IRVINE HALL

**Building Key:** 09C9132

**Basic Gross Area (sf):** 54,620

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	37,290
<b>Peak Demand (kW):</b>	4.0
<b>Gas (th/yr):</b>	11,088
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 37,290

**Equivalent Gas Savings (th/yr):** 11,088

**Anticipated Gross Incentive:** \$20,038

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$16,659		\$49,977
		Contingency: 10.00%	\$1,666		\$4,998
		Totals:	\$18,325		\$54,975
		Engineering: 15.00%	\$10,995		
		Construction Phase: 5.00%	\$3,665		
		Project Management: 6.00%	\$4,398		
		Total Project Cost:	\$92,357		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$92,357	<b>Total Purchased Electricity Savings (kWh/yr):</b>	53,572
<b>Rebate/Incentive*:</b>	\$20,038	<b>Total Purchased Gas Savings (th/yr):</b>	8,780
<b>Net Project Cost:</b>	\$72,319	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$14,271
<b>Net Simple Payback Period (yrs):</b>	5.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3103**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG GATEWAY

**Building Key:** 09C9140

**Basic Gross Area (sf):** 132,090

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	257,543
<b>Peak Demand (kW):</b>	29.0
<b>Gas (th/yr):</b>	26,814
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 257,543

**Equivalent Gas Savings (th/yr):** 26,814

**Anticipated Gross Incentive:** \$88,624

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$40,287		\$120,862
		Contingency: 10.00%	\$4,029		\$12,086
		Totals:	\$44,316		\$132,948
		Engineering: 15.00%	\$26,590		
		Construction Phase: 5.00%	\$8,863		
		Project Management: 6.00%	\$10,636		
		Total Project Cost:	\$223,353		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$223,353	<b>Total Purchased Electricity Savings (kWh/yr):</b>	213,236
<b>Rebate/Incentive*:</b>	\$88,624	<b>Total Purchased Gas Savings (th/yr):</b>	29,538
<b>Net Project Cost:</b>	\$134,729	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$52,368
<b>Net Simple Payback Period (yrs):</b>	2.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3104**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOCSCI TOWER

**Building Key:** 09C9204

**Basic Gross Area (sf):** 83,844

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	145,072
<b>Peak Demand (kW):</b>	17.0
<b>Gas (th/yr):</b>	8,804
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 145,072

**Equivalent Gas Savings (th/yr):** 8,804

**Anticipated Gross Incentive:** \$43,621

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$12,786		\$38,359
		Contingency: 10.00%	\$1,279		\$3,836
		Totals:	\$14,065		\$42,195
		Engineering: 15.00%	\$8,439		
		Construction Phase: 5.00%	\$2,813		
		Project Management: 6.00%	\$3,376		
		Total Project Cost:	\$70,887		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$70,887	<b>Total Purchased Electricity Savings (kWh/yr):</b>	100,269
<b>Rebate/Incentive*:</b>	\$43,621	<b>Total Purchased Gas Savings (th/yr):</b>	12,701
<b>Net Project Cost:</b>	\$27,266	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,650
<b>Net Simple Payback Period (yrs):</b>	1.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3105**

**Project: SBD, New/Renov - School of Business Building**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SCH BUSINESS

**Building Key:** 09C9208

**Basic Gross Area (sf):** 41,455

**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls

**Project Description Reference(s):** New Construction and Renovation from Capital Program.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	249,750
<b>Peak Demand (kW):</b>	29.0
<b>Gas (th/yr):</b>	23,400
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 249,750

**Equivalent Gas Savings (th/yr):** 23,400

**Anticipated Gross Incentive:** \$83,340

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$182,543		\$182,542
		Contingency: 10.00%	\$18,254		\$18,254
		Totals:	\$200,797		\$200,796
		Engineering: 15.00%	\$60,239		
		Construction Phase: 5.00%	\$20,080		
		Project Management: 6.00%	\$24,096		
		Total Project Cost:	\$506,008		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$506,008	<b>Total Purchased Electricity Savings (kWh/yr):</b>	198,585
<b>Rebate/Incentive*:</b>	\$83,340	<b>Total Purchased Gas Savings (th/yr):</b>	27,018
<b>Net Project Cost:</b>	\$422,668	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,368
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3106

**Project:** Monitoring Based Commissioning

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL A

**Building Key:** 09C9212

**Basic Gross Area (sf):** 46,479

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

**Electric (kWh/yr):** 35,789  
**Peak Demand (kW):** 4.0  
**Gas (th/yr):** 4,880  
**Chilled Water (ton-hr/yr):** 0  
**HW/Steam (MMBTu/yr):** 0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 35,789

**Equivalent Gas Savings (th/yr):** 4,880

**Anticipated Gross Incentive:** \$13,469

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$7,088		\$21,264
		Contingency: 10.00%	\$709		\$2,126
		Totals:	\$7,797		\$23,390
		Engineering: 15.00%	\$4,678		
		Construction Phase: 5.00%	\$1,559		
		Project Management: 6.00%	\$1,871		
		Total Project Cost:	\$39,296		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

**Total Project Cost:** \$39,296      **Total Purchased Electricity Savings (kWh/yr):** 33,267  
**Rebate/Incentive\*:** \$13,469      **Total Purchased Gas Savings (th/yr):** 4,826  
**Net Project Cost:** \$25,827      **Total Purchased Annual Cost Savings (\$/yr):** \$8,348  
**Net Simple Payback Period (yrs):** 3.1

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3107**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL B

**Building Key:** 09C9221

**Basic Gross Area (sf):** 49,078

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	37,790
<b>Peak Demand (kW):</b>	4.0
<b>Gas (th/yr):</b>	5,153
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 37,790

**Equivalent Gas Savings (th/yr):** 5,153

**Anticipated Gross Incentive:** \$14,223

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$7,484		\$22,453
		Contingency: 10.00%	\$748		\$2,245
		Totals:	\$8,232		\$24,698
		Engineering: 15.00%	\$4,940		
		Construction Phase: 5.00%	\$1,647		
		Project Management: 6.00%	\$1,976		
		Total Project Cost:	\$41,493		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$41,493	<b>Total Purchased Electricity Savings (kWh/yr):</b>	35,127
<b>Rebate/Incentive*:</b>	\$14,223	<b>Total Purchased Gas Savings (th/yr):</b>	5,096
<b>Net Project Cost:</b>	\$27,270	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,815
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3108**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY2

**Building Key:** 09C9222

**Basic Gross Area (sf):** 35,753

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	35,108
<b>Peak Demand (kW):</b>	4.0
<b>Gas (th/yr):</b>	3,754
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 35,108

**Equivalent Gas Savings (th/yr):** 3,754

**Anticipated Gross Incentive:** \$12,180

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,452		\$16,357
		Contingency: 10.00%	\$545		\$1,636
		Totals:	\$5,997		\$17,993
		Engineering: 15.00%	\$3,598		
		Construction Phase: 5.00%	\$1,199		
		Project Management: 6.00%	\$1,439		
		Total Project Cost:	\$30,227		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$30,227	<b>Total Purchased Electricity Savings (kWh/yr):</b>	29,379
<b>Rebate/Incentive*:</b>	\$12,180	<b>Total Purchased Gas Savings (th/yr):</b>	4,088
<b>Net Project Cost:</b>	\$18,047	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,230
<b>Net Simple Payback Period (yrs):</b>	2.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3109**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ANT REC CTR

**Building Key:** 09C9299

**Basic Gross Area (sf):** 89,320

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2011  
**Scheduled Completion:** 12/15/2012

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	68,776
<b>Peak Demand (kW):</b>	8.0
<b>Gas (th/yr):</b>	11,970
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 68,776

**Equivalent Gas Savings (th/yr):** 11,970

**Anticipated Gross Incentive:** \$28,476

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$13,621		\$40,864
		Contingency: 10.00%	\$1,362		\$4,086
		Totals:	\$14,983		\$44,950
		Engineering: 15.00%	\$8,990		
		Construction Phase: 5.00%	\$2,997		
		Project Management: 6.00%	\$3,596		
		Total Project Cost:	\$75,516		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$75,516	<b>Total Purchased Electricity Savings (kWh/yr):</b>	72,094
<b>Rebate/Incentive*:</b>	\$28,476	<b>Total Purchased Gas Savings (th/yr):</b>	10,894
<b>Net Project Cost:</b>	\$47,040	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$18,449
<b>Net Simple Payback Period (yrs):</b>	2.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3110**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CRAWFORD HAL

**Building Key:** 09C9300

**Basic Gross Area (sf):** 57,437

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	69,314
<b>Peak Demand (kW):</b>	8.0
<b>Gas (th/yr):</b>	6,031
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 69,314

**Equivalent Gas Savings (th/yr):** 6,031

**Anticipated Gross Incentive:** \$22,666

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$8,759		\$26,277
		Contingency: 10.00%	\$876		\$2,628
		Totals:	\$9,635		\$28,905
		Engineering: 15.00%	\$5,781		
		Construction Phase: 5.00%	\$1,927		
		Project Management: 6.00%	\$2,312		
		Total Project Cost:	\$48,560		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$48,560	<b>Total Purchased Electricity Savings (kWh/yr):</b>	53,655
<b>Rebate/Incentive*:</b>	\$22,666	<b>Total Purchased Gas Savings (th/yr):</b>	7,209
<b>Net Project Cost:</b>	\$25,894	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,994
<b>Net Simple Payback Period (yrs):</b>	2.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3111**

**Project: MBCx Central Plant**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CENTRL PLANT

**Building Key:** 09C9302

**Basic Gross Area (sf):** 24,951

**Calculation File:** UC SEP Central Plant MBCx - Checked MZ 032808.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	750,000
<b>Peak Demand (kW):</b>	86.0
<b>Gas (th/yr):</b>	60,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 750,000

**Equivalent Gas Savings (th/yr):** 60,000

**Anticipated Gross Incentive:** \$240,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$100,000		\$400,000
		Contingency: 10.00%	\$10,000		\$40,000
		Totals:	\$110,000		\$440,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	564,000
<b>Rebate/Incentive*:</b>	\$240,000	<b>Total Purchased Gas Savings (th/yr):</b>	74,715
<b>Net Project Cost:</b>	\$453,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$135,714
<b>Net Simple Payback Period (yrs):</b>	3.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3112**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BREN EVENTS

**Building Key:** 09C9314

**Basic Gross Area (sf):** 97,259

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2012  
**Scheduled Completion:** 12/15/2013

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	74,889
<b>Peak Demand (kW):</b>	8.0
<b>Gas (th/yr):</b>	10,212
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 74,889

**Equivalent Gas Savings (th/yr):** 10,212

**Anticipated Gross Incentive:** \$28,185

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$14,832		\$44,496
		Contingency: 10.00%	\$1,483		\$4,450
		Totals:	\$16,315		\$48,946
		Engineering: 15.00%	\$9,789		
		Construction Phase: 5.00%	\$3,263		
		Project Management: 6.00%	\$3,916		
		Total Project Cost:	\$82,229		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$82,229	<b>Total Purchased Electricity Savings (kWh/yr):</b>	69,612
<b>Rebate/Incentive*:</b>	\$28,185	<b>Total Purchased Gas Savings (th/yr):</b>	10,098
<b>Net Project Cost:</b>	\$54,044	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$17,470
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3113**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** MED SCI C  
**Building Key:** 09C9322  
**Basic Gross Area (sf):** 55,853  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	177,490
<b>Peak Demand (kW):</b>	20.0
<b>Gas (th/yr):</b>	11,338
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 177,490  
**Equivalent Gas Savings (th/yr):** 11,338  
**Anticipated Gross Incentive:** \$53,936

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$17,035		\$51,106
		Contingency: 10.00%	\$1,704		\$5,111
		Totals:	\$18,739		\$56,217
		Engineering: 15.00%	\$11,243		
		Construction Phase: 5.00%	\$3,748		
		Project Management: 6.00%	\$4,497		
		Total Project Cost:	\$94,443		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$94,443	<b>Total Purchased Electricity Savings (kWh/yr):</b>	124,460
<b>Rebate/Incentive*:</b>	\$53,936	<b>Total Purchased Gas Savings (th/yr):</b>	15,893
<b>Net Project Cost:</b>	\$40,507	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$29,461
<b>Net Simple Payback Period (yrs):</b>	1.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3114**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** MED SCI D  
**Building Key:** 09C9323  
**Basic Gross Area (sf):** 71,959  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	100,010
<b>Peak Demand (kW):</b>	11.0
<b>Gas (th/yr):</b>	14,608
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 100,010  
**Equivalent Gas Savings (th/yr):** 14,608  
**Anticipated Gross Incentive:** \$38,610

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$21,948		\$65,842
		Contingency: 10.00%	\$2,195		\$6,584
		Totals:	\$24,143		\$72,426
		Engineering: 15.00%	\$14,485		
		Construction Phase: 5.00%	\$4,828		
		Project Management: 6.00%	\$5,794		
		Total Project Cost:	\$121,677		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$121,677	<b>Total Purchased Electricity Savings (kWh/yr):</b>	96,020
<b>Rebate/Incentive*:</b>	\$38,610	<b>Total Purchased Gas Savings (th/yr):</b>	14,092
<b>Net Project Cost:</b>	\$83,067	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$24,231
<b>Net Simple Payback Period (yrs):</b>	3.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3115**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** MED SCI A  
**Building Key:** 09C9325  
**Basic Gross Area (sf):** 13,418  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	25,360
<b>Peak Demand (kW):</b>	3.0
<b>Gas (th/yr):</b>	2,724
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 25,360  
**Equivalent Gas Savings (th/yr):** 2,724  
**Anticipated Gross Incentive:** \$8,810

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$4,092		\$12,277
		Contingency: 10.00%	\$409		\$1,228
		Totals:	\$4,501		\$13,505
		Engineering: 15.00%	\$2,701		
		Construction Phase: 5.00%	\$900		
		Project Management: 6.00%	\$1,080		
		Total Project Cost:	\$22,687		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$22,687	<b>Total Purchased Electricity Savings (kWh/yr):</b>	21,261
<b>Rebate/Incentive*:</b>	\$8,810	<b>Total Purchased Gas Savings (th/yr):</b>	2,961
<b>Net Project Cost:</b>	\$13,877	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$5,234
<b>Net Simple Payback Period (yrs):</b>	2.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3116**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** MED SCI B  
**Building Key:** 09C9328  
**Basic Gross Area (sf):** 35,864  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	27,615
<b>Peak Demand (kW):</b>	3.0
<b>Gas (th/yr):</b>	3,766
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 27,615

**Equivalent Gas Savings (th/yr):** 3,766

**Anticipated Gross Incentive:** \$10,394

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,469		\$16,408
		Contingency: 10.00%	\$547		\$1,641
		Totals:	\$6,016		\$18,049
		Engineering: 15.00%	\$3,610		
		Construction Phase: 5.00%	\$1,203		
		Project Management: 6.00%	\$1,444		
		Total Project Cost:	\$30,322		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$30,322	<b>Total Purchased Electricity Savings (kWh/yr):</b>	25,670
<b>Rebate/Incentive*:</b>	\$10,394	<b>Total Purchased Gas Savings (th/yr):</b>	3,724
<b>Net Project Cost:</b>	\$19,928	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,442
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3117**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SURG 2

**Building Key:** 09C9329

**Basic Gross Area (sf):** 60,238

**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls

**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	114,754
<b>Peak Demand (kW):</b>	13.0
<b>Gas (th/yr):</b>	12,228
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 114,754

**Equivalent Gas Savings (th/yr):** 12,228

**Anticipated Gross Incentive:** \$39,769

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$18,373		\$55,118
		Contingency: 10.00%	\$1,837		\$5,512
		Totals:	\$20,210		\$60,630
		Engineering: 15.00%	\$12,126		
		Construction Phase: 5.00%	\$4,042		
		Project Management: 6.00%	\$4,850		
		Total Project Cost:	\$101,859		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$101,859	<b>Total Purchased Electricity Savings (kWh/yr):</b>	95,895
<b>Rebate/Incentive*:</b>	\$39,769	<b>Total Purchased Gas Savings (th/yr):</b>	13,337
<b>Net Project Cost:</b>	\$62,090	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,594
<b>Net Simple Payback Period (yrs):</b>	2.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3118**

**Project: Mesa Commons Kitchen Hood Controls**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	MESA CEN SER	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09C9518	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>	35,286	<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	UC Irvine Mesa Commons Kitchen Hoods EWB - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Air Handler Project 8. Kitchen Hood VFD.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	30,578
<b>Peak Demand (kW):</b>	12.0
<b>Gas (th/yr):</b>	315
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	30,578
<b>Equivalent Gas Savings (th/yr):</b>	315
<b>Anticipated Gross Incentive:</b>	\$7,654

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Mesa Commons Kitchen Hood Controls	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$13,950		\$9,300
		Contingency: 10.00%	\$1,395		\$930
		Totals:	\$15,345		\$10,230
		Engineering: 15.00%	\$3,836		
		Construction Phase: 5.00%	\$1,279		
		Project Management: 6.00%	\$1,535		
		Total Project Cost:	\$32,225		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$32,225	<b>Total Purchased Electricity Savings (kWh/yr):</b>	16,281
<b>Rebate/Incentive*:</b>	\$7,654	<b>Total Purchased Gas Savings (th/yr):</b>	1,714
<b>Net Project Cost:</b>	\$24,571	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,555
<b>Net Simple Payback Period (yrs):</b>	6.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3119**

**Project: Brandywine Kitchen Hood Controls**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** M E BRDYWINE

**Building Key:** 09C9530

**Basic Gross Area (sf):** 11,200

**Calculation File:** UC Irvine Brandywine Kitchen Hoods EWB - Checked MZ 032708.xls

**Project Description Reference(s):** Air Handler Project 8. Kitchen Hood VFD.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,305
<b>Peak Demand (kW):</b>	5.0
<b>Gas (th/yr):</b>	103
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,305

**Equivalent Gas Savings (th/yr):** 103

**Anticipated Gross Incentive:** \$1,616

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Brandywine Kitchen Hood Controls	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,400		\$3,600
		Contingency: 10.00%	\$540		\$360
		Totals:	\$5,940		\$3,960
		Engineering: 15.00%	\$1,485		
		Construction Phase: 5.00%	\$495		
		Project Management: 6.00%	\$594		
		Total Project Cost:	\$12,474		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$12,474	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,477
<b>Rebate/Incentive*:</b>	\$1,616	<b>Total Purchased Gas Savings (th/yr):</b>	377
<b>Net Project Cost:</b>	\$10,858	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$768
<b>Net Simple Payback Period (yrs):</b>	14.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3120

## Project: Pippin Kitchen Hood Controls

Campus: IRVINE  
 Location: IRVINE  
 Building: ME PIPPIN  
 Building Key: 09C9557  
 Basic Gross Area (sf): 15,300  
 Calculation File: UC Irvine Pippin Kitchen Hoods EWB - Checked MZ 032708.xls  
 Project Description Reference(s): Air Handler Project 8. Kitchen Hood VFD.

### Campus Prioritization and Schedule

Project Tier: Tier 2  
 Start Preliminary Engineering: 6/1/2009  
 Scheduled Completion: 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

Electric (kWh/yr):	28,530
Peak Demand (kW):	12.0
Gas (th/yr):	230
Chilled Water (ton-hr/yr):	0
HW/Steam (MMBTu/yr):	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

Equivalent Electric Savings (kWh/yr): 28,530  
 Equivalent Gas Savings (th/yr): 230  
 Anticipated Gross Incentive: \$7,077

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Pippin Kitchen Hood Controls	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$13,950		\$9,300
		Contingency: 10.00%	\$1,395		\$930
		Totals:	\$15,345		\$10,230
		Engineering: 15.00%	\$3,836		
		Construction Phase: 5.00%	\$1,279		
		Project Management: 6.00%	\$1,535		
		Total Project Cost:	\$32,225		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

Total Project Cost:	\$32,225	Total Purchased Electricity Savings (kWh/yr):	14,990
Rebate/Incentive*:	\$7,077	Total Purchased Gas Savings (th/yr):	1,559
Net Project Cost:	\$25,148	Total Purchased Annual Cost Savings (\$/yr):	\$3,257
Net Simple Payback Period (yrs):	7.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3121**

**Project: SBD, New/Renov - Verano Place Unit 4 Renovation**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	VERANO 400	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09C9653	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>	8,886	<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	New Construction and Renovation from Capital Program.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	212,411
<b>Peak Demand (kW):</b>	24.0
<b>Gas (th/yr):</b>	19,902
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	212,411
<b>Equivalent Gas Savings (th/yr):</b>	19,902
<b>Anticipated Gross Incentive:</b>	\$70,881
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$155,253		\$155,253
		Contingency: 10.00%	\$15,525		\$15,525
		Totals:	\$170,778		\$170,778
		Engineering: 15.00%	\$51,233		
		Construction Phase: 5.00%	\$17,078		
		Project Management: 6.00%	\$20,493		
		Total Project Cost:	\$430,361		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$430,361	<b>Total Purchased Electricity Savings (kWh/yr):</b>	168,897
<b>Rebate/Incentive*:</b>	\$70,881	<b>Total Purchased Gas Savings (th/yr):</b>	22,979
<b>Net Project Cost:</b>	\$359,480	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$41,137
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3122**

**Project: SBD, New/Renov - Verano Place Unit 6 Renovation**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** VERANO 600

**Building Key:** 09C9655

**Basic Gross Area (sf):** 7,527

**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls

**Project Description Reference(s):** New Construction and Renovation from Capital Program.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2010

**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	191,575
<b>Peak Demand (kW):</b>	22.0
<b>Gas (th/yr):</b>	17,949
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 191,575

**Equivalent Gas Savings (th/yr):** 17,949

**Anticipated Gross Incentive:** \$63,927

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$140,021		\$140,021
		Contingency: 10.00%	\$14,002		\$14,002
		Totals:	\$154,023		\$154,023
		Engineering: 15.00%	\$46,207		
		Construction Phase: 5.00%	\$15,402		
		Project Management: 6.00%	\$18,483		
		Total Project Cost:	\$388,138		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$388,138	<b>Total Purchased Electricity Savings (kWh/yr):</b>	152,327
<b>Rebate/Incentive*:</b>	\$63,927	<b>Total Purchased Gas Savings (th/yr):</b>	20,724
<b>Net Project Cost:</b>	\$324,211	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$37,101
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3125**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** BREN HALL  
**Building Key:** 09CTBD1  
**Basic Gross Area (sf):** 147,975  
**Calculation File:** SEP MBCx Analysis MZ 080326 Final.Checked by LCK.xls  
**Project Description Reference(s):** Monitoring Based Commission for All SEP Buildings.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	113,941
<b>Peak Demand (kW):</b>	13.0
<b>Gas (th/yr):</b>	15,537
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 113,941  
**Equivalent Gas Savings (th/yr):** 15,537  
**Anticipated Gross Incentive:** \$42,883

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$22,566		\$67,699
		Contingency: 10.00%	\$2,257		\$6,770
		Totals:	\$24,823		\$74,469
		Engineering: 15.00%	\$14,894		
		Construction Phase: 5.00%	\$4,965		
		Project Management: 6.00%	\$5,957		
		Total Project Cost:	\$125,107		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$125,107	<b>Total Purchased Electricity Savings (kWh/yr):</b>	105,912
<b>Rebate/Incentive*:</b>	\$42,883	<b>Total Purchased Gas Savings (th/yr):</b>	15,364
<b>Net Project Cost:</b>	\$82,224	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$26,579
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3126

**Project:** SBD, New/Renov - Biological Sciences 3 Laboratory Conversion

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BIOLOGICAL SCIENCES 3 LABORATO

**Building Key:** 09CTBD2

**Basic Gross Area (sf):**

**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls

**Project Description Reference(s):** New Construction and Renovation from Capital Program.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2009

**Scheduled Completion:** 12/15/2010

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	206,514
<b>Peak Demand (kW):</b>	24.0
<b>Gas (th/yr):</b>	9,841
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 206,514

**Equivalent Gas Savings (th/yr):** 9,841

**Anticipated Gross Incentive:** \$59,404

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$123,652		\$123,651
		Contingency: 10.00%	\$12,365		\$12,365
		Totals:	\$136,017		\$136,016
		Engineering: 15.00%	\$40,805		
		Construction Phase: 5.00%	\$13,602		
		Project Management: 6.00%	\$16,322		
		Total Project Cost:	\$342,762		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$342,762	<b>Total Purchased Electricity Savings (kWh/yr):</b>	134,256
<b>Rebate/Incentive*:</b>	\$59,404	<b>Total Purchased Gas Savings (th/yr):</b>	16,398
<b>Net Project Cost:</b>	\$283,358	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$31,168
<b>Net Simple Payback Period (yrs):</b>	9.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3127**

**Project: SBD, New/Renov - Irvine Biomedical Research Facility - 4 (Stem Cell)**

**Campus:** IRVINE  
**Location:** IRVINE **Campus Prioritization and Schedule**  
**Building:** BIOMEDICAL RESEARCH FACILITY 4 - **Project Tier:** Tier 2  
**Building Key:** 09CTBD3 **Start Preliminary Engineering:** 6/1/2011  
**Basic Gross Area (sf):** **Scheduled Completion:** 12/15/2012  
**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls  
**Project Description Reference(s):** New Construction and Renovation from Capital Program.

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	701,343
<b>Peak Demand (kW):</b>	80.0
<b>Gas (th/yr):</b>	33,420
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 701,343

**Equivalent Gas Savings (th/yr):** 33,420

**Anticipated Gross Incentive:** \$201,742

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$419,937		\$419,937
		Contingency: 10.00%	\$41,994		\$41,994
		Totals:	\$461,931		\$461,931
		Engineering: 15.00%	\$138,579		
		Construction Phase: 5.00%	\$46,193		
		Project Management: 6.00%	\$55,432		
		Total Project Cost:	\$1,164,065		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,164,065	<b>Total Purchased Electricity Savings (kWh/yr):</b>	455,945
<b>Rebate/Incentive*:</b>	\$201,742	<b>Total Purchased Gas Savings (th/yr):</b>	55,688
<b>Net Project Cost:</b>	\$962,323	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$105,849
<b>Net Simple Payback Period (yrs):</b>	9.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

**SEP Project ID Number: I3128**

**Project: SBD, New/Renov - Health Sciences Academic Building**

**Campus:** IRVINE

**Location:** IRVINE

**Campus Prioritization and Schedule**

**Building:** HEALTH SCIENCES ACADEMIC BUILDI

**Project Tier:** Tier 2

**Building Key:** 09CTBD4

**Start Preliminary Engineering:** 6/1/2012

**Basic Gross Area (sf):**

**Scheduled Completion:** 12/15/2013

**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls

**Project Description Reference(s):** New Construction and Renovation from Capital Program.

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	241,380
<b>Peak Demand (kW):</b>	28.0
<b>Gas (th/yr):</b>	11,502
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 241,380

**Equivalent Gas Savings (th/yr):** 11,502

**Anticipated Gross Incentive:** \$69,433

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$144,529		\$144,529
		Contingency: 10.00%	\$14,453		\$14,453
		Totals:	\$158,982		\$158,982
		Engineering: 15.00%	\$47,695		
		Construction Phase: 5.00%	\$15,898		
		Project Management: 6.00%	\$19,078		
		Total Project Cost:	\$400,634		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$400,634	<b>Total Purchased Electricity Savings (kWh/yr):</b>	156,921
<b>Rebate/Incentive*:</b>	\$69,433	<b>Total Purchased Gas Savings (th/yr):</b>	19,166
<b>Net Project Cost:</b>	\$331,201	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$36,430
<b>Net Simple Payback Period (yrs):</b>	9.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3129**

**Project: SBD, New/Renov - Telemedicine/PRIME-LC Facilities**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	TELEMEDICINE/PRIME-LC FACILITY	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CTBD5	<b>Start Preliminary Engineering:</b>	6/1/2011
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2012
<b>Calculation File:</b>	UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	New Construction and Renovation from Capital Program.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	402,300
<b>Peak Demand (kW):</b>	46.0
<b>Gas (th/yr):</b>	19,170
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	402,300
<b>Equivalent Gas Savings (th/yr):</b>	19,170
<b>Anticipated Gross Incentive:</b>	\$115,722

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$240,881		\$240,880
		Contingency: 10.00%	\$24,088		\$24,088
		Totals:	\$264,969		\$264,968
		Engineering: 15.00%	\$79,491		
		Construction Phase: 5.00%	\$26,497		
		Project Management: 6.00%	\$31,796		
		Total Project Cost:	\$667,721		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$667,721	<b>Total Purchased Electricity Savings (kWh/yr):</b>	261,536
<b>Rebate/Incentive*:</b>	\$115,722	<b>Total Purchased Gas Savings (th/yr):</b>	31,943
<b>Net Project Cost:</b>	\$551,999	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$60,716
<b>Net Simple Payback Period (yrs):</b>	9.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3133**

**Project: First Electric Savings Component of DM and CR Projects 2009**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3134**

**Project: Second Electric Savings Component of DM and CR Projects 2009**

**Campus:** IRVINE

**Location:** IRVINE

**Campus Prioritization and Schedule**

**Building:** CAMPUSWIDE

**Project Tier:** Backup

**Building Key:** 09CWIDE

**Start Preliminary Engineering:**

**Basic Gross Area (sf):**

**Scheduled Completion:**

**Calculation File:** Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3135**

**Project: Natural Gas Component of DM and CR Projects 2009**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	28,409
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 28,409

**Anticipated Gross Incentive:** \$28,409

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$125,000		\$125,000
		Contingency: 10.00%	\$12,500		\$12,500
		Totals:	\$137,500		\$137,500
		Engineering: 15.00%	\$41,250		
		Construction Phase: 5.00%	\$13,750		
		Project Management: 6.00%	\$16,500		
		Total Project Cost:	\$346,500		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$346,500	<b>Total Purchased Electricity Savings (kWh/yr):</b>	89,488
<b>Rebate/Incentive*:</b>	\$28,409	<b>Total Purchased Gas Savings (th/yr):</b>	17,756
<b>Net Project Cost:</b>	\$318,091	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$26,372
<b>Net Simple Payback Period (yrs):</b>	12.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3136**

**Project: First Electric Savings Component of DM and CR Projects 2010**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3137**

**Project: Second Electric Savings Component of DM and CR Projects 2010**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3138

**Project:** Natural Gas Component of DM and CR Projects 2010

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2009

**Scheduled Completion:** 12/15/2010

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	28,409
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 28,409

**Anticipated Gross Incentive:** \$28,409

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$125,000		\$125,000
		Contingency: 10.00%	\$12,500		\$12,500
		Totals:	\$137,500		\$137,500
		Engineering: 15.00%	\$41,250		
		Construction Phase: 5.00%	\$13,750		
		Project Management: 6.00%	\$16,500		
		Total Project Cost:	\$346,500		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$346,500	<b>Total Purchased Electricity Savings (kWh/yr):</b>	89,488
<b>Rebate/Incentive*:</b>	\$28,409	<b>Total Purchased Gas Savings (th/yr):</b>	17,756
<b>Net Project Cost:</b>	\$318,091	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$26,372
<b>Net Simple Payback Period (yrs):</b>	12.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3139**

**Project: First Electric Savings Component of DM and CR Projects 2011**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2010
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2011
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	454,550
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3140**

**Project: Second Electric Savings Component of DM and CR Projects 2011**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3141**

**Project: Natural Gas Component of DM and CR Projects 2011**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2010
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2011
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	28,409
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 28,409

**Anticipated Gross Incentive:** \$28,409

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$125,000		\$125,000
		Contingency: 10.00%	\$12,500		\$12,500
		Totals:	\$137,500		\$137,500
		Engineering: 15.00%	\$41,250		
		Construction Phase: 5.00%	\$13,750		
		Project Management: 6.00%	\$16,500		
		Total Project Cost:	\$346,500		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$346,500	<b>Total Purchased Electricity Savings (kWh/yr):</b>	89,488
<b>Rebate/Incentive*:</b>	\$28,409	<b>Total Purchased Gas Savings (th/yr):</b>	17,756
<b>Net Project Cost:</b>	\$318,091	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$26,372
<b>Net Simple Payback Period (yrs):</b>	12.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3142**

**Project: First Electric Savings Component of DM and CR Projects 2012**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2011
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2012
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	454,550
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3143

**Project:** Second Electric Savings Component of DM and CR Projects 2012

**Campus:** IRVINE

**Location:** IRVINE

**Campus Prioritization and Schedule**

**Building:** CAMPUSWIDE

**Project Tier:** Backup

**Building Key:** 09CWIDE

**Start Preliminary Engineering:**

**Basic Gross Area (sf):**

**Scheduled Completion:**

**Calculation File:** Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3144

**Project:** Natural Gas Component of DM and CR Projects 2012

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:**

**Project Description Reference(s):**

Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls

Deferred Maintenance and Capital Renewal Projects.

**Campus Prioritization and Schedule**

**Project Tier:**

Tier 2

**Start Preliminary Engineering:**

6/1/2011

**Scheduled Completion:**

12/15/2012

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	28,409
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 28,409

**Anticipated Gross Incentive:** \$28,409

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$125,000		\$125,000
		Contingency: 10.00%	\$12,500		\$12,500
		Totals:	\$137,500		\$137,500
		Engineering: 15.00%	\$41,250		
		Construction Phase: 5.00%	\$13,750		
		Project Management: 6.00%	\$16,500		
		Total Project Cost:	\$346,500		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$346,500	<b>Total Purchased Electricity Savings (kWh/yr):</b>	89,488
<b>Rebate/Incentive*:</b>	\$28,409	<b>Total Purchased Gas Savings (th/yr):</b>	17,756
<b>Net Project Cost:</b>	\$318,091	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$26,372
<b>Net Simple Payback Period (yrs):</b>	12.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3145**

**Project: First Electric Savings Component of DM and CR Projects 2013**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2012
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2013
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3146**

**Project: Second Electric Savings Component of DM and CR Projects 2013**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3147

**Project:** Natural Gas Component of DM and CR Projects 2013

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2012

**Scheduled Completion:** 12/15/2013

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	28,409
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 28,409

**Anticipated Gross Incentive:** \$28,409

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$125,000		\$125,000
		Contingency: 10.00%	\$12,500		\$12,500
		Totals:	\$137,500		\$137,500
		Engineering: 15.00%	\$41,250		
		Construction Phase: 5.00%	\$13,750		
		Project Management: 6.00%	\$16,500		
		Total Project Cost:	\$346,500		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$346,500	<b>Total Purchased Electricity Savings (kWh/yr):</b>	89,488
<b>Rebate/Incentive*:</b>	\$28,409	<b>Total Purchased Gas Savings (th/yr):</b>	17,756
<b>Net Project Cost:</b>	\$318,091	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$26,372
<b>Net Simple Payback Period (yrs):</b>	12.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3148**

**Project: First Electric Savings Component of DM and CR Projects 2014**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2013
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2014
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

**SEP Project ID Number: I3149**

**Project: Second Electric Savings Component of DM and CR Projects 2014**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	454,550
<b>Peak Demand (kW):</b>	52.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 454,550

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$109,092

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$250,000		\$250,000
		Contingency: 10.00%	\$25,000		\$25,000
		Totals:	\$275,000		\$275,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	227,275
<b>Rebate/Incentive*:</b>	\$109,092	<b>Total Purchased Gas Savings (th/yr):</b>	22,555
<b>Net Project Cost:</b>	\$583,908	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,495
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3150**

**Project: Natural Gas Component of DM and CR Projects 2014**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2013
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2014
<b>Calculation File:</b>	Deferred Maintenance and Capital Renewal Projects - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	Deferred Maintenance and Capital Renewal Projects.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	28,409
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 28,409

**Anticipated Gross Incentive:** \$28,409

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$125,000		\$125,000
		Contingency: 10.00%	\$12,500		\$12,500
		Totals:	\$137,500		\$137,500
		Engineering: 15.00%	\$41,250		
		Construction Phase: 5.00%	\$13,750		
		Project Management: 6.00%	\$16,500		
		Total Project Cost:	\$346,500		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$346,500	<b>Total Purchased Electricity Savings (kWh/yr):</b>	89,488
<b>Rebate/Incentive*:</b>	\$28,409	<b>Total Purchased Gas Savings (th/yr):</b>	17,756
<b>Net Project Cost:</b>	\$318,091	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$26,372
<b>Net Simple Payback Period (yrs):</b>	12.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3151**

**Project: SBD, New/Renov - Campus Approved Projects Under \$5 Million**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls		
<b>Project Description Reference(s):</b>	New Construction and Renovation from Capital Program.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	84,519
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	7,919
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 84,519

**Equivalent Gas Savings (th/yr):** 7,919

**Anticipated Gross Incentive:** \$28,204

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$61,775		\$61,775
		Contingency: 10.00%	\$6,178		\$6,178
		Totals:	\$67,953		\$67,953
		Engineering: 15.00%	\$20,386		
		Construction Phase: 5.00%	\$6,795		
		Project Management: 6.00%	\$8,154		
		Total Project Cost:	\$171,240		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$171,240	<b>Total Purchased Electricity Savings (kWh/yr):</b>	67,204
<b>Rebate/Incentive*:</b>	\$28,204	<b>Total Purchased Gas Savings (th/yr):</b>	9,143
<b>Net Project Cost:</b>	\$143,036	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$16,368
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3152**

**Project: SBD, New/Renov - Classroom Renovations Phase 6**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls

**Project Description Reference(s):** New Construction and Renovation from Capital Program.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	22,478
<b>Peak Demand (kW):</b>	3.0
<b>Gas (th/yr):</b>	2,106
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 22,478

**Equivalent Gas Savings (th/yr):** 2,106

**Anticipated Gross Incentive:** \$7,501

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$16,429		\$16,429
		Contingency: 10.00%	\$1,643		\$1,643
		Totals:	\$18,072		\$18,072
		Engineering: 15.00%	\$5,422		
		Construction Phase: 5.00%	\$1,807		
		Project Management: 6.00%	\$2,169		
		Total Project Cost:	\$45,541		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$45,541	<b>Total Purchased Electricity Savings (kWh/yr):</b>	17,873
<b>Rebate/Incentive*:</b>	\$7,501	<b>Total Purchased Gas Savings (th/yr):</b>	2,432
<b>Net Project Cost:</b>	\$38,040	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,353
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3153**

**Project: SBD, New/Renov - Campus Approved Projects Under \$5 Million**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls

**Project Description Reference(s):** New Construction and Renovation from Capital Program.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	84,519
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	7,919
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 84,519

**Equivalent Gas Savings (th/yr):** 7,919

**Anticipated Gross Incentive:** \$28,204

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$61,775		\$61,775
		Contingency: 10.00%	\$6,178		\$6,178
		Totals:	\$67,953		\$67,953
		Engineering: 15.00%	\$20,386		
		Construction Phase: 5.00%	\$6,795		
		Project Management: 6.00%	\$8,154		
		Total Project Cost:	\$171,240		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$171,240	<b>Total Purchased Electricity Savings (kWh/yr):</b>	67,204
<b>Rebate/Incentive*:</b>	\$28,204	<b>Total Purchased Gas Savings (th/yr):</b>	9,143
<b>Net Project Cost:</b>	\$143,036	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$16,368
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

**SEP Project ID Number: I3154**

**Project: SBD, New/Renov - Campus Approved Projects Under \$5 Million**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls

**Project Description Reference(s):** New Construction and Renovation from Capital Program.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2010

**Scheduled Completion:** 12/15/2011

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	84,519
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	7,919
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 84,519

**Equivalent Gas Savings (th/yr):** 7,919

**Anticipated Gross Incentive:** \$28,204

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$61,775		\$61,775
		Contingency: 10.00%	\$6,178		\$6,178
		Totals:	\$67,953		\$67,953
		Engineering: 15.00%	\$20,386		
		Construction Phase: 5.00%	\$6,795		
		Project Management: 6.00%	\$8,154		
		Total Project Cost:	\$171,240		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$171,240	<b>Total Purchased Electricity Savings (kWh/yr):</b>	67,204
<b>Rebate/Incentive*:</b>	\$28,204	<b>Total Purchased Gas Savings (th/yr):</b>	9,143
<b>Net Project Cost:</b>	\$143,036	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$16,368
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3155

**Project:** SBD, New/Renov - Campus Approved Projects Under \$5 Million

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** UC SEP Capital Project Savings Potential (27 Mar) - Checked MZ 032708.xls

**Project Description Reference(s):** New Construction and Renovation from Capital Program.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2011

**Scheduled Completion:** 12/15/2012

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	84,519
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	7,919
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 84,519

**Equivalent Gas Savings (th/yr):** 7,919

**Anticipated Gross Incentive:** \$28,204

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$61,775		\$61,775
		Contingency: 10.00%	\$6,178		\$6,178
		Totals:	\$67,953		\$67,953
		Engineering: 15.00%	\$20,386		
		Construction Phase: 5.00%	\$6,795		
		Project Management: 6.00%	\$8,154		
		Total Project Cost:	\$171,240		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$171,240	<b>Total Purchased Electricity Savings (kWh/yr):</b>	67,204
<b>Rebate/Incentive*:</b>	\$28,204	<b>Total Purchased Gas Savings (th/yr):</b>	9,143
<b>Net Project Cost:</b>	\$143,036	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$16,368
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3156**

**Project: Retrofit office trailers with high efficiency heat pumps and occupancy sensors for air-conditioning.**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** UCI\_EnergyProjects-Master03-19-08 - Checked MZ 032808.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	125,000
<b>Peak Demand (kW):</b>	25.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 125,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$30,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$84,000		\$36,000
		Contingency: 10.00%	\$8,400		\$3,600
		Totals:	\$92,400		\$39,600
		Engineering: 15.00%	\$19,800		
		Construction Phase: 5.00%	\$6,600		
		Project Management: 6.00%	\$7,920		
		Total Project Cost:	\$166,320		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$166,320	<b>Total Purchased Electricity Savings (kWh/yr):</b>	62,500
<b>Rebate/Incentive*:</b>	\$30,000	<b>Total Purchased Gas Savings (th/yr):</b>	6,203
<b>Net Project Cost:</b>	\$136,320	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$13,336
<b>Net Simple Payback Period (yrs):</b>	10.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3157

**Project:** Install occupancy sensor switches for restroom fans, and right size motors wherever cost-feasible campus wide.

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** UCI\_EnergyProjects-Master03-19-08 - Checked MZ 032808.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

## Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	263,485
<b>Peak Demand (kW):</b>	30.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 263,485

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$63,236

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$172,900		\$74,100
		Contingency: 10.00%	\$17,290		\$7,410
		Totals:	\$190,190		\$81,510
		Engineering: 15.00%	\$40,755		
		Construction Phase: 5.00%	\$13,585		
		Project Management: 6.00%	\$16,302		
		Total Project Cost:	\$342,342		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$342,342	<b>Total Purchased Electricity Savings (kWh/yr):</b>	131,743
<b>Rebate/Incentive*:</b>	\$63,236	<b>Total Purchased Gas Savings (th/yr):</b>	13,074
<b>Net Project Cost:</b>	\$279,106	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$28,111
<b>Net Simple Payback Period (yrs):</b>	9.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3158**

**Project: Install brilliant white "cool roof" roofing material at the Bren Events Center and Med Sci A-C**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** UCI\_EnergyProjects-Master03-19-08 - Checked MZ 032808.xls

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	8,215
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>		<b>Central Plant Efficiencies:</b>	
Electricity	\$0.24 per annual kWh	th/MMBTU:	12.5
Natural Gas	\$1 per annual therm	kWh/ton-hr:	0.8
		th/ton-hr:	0.0

**Equivalent Electric Savings (kWh/yr):** 8,215

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,972

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$599,769		\$257,044
		Contingency: 10.00%	\$59,977		\$25,704
		Totals:	\$659,746		\$282,748
		Engineering: 15.00%	\$141,374		
		Construction Phase: 5.00%	\$47,125		
		Project Management: 6.00%	\$56,550		
		Total Project Cost:	\$1,187,543		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,187,543	<b>Total Purchased Electricity Savings (kWh/yr):</b>	4,108
<b>Rebate/Incentive*:</b>	\$1,972	<b>Total Purchased Gas Savings (th/yr):</b>	408
<b>Net Project Cost:</b>	\$1,185,571	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$876
<b>Net Simple Payback Period (yrs):</b>	1,352.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3163**

**Project: Lab Freezers Phase 1 of 3: 20 Lab Freezer Replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Lab Freezer Projects SEP MZ 032708-Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 2. Lab Freezers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1

**Start Preliminary Engineering:** 6/1/2008

**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	77,280
<b>Peak Demand (kW):</b>	9.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 77,280

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$18,547

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Lab Freezer	20				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$280,000		\$0
		Contingency: 10.00%	\$28,000		\$0
		Totals:	\$308,000		\$0
		Engineering: 15.00%	\$46,200		
		Construction Phase: 5.00%	\$15,400		
		Project Management: 6.00%	\$18,480		
		Total Project Cost:	\$388,080		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$388,080	<b>Total Purchased Electricity Savings (kWh/yr):</b>	38,640
<b>Rebate/Incentive*:</b>	\$18,547	<b>Total Purchased Gas Savings (th/yr):</b>	3,835
<b>Net Project Cost:</b>	\$369,533	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,245
<b>Net Simple Payback Period (yrs):</b>	44.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3164

**Project:** Lab Freezers Phase 2 of 3: 20 Lab Freezer Replacements

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Lab Freezer Projects SEP MZ 032708-Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 2. Lab Freezers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1

**Start Preliminary Engineering:** 6/1/2009

**Scheduled Completion:** 12/15/2010

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	77,280
<b>Peak Demand (kW):</b>	9.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 77,280

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$18,547

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Lab Freezer	20				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$280,000		\$0
		Contingency: 10.00%	\$28,000		\$0
		Totals:	\$308,000		\$0
		Engineering: 15.00%	\$46,200		
		Construction Phase: 5.00%	\$15,400		
		Project Management: 6.00%	\$18,480		
		Total Project Cost:	\$388,080		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$388,080	<b>Total Purchased Electricity Savings (kWh/yr):</b>	38,640
<b>Rebate/Incentive*:</b>	\$18,547	<b>Total Purchased Gas Savings (th/yr):</b>	3,835
<b>Net Project Cost:</b>	\$369,533	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,245
<b>Net Simple Payback Period (yrs):</b>	44.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3165**

**Project: Lab Freezers Phase 3 of 3: 5 Lab Freezer Replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Lab Freezer Projects SEP MZ 032708-Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 2. Lab Freezers .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	19,320
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 19,320

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$4,637

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Lab Freezer	5				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$70,000		\$0
		Contingency: 10.00%	\$7,000		\$0
		Totals:	\$77,000		\$0
		Engineering: 15.00%	\$11,550		
		Construction Phase: 5.00%	\$3,850		
		Project Management: 6.00%	\$4,620		
		Total Project Cost:	\$97,020		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$97,020	<b>Total Purchased Electricity Savings (kWh/yr):</b>	9,660
<b>Rebate/Incentive*:</b>	\$4,637	<b>Total Purchased Gas Savings (th/yr):</b>	959
<b>Net Project Cost:</b>	\$92,383	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,061
<b>Net Simple Payback Period (yrs):</b>	44.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3166**

**Project: Refrigerators Phase 1 of 4: 100 Energy Star Refrigerator Replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Campus-wide) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	224,300
<b>Peak Demand (kW):</b>	26.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 224,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$53,832

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	100				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$69,800		\$0
		Contingency: 10.00%	\$6,980		\$0
		Totals:	\$76,780		\$0
		Engineering: 15.00%	\$11,517		
		Construction Phase: 5.00%	\$3,839		
		Project Management: 6.00%	\$4,607		
		Total Project Cost:	\$96,743		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,743	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,150
<b>Rebate/Incentive*:</b>	\$53,832	<b>Total Purchased Gas Savings (th/yr):</b>	11,130
<b>Net Project Cost:</b>	\$42,911	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,930
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3167

**Project:** Refrigerators Phase 2 of 4: 100 Energy Star Refrigerator Replacements

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Campus-wide) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	224,300
<b>Peak Demand (kW):</b>	26.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 224,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$53,832

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	100				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$69,800		\$0
		Contingency: 10.00%	\$6,980		\$0
		Totals:	\$76,780		\$0
		Engineering: 15.00%	\$11,517		
		Construction Phase: 5.00%	\$3,839		
		Project Management: 6.00%	\$4,607		
		Total Project Cost:	\$96,743		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,743	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,150
<b>Rebate/Incentive*:</b>	\$53,832	<b>Total Purchased Gas Savings (th/yr):</b>	11,130
<b>Net Project Cost:</b>	\$42,911	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,930
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3168**

**Project: Refrigerators Phase 3 of 4: 100 Energy Star Refrigerator Replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Campus-wide) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	224,300
<b>Peak Demand (kW):</b>	26.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 224,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$53,832

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	100				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$69,800		\$0
		Contingency: 10.00%	\$6,980		\$0
		Totals:	\$76,780		\$0
		Engineering: 15.00%	\$11,517		
		Construction Phase: 5.00%	\$3,839		
		Project Management: 6.00%	\$4,607		
		Total Project Cost:	\$96,743		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,743	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,150
<b>Rebate/Incentive*:</b>	\$53,832	<b>Total Purchased Gas Savings (th/yr):</b>	11,130
<b>Net Project Cost:</b>	\$42,911	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,930
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3169

**Project:** Refrigerators Phase 4 of 4: 20 Energy Star Refrigerator Replacements

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Campus-wide) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1

**Start Preliminary Engineering:** 6/1/2009

**Scheduled Completion:** 12/15/2010

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	44,860
<b>Peak Demand (kW):</b>	5.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 44,860

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$10,766

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	20				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$13,960		\$0
		Contingency: 10.00%	\$1,396		\$0
		Totals:	\$15,356		\$0
		Engineering: 15.00%	\$2,303		
		Construction Phase: 5.00%	\$768		
		Project Management: 6.00%	\$921		
		Total Project Cost:	\$19,349		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$19,349	<b>Total Purchased Electricity Savings (kWh/yr):</b>	22,430
<b>Rebate/Incentive*:</b>	\$10,766	<b>Total Purchased Gas Savings (th/yr):</b>	2,226
<b>Net Project Cost:</b>	\$8,583	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,786
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



## PROJECT DETAIL REPORT

SEP Project ID Number: I3170

**Project:** Refrigerators Phase 1 of 6: 100 Energy Star Refrigerator Replacements

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Housing) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

### Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	224,300
<b>Peak Demand (kW):</b>	26.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 224,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$53,832

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	100				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$69,800		\$0
		Contingency: 10.00%	\$6,980		\$0
		Totals:	\$76,780		\$0
		Engineering: 15.00%	\$11,517		
		Construction Phase: 5.00%	\$3,839		
		Project Management: 6.00%	\$4,607		
		Total Project Cost:	\$96,743		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,743	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,150
<b>Rebate/Incentive*:</b>	\$53,832	<b>Total Purchased Gas Savings (th/yr):</b>	11,130
<b>Net Project Cost:</b>	\$42,911	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,930
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3171**

**Project: Refrigerators Phase 2 of 6: 100 Energy Star Refrigerator Replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Housing) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	224,300
<b>Peak Demand (kW):</b>	26.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 224,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$53,832

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	100				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$69,800		\$0
		Contingency: 10.00%	\$6,980		\$0
		Totals:	\$76,780		\$0
		Engineering: 15.00%	\$11,517		
		Construction Phase: 5.00%	\$3,839		
		Project Management: 6.00%	\$4,607		
		Total Project Cost:	\$96,743		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,743	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,150
<b>Rebate/Incentive*:</b>	\$53,832	<b>Total Purchased Gas Savings (th/yr):</b>	11,130
<b>Net Project Cost:</b>	\$42,911	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,930
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3172**

**Project: Refrigerators Phase 3 of 6: 100 Energy Star Refrigerator Replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Housing) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	224,300
<b>Peak Demand (kW):</b>	26.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 224,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$53,832

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	100				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$69,800		\$0
		Contingency: 10.00%	\$6,980		\$0
		Totals:	\$76,780		\$0
		Engineering: 15.00%	\$11,517		
		Construction Phase: 5.00%	\$3,839		
		Project Management: 6.00%	\$4,607		
		Total Project Cost:	\$96,743		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,743	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,150
<b>Rebate/Incentive*:</b>	\$53,832	<b>Total Purchased Gas Savings (th/yr):</b>	11,130
<b>Net Project Cost:</b>	\$42,911	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,930
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3173**

**Project: Refrigerators Phase 4 of 6: 100 Energy Star Refrigerator Replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Housing) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	224,300
<b>Peak Demand (kW):</b>	26.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 224,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$53,832

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	100				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$69,800		\$0
		Contingency: 10.00%	\$6,980		\$0
		Totals:	\$76,780		\$0
		Engineering: 15.00%	\$11,517		
		Construction Phase: 5.00%	\$3,839		
		Project Management: 6.00%	\$4,607		
		Total Project Cost:	\$96,743		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,743	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,150
<b>Rebate/Incentive*:</b>	\$53,832	<b>Total Purchased Gas Savings (th/yr):</b>	11,130
<b>Net Project Cost:</b>	\$42,911	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,930
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3174

**Project:** Refrigerators Phase 5 of 6: 100 Energy Star Refrigerator Replacements

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Housing) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

### Campus Prioritization and Schedule

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2009

**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	224,300
<b>Peak Demand (kW):</b>	26.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 224,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$53,832

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	100				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$69,800		\$0
		Contingency: 10.00%	\$6,980		\$0
		Totals:	\$76,780		\$0
		Engineering: 15.00%	\$11,517		
		Construction Phase: 5.00%	\$3,839		
		Project Management: 6.00%	\$4,607		
		Total Project Cost:	\$96,743		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,743	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,150
<b>Rebate/Incentive*:</b>	\$53,832	<b>Total Purchased Gas Savings (th/yr):</b>	11,130
<b>Net Project Cost:</b>	\$42,911	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,930
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3175**

**Project: Refrigerators Phase 6 of 6: 9 Energy Star Refrigerator Replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Refrigerator (Housing) Projects SEP MZ 032608.Checked by LCK.xls

**Project Description Reference(s):** Campus Wide Project 1. Refrigerators.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	20,187
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 20,187

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$4,845

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Energy Star Refrigerator	9				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$6,282		\$0
		Contingency: 10.00%	\$628		\$0
		Totals:	\$6,910		\$0
		Engineering: 15.00%	\$1,037		
		Construction Phase: 5.00%	\$346		
		Project Management: 6.00%	\$415		
		Total Project Cost:	\$8,707		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,707	<b>Total Purchased Electricity Savings (kWh/yr):</b>	10,094
<b>Rebate/Incentive*:</b>	\$4,845	<b>Total Purchased Gas Savings (th/yr):</b>	1,002
<b>Net Project Cost:</b>	\$3,862	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,154
<b>Net Simple Payback Period (yrs):</b>	1.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3176

**Project:** LCD Phase 1 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Verdiem & CRT Projects SEP MZ 032608 - TLH.xls

**Project Description Reference(s):** Campus Wide Project 4. Network Computer Power Management Software/CRT .

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	213,796
<b>Peak Demand (kW):</b>	27.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 213,796

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$51,311

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Verdiem (or similar) Software, Licence & Installation	1,000				
LCD Monitor & Installation	40				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$48,200		\$1,000
		Contingency: 10.00%	\$4,820		\$100
		Totals:	\$53,020		\$1,100
		Engineering: 15.00%	\$8,118		
		Construction Phase: 5.00%	\$2,706		
		Project Management: 6.00%	\$3,247		
		Total Project Cost:	\$68,191		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$68,191	<b>Total Purchased Electricity Savings (kWh/yr):</b>	106,898
<b>Rebate/Incentive*:</b>	\$51,311	<b>Total Purchased Gas Savings (th/yr):</b>	10,609
<b>Net Project Cost:</b>	\$16,880	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$22,810
<b>Net Simple Payback Period (yrs):</b>	0.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3177

**Project:** LCD Phase 2 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Verdiem & CRT Projects SEP MZ 032608 - TLH.xls

**Project Description Reference(s):** Campus Wide Project 4. Network Computer Power Management Software/CRT .

### Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	213,796
<b>Peak Demand (kW):</b>	27.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 213,796

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$51,311

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
LCD Monitor & Installation	40				
Verdiem (or similar) Software, Licence & Installation	1,000				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$48,200		\$1,000
		Contingency: 10.00%	\$4,820		\$100
		Totals:	\$53,020		\$1,100
		Engineering: 15.00%	\$8,118		
		Construction Phase: 5.00%	\$2,706		
		Project Management: 6.00%	\$3,247		
		Total Project Cost:	\$68,191		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$68,191	<b>Total Purchased Electricity Savings (kWh/yr):</b>	106,898
<b>Rebate/Incentive*:</b>	\$51,311	<b>Total Purchased Gas Savings (th/yr):</b>	10,609
<b>Net Project Cost:</b>	\$16,880	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$22,810
<b>Net Simple Payback Period (yrs):</b>	0.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



## PROJECT DETAIL REPORT

SEP Project ID Number: I3178

**Project:** LCD Phase 3 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Verdiem & CRT Projects SEP MZ 032608 - TLH.xls

**Project Description Reference(s):** Campus Wide Project 4. Network Computer Power Management Software/CRT .

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	213,796
<b>Peak Demand (kW):</b>	27.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 213,796

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$51,311

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
LCD Monitor & Installation	40				
Verdiem (or similar) Software, Licence & Installation	1,000				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$48,200		\$1,000
		Contingency: 10.00%	\$4,820		\$100
		Totals:	\$53,020		\$1,100
		Engineering: 15.00%	\$8,118		
		Construction Phase: 5.00%	\$2,706		
		Project Management: 6.00%	\$3,247		
		Total Project Cost:	\$68,191		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$68,191	<b>Total Purchased Electricity Savings (kWh/yr):</b>	106,898
<b>Rebate/Incentive*:</b>	\$51,311	<b>Total Purchased Gas Savings (th/yr):</b>	10,609
<b>Net Project Cost:</b>	\$16,880	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$22,810
<b>Net Simple Payback Period (yrs):</b>	0.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3179

**Project:** LCD Phase 4 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Verdiem & CRT Projects SEP MZ 032608 - TLH.xls

**Project Description Reference(s):** Campus Wide Project 4. Network Computer Power Management Software/CRT .

### Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	213,796
<b>Peak Demand (kW):</b>	27.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 213,796

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$51,311

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
LCD Monitor & Installation	40				
Verdiem (or similar) Software, Licence & Installation	1,000				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$48,200		\$1,000
		Contingency: 10.00%	\$4,820		\$100
		Totals:	\$53,020		\$1,100
		Engineering: 15.00%	\$8,118		
		Construction Phase: 5.00%	\$2,706		
		Project Management: 6.00%	\$3,247		
		Total Project Cost:	\$68,191		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$68,191	<b>Total Purchased Electricity Savings (kWh/yr):</b>	106,898
<b>Rebate/Incentive*:</b>	\$51,311	<b>Total Purchased Gas Savings (th/yr):</b>	10,609
<b>Net Project Cost:</b>	\$16,880	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$22,810
<b>Net Simple Payback Period (yrs):</b>	0.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3180**

**Project: LCD Phase 5 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Verdiem & CRT Projects SEP MZ 032608 - TLH.xls

**Project Description Reference(s):** Campus Wide Project 4. Network Computer Power Management Software/CRT .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	213,796
<b>Peak Demand (kW):</b>	27.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 213,796

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$51,311

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
LCD Monitor & Installation	40				
Verdiem (or similar) Software, Licence & Installation	1,000				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$48,200		\$1,000
		Contingency: 10.00%	\$4,820		\$100
		Totals:	\$53,020		\$1,100
		Engineering: 15.00%	\$8,118		
		Construction Phase: 5.00%	\$2,706		
		Project Management: 6.00%	\$3,247		
		Total Project Cost:	\$68,191		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$68,191	<b>Total Purchased Electricity Savings (kWh/yr):</b>	106,898
<b>Rebate/Incentive*:</b>	\$51,311	<b>Total Purchased Gas Savings (th/yr):</b>	10,609
<b>Net Project Cost:</b>	\$16,880	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$22,810
<b>Net Simple Payback Period (yrs):</b>	0.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3181**

**Project: LCD Phase 6 of 6: 565 Verdiem (PC Power Management) Installations and 23 CRT Replacements**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** CAMPUSWIDE  
**Building Key:** 09CWIDE  
**Basic Gross Area (sf):**

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

**Calculation File:** Verdiem & CRT Projects SEP MZ 032608 - TLH.xls

**Project Description Reference(s):** Campus Wide Project 4. Network Computer Power Management Software/CRT .

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	120,795
<b>Peak Demand (kW):</b>	15.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 120,795

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$28,991

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
LCD Monitor & Installation	23				
Verdiem (or similar) Software, Licence & Installation	565				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$27,365		\$575
		Contingency: 10.00%	\$2,737		\$58
		Totals:	\$30,102		\$633
		Engineering: 15.00%	\$4,610		
		Construction Phase: 5.00%	\$1,537		
		Project Management: 6.00%	\$1,844		
		Total Project Cost:	\$38,725		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$38,725	<b>Total Purchased Electricity Savings (kWh/yr):</b>	60,398
<b>Rebate/Incentive*:</b>	\$28,991	<b>Total Purchased Gas Savings (th/yr):</b>	5,994
<b>Net Project Cost:</b>	\$9,734	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,887
<b>Net Simple Payback Period (yrs):</b>	0.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3182**

**Project: Server Virtualization Phase 1 of 3: 10 VM Installations**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Virtualization Projects SEP MZ 032608 - Checked ADM 032808.xls

**Project Description Reference(s):** Campus Wide Project 3. Server Virtualization .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	280,000
<b>Peak Demand (kW):</b>	35.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 280,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$67,200

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Hardware, Software, License & Installation; VM or similar, per Vir	10				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$210,000		\$0
		Contingency: 10.00%	\$21,000		\$0
		Totals:	\$231,000		\$0
		Engineering: 15.00%	\$34,650		
		Construction Phase: 5.00%	\$11,550		
		Project Management: 6.00%	\$13,860		
		Total Project Cost:	\$291,060		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$291,060	<b>Total Purchased Electricity Savings (kWh/yr):</b>	140,000
<b>Rebate/Incentive*:</b>	\$67,200	<b>Total Purchased Gas Savings (th/yr):</b>	13,894
<b>Net Project Cost:</b>	\$223,860	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$29,873
<b>Net Simple Payback Period (yrs):</b>	7.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3183**

**Project: Server Virtualization Phase 2 of 3: 10 VM Installations**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Virtualization Projects SEP MZ 032608 - Checked ADM 032808.xls

**Project Description Reference(s):** Campus Wide Project 3. Server Virtualization .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	280,000
<b>Peak Demand (kW):</b>	35.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 280,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$67,200

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Hardware, Software, License & Installation; VM or similar, per Vir	10				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$210,000		\$0
		Contingency: 10.00%	\$21,000		\$0
		Totals:	\$231,000		\$0
		Engineering: 15.00%	\$34,650		
		Construction Phase: 5.00%	\$11,550		
		Project Management: 6.00%	\$13,860		
		Total Project Cost:	\$291,060		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$291,060	<b>Total Purchased Electricity Savings (kWh/yr):</b>	140,000
<b>Rebate/Incentive*:</b>	\$67,200	<b>Total Purchased Gas Savings (th/yr):</b>	13,894
<b>Net Project Cost:</b>	\$223,860	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$29,873
<b>Net Simple Payback Period (yrs):</b>	7.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3184**

**Project: Server Virtualization Phase 3 of 3: 10 VM Installations**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Virtualization Projects SEP MZ 032608 - Checked ADM 032808.xls

**Project Description Reference(s):** Campus Wide Project 3. Server Virtualization .

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2010

**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	280,000
<b>Peak Demand (kW):</b>	35.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 280,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$67,200

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Hardware, Software, License & Installation; VM or similar, per Vir	10				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$210,000		\$0
		Contingency: 10.00%	\$21,000		\$0
		Totals:	\$231,000		\$0
		Engineering: 15.00%	\$34,650		
		Construction Phase: 5.00%	\$11,550		
		Project Management: 6.00%	\$13,860		
		Total Project Cost:	\$291,060		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$291,060	<b>Total Purchased Electricity Savings (kWh/yr):</b>	140,000
<b>Rebate/Incentive*:</b>	\$67,200	<b>Total Purchased Gas Savings (th/yr):</b>	13,894
<b>Net Project Cost:</b>	\$223,860	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$29,873
<b>Net Simple Payback Period (yrs):</b>	7.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3185

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** LANGSON LIB

**Building Key:** 09C9001

**Basic Gross Area (sf):** 150,883

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	134,334
<b>Peak Demand (kW):</b>	36.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 134,334

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$32,240

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Daylighting	1	\$4,266.46	\$4,377	\$11,129.90	\$12,310
Occupancy Sensors	1	\$25,854.35	\$26,527	\$17,313.37	\$19,149
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$13,059.38	\$13,399	\$14,288.16	\$15,803
Raw Costs:			\$44,303		\$47,261
City: Anaheim		Sales Tax: 8.25%	\$3,655		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$5,755		\$5,671
City Index Labor Multiplier: 110.6%		Subtotals:	\$53,713		\$52,932
		Contingency: 10.00%	\$5,371		\$5,293
		Totals:	\$59,084		\$58,226
		Engineering: 15.00%	\$17,596		
		Construction Phase: 5.00%	\$5,865		
		Project Management: 6.00%	\$7,039		
		Total Project Cost:	\$147,810		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$147,810	<b>Total Purchased Electricity Savings (kWh/yr):</b>	67,167
<b>Rebate/Incentive*:</b>	\$32,240	<b>Total Purchased Gas Savings (th/yr):</b>	6,666
<b>Net Project Cost:</b>	\$115,570	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$14,332
<b>Net Simple Payback Period (yrs):</b>	8.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

SEP Project ID Number: I3186

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ADMIN BLDG

**Building Key:** 09C9003

**Basic Gross Area (sf):** 101,022

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	118,239
<b>Peak Demand (kW):</b>	28.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 118,239

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$28,377

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy Sensors	1	\$40,969.51	\$42,035	\$27,435.25	\$30,343
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$8,743.76	\$8,971	\$9,566.48	\$10,581
Daylighting	1	\$1,466.49	\$1,505	\$3,825.62	\$4,231
Raw Costs:			\$52,510		\$45,155
City: Anaheim	Sales Tax: 8.25%		\$4,332		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$6,821		\$5,419
City Index Labor Multiplier: 110.6%	Subtotals:		\$63,664		\$50,574
Contingency: 10.00%			\$6,366		\$5,057
Totals:			\$70,030		\$55,631
Engineering: 15.00%			\$18,849		
Construction Phase: 5.00%			\$6,283		
Project Management: 6.00%			\$7,540		
Total Project Cost:			\$158,333		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$158,333	<b>Total Purchased Electricity Savings (kWh/yr):</b>	59,120
<b>Rebate/Incentive*:</b>	\$28,377	<b>Total Purchased Gas Savings (th/yr):</b>	5,867
<b>Net Project Cost:</b>	\$129,956	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,615
<b>Net Simple Payback Period (yrs):</b>	10.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3187

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** UCI STU CNTR

**Building Key:** 09C9005

**Basic Gross Area (sf):** 164,042

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	245,322
<b>Peak Demand (kW):</b>	64.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 245,322

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$58,877

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Daylighting	1	\$779.10	\$799	\$2,032.45	\$2,248
Occupancy Sensors	1	\$30,320.69	\$31,109	\$20,304.26	\$22,457
Raw Costs:			\$31,908		\$24,704
City: Anaheim		Sales Tax: 8.25%	\$2,632		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$4,145		\$2,965
City Index Labor Multiplier: 110.6%		Subtotals:	\$38,686		\$27,669
		Contingency: 10.00%	\$3,869		\$2,767
		Totals:	\$42,554		\$30,436
		Engineering: 15.00%	\$10,949		
		Construction Phase: 5.00%	\$3,650		
		Project Management: 6.00%	\$4,379		
		Total Project Cost:	\$91,968		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$91,968	<b>Total Purchased Electricity Savings (kWh/yr):</b>	122,661
<b>Rebate/Incentive*:</b>	\$58,877	<b>Total Purchased Gas Savings (th/yr):</b>	12,173
<b>Net Project Cost:</b>	\$33,091	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$26,173
<b>Net Simple Payback Period (yrs):</b>	1.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3188

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** HIB

**Building Key:** 09C9035

**Basic Gross Area (sf):** 74,090

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	129,521
<b>Peak Demand (kW):</b>	33.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 129,521

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$31,085

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$21,161.96	\$21,712	\$23,153.13	\$25,607
Occupancy Sensors	1	\$26,289.52	\$26,973	\$17,604.78	\$19,471
Daylighting	1	\$1,127.69	\$1,157	\$2,941.81	\$3,254
Raw Costs:			\$49,842		\$48,332
City: Anaheim	Sales Tax: 8.25%		\$4,112		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$6,475		\$5,800
City Index Labor Multiplier: 110.6%	Subtotals:		\$60,429		\$54,132
Contingency: 10.00%			\$6,043		\$5,413
Totals:			\$66,472		\$59,545
Engineering: 15.00%			\$18,902		
Construction Phase: 5.00%			\$6,301		
Project Management: 6.00%			\$7,561		
Total Project Cost:			\$158,781		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$158,781	<b>Total Purchased Electricity Savings (kWh/yr):</b>	64,761
<b>Rebate/Incentive*:</b>	\$31,085	<b>Total Purchased Gas Savings (th/yr):</b>	6,427
<b>Net Project Cost:</b>	\$127,696	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$13,818
<b>Net Simple Payback Period (yrs):</b>	9.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3189**

**Project: Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** W SMITH HALL

**Building Key:** 09C9050

**Basic Gross Area (sf):** 9,458

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	15,263
<b>Peak Demand (kW):</b>	4.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 15,263

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$3,663

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$2,701.44	\$2,772	\$2,955.63	\$3,269
Occupancy Sensors	1	\$1,530.52	\$1,570	\$1,024.91	\$1,134
Raw Costs:			\$4,342		\$4,402
City: Anaheim		Sales Tax: 8.25%	\$358		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$564		\$528
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,264		\$4,931
		Contingency: 10.00%	\$526		\$493
		Totals:	\$5,791		\$5,424
		Engineering: 15.00%	\$1,682		
		Construction Phase: 5.00%	\$561		
		Project Management: 6.00%	\$673		
		Total Project Cost:	\$14,130		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$14,130	<b>Total Purchased Electricity Savings (kWh/yr):</b>	7,632
<b>Rebate/Incentive*:</b>	\$3,663	<b>Total Purchased Gas Savings (th/yr):</b>	757
<b>Net Project Cost:</b>	\$10,467	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,628
<b>Net Simple Payback Period (yrs):</b>	6.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3190

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CTB THEATRE

**Building Key:** 09C9051

**Basic Gross Area (sf):** 20,377

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	32,008
<b>Peak Demand (kW):</b>	8.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 32,008

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$7,682

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy Sensors	1	\$2,707.74	\$2,778	\$1,813.24	\$2,005
Daylighting	1	\$8.54	\$9	\$22.27	\$25
Raw Costs:			\$2,787		\$2,030
City: Anaheim Sales Tax: 8.25%			\$230		N/A
City Index Material Multiplier: 102.6%			\$362		\$244
City Index Labor Multiplier: 110.6%			\$3,379		\$2,274
Subtotals:			\$3,379		\$2,274
Contingency: 10.00%			\$338		\$227
Totals:			\$3,717		\$2,501
Engineering: 15.00%			\$933		
Construction Phase: 5.00%			\$311		
Project Management: 6.00%			\$373		
Total Project Cost:			\$7,834		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$7,834	<b>Total Purchased Electricity Savings (kWh/yr):</b>	16,004
<b>Rebate/Incentive*:</b>	\$6,268	<b>Total Purchased Gas Savings (th/yr):</b>	1,588
<b>Net Project Cost:</b>	\$1,567	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,415
<b>Net Simple Payback Period (yrs):</b>	0.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3191**

**Project: Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	SOTA PROD ST	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9053	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	5,182	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI All Building List - Lighting Analysis AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	3,654
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	3,654
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$877
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$448.52	\$460	\$490.72	\$543
Occupancy Sensors	1	\$176.93	\$182	\$118.48	\$131
Daylighting	1	\$3.50	\$4	\$9.14	\$10
Raw Costs:			\$645		\$684
City: Anaheim		Sales Tax: 8.25%	\$53		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$84		\$82
City Index Labor Multiplier: 110.6%		Subtotals:	\$782		\$766
		Contingency: 10.00%	\$78		\$77
		Totals:	\$861		\$843
		Engineering: 15.00%	\$255		
		Construction Phase: 5.00%	\$85		
		Project Management: 6.00%	\$102		
		Total Project Cost:	\$2,146		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,146	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,827
<b>Rebate/Incentive*:</b>	\$877	<b>Total Purchased Gas Savings (th/yr):</b>	181
<b>Net Project Cost:</b>	\$1,269	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$390
<b>Net Simple Payback Period (yrs):</b>	3.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3192**

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA DRAMA

**Building Key:** 09C9054

**Basic Gross Area (sf):** 8,772

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	10,569
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 10,569

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,537

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$759.24	\$779	\$830.68	\$919
Occupancy Sensors	1	\$3,774.45	\$3,873	\$2,527.56	\$2,795
Daylighting	1	\$132.98	\$136	\$346.92	\$384
Raw Costs:			\$4,788		\$4,098
City: Anaheim Sales Tax: 8.25%			\$395		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$622	\$492
City Index Labor Multiplier: 110.6%			Subtotals:	\$5,805	\$4,590
Contingency: 10.00%			\$580		\$459
Totals:			\$6,385		\$5,049
Engineering: 15.00%			\$1,715		
Construction Phase: 5.00%			\$572		
Project Management: 6.00%			\$686		
Total Project Cost:			\$14,407		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$14,407	<b>Total Purchased Electricity Savings (kWh/yr):</b>	5,285
<b>Rebate/Incentive*:</b>	\$2,537	<b>Total Purchased Gas Savings (th/yr):</b>	524
<b>Net Project Cost:</b>	\$11,870	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,128
<b>Net Simple Payback Period (yrs):</b>	10.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3193

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** UNIV ART GAL

**Building Key:** 09C9055

**Basic Gross Area (sf):** 8,920

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	10,488
<b>Peak Demand (kW):</b>	3.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 10,488

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,517

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$2,388.54	\$2,451	\$2,613.28	\$2,890
Occupancy Sensors	1	\$143.99	\$148	\$96.42	\$107
Daylighting	1	\$5.48	\$6	\$14.29	\$16
Raw Costs:			\$2,604		\$3,013
City: Anaheim Sales Tax: 8.25%			\$215		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$338	\$362
City Index Labor Multiplier: 110.6%			Subtotals:	\$3,157	\$3,374
Contingency: 10.00%			\$316		\$337
Totals:			\$3,473		\$3,712
Engineering: 15.00%			\$1,078		
Construction Phase: 5.00%			\$359		
Project Management: 6.00%			\$431		
Total Project Cost:			\$9,052		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$9,052	<b>Total Purchased Electricity Savings (kWh/yr):</b>	5,244
<b>Rebate/Incentive*:</b>	\$2,517	<b>Total Purchased Gas Savings (th/yr):</b>	520
<b>Net Project Cost:</b>	\$6,535	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,119
<b>Net Simple Payback Period (yrs):</b>	5.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

SEP Project ID Number: I3194

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA ART STD

**Building Key:** 09C9056

**Basic Gross Area (sf):** 10,570

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	8,044
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 8,044

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,931

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$914.87	\$939	\$1,000.95	\$1,107
Occupancy Sensors	1	\$725.85	\$745	\$486.07	\$538
Daylighting	1	\$18.74	\$19	\$48.89	\$54
Raw Costs:			\$1,703		\$1,699
City: Anaheim Sales Tax: 8.25%			\$140		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$221	\$204
City Index Labor Multiplier: 110.6%			Subtotals:	\$2,064	\$1,903
Contingency: 10.00%			\$206		\$190
Totals:			\$2,271		\$2,093
Engineering: 15.00%			\$655		
Construction Phase: 5.00%			\$218		
Project Management: 6.00%			\$262		
Total Project Cost:			\$5,498		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$5,498	<b>Total Purchased Electricity Savings (kWh/yr):</b>	4,022
<b>Rebate/Incentive*:</b>	\$1,931	<b>Total Purchased Gas Savings (th/yr):</b>	399
<b>Net Project Cost:</b>	\$3,567	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$858
<b>Net Simple Payback Period (yrs):</b>	4.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3195**

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOTA SCULPTR

**Building Key:** 09C9057

**Basic Gross Area (sf):** 10,894

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	7,968
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 7,968

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,912

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$942.91	\$967	\$1,031.63	\$1,141
Daylighting	1	\$12.28	\$13	\$32.02	\$35
Occupancy Sensors	1	\$550.69	\$565	\$368.77	\$408
Raw Costs:			\$1,545		\$1,584
City: Anaheim	Sales Tax: 8.25%		\$127		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$201		\$190
City Index Labor Multiplier: 110.6%	Subtotals:		\$1,873		\$1,774
Contingency: 10.00%			\$187		\$177
Totals:			\$2,061		\$1,952
Engineering: 15.00%			\$602		
Construction Phase: 5.00%			\$201		
Project Management: 6.00%			\$241		
Total Project Cost:			\$5,056		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$5,056	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,984
<b>Rebate/Incentive*:</b>	\$1,912	<b>Total Purchased Gas Savings (th/yr):</b>	395
<b>Net Project Cost:</b>	\$3,144	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$850
<b>Net Simple Payback Period (yrs):</b>	3.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3196**

**Project: Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	SCILIBRARY	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9073	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	189,590	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI All Building List - Lighting Analysis AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	174,472
<b>Peak Demand (kW):</b>	47.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	174,472
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$41,873
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$16,409.59	\$16,836	\$17,953.60	\$19,857
Occupancy Sensors	1	\$36,740.55	\$37,696	\$24,603.32	\$27,211
Daylighting	1	\$5,415.56	\$5,556	\$14,127.54	\$15,625
Raw Costs:			\$60,088		\$62,693
City: Anaheim		Sales Tax: 8.25%	\$4,957		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$7,805		\$7,523
City Index Labor Multiplier: 110.6%		Subtotals:	\$72,851		\$70,216
		Contingency: 10.00%	\$7,285		\$7,022
		Totals:	\$80,136		\$77,238
		Engineering: 15.00%	\$23,606		
		Construction Phase: 5.00%	\$7,869		
		Project Management: 6.00%	\$9,442		
		Total Project Cost:	\$198,291		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$198,291	<b>Total Purchased Electricity Savings (kWh/yr):</b>	87,236
<b>Rebate/Incentive*:</b>	\$41,873	<b>Total Purchased Gas Savings (th/yr):</b>	8,657
<b>Net Project Cost:</b>	\$156,418	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$18,614
<b>Net Simple Payback Period (yrs):</b>	8.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3197

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** STEINHAUS H

**Building Key:** 09C9075

**Basic Gross Area (sf):** 107,521

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	80,032
<b>Peak Demand (kW):</b>	21.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 80,032

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$19,208

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$9,306.27	\$9,548	\$10,181.91	\$11,261
Occupancy Sensors	1	\$11,448.87	\$11,747	\$7,666.74	\$8,479
Daylighting	1	\$506.42	\$520	\$1,321.09	\$1,461
Raw Costs:			\$21,814		\$21,202
City: Anaheim		Sales Tax: 8.25%	\$1,800		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$2,834		\$2,544
City Index Labor Multiplier: 110.6%		Subtotals:	\$26,448		\$23,746
		Contingency: 10.00%	\$2,645		\$2,375
		Totals:	\$29,093		\$26,121
		Engineering: 15.00%	\$8,282		
		Construction Phase: 5.00%	\$2,761		
		Project Management: 6.00%	\$3,313		
		Total Project Cost:	\$69,568		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$69,568	<b>Total Purchased Electricity Savings (kWh/yr):</b>	40,016
<b>Rebate/Incentive*:</b>	\$19,208	<b>Total Purchased Gas Savings (th/yr):</b>	3,971
<b>Net Project Cost:</b>	\$50,360	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,538
<b>Net Simple Payback Period (yrs):</b>	5.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3198

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	MCGAUGH HALL	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9084	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	213,717	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI All Building List - Lighting Analysis AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	144,537
<b>Peak Demand (kW):</b>	38.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 144,537

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$34,689

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$18,497.85	\$18,979	\$20,238.35	\$22,384
Occupancy Sensors	1	\$13,153.99	\$13,496	\$8,808.58	\$9,742
Daylighting	1	\$469.02	\$481	\$1,223.52	\$1,353
Raw Costs:			\$32,956		\$33,479
City: Anaheim		Sales Tax: 8.25%	\$2,719		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$4,281		\$4,017
City Index Labor Multiplier: 110.6%		Subtotals:	\$39,956		\$37,497
		Contingency: 10.00%	\$3,996		\$3,750
		Totals:	\$43,951		\$41,246
		Engineering: 15.00%	\$12,780		
		Construction Phase: 5.00%	\$4,260		
		Project Management: 6.00%	\$5,112		
		Total Project Cost:	\$107,349		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$107,349	<b>Total Purchased Electricity Savings (kWh/yr):</b>	72,269
<b>Rebate/Incentive*:</b>	\$34,689	<b>Total Purchased Gas Savings (th/yr):</b>	7,172
<b>Net Project Cost:</b>	\$72,660	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$15,420
<b>Net Simple Payback Period (yrs):</b>	4.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3199**

**Project: Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install daylighting sensors where appropriate**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** HEWITT HALL

**Building Key:** 09C9088

**Basic Gross Area (sf):** 78,871

**Calculation File:** Hewitt Hall - SEP Custom Lighting Calculation P2S.xls

**Project Description Reference(s):** Lighting Project 2. Interior Lighting Controls.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	26,892
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 26,892

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$6,454

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy/Daylight Sensor	150	\$125.00	\$19,238	\$48.00	\$7,963
Raw Costs:			\$19,238		\$7,963
City: Anaheim		Sales Tax: 8.25%	\$1,587		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$2,499		\$956
Subtotals:			\$23,324		\$8,919
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$2,332		\$892
Totals:			\$25,656		\$9,811
		Engineering: 15.00%	\$5,320		
		Construction Phase: 5.00%	\$1,773		
		Project Management: 6.00%	\$2,128		
Total Project Cost:			\$44,688		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$44,688	<b>Total Purchased Electricity Savings (kWh/yr):</b>	13,446
<b>Rebate/Incentive*:</b>	\$6,454	<b>Total Purchased Gas Savings (th/yr):</b>	1,334
<b>Net Project Cost:</b>	\$38,234	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,869
<b>Net Simple Payback Period (yrs):</b>	13.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3200

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** NAT SCI 1  
**Building Key:** 09C9090  
**Basic Gross Area (sf):** 120,913  
**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	160,222
<b>Peak Demand (kW):</b>	44.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 160,222

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$38,453

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$34,535.78	\$35,434	\$37,785.31	\$41,791
Occupancy Sensors	1	\$8,905.96	\$9,138	\$5,963.88	\$6,596
Daylighting	1	\$350.37	\$359	\$914.02	\$1,011
Raw Costs:			\$44,931		\$49,398
City: Anaheim		Sales Tax: 8.25%	\$3,707		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$5,836		\$5,928
City Index Labor Multiplier: 110.6%		Subtotals:	\$54,474		\$55,325
		Contingency: 10.00%	\$5,447		\$5,533
		Totals:	\$59,921		\$60,858
		Engineering: 15.00%	\$18,117		
		Construction Phase: 5.00%	\$6,039		
		Project Management: 6.00%	\$7,247		
		Total Project Cost:	\$152,182		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$152,182	<b>Total Purchased Electricity Savings (kWh/yr):</b>	80,111
<b>Rebate/Incentive*:</b>	\$38,453	<b>Total Purchased Gas Savings (th/yr):</b>	7,950
<b>Net Project Cost:</b>	\$113,729	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$17,094
<b>Net Simple Payback Period (yrs):</b>	6.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3201**

**Project: Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	NAT SCI 2	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9091	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	136,305	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI All Building List - Lighting Analysis AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	105,987
<b>Peak Demand (kW):</b>	33.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	105,987
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$25,437
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$26,765.83	\$27,462	\$29,284.28	\$32,388
Daylighting	1	\$853.84	\$876	\$2,227.40	\$2,464
Raw Costs:			\$28,338		\$34,852
City: Anaheim	Sales Tax: 8.25%		\$2,338		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$3,681		\$4,182
City Index Labor Multiplier: 110.6%	Subtotals:		\$34,357		\$39,034
Contingency: 10.00%			\$3,436		\$3,903
Totals:			\$37,792		\$42,938
Engineering: 15.00%			\$12,109		
Construction Phase: 5.00%			\$4,036		
Project Management: 6.00%			\$4,844		
Total Project Cost:			\$101,720		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$101,720	<b>Total Purchased Electricity Savings (kWh/yr):</b>	52,994
<b>Rebate/Incentive*:</b>	\$25,437	<b>Total Purchased Gas Savings (th/yr):</b>	5,259
<b>Net Project Cost:</b>	\$76,283	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$11,308
<b>Net Simple Payback Period (yrs):</b>	6.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

SEP Project ID Number: I3202

**Project:** Retrofit T12 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	ROWLAND HALL	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9100	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	196,057	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI All Building List - Lighting Analysis AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	560,348
<b>Peak Demand (kW):</b>	158.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 560,348

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$134,484

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Daylighting	1	\$915.03	\$939	\$2,387.03	\$2,640
T12 Lamps, Magnetic Ballasts --> 25W F32T8 Lamps, RLO Balla	1	\$55,998.78	\$57,455	\$61,267.81	\$67,762
Occupancy Sensors	1	\$14,864.16	\$15,251	\$9,953.79	\$11,009
Raw Costs:			\$73,644		\$81,411
City: Anaheim		Sales Tax: 8.25%	\$6,076		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$9,566		\$9,769
City Index Labor Multiplier: 110.6%		Subtotals:	\$89,286		\$91,180
		Contingency: 10.00%	\$8,929		\$9,118
		Totals:	\$98,215		\$100,299
		Engineering: 15.00%	\$29,777		
		Construction Phase: 5.00%	\$9,926		
		Project Management: 6.00%	\$11,911		
		Total Project Cost:	\$250,127		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$250,127	<b>Total Purchased Electricity Savings (kWh/yr):</b>	280,174
<b>Rebate/Incentive*:</b>	\$134,484	<b>Total Purchased Gas Savings (th/yr):</b>	27,804
<b>Net Project Cost:</b>	\$115,643	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$59,783
<b>Net Simple Payback Period (yrs):</b>	1.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3203**

**Project: Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	BERKELEY PL	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9107	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	114,000	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI All Building List - Lighting Analysis AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	58,160
<b>Peak Demand (kW):</b>	21.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 58,160

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$13,958

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$9,867.05	\$10,124	\$10,795.45	\$11,940
Daylighting	1	\$1,678.26	\$1,722	\$4,378.07	\$4,842
Raw Costs:			\$11,845		\$16,782
City: Anaheim		Sales Tax: 8.25%	\$977		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,539		\$2,014
Subtotals:			\$14,361		\$18,796
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$1,436		\$1,880
Totals:			\$15,798		\$20,675
		Engineering: 15.00%	\$5,471		
		Construction Phase: 5.00%	\$1,824		
		Project Management: 6.00%	\$2,188		
Total Project Cost:			\$45,956		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$45,956	<b>Total Purchased Electricity Savings (kWh/yr):</b>	29,080
<b>Rebate/Incentive*:</b>	\$13,958	<b>Total Purchased Gas Savings (th/yr):</b>	2,886
<b>Net Project Cost:</b>	\$31,998	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,205
<b>Net Simple Payback Period (yrs):</b>	5.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3204

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** REINES HALL

**Building Key:** 09C9108

**Basic Gross Area (sf):** 156,514

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	110,221
<b>Peak Demand (kW):</b>	29.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 110,221

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$26,453

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$13,546.76	\$13,899	\$14,821.40	\$16,392
Occupancy Sensors	1	\$12,564.69	\$12,891	\$8,413.95	\$9,306
Daylighting	1	\$478.10	\$491	\$1,247.23	\$1,379
Raw Costs:			\$27,281		\$27,078
City: Anaheim		Sales Tax: 8.25%	\$2,251		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,544		\$3,249
City Index Labor Multiplier: 110.6%		Subtotals:	\$33,075		\$30,327
		Contingency: 10.00%	\$3,308		\$3,033
		Totals:	\$36,383		\$33,360
		Engineering: 15.00%	\$10,461		
		Construction Phase: 5.00%	\$3,487		
		Project Management: 6.00%	\$4,185		
		Total Project Cost:	\$87,876		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$87,876	<b>Total Purchased Electricity Savings (kWh/yr):</b>	55,111
<b>Rebate/Incentive*:</b>	\$26,453	<b>Total Purchased Gas Savings (th/yr):</b>	5,469
<b>Net Project Cost:</b>	\$61,423	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$11,759
<b>Net Simple Payback Period (yrs):</b>	5.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3205

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** M SCI & TECH

**Building Key:** 09C9114

**Basic Gross Area (sf):** 63,111

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	105,385
<b>Peak Demand (kW):</b>	25.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 105,385

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$25,292

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$18,026.08	\$18,495	\$19,722.19	\$21,813
Occupancy Sensors	1	\$11,577.38	\$11,878	\$7,752.80	\$8,575
Daylighting	1	\$541.63	\$556	\$1,412.95	\$1,563
Raw Costs:			\$30,929		\$31,950
City: Anaheim	Sales Tax: 8.25%		\$2,552		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$4,018		\$3,834
City Index Labor Multiplier: 110.6%	Subtotals:		\$37,498		\$35,784
Contingency: 10.00%			\$3,750		\$3,578
Totals:			\$41,248		\$39,362
Engineering: 15.00%			\$12,092		
Construction Phase: 5.00%			\$4,031		
Project Management: 6.00%			\$4,837		
Total Project Cost:			\$101,569		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$101,569	<b>Total Purchased Electricity Savings (kWh/yr):</b>	52,693
<b>Rebate/Incentive*:</b>	\$25,292	<b>Total Purchased Gas Savings (th/yr):</b>	5,229
<b>Net Project Cost:</b>	\$76,277	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$11,243
<b>Net Simple Payback Period (yrs):</b>	6.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3206**

**Project: Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CROUL HALL	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9115	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	66,170	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI All Building List - Lighting Analysis AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	32,540
<b>Peak Demand (kW):</b>	10.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	32,540
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$7,810
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$7,796.17	\$7,999	\$8,529.73	\$9,434
Daylighting	1	\$442.96	\$454	\$1,155.55	\$1,278
Raw Costs:			\$8,453		\$10,712
City: Anaheim	Sales Tax: 8.25%		\$697		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$1,098		\$1,285
City Index Labor Multiplier: 110.6%	Subtotals:		\$10,249		\$11,997
Contingency: 10.00%			\$1,025		\$1,200
Totals:			\$11,274		\$13,197
Engineering: 15.00%			\$3,671		
Construction Phase: 5.00%			\$1,224		
Project Management: 6.00%			\$1,468		
Total Project Cost:			\$30,833		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$30,833	<b>Total Purchased Electricity Savings (kWh/yr):</b>	16,270
<b>Rebate/Incentive*:</b>	\$7,810	<b>Total Purchased Gas Savings (th/yr):</b>	1,615
<b>Net Project Cost:</b>	\$23,023	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,472
<b>Net Simple Payback Period (yrs):</b>	6.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3207**

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** CAL (IT)2  
**Building Key:** 09C9118  
**Basic Gross Area (sf):** 119,860  
**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	117,494
<b>Peak Demand (kW):</b>	41.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 117,494

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$28,199

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$34,235.01	\$35,125	\$37,456.25	\$41,427
Daylighting	1	\$218.18	\$224	\$569.16	\$629
Raw Costs:			\$35,349		\$42,056
City: Anaheim Sales Tax: 8.25%			\$2,916		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$4,592	\$5,047
City Index Labor Multiplier: 110.6%			Subtotals:	\$42,857	\$47,103
Contingency: 10.00%			\$4,286		\$4,710
Totals:			\$47,143		\$51,813
Engineering: 15.00%			\$14,843		
Construction Phase: 5.00%			\$4,948		
Project Management: 6.00%			\$5,937		
Total Project Cost:			\$124,684		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$124,684	<b>Total Purchased Electricity Savings (kWh/yr):</b>	58,747
<b>Rebate/Incentive*:</b>	\$28,199	<b>Total Purchased Gas Savings (th/yr):</b>	5,830
<b>Net Project Cost:</b>	\$96,485	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,535
<b>Net Simple Payback Period (yrs):</b>	7.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: **I3208**

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG TOWER

**Building Key:** 09C9125

**Basic Gross Area (sf):** 113,941

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	85,968
<b>Peak Demand (kW):</b>	22.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 85,968

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$20,632

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy Sensors	1	\$12,972.46	\$13,310	\$8,687.01	\$9,608
Daylighting	1	\$542.10	\$556	\$1,414.18	\$1,564
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$9,861.94	\$10,118	\$10,789.87	\$11,934
Raw Costs:			\$23,984		\$23,106
City: Anaheim		Sales Tax: 8.25%	\$1,979		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,116		\$2,773
City Index Labor Multiplier: 110.6%		Subtotals:	\$29,079		\$25,878
		Contingency: 10.00%	\$2,908		\$2,588
		Totals:	\$31,986		\$28,466
		Engineering: 15.00%	\$9,068		
		Construction Phase: 5.00%	\$3,023		
		Project Management: 6.00%	\$3,627		
		Total Project Cost:	\$76,170		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$76,170	<b>Total Purchased Electricity Savings (kWh/yr):</b>	42,984
<b>Rebate/Incentive*:</b>	\$20,632	<b>Total Purchased Gas Savings (th/yr):</b>	4,266
<b>Net Project Cost:</b>	\$55,538	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,172
<b>Net Simple Payback Period (yrs):</b>	6.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3209

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** COMP SCI BLD

**Building Key:** 09C9126

**Basic Gross Area (sf):** 60,678

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	60,192
<b>Peak Demand (kW):</b>	15.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 60,192

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$14,446

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$5,251.86	\$5,388	\$5,746.02	\$6,355
Occupancy Sensors	1	\$16,646.66	\$17,079	\$11,147.44	\$12,329
Daylighting	1	\$810.49	\$832	\$2,114.33	\$2,338
Raw Costs:			\$23,299		\$21,023
City: Anaheim		Sales Tax: 8.25%	\$1,922		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,027		\$2,523
City Index Labor Multiplier: 110.6%		Subtotals:	\$28,248		\$23,545
		Contingency: 10.00%	\$2,825		\$2,355
		Totals:	\$31,073		\$25,900
		Engineering: 15.00%	\$8,546		
		Construction Phase: 5.00%	\$2,849		
		Project Management: 6.00%	\$3,418		
		Total Project Cost:	\$71,786		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$71,786	<b>Total Purchased Electricity Savings (kWh/yr):</b>	30,096
<b>Rebate/Incentive*:</b>	\$14,446	<b>Total Purchased Gas Savings (th/yr):</b>	2,987
<b>Net Project Cost:</b>	\$57,340	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,422
<b>Net Simple Payback Period (yrs):</b>	8.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



## PROJECT DETAIL REPORT

SEP Project ID Number: I3210

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY

**Building Key:** 09C9128

**Basic Gross Area (sf):** 55,000

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	53,804
<b>Peak Demand (kW):</b>	13.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 53,804

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$12,913

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$4,760.42	\$4,884	\$5,208.33	\$5,760
Occupancy Sensors	1	\$14,807.78	\$15,193	\$9,916.03	\$10,967
Daylighting	1	\$563.46	\$578	\$1,469.88	\$1,626
Raw Costs:			\$20,655		\$18,353
City: Anaheim		Sales Tax: 8.25%	\$1,704		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$2,683		\$2,202
City Index Labor Multiplier: 110.6%		Subtotals:	\$25,042		\$20,556
		Contingency: 10.00%	\$2,504		\$2,056
		Totals:	\$27,546		\$22,611
		Engineering: 15.00%	\$7,524		
		Construction Phase: 5.00%	\$2,508		
		Project Management: 6.00%	\$3,009		
		Total Project Cost:	\$63,199		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$63,199	<b>Total Purchased Electricity Savings (kWh/yr):</b>	26,902
<b>Rebate/Incentive*:</b>	\$12,913	<b>Total Purchased Gas Savings (th/yr):</b>	2,670
<b>Net Project Cost:</b>	\$50,286	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$5,740
<b>Net Simple Payback Period (yrs):</b>	8.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3211

**Project:** Install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** IRVINE HALL

**Building Key:** 09C9132

**Basic Gross Area (sf):** 54,620

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 2. Interior Lighting Controls.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	17,572
<b>Peak Demand (kW):</b>	3.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 17,572

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$4,217

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy Sensors	1	\$12,952.32	\$13,289	\$8,673.53	\$9,593
Daylighting	1	\$412.39	\$423	\$1,075.80	\$1,190
Raw Costs:			\$13,712		\$10,783
City: Anaheim		Sales Tax: 8.25%	\$1,131		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$1,781		\$1,294
City Index Labor Multiplier: 110.6%		Subtotals:	\$16,625		\$12,077
		Contingency: 10.00%	\$1,662		\$1,208
		Totals:	\$18,287		\$13,284
		Engineering: 15.00%	\$4,736		
		Construction Phase: 5.00%	\$1,579		
		Project Management: 6.00%	\$1,894		
		Total Project Cost:	\$39,780		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$39,780	<b>Total Purchased Electricity Savings (kWh/yr):</b>	8,786
<b>Rebate/Incentive*:</b>	\$4,217	<b>Total Purchased Gas Savings (th/yr):</b>	872
<b>Net Project Cost:</b>	\$35,563	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,875
<b>Net Simple Payback Period (yrs):</b>	19.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3212**

**Project: Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG GATEWAY

**Building Key:** 09C9140

**Basic Gross Area (sf):** 132,090

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	103,750
<b>Peak Demand (kW):</b>	27.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	103,750
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$24,900
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy Sensors	1	\$17,976.88	\$18,444	\$12,038.22	\$13,314
Daylighting	1	\$663.22	\$680	\$1,730.15	\$1,914
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$11,432.79	\$11,730	\$12,508.52	\$13,834
Raw Costs:			\$30,855		\$29,062
City: Anaheim		Sales Tax: 8.25%	\$2,546		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$4,008		\$3,487
City Index Labor Multiplier: 110.6%		Subtotals:	\$37,408		\$32,550
		Contingency: 10.00%	\$3,741		\$3,255
		Totals:	\$41,149		\$35,805
		Engineering: 15.00%	\$11,543		
		Construction Phase: 5.00%	\$3,848		
		Project Management: 6.00%	\$4,617		
		Total Project Cost:	\$96,962		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$96,962	<b>Total Purchased Electricity Savings (kWh/yr):</b>	51,875
<b>Rebate/Incentive*:</b>	\$24,900	<b>Total Purchased Gas Savings (th/yr):</b>	5,148
<b>Net Project Cost:</b>	\$72,062	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$11,069
<b>Net Simple Payback Period (yrs):</b>	6.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3213

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOCSCI TOWER

**Building Key:** 09C9204

**Basic Gross Area (sf):** 83,844

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	74,870
<b>Peak Demand (kW):</b>	19.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 74,870

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$17,969

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy Sensors	1	\$17,134.97	\$17,580	\$11,474.44	\$12,691
Daylighting	1	\$937.82	\$962	\$2,446.49	\$2,706
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$7,256.95	\$7,446	\$7,939.77	\$8,781
Raw Costs:			\$25,988		\$24,178
City: Anaheim		Sales Tax: 8.25%	\$2,144		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,376		\$2,901
City Index Labor Multiplier: 110.6%		Subtotals:	\$31,508		\$27,079
		Contingency: 10.00%	\$3,151		\$2,708
		Totals:	\$34,659		\$29,787
		Engineering: 15.00%	\$9,667		
		Construction Phase: 5.00%	\$3,222		
		Project Management: 6.00%	\$3,867		
		Total Project Cost:	\$81,202		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$81,202	<b>Total Purchased Electricity Savings (kWh/yr):</b>	37,435
<b>Rebate/Incentive*:</b>	\$17,969	<b>Total Purchased Gas Savings (th/yr):</b>	3,715
<b>Net Project Cost:</b>	\$63,233	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,988
<b>Net Simple Payback Period (yrs):</b>	7.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3214**

**Project: Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	SOC SCI PL A	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9212	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	46,479	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	UCI All Building List - Lighting Analysis AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	81,270
<b>Peak Demand (kW):</b>	21.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 81,270

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$19,505

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$13,275.56	\$13,621	\$14,524.69	\$16,064
Occupancy Sensors	1	\$16,428.82	\$16,856	\$11,001.56	\$12,168
Daylighting	1	\$758.22	\$778	\$1,977.96	\$2,188
Raw Costs:			\$31,255		\$30,420
City: Anaheim		Sales Tax: 8.25%	\$2,579		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$4,060		\$3,650
City Index Labor Multiplier: 110.6%		Subtotals:	\$37,893		\$34,070
		Contingency: 10.00%	\$3,789		\$3,407
		Totals:	\$41,682		\$37,477
		Engineering: 15.00%	\$11,874		
		Construction Phase: 5.00%	\$3,958		
		Project Management: 6.00%	\$4,750		
		Total Project Cost:	\$99,741		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$99,741	<b>Total Purchased Electricity Savings (kWh/yr):</b>	40,635
<b>Rebate/Incentive*:</b>	\$19,505	<b>Total Purchased Gas Savings (th/yr):</b>	4,033
<b>Net Project Cost:</b>	\$80,236	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,671
<b>Net Simple Payback Period (yrs):</b>	9.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: **I3215**

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL B

**Building Key:** 09C9221

**Basic Gross Area (sf):** 49,078

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	86,390
<b>Peak Demand (kW):</b>	22.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 86,390

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$20,734

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$14,017.90	\$14,382	\$15,336.88	\$16,963
Occupancy Sensors	1	\$17,939.94	\$18,406	\$12,013.49	\$13,287
Daylighting	1	\$691.63	\$710	\$1,804.25	\$1,996
Raw Costs:			\$33,498		\$32,245
City: Anaheim		Sales Tax: 8.25%	\$2,764		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$4,351		\$3,869
City Index Labor Multiplier: 110.6%		Subtotals:	\$40,613		\$36,114
		Contingency: 10.00%	\$4,061		\$3,611
		Totals:	\$44,675		\$39,726
		Engineering: 15.00%	\$12,660		
		Construction Phase: 5.00%	\$4,220		
		Project Management: 6.00%	\$5,064		
		Total Project Cost:	\$106,345		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$106,345	<b>Total Purchased Electricity Savings (kWh/yr):</b>	43,195
<b>Rebate/Incentive*:</b>	\$20,734	<b>Total Purchased Gas Savings (th/yr):</b>	4,287
<b>Net Project Cost:</b>	\$85,611	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,217
<b>Net Simple Payback Period (yrs):</b>	9.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: **I3216**

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY2

**Building Key:** 09C9222

**Basic Gross Area (sf):** 35,753

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	55,525
<b>Peak Demand (kW):</b>	14.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 55,525

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$13,326

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$10,211.95	\$10,477	\$11,172.81	\$12,357
Occupancy Sensors	1	\$7,818.20	\$8,021	\$5,235.46	\$5,790
Daylighting	1	\$345.62	\$355	\$901.63	\$997
Raw Costs:			\$18,854		\$19,145
City: Anaheim		Sales Tax: 8.25%	\$1,555		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$2,449		\$2,297
City Index Labor Multiplier: 110.6%		Subtotals:	\$22,858		\$21,442
		Contingency: 10.00%	\$2,286		\$2,144
		Totals:	\$25,144		\$23,586
		Engineering: 15.00%	\$7,310		
		Construction Phase: 5.00%	\$2,437		
		Project Management: 6.00%	\$2,924		
		Total Project Cost:	\$61,400		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$61,400	<b>Total Purchased Electricity Savings (kWh/yr):</b>	27,763
<b>Rebate/Incentive*:</b>	\$13,326	<b>Total Purchased Gas Savings (th/yr):</b>	2,755
<b>Net Project Cost:</b>	\$48,074	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$5,924
<b>Net Simple Payback Period (yrs):</b>	8.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3217**

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	ANT REC CTR	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9299	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>	89,320	<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	UCI All Building List - Lighting Analysis AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	167,825
<b>Peak Demand (kW):</b>	43.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	167,825
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$40,278
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy Sensors	1	\$38,400.60	\$39,399	\$25,714.98	\$28,441
Daylighting	1	\$2,821.60	\$2,895	\$7,360.70	\$8,141
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$25,512.03	\$26,175	\$27,912.50	\$30,871
Raw Costs:			\$68,469		\$67,453
City: Anaheim	Sales Tax: 8.25%		\$5,649		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$8,894		\$8,094
City Index Labor Multiplier: 110.6%	Subtotals:		\$83,012		\$75,547
Contingency: 10.00%			\$8,301		\$7,555
Totals:			\$91,313		\$83,102
Engineering: 15.00%			\$26,162		
Construction Phase: 5.00%			\$8,721		
Project Management: 6.00%			\$10,465		
Total Project Cost:			\$219,763		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$219,763	<b>Total Purchased Electricity Savings (kWh/yr):</b>	83,913
<b>Rebate/Incentive*:</b>	\$40,278	<b>Total Purchased Gas Savings (th/yr):</b>	8,327
<b>Net Project Cost:</b>	\$179,485	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$17,905
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



## PROJECT DETAIL REPORT

SEP Project ID Number: I3218

**Project:** Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CRAWFORD HAL

**Building Key:** 09C9300

**Basic Gross Area (sf):** 57,437

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	70,768
<b>Peak Demand (kW):</b>	17.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 70,768

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$16,984

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, RLO Ballasts --> 25W F32T8 Lamps, RLO B	1	\$4,971.35	\$5,101	\$5,439.11	\$6,016
Occupancy Sensors	1	\$24,714.22	\$25,357	\$16,549.88	\$18,304
Daylighting	1	\$1,722.20	\$1,767	\$4,492.70	\$4,969
Raw Costs:			\$32,224		\$29,289
City: Anaheim		Sales Tax: 8.25%	\$2,659		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$4,186		\$3,515
City Index Labor Multiplier: 110.6%		Subtotals:	\$39,069		\$32,803
		Contingency: 10.00%	\$3,907		\$3,280
		Totals:	\$42,976		\$36,084
		Engineering: 15.00%	\$11,859		
		Construction Phase: 5.00%	\$3,953		
		Project Management: 6.00%	\$4,744		
		Total Project Cost:	\$99,615		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$99,615	<b>Total Purchased Electricity Savings (kWh/yr):</b>	35,384
<b>Rebate/Incentive*:</b>	\$16,984	<b>Total Purchased Gas Savings (th/yr):</b>	3,512
<b>Net Project Cost:</b>	\$82,631	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,550
<b>Net Simple Payback Period (yrs):</b>	10.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3219**

**Project: Retrofit T12 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	BREN EVENTS	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9314	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>	97,259	<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Bren Events Center - SEP Custom Lighting Calculation P2S.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	56,484
<b>Peak Demand (kW):</b>	13.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 56,484

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$13,556

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Retrofit:1000W	60	\$200.00	\$12,312	\$100.00	\$6,636
Occupancy/Daylight Sensor	80	\$150.00	\$12,312	\$100.00	\$8,848
Raw Costs:			\$24,624		\$15,484
City: Anaheim	Sales Tax: 8.25%		\$2,031		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$3,199		\$1,858
City Index Labor Multiplier: 110.6%	Subtotals:		\$29,854		\$17,342
Contingency: 10.00%			\$2,985		\$1,734
Totals:			\$32,840		\$19,076
Engineering: 15.00%			\$7,787		
Construction Phase: 5.00%			\$2,596		
Project Management: 6.00%			\$3,115		
Total Project Cost:			\$65,414		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$65,414	<b>Total Purchased Electricity Savings (kWh/yr):</b>	28,242
<b>Rebate/Incentive*:</b>	\$13,556	<b>Total Purchased Gas Savings (th/yr):</b>	2,803
<b>Net Project Cost:</b>	\$51,858	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,026
<b>Net Simple Payback Period (yrs):</b>	8.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3220**

**Project: Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** MED SCI C  
**Building Key:** 09C9322  
**Basic Gross Area (sf):** 55,853  
**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Campus Prioritization and Schedule**

**Project Tier:** Backup  
**Start Preliminary Engineering:**  
**Scheduled Completion:**

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	9,062
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 9,062

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,175

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy Sensors	1	\$6,640.62	\$6,813	\$4,446.89	\$4,918
Daylighting	1	\$209.35	\$215	\$546.14	\$604
Raw Costs:			\$7,028		\$5,522
City: Anaheim		Sales Tax: 8.25%	\$580		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$913		\$663
City Index Labor Multiplier: 110.6%		Subtotals:	\$8,521		\$6,185
		Contingency: 10.00%	\$852		\$618
		Totals:	\$9,373		\$6,803
		Engineering: 15.00%	\$2,426		
		Construction Phase: 5.00%	\$809		
		Project Management: 6.00%	\$971		
		Total Project Cost:	\$20,382		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$20,382	<b>Total Purchased Electricity Savings (kWh/yr):</b>	4,531
<b>Rebate/Incentive*:</b>	\$2,175	<b>Total Purchased Gas Savings (th/yr):</b>	450
<b>Net Project Cost:</b>	\$18,207	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$967
<b>Net Simple Payback Period (yrs):</b>	18.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3221**

**Project: Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** MED SCI D  
**Building Key:** 09C9323  
**Basic Gross Area (sf):** 71,959  
**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Campus Prioritization and Schedule**

**Project Tier:** Backup  
**Start Preliminary Engineering:**  
**Scheduled Completion:**

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,071
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 11,071

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$2,657

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Occupancy Sensors	1	\$8,032.27	\$8,241	\$5,378.82	\$5,949
Daylighting	1	\$296.60	\$304	\$773.75	\$856
Raw Costs:			\$8,545		\$6,805
City: Anaheim	Sales Tax: 8.25%		\$705		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$1,110		\$817
City Index Labor Multiplier: 110.6%	Subtotals:		\$10,360		\$7,621
Contingency: 10.00%			\$1,036		\$762
Totals:			\$11,397		\$8,383
Engineering: 15.00%			\$2,967		
Construction Phase: 5.00%			\$989		
Project Management: 6.00%			\$1,187		
Total Project Cost:			\$24,923		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$24,923	<b>Total Purchased Electricity Savings (kWh/yr):</b>	5,536
<b>Rebate/Incentive*:</b>	\$2,657	<b>Total Purchased Gas Savings (th/yr):</b>	549
<b>Net Project Cost:</b>	\$22,266	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,181
<b>Net Simple Payback Period (yrs):</b>	18.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3222**

**Project: Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** MED SCI B  
**Building Key:** 09C9328  
**Basic Gross Area (sf):** 35,864  
**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Campus Prioritization and Schedule**

**Project Tier:** Backup  
**Start Preliminary Engineering:**  
**Scheduled Completion:**

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	4,987
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,987

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,197

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Daylighting	1	\$131.47	\$135	\$342.97	\$379
Occupancy Sensors	1	\$3,619.24	\$3,713	\$2,423.63	\$2,681
Raw Costs:			\$3,848		\$3,060
City: Anaheim		Sales Tax: 8.25%	\$317		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$500		\$367
City Index Labor Multiplier: 110.6%		Subtotals:	\$4,666		\$3,427
		Contingency: 10.00%	\$467		\$343
		Totals:	\$5,132		\$3,770
		Engineering: 15.00%	\$1,335		
		Construction Phase: 5.00%	\$445		
		Project Management: 6.00%	\$534		
		Total Project Cost:	\$11,216		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$11,216	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,494
<b>Rebate/Incentive*:</b>	\$1,197	<b>Total Purchased Gas Savings (th/yr):</b>	247
<b>Net Project Cost:</b>	\$10,019	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$532
<b>Net Simple Payback Period (yrs):</b>	18.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3223**

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SURG 2

**Building Key:** 09C9329

**Basic Gross Area (sf):** 60,238

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Campus Prioritization and Schedule

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	80,478
<b>Peak Demand (kW):</b>	22.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 80,478

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$19,315

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$17,205.48	\$17,653	\$18,824.38	\$20,820
Occupancy Sensors	1	\$4,334.15	\$4,447	\$2,902.37	\$3,210
Daylighting	1	\$157.49	\$162	\$410.85	\$454
Raw Costs:			\$22,261		\$24,484
City: Anaheim		Sales Tax: 8.25%	\$1,837		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$2,892		\$2,938
City Index Labor Multiplier: 110.6%		Subtotals:	\$26,990		\$27,422
		Contingency: 10.00%	\$2,699		\$2,742
		Totals:	\$29,688		\$30,165
		Engineering: 15.00%	\$8,978		
		Construction Phase: 5.00%	\$2,993		
		Project Management: 6.00%	\$3,591		
		Total Project Cost:	\$75,415		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$75,415	<b>Total Purchased Electricity Savings (kWh/yr):</b>	40,239
<b>Rebate/Incentive*:</b>	\$19,315	<b>Total Purchased Gas Savings (th/yr):</b>	3,993
<b>Net Project Cost:</b>	\$56,100	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,586
<b>Net Simple Payback Period (yrs):</b>	6.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3224

**Project:** Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install daylighting sensors where appropriate

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BREN HALL

**Building Key:** 09CTBD1

**Basic Gross Area (sf):** 147,975

**Calculation File:** UCI All Building List - Lighting Analysis AML.xls

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

## Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	151,218
<b>Peak Demand (kW):</b>	54.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 151,218

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$36,292

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
32W F32T8 Lamps, Standard NLO Ballasts --> 25W F32T8 Lamp	1	\$42,265.36	\$43,364	\$46,242.19	\$51,144
Daylighting	1	\$1,938.22	\$1,989	\$5,056.23	\$5,592
Raw Costs:			\$45,353		\$56,736
City: Anaheim Sales Tax: 8.25%			\$3,742		N/A
City Index Material Multiplier: 102.6%			Contractor O&P: 12.00%	\$5,891	\$6,808
City Index Labor Multiplier: 110.6%			Subtotals:	\$54,986	\$63,544
Contingency: 10.00%			\$5,499		\$6,354
Totals:			\$60,484		\$69,899
Engineering: 15.00%			\$19,557		
Construction Phase: 5.00%			\$6,519		
Project Management: 6.00%			\$7,823		
Total Project Cost:			\$164,283		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$164,283	<b>Total Purchased Electricity Savings (kWh/yr):</b>	75,609
<b>Rebate/Incentive*:</b>	\$36,292	<b>Total Purchased Gas Savings (th/yr):</b>	7,503
<b>Net Project Cost:</b>	\$127,991	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$16,133
<b>Net Simple Payback Period (yrs):</b>	7.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3225**

**Project: EF VFDs**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CROUL HALL

**Building Key:** 09C9115

**Basic Gross Area (sf):** 66,170

**Calculation File:** UCI EF VFD Calculation-Croul.EWB 042408.xls

**Project Description Reference(s):** UCI Laboratory Air Handler Project 4. Variable Drives on Exhaust Fans .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	375,219
<b>Peak Demand (kW):</b>	21.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 375,219

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$90,053

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
40 hp VFD	3	\$7,025.00	\$21,623	\$1,100.00	\$3,650
Programming	3	\$500.00	\$1,539	\$800.00	\$2,654
Raw Costs:			\$23,162		\$6,304
City: Anaheim		Sales Tax: 8.25%	\$1,911		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$3,009		\$757
City Index Labor Multiplier: 110.6%		Subtotals:	\$28,082		\$7,061
		Contingency: 10.00%	\$2,808		\$706
		Totals:	\$30,890		\$7,767
		Engineering: 15.00%	\$5,798		
		Construction Phase: 5.00%	\$1,933		
		Project Management: 6.00%	\$2,319		
		Total Project Cost:	\$48,707		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$48,707	<b>Total Purchased Electricity Savings (kWh/yr):</b>	187,610
<b>Rebate/Incentive*:</b>	\$38,966	<b>Total Purchased Gas Savings (th/yr):</b>	18,618
<b>Net Project Cost:</b>	\$9,741	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$40,032
<b>Net Simple Payback Period (yrs):</b>	0.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3226**

**Project: EF VFDs**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** HEWITT HALL

**Building Key:** 09C9088

**Basic Gross Area (sf):** 78,871

**Calculation File:** UCI EF VFD Calculation-Hewitt.EWB 042408.xls

**Project Description Reference(s):** UCI Laboratory Air Handler Project 4. Variable Drives on Exhaust Fans .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	520,588
<b>Peak Demand (kW):</b>	30.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 520,588

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$124,941

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
2 hp VFD	1	\$700.00	\$718	\$400.00	\$442
Programming	4	\$500.00	\$2,052	\$800.00	\$3,539
75 hp VFD	3	\$11,500.00	\$35,397	\$1,600.00	\$5,309
7.5 hp VFD	2	\$1,975.00	\$4,053	\$545.00	\$1,206
Raw Costs:			\$42,220		\$10,496
City: Anaheim		Sales Tax: 8.25%	\$3,483		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$5,484		\$1,260
City Index Labor Multiplier: 110.6%		Subtotals:	\$51,187		\$11,755
		Contingency: 10.00%	\$5,119		\$1,176
		Totals:	\$56,306		\$12,931
		Engineering: 15.00%	\$10,386		
		Construction Phase: 5.00%	\$3,462		
		Project Management: 6.00%	\$4,154		
		Total Project Cost:	\$87,239		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$87,239	<b>Total Purchased Electricity Savings (kWh/yr):</b>	260,294
<b>Rebate/Incentive*:</b>	\$69,791	<b>Total Purchased Gas Savings (th/yr):</b>	25,832
<b>Net Project Cost:</b>	\$17,448	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$55,541
<b>Net Simple Payback Period (yrs):</b>	0.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3227**

**Project: EF VFDs**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** NAT SCI 2

**Building Key:** 09C9091

**Basic Gross Area (sf):** 136,305

**Calculation File:** UCI EF VFD Calculation-NS2.EWB 042308.xls

**Project Description Reference(s):** UCI Laboratory Air Handler Project 4. Variable Drives on Exhaust Fans .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	34,366
<b>Peak Demand (kW):</b>	2.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 34,366

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$8,248

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
2 hp VFD	4	\$700.00	\$2,873	\$400.00	\$1,770
5 hp VFD	1	\$1,675.00	\$1,719	\$455.00	\$503
Raw Costs:			\$4,591		\$2,273
City: Anaheim		Sales Tax: 8.25%	\$379		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$596		\$273
City Index Labor Multiplier: 110.6%		Subtotals:	\$5,567		\$2,546
		Contingency: 10.00%	\$557		\$255
		Totals:	\$6,123		\$2,800
		Engineering: 15.00%	\$1,339		
		Construction Phase: 5.00%	\$446		
		Project Management: 6.00%	\$535		
		Total Project Cost:	\$11,243		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$11,243	<b>Total Purchased Electricity Savings (kWh/yr):</b>	17,183
<b>Rebate/Incentive*:</b>	\$8,248	<b>Total Purchased Gas Savings (th/yr):</b>	1,705
<b>Net Project Cost:</b>	\$2,995	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,666
<b>Net Simple Payback Period (yrs):</b>	0.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3228**

**Project: Auto-Sash Closers**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project.. Placeholder for additional autosash closers, most conversions reflected in recommended projects

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	600,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	35,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 600,000

**Equivalent Gas Savings (th/yr):** 35,000

**Anticipated Gross Incentive:** \$179,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$510,000		\$340,000
		Contingency: 10.00%	\$51,000		\$34,000
		Totals:	\$561,000		\$374,000
		Engineering: 15.00%	\$140,250		
		Construction Phase: 5.00%	\$46,750		
		Project Management: 6.00%	\$56,100		
		Total Project Cost:	\$1,178,100		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,178,100	<b>Total Purchased Electricity Savings (kWh/yr):</b>	410,250
<b>Rebate/Incentive*:</b>	\$179,000	<b>Total Purchased Gas Savings (th/yr):</b>	51,647
<b>Net Project Cost:</b>	\$999,100	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$96,504
<b>Net Simple Payback Period (yrs):</b>	10.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3229**

**Project: Replace Heating Furnace (200 units)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE - HOUSING

**Building Key:** 09CWIDEH

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	6,331
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 6,331

**Anticipated Gross Incentive:** \$6,331

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$132,000		\$88,000
		Contingency: 10.00%	\$13,200		\$8,800
		Totals:	\$145,200		\$96,800
		Engineering: 15.00%	\$36,300		
		Construction Phase: 5.00%	\$12,100		
		Project Management: 6.00%	\$14,520		
		Total Project Cost:	\$304,920		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$304,920	<b>Total Purchased Electricity Savings (kWh/yr):</b>	19,943
<b>Rebate/Incentive*:</b>	\$6,331	<b>Total Purchased Gas Savings (th/yr):</b>	3,957
<b>Net Project Cost:</b>	\$298,589	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$5,877
<b>Net Simple Payback Period (yrs):</b>	50.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3230**

**Project: Install Power Misers or Replace All Vending Machines with Energy Star Units.**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - OTHER	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09CWIDEO	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus Wide Project 5. Install Controllers on Vending Machines .		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	145,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 145,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$34,800

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$75,000		\$50,000
		Contingency: 10.00%	\$7,500		\$5,000
		Totals:	\$82,500		\$55,000
		Engineering: 15.00%	\$20,625		
		Construction Phase: 5.00%	\$6,875		
		Project Management: 6.00%	\$8,250		
		Total Project Cost:	\$173,250		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$173,250	<b>Total Purchased Electricity Savings (kWh/yr):</b>	72,500
<b>Rebate/Incentive*:</b>	\$34,800	<b>Total Purchased Gas Savings (th/yr):</b>	7,195
<b>Net Project Cost:</b>	\$138,450	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$15,470
<b>Net Simple Payback Period (yrs):</b>	8.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3231**

**Project: Install Power Factor Correction with < 10 YR. Payback.**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project.. Likely no IOU incentive

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	235,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 235,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$56,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$210,000		\$140,000
		Contingency: 10.00%	\$21,000		\$14,000
		Totals:	\$231,000		\$154,000
		Engineering: 15.00%	\$57,750		
		Construction Phase: 5.00%	\$19,250		
		Project Management: 6.00%	\$23,100		
		Total Project Cost:	\$485,100		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$485,100	<b>Total Purchased Electricity Savings (kWh/yr):</b>	117,500
<b>Rebate/Incentive*:</b>	\$56,400	<b>Total Purchased Gas Savings (th/yr):</b>	11,661
<b>Net Project Cost:</b>	\$428,700	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$25,072
<b>Net Simple Payback Period (yrs):</b>	17.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3232**

**Project: Install Solar Hot Water Systems in Dining and Residential Buildings with Central Hot Water Systems.**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Domestic Solar Hot Water.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	43,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 43,000

**Anticipated Gross Incentive:** \$43,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$570,000		\$380,000
		Contingency: 10.00%	\$57,000		\$38,000
		Totals:	\$627,000		\$418,000
		Engineering: 15.00%	\$156,750		
		Construction Phase: 5.00%	\$52,250		
		Project Management: 6.00%	\$62,700		
		Total Project Cost:	\$1,316,700		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,316,700	<b>Total Purchased Electricity Savings (kWh/yr):</b>	135,450
<b>Rebate/Incentive*:</b>	\$43,000	<b>Total Purchased Gas Savings (th/yr):</b>	26,875
<b>Net Project Cost:</b>	\$1,273,700	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$39,917
<b>Net Simple Payback Period (yrs):</b>	31.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3233**

**Project: Improve Insulation in Attics and Stud Spaces.**

**Campus:** IRVINE  
**Location:** IRVINE **Campus Prioritization and Schedule**  
**Building:** CAMPUSWIDE - HOUSING **Project Tier:** Backup  
**Building Key:** 09CWIDEH **Start Preliminary Engineering:**  
**Basic Gross Area (sf):** **Scheduled Completion:**  
**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)  
**Project Description Reference(s):** Campus initiated project..

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	38,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Central Plant Efficiencies:  
 Electricity \$0.24 per annual kWh th/MMBTU: 12.5  
 Natural Gas \$1 per annual therm kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0  
**Equivalent Gas Savings (th/yr):** 38,000  
**Anticipated Gross Incentive:** \$38,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$510,000		\$340,000
		Contingency: 10.00%	\$51,000		\$34,000
		Totals:	\$561,000		\$374,000
		Engineering: 15.00%	\$140,250		
		Construction Phase: 5.00%	\$46,750		
		Project Management: 6.00%	\$56,100		
		Total Project Cost:	\$1,178,100		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,178,100	<b>Total Purchased Electricity Savings (kWh/yr):</b>	119,700
<b>Rebate/Incentive*:</b>	\$38,000	<b>Total Purchased Gas Savings (th/yr):</b>	23,750
<b>Net Project Cost:</b>	\$1,140,100	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$35,275
<b>Net Simple Payback Period (yrs):</b>	32.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3234**

**Project: Retrofit All Single Glazed Windows with Insulated Glass Windows.**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	4,500
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 4,500

**Anticipated Gross Incentive:** \$4,500

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$72,000		\$48,000
		Contingency: 10.00%	\$7,200		\$4,800
		Totals:	\$79,200		\$52,800
		Engineering: 15.00%	\$19,800		
		Construction Phase: 5.00%	\$6,600		
		Project Management: 6.00%	\$7,920		
		Total Project Cost:	\$166,320		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$166,320	<b>Total Purchased Electricity Savings (kWh/yr):</b>	14,175
<b>Rebate/Incentive*:</b>	\$4,500	<b>Total Purchased Gas Savings (th/yr):</b>	2,813
<b>Net Project Cost:</b>	\$161,820	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,177
<b>Net Simple Payback Period (yrs):</b>	38.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3235**

**Project: Replace Electric Range with Energy Star unit**

**Campus:** IRVINE  
**Location:** IRVINE **Campus Prioritization and Schedule**  
**Building:** CAMPUSWIDE - HOUSING **Project Tier:** Backup  
**Building Key:** 09CWIDEH **Start Preliminary Engineering:**  
**Basic Gross Area (sf):** **Scheduled Completion:**  
**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)  
**Project Description Reference(s):** Campus initiated project..

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	37,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 37,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$8,880

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$105,000		\$70,000
		Contingency: 10.00%	\$10,500		\$7,000
		Totals:	\$115,500		\$77,000
		Engineering: 15.00%	\$28,875		
		Construction Phase: 5.00%	\$9,625		
		Project Management: 6.00%	\$11,550		
		Total Project Cost:	\$242,550		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$242,550	<b>Total Purchased Electricity Savings (kWh/yr):</b>	18,500
<b>Rebate/Incentive*:</b>	\$8,880	<b>Total Purchased Gas Savings (th/yr):</b>	1,836
<b>Net Project Cost:</b>	\$233,670	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,947
<b>Net Simple Payback Period (yrs):</b>	59.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3236**

**Project: Chilled Beams or Fan Coil Units for Isolated Heat Loads**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	72,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 72,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$17,280

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$225,000		\$150,000
		Contingency: 10.00%	\$22,500		\$15,000
		Totals:	\$247,500		\$165,000
		Engineering: 15.00%	\$61,875		
		Construction Phase: 5.00%	\$20,625		
		Project Management: 6.00%	\$24,750		
		Total Project Cost:	\$519,750		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$519,750	<b>Total Purchased Electricity Savings (kWh/yr):</b>	36,000
<b>Rebate/Incentive*:</b>	\$17,280	<b>Total Purchased Gas Savings (th/yr):</b>	3,573
<b>Net Project Cost:</b>	\$502,470	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,682
<b>Net Simple Payback Period (yrs):</b>	65.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3237

**Project:** Extend 12KV Campus Primary Grid to Middle Earth and East Campus Housing

**Campus:** IRVINE

**Location:** IRVINE

**Campus Prioritization and Schedule**

**Building:** CAMPUSWIDE

**Project Tier:** Backup

**Building Key:** 09CWIDE

**Start Preliminary Engineering:**

**Basic Gross Area (sf):**

**Scheduled Completion:**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project.. Likely no IOU incentive

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	1,500,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 1,500,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$360,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$6,300,000		\$4,200,000
		Contingency: 10.00%	\$630,000		\$420,000
		Totals:	\$6,930,000		\$4,620,000
		Engineering: 15.00%	\$1,732,500		
		Construction Phase: 5.00%	\$577,500		
		Project Management: 6.00%	\$693,000		
		Total Project Cost:	\$14,553,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$14,553,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	750,000
<b>Rebate/Incentive*:</b>	\$360,000	<b>Total Purchased Gas Savings (th/yr):</b>	74,430
<b>Net Project Cost:</b>	\$14,193,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$160,033
<b>Net Simple Payback Period (yrs):</b>	88.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3238**

**Project: Wall Furnace Replacement**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** VERANO 400

**Building Key:** 09C9653

**Basic Gross Area (sf):** 8,886

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	4,500
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 4,500

**Anticipated Gross Incentive:** \$4,500

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$64,200		\$42,800
		Contingency: 10.00%	\$6,420		\$4,280
		Totals:	\$70,620		\$47,080
		Engineering: 15.00%	\$17,655		
		Construction Phase: 5.00%	\$5,885		
		Project Management: 6.00%	\$7,062		
		Total Project Cost:	\$148,302		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$148,302	<b>Total Purchased Electricity Savings (kWh/yr):</b>	14,175
<b>Rebate/Incentive*:</b>	\$4,500	<b>Total Purchased Gas Savings (th/yr):</b>	2,813
<b>Net Project Cost:</b>	\$143,802	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,177
<b>Net Simple Payback Period (yrs):</b>	34.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3239**

**Project: Cool Roof Replacement on Select Buildings as they become available**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project.. Included for placeholder, Potential future projects in conjunction with other retrofits.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$0

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$0
		Contingency: 10.00%	\$0		\$0
		Totals:	\$0		\$0
		Engineering: 15.00%	\$0		
		Construction Phase: 5.00%	\$0		
		Project Management: 6.00%	\$0		
		Total Project Cost:	\$0		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$0	<b>Total Purchased Electricity Savings (kWh/yr):</b>	0
<b>Rebate/Incentive*:</b>	\$0	<b>Total Purchased Gas Savings (th/yr):</b>	0
<b>Net Project Cost:</b>	\$0	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$0
<b>Net Simple Payback Period (yrs):</b>	#Num!		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3240**

**Project: Replace Heating Furnaces with Energy Star Units**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE - HOUSING

**Building Key:** 09CWIDEH

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project.. Included for placeholder, Potential future projects in conjunction with other retrofits.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$0

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
		Raw Costs:			
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$0
		Contingency: 10.00%	\$0		\$0
		Totals:	\$0		\$0
		Engineering: 15.00%	\$0		
		Construction Phase: 5.00%	\$0		
		Project Management: 6.00%	\$0		
		Total Project Cost:	\$0		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$0	<b>Total Purchased Electricity Savings (kWh/yr):</b>	0
<b>Rebate/Incentive*:</b>	\$0	<b>Total Purchased Gas Savings (th/yr):</b>	0
<b>Net Project Cost:</b>	\$0	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$0
<b>Net Simple Payback Period (yrs):</b>	#Num!		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3241**

**Project: Aircuity Installation as Applicable**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Laboratory Air Handler Project 3. Reduce Minimum Air Change Requirements through Continuous Monitoring. Included for placeholder, Potential future projects in conjunction with other retrofits.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$0

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
		Raw Costs:			
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$0
		Contingency: 10.00%	\$0		\$0
		Totals:	\$0		\$0
		Engineering: 15.00%	\$0		
		Construction Phase: 5.00%	\$0		
		Project Management: 6.00%	\$0		
		Total Project Cost:	\$0		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$0	<b>Total Purchased Electricity Savings (kWh/yr):</b>	0
<b>Rebate/Incentive*:</b>	\$0	<b>Total Purchased Gas Savings (th/yr):</b>	0
<b>Net Project Cost:</b>	\$0	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$0
<b>Net Simple Payback Period (yrs):</b>	#Num!		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3242**

**Project: Replace Refrigerators with Energy Star units**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2010
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2011
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	975,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	975,000
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$234,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$240,000		\$160,000
		Contingency: 10.00%	\$24,000		\$16,000
		Totals:	\$264,000		\$176,000
		Engineering: 15.00%	\$66,000		
		Construction Phase: 5.00%	\$22,000		
		Project Management: 6.00%	\$26,400		
		Total Project Cost:	\$554,400		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$554,400	<b>Total Purchased Electricity Savings (kWh/yr):</b>	487,500
<b>Rebate/Incentive*:</b>	\$234,000	<b>Total Purchased Gas Savings (th/yr):</b>	48,380
<b>Net Project Cost:</b>	\$320,400	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$104,021
<b>Net Simple Payback Period (yrs):</b>	3.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3243

**Project:** Monitoring Based Commissioning - Buildings < 50k GSF not in SEP

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Monitoring Based Commissioning. Buildings < 50k GSF not in SEP

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2010

**Scheduled Completion:** 12/15/2011

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	1,100,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	58,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 1,100,000

**Equivalent Gas Savings (th/yr):** 58,000

**Anticipated Gross Incentive:** \$322,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
		Raw Costs:			
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$525,000		\$350,000
		Contingency: 10.00%	\$52,500		\$35,000
		Totals:	\$577,500		\$385,000
		Engineering: 15.00%	\$144,375		
		Construction Phase: 5.00%	\$48,125		
		Project Management: 6.00%	\$57,750		
		Total Project Cost:	\$1,212,750		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,212,750	<b>Total Purchased Electricity Savings (kWh/yr):</b>	732,700
<b>Rebate/Incentive*:</b>	\$322,000	<b>Total Purchased Gas Savings (th/yr):</b>	90,832
<b>Net Project Cost:</b>	\$890,750	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$171,199
<b>Net Simple Payback Period (yrs):</b>	5.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3244

**Project:** Install LED w/ Occupancy Sensors in Restrooms, Dimmable Photo Sensing Ballast in Common Areas

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2010
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2011
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	225,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 225,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$54,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$105,000		\$70,000
		Contingency: 10.00%	\$10,500		\$7,000
		Totals:	\$115,500		\$77,000
		Engineering: 15.00%	\$28,875		
		Construction Phase: 5.00%	\$9,625		
		Project Management: 6.00%	\$11,550		
		Total Project Cost:	\$242,550		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$242,550	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,500
<b>Rebate/Incentive*:</b>	\$54,000	<b>Total Purchased Gas Savings (th/yr):</b>	11,165
<b>Net Project Cost:</b>	\$188,550	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$24,005
<b>Net Simple Payback Period (yrs):</b>	7.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3245**

**Project: Implement Demand Control Ventilation - Buildings < 50k GSF not in SEP**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Air Handler Project 3. Demand Control Ventilation.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	430,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	9,500
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 430,000

**Equivalent Gas Savings (th/yr):** 9,500

**Anticipated Gross Incentive:** \$112,700

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$288,000		\$192,000
		Contingency: 10.00%	\$28,800		\$19,200
		Totals:	\$316,800		\$211,200
		Engineering: 15.00%	\$79,200		
		Construction Phase: 5.00%	\$26,400		
		Project Management: 6.00%	\$31,680		
		Total Project Cost:	\$665,280		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$665,280	<b>Total Purchased Electricity Savings (kWh/yr):</b>	244,925
<b>Rebate/Incentive*:</b>	\$112,700	<b>Total Purchased Gas Savings (th/yr):</b>	27,274
<b>Net Project Cost:</b>	\$552,580	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$54,695
<b>Net Simple Payback Period (yrs):</b>	10.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3246**

**Project: Install Bi-level Stairwell Fixture, Replace Incandescent Lamps w/ CFLs**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2010
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2011
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Lighting Project 3. Stairwell Lighting.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	450,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	450,000
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$108,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$270,000		\$180,000
		Contingency: 10.00%	\$27,000		\$18,000
		Totals:	\$297,000		\$198,000
		Engineering: 15.00%	\$74,250		
		Construction Phase: 5.00%	\$24,750		
		Project Management: 6.00%	\$29,700		
		Total Project Cost:	\$623,700		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$623,700	<b>Total Purchased Electricity Savings (kWh/yr):</b>	225,000
<b>Rebate/Incentive*:</b>	\$108,000	<b>Total Purchased Gas Savings (th/yr):</b>	22,329
<b>Net Project Cost:</b>	\$515,700	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$48,010
<b>Net Simple Payback Period (yrs):</b>	10.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3247**

**Project: Occupancy Based Ventilation Control**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	225,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	5,200
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 225,000

**Equivalent Gas Savings (th/yr):** 5,200

**Anticipated Gross Incentive:** \$59,200

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$195,000		\$130,000
		Contingency: 10.00%	\$19,500		\$13,000
		Totals:	\$214,500		\$143,000
		Engineering: 15.00%	\$53,625		
		Construction Phase: 5.00%	\$17,875		
		Project Management: 6.00%	\$21,450		
		Total Project Cost:	\$450,450		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$450,450	<b>Total Purchased Electricity Savings (kWh/yr):</b>	128,880
<b>Rebate/Incentive*:</b>	\$59,200	<b>Total Purchased Gas Savings (th/yr):</b>	14,415
<b>Net Project Cost:</b>	\$391,250	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$28,832
<b>Net Simple Payback Period (yrs):</b>	13.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3248

**Project:** Install Occupancy Sensors wherever applicable and Retrofit Lighting systems.

**Campus:** IRVINE

**Location:** IRVINE

**Campus Prioritization and Schedule**

**Building:** CAMPUSWIDE - HOUSING

**Project Tier:** Tier 2

**Building Key:** 09CWIDEH

**Start Preliminary Engineering:** 6/1/2009

**Basic Gross Area (sf):**

**Scheduled Completion:** 12/15/2010

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	125,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 125,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$30,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$105,000		\$70,000
		Contingency: 10.00%	\$10,500		\$7,000
		Totals:	\$115,500		\$77,000
		Engineering: 15.00%	\$28,875		
		Construction Phase: 5.00%	\$9,625		
		Project Management: 6.00%	\$11,550		
		Total Project Cost:	\$242,550		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$242,550	<b>Total Purchased Electricity Savings (kWh/yr):</b>	62,500
<b>Rebate/Incentive*:</b>	\$30,000	<b>Total Purchased Gas Savings (th/yr):</b>	6,203
<b>Net Project Cost:</b>	\$212,550	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$13,336
<b>Net Simple Payback Period (yrs):</b>	15.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3249**

**Project: Data Center Energy Efficiency Project**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	77,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 77,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$18,480

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$66,000		\$44,000
		Contingency: 10.00%	\$6,600		\$4,400
		Totals:	\$72,600		\$48,400
		Engineering: 15.00%	\$18,150		
		Construction Phase: 5.00%	\$6,050		
		Project Management: 6.00%	\$7,260		
		Total Project Cost:	\$152,460		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$152,460	<b>Total Purchased Electricity Savings (kWh/yr):</b>	38,500
<b>Rebate/Incentive*:</b>	\$18,480	<b>Total Purchased Gas Savings (th/yr):</b>	3,821
<b>Net Project Cost:</b>	\$133,980	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,215
<b>Net Simple Payback Period (yrs):</b>	16.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3250**

**Project: Path, Area, and Parking Lot Lighting Upgrade to LED, High Efficiency Lighting Systems**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** CAMPUSWIDE  
**Building Key:** 09CWIDE  
**Basic Gross Area (sf):**

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Lighting Project 5. Parking Garage and Outdoor Pole Lighting. LED Lighting proposed instead of fluorescent, price point likely to drop is reached as technology gains penetration in coming years

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	785,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 785,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$188,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$720,000		\$480,000
		Contingency: 10.00%	\$72,000		\$48,000
		Totals:	\$792,000		\$528,000
		Engineering: 15.00%	\$198,000		
		Construction Phase: 5.00%	\$66,000		
		Project Management: 6.00%	\$79,200		
		Total Project Cost:	\$1,663,200		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,663,200	<b>Total Purchased Electricity Savings (kWh/yr):</b>	392,500
<b>Rebate/Incentive*:</b>	\$188,400	<b>Total Purchased Gas Savings (th/yr):</b>	38,952
<b>Net Project Cost:</b>	\$1,474,800	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$83,750
<b>Net Simple Payback Period (yrs):</b>	17.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3251

**Project:** Reduced Exhaust Stack Velocity and Eliminate Make Up Air in Lab Exhaust Systems

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	650,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	25,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 650,000

**Equivalent Gas Savings (th/yr):** 25,000

**Anticipated Gross Incentive:** \$181,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$840,000		\$560,000
		Contingency: 10.00%	\$84,000		\$56,000
		Totals:	\$924,000		\$616,000
		Engineering: 15.00%	\$231,000		
		Construction Phase: 5.00%	\$77,000		
		Project Management: 6.00%	\$92,400		
		Total Project Cost:	\$1,940,400		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,940,400	<b>Total Purchased Electricity Savings (kWh/yr):</b>	403,750
<b>Rebate/Incentive*:</b>	\$181,000	<b>Total Purchased Gas Savings (th/yr):</b>	47,878
<b>Net Project Cost:</b>	\$1,759,400	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$92,555
<b>Net Simple Payback Period (yrs):</b>	19.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3252

**Project:** Install Occupancy Sensors in Laundry Rooms and Restrooms to control Exhaust Fans.

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	95,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 95,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$22,800

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$105,000		\$70,000
		Contingency: 10.00%	\$10,500		\$7,000
		Totals:	\$115,500		\$77,000
		Engineering: 15.00%	\$28,875		
		Construction Phase: 5.00%	\$9,625		
		Project Management: 6.00%	\$11,550		
		Total Project Cost:	\$242,550		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$242,550	<b>Total Purchased Electricity Savings (kWh/yr):</b>	47,500
<b>Rebate/Incentive*:</b>	\$22,800	<b>Total Purchased Gas Savings (th/yr):</b>	4,714
<b>Net Project Cost:</b>	\$219,750	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$10,135
<b>Net Simple Payback Period (yrs):</b>	21.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3253

**Project:** Replace Chillers, Heat Exchangers, Air Handlers, Pumps, Motors, and Controls with < 10 Yr. Payback.

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

### Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	775,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 775,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$186,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$900,000		\$600,000
		Contingency: 10.00%	\$90,000		\$60,000
		Totals:	\$990,000		\$660,000
		Engineering: 15.00%	\$247,500		
		Construction Phase: 5.00%	\$82,500		
		Project Management: 6.00%	\$99,000		
		Total Project Cost:	\$2,079,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,079,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	387,500
<b>Rebate/Incentive*:</b>	\$186,000	<b>Total Purchased Gas Savings (th/yr):</b>	38,456
<b>Net Project Cost:</b>	\$1,893,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$82,684
<b>Net Simple Payback Period (yrs):</b>	22.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3254

**Project:** Replace Stand Alone Packaged DX Units < 8 SEER

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2010

**Scheduled Completion:** 12/15/2011

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	180,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	2,500
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 180,000

**Equivalent Gas Savings (th/yr):** 2,500

**Anticipated Gross Incentive:** \$45,700

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$228,000		\$152,000
		Contingency: 10.00%	\$22,800		\$15,200
		Totals:	\$250,800		\$167,200
		Engineering: 15.00%	\$62,700		
		Construction Phase: 5.00%	\$20,900		
		Project Management: 6.00%	\$25,080		
		Total Project Cost:	\$526,680		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$526,680	<b>Total Purchased Electricity Savings (kWh/yr):</b>	97,875
<b>Rebate/Incentive*:</b>	\$45,700	<b>Total Purchased Gas Savings (th/yr):</b>	10,494
<b>Net Project Cost:</b>	\$480,980	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$21,525
<b>Net Simple Payback Period (yrs):</b>	22.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3255

**Project:** Replace Inefficient Packaged HVAC and Chiller units with high SEER units.

**Campus:** IRVINE

**Location:** IRVINE

**Campus Prioritization and Schedule**

**Building:** CAMPUSWIDE - HOUSING

**Project Tier:** Tier 2

**Building Key:** 09CWIDEH

**Start Preliminary Engineering:** 6/1/2010

**Basic Gross Area (sf):**

**Scheduled Completion:** 12/15/2011

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	125,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	4,100
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 125,000

**Equivalent Gas Savings (th/yr):** 4,100

**Anticipated Gross Incentive:** \$34,100

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$180,000		\$120,000
		Contingency: 10.00%	\$18,000		\$12,000
		Totals:	\$198,000		\$132,000
		Engineering: 15.00%	\$49,500		
		Construction Phase: 5.00%	\$16,500		
		Project Management: 6.00%	\$19,800		
		Total Project Cost:	\$415,800		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$415,800	<b>Total Purchased Electricity Savings (kWh/yr):</b>	75,415
<b>Rebate/Incentive*:</b>	\$34,100	<b>Total Purchased Gas Savings (th/yr):</b>	8,765
<b>Net Project Cost:</b>	\$381,700	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$17,142
<b>Net Simple Payback Period (yrs):</b>	22.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3256**

**Project: Compressed and Vacuum Air System Efficiency Retrofit**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2010

**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	350,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 350,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$84,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$420,000		\$280,000
		Contingency: 10.00%	\$42,000		\$28,000
		Totals:	\$462,000		\$308,000
		Engineering: 15.00%	\$115,500		
		Construction Phase: 5.00%	\$38,500		
		Project Management: 6.00%	\$46,200		
		Total Project Cost:	\$970,200		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$970,200	<b>Total Purchased Electricity Savings (kWh/yr):</b>	175,000
<b>Rebate/Incentive*:</b>	\$84,000	<b>Total Purchased Gas Savings (th/yr):</b>	17,367
<b>Net Project Cost:</b>	\$886,200	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$37,341
<b>Net Simple Payback Period (yrs):</b>	23.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3257**

**Project: Reduce ACH Using Low Flow Fumehoods**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	445,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	42,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 445,000

**Equivalent Gas Savings (th/yr):** 42,000

**Anticipated Gross Incentive:** \$148,800

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$900,000		\$600,000
		Contingency: 10.00%	\$90,000		\$60,000
		Totals:	\$990,000		\$660,000
		Engineering: 15.00%	\$247,500		
		Construction Phase: 5.00%	\$82,500		
		Project Management: 6.00%	\$99,000		
		Total Project Cost:	\$2,079,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,079,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	354,800
<b>Rebate/Incentive*:</b>	\$148,800	<b>Total Purchased Gas Savings (th/yr):</b>	48,331
<b>Net Project Cost:</b>	\$1,930,200	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$86,465
<b>Net Simple Payback Period (yrs):</b>	22.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3258**

**Project: Remove Sound Attenuators to Reduce Pressure Drop on Fan System**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2010
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2011
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	185,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	185,000
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$44,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$252,000		\$168,000
		Contingency: 10.00%	\$25,200		\$16,800
		Totals:	\$277,200		\$184,800
		Engineering: 15.00%	\$69,300		
		Construction Phase: 5.00%	\$23,100		
		Project Management: 6.00%	\$27,720		
		Total Project Cost:	\$582,120		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$582,120	<b>Total Purchased Electricity Savings (kWh/yr):</b>	92,500
<b>Rebate/Incentive*:</b>	\$44,400	<b>Total Purchased Gas Savings (th/yr):</b>	9,180
<b>Net Project Cost:</b>	\$537,720	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$19,737
<b>Net Simple Payback Period (yrs):</b>	27.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

**SEP Project ID Number: I3259**

**Project: Replace remaining old Boilers with high Efficient units.**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2010
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2011
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	26,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 26,000

**Anticipated Gross Incentive:** \$26,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$225,000		\$150,000
		Contingency: 10.00%	\$22,500		\$15,000
		Totals:	\$247,500		\$165,000
		Engineering: 15.00%	\$61,875		
		Construction Phase: 5.00%	\$20,625		
		Project Management: 6.00%	\$24,750		
		Total Project Cost:	\$519,750		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$519,750	<b>Total Purchased Electricity Savings (kWh/yr):</b>	81,900
<b>Rebate/Incentive*:</b>	\$26,000	<b>Total Purchased Gas Savings (th/yr):</b>	16,250
<b>Net Project Cost:</b>	\$493,750	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$24,136
<b>Net Simple Payback Period (yrs):</b>	20.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3260**

**Project: HVAC Efficiency Improvement - Buildings < 50k GSF not in SEP**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	345,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	65,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	345,000
<b>Equivalent Gas Savings (th/yr):</b>	65,000
<b>Anticipated Gross Incentive:</b>	\$147,800

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,050,000		\$700,000
		Contingency: 10.00%	\$105,000		\$70,000
		Totals:	\$1,155,000		\$770,000
		Engineering: 15.00%	\$288,750		
		Construction Phase: 5.00%	\$96,250		
		Project Management: 6.00%	\$115,500		
		Total Project Cost:	\$2,425,500		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,425,500	<b>Total Purchased Electricity Savings (kWh/yr):</b>	377,250
<b>Rebate/Incentive*:</b>	\$147,800	<b>Total Purchased Gas Savings (th/yr):</b>	57,744
<b>Net Project Cost:</b>	\$2,277,700	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$97,147
<b>Net Simple Payback Period (yrs):</b>	23.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3261**

**Project: Upgrade and Enhance EMS as needed to manage, monitor, and maintain measures embodied in the SEP.**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	1,200,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	35,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	1,200,000
<b>Equivalent Gas Savings (th/yr):</b>	35,000
<b>Anticipated Gross Incentive:</b>	\$323,000
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$2,100,000		\$1,400,000
		Contingency: 10.00%	\$210,000		\$140,000
		Totals:	\$2,310,000		\$1,540,000
		Engineering: 15.00%	\$577,500		
		Construction Phase: 5.00%	\$192,500		
		Project Management: 6.00%	\$231,000		
		Total Project Cost:	\$4,851,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,851,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	710,250
<b>Rebate/Incentive*:</b>	\$323,000	<b>Total Purchased Gas Savings (th/yr):</b>	81,419
<b>Net Project Cost:</b>	\$4,528,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$160,517
<b>Net Simple Payback Period (yrs):</b>	28.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

**SEP Project ID Number: I3262**

**Project: EMS Control Upgrade - Buildings < 50k GSF not in SEP**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2009

**Scheduled Completion:** 12/15/2010

### Project Energy Savings Summary

#### Building Energy Savings

<b>Electric (kWh/yr):</b>	645,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	22,500
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

#### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 645,000

**Equivalent Gas Savings (th/yr):** 22,500

**Anticipated Gross Incentive:** \$177,300

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

### Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,500,000		\$1,000,000
		Contingency: 10.00%	\$150,000		\$100,000
		Totals:	\$1,650,000		\$1,100,000
		Engineering: 15.00%	\$412,500		
		Construction Phase: 5.00%	\$137,500		
		Project Management: 6.00%	\$165,000		
		Total Project Cost:	\$3,465,000		

### Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$3,465,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	393,375
<b>Rebate/Incentive*:</b>	\$177,300	<b>Total Purchased Gas Savings (th/yr):</b>	46,067
<b>Net Project Cost:</b>	\$3,287,700	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$89,701
<b>Net Simple Payback Period (yrs):</b>	36.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3263**

**Project: Replace Kitchen Appliances with Energy Star units where opportunities exist.**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	42,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	2,800
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	42,000
<b>Equivalent Gas Savings (th/yr):</b>	2,800
<b>Anticipated Gross Incentive:</b>	\$12,880
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$120,000		\$80,000
		Contingency: 10.00%	\$12,000		\$8,000
		Totals:	\$132,000		\$88,000
		Engineering: 15.00%	\$33,000		
		Construction Phase: 5.00%	\$11,000		
		Project Management: 6.00%	\$13,200		
		Total Project Cost:	\$277,200		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$277,200	<b>Total Purchased Electricity Savings (kWh/yr):</b>	29,820
<b>Rebate/Incentive*:</b>	\$12,880	<b>Total Purchased Gas Savings (th/yr):</b>	3,834
<b>Net Project Cost:</b>	\$264,320	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,080
<b>Net Simple Payback Period (yrs):</b>	37.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3264

**Project:** Chillers, heat exchangers, air-handlers, duct streamlining measures (e.g., radial ducts where right-angle transitions exist), pumps, controls, and motors with <10 year payback.

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

### Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	225,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 225,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$54,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
		Raw Costs:			
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$465,000		\$310,000
		Contingency: 10.00%	\$46,500		\$31,000
		Totals:	\$511,500		\$341,000
		Engineering: 15.00%	\$127,875		
		Construction Phase: 5.00%	\$42,625		
		Project Management: 6.00%	\$51,150		
		Total Project Cost:	\$1,074,150		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,074,150	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,500
<b>Rebate/Incentive*:</b>	\$54,000	<b>Total Purchased Gas Savings (th/yr):</b>	11,165
<b>Net Project Cost:</b>	\$1,020,150	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$24,005
<b>Net Simple Payback Period (yrs):</b>	42.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3265**

**Project: Install Efficient HTW Solution for Health Sciences**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

## Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	345,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 345,000

**Anticipated Gross Incentive:** \$345,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$4,800,000		\$3,200,000
		Contingency: 10.00%	\$480,000		\$320,000
		Totals:	\$5,280,000		\$3,520,000
		Engineering: 15.00%	\$1,320,000		
		Construction Phase: 5.00%	\$440,000		
		Project Management: 6.00%	\$528,000		
		Total Project Cost:	\$11,088,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$11,088,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,086,750
<b>Rebate/Incentive*:</b>	\$345,000	<b>Total Purchased Gas Savings (th/yr):</b>	215,625
<b>Net Project Cost:</b>	\$10,743,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$320,264
<b>Net Simple Payback Period (yrs):</b>	33.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3266**

**Project: Replace All Hot Water Heaters w/ Highest Efficiency Units**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	13,500
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

<b>Equivalent Electric Savings (kWh/yr):</b>	0
<b>Equivalent Gas Savings (th/yr):</b>	13,500
<b>Anticipated Gross Incentive:</b>	\$13,500

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$195,000		\$130,000
		Contingency: 10.00%	\$19,500		\$13,000
		Totals:	\$214,500		\$143,000
		Engineering: 15.00%	\$53,625		
		Construction Phase: 5.00%	\$17,875		
		Project Management: 6.00%	\$21,450		
		Total Project Cost:	\$450,450		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$450,450	<b>Total Purchased Electricity Savings (kWh/yr):</b>	42,525
<b>Rebate/Incentive*:</b>	\$13,500	<b>Total Purchased Gas Savings (th/yr):</b>	8,438
<b>Net Project Cost:</b>	\$436,950	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$12,532
<b>Net Simple Payback Period (yrs):</b>	34.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3267

**Project:** Install Solar Water Heating System in Housing Units with Central Heating Water Heating System

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Domestic Solar Hot Water.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	15,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 15,000

**Anticipated Gross Incentive:** \$15,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$270,000		\$180,000
		Contingency: 10.00%	\$27,000		\$18,000
		Totals:	\$297,000		\$198,000
		Engineering: 15.00%	\$74,250		
		Construction Phase: 5.00%	\$24,750		
		Project Management: 6.00%	\$29,700		
		Total Project Cost:	\$623,700		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$623,700	<b>Total Purchased Electricity Savings (kWh/yr):</b>	47,250
<b>Rebate/Incentive*:</b>	\$15,000	<b>Total Purchased Gas Savings (th/yr):</b>	9,375
<b>Net Project Cost:</b>	\$608,700	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$13,925
<b>Net Simple Payback Period (yrs):</b>	43.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3268**

**Project: DDC Conversion and Control Upgrade - Buildings < 50k GSF not in SEP**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	345,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	15,100
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 345,000

**Equivalent Gas Savings (th/yr):** 15,100

**Anticipated Gross Incentive:** \$97,900

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,350,000		\$900,000
		Contingency: 10.00%	\$135,000		\$90,000
		Totals:	\$1,485,000		\$990,000
		Engineering: 15.00%	\$371,250		
		Construction Phase: 5.00%	\$123,750		
		Project Management: 6.00%	\$148,500		
		Total Project Cost:	\$3,118,500		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$3,118,500	<b>Total Purchased Electricity Savings (kWh/yr):</b>	220,065
<b>Rebate/Incentive*:</b>	\$97,900	<b>Total Purchased Gas Savings (th/yr):</b>	26,556
<b>Net Project Cost:</b>	\$3,020,600	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$50,825
<b>Net Simple Payback Period (yrs):</b>	59.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3269**

## Project: Equipment Efficiency Upgrade

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CENTRL PLANT	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09C9302	<b>Start Preliminary Engineering:</b>	6/1/2010
<b>Basic Gross Area (sf):</b>	24,951	<b>Scheduled Completion:</b>	12/15/2011
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	240,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	15,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 240,000

**Equivalent Gas Savings (th/yr):** 15,000

**Anticipated Gross Incentive:** \$72,600

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
		Raw Costs:			
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$300,000		\$200,000
		Contingency: 10.00%	\$30,000		\$20,000
		Totals:	\$330,000		\$220,000
		Engineering: 15.00%	\$82,500		
		Construction Phase: 5.00%	\$27,500		
		Project Management: 6.00%	\$33,000		
		Total Project Cost:	\$693,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$693,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	167,250
<b>Rebate/Incentive*:</b>	\$72,600	<b>Total Purchased Gas Savings (th/yr):</b>	21,284
<b>Net Project Cost:</b>	\$620,400	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$39,530
<b>Net Simple Payback Period (yrs):</b>	15.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3270**

**Project: DDC Conversion**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CTB THEATRE

**Building Key:** 09C9051

**Basic Gross Area (sf):** 20,377

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	25,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	1,500
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 25,000

**Equivalent Gas Savings (th/yr):** 1,500

**Anticipated Gross Incentive:** \$7,500

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$45,000		\$30,000
		Contingency: 10.00%	\$4,500		\$3,000
		Totals:	\$49,500		\$33,000
		Engineering: 15.00%	\$12,375		
		Construction Phase: 5.00%	\$4,125		
		Project Management: 6.00%	\$4,950		
		Total Project Cost:	\$103,950		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$103,950	<b>Total Purchased Electricity Savings (kWh/yr):</b>	17,225
<b>Rebate/Incentive*:</b>	\$7,500	<b>Total Purchased Gas Savings (th/yr):</b>	2,178
<b>Net Project Cost:</b>	\$96,450	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,060
<b>Net Simple Payback Period (yrs):</b>	23.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3271**

**Project: Air Handler Replacement**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOCSCI HALL

**Building Key:** 09C9202

**Basic Gross Area (sf):** 4,800

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2010

**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	27,500
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	1,800
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 27,500

**Equivalent Gas Savings (th/yr):** 1,800

**Anticipated Gross Incentive:** \$8,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$72,000		\$48,000
		Contingency: 10.00%	\$7,200		\$4,800
		Totals:	\$79,200		\$52,800
		Engineering: 15.00%	\$19,800		
		Construction Phase: 5.00%	\$6,600		
		Project Management: 6.00%	\$7,920		
		Total Project Cost:	\$166,320		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$166,320	<b>Total Purchased Electricity Savings (kWh/yr):</b>	19,420
<b>Rebate/Incentive*:</b>	\$8,400	<b>Total Purchased Gas Savings (th/yr):</b>	2,490
<b>Net Project Cost:</b>	\$157,920	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,605
<b>Net Simple Payback Period (yrs):</b>	34.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3272**

**Project: Replace Heating Furnace (780 units)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** VERANO 400

**Building Key:** 09C9653

**Basic Gross Area (sf):** 8,886

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	36,316
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0  
**Equivalent Gas Savings (th/yr):** 36,316  
**Anticipated Gross Incentive:** \$36,316

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$516,000		\$344,000
		Contingency: 10.00%	\$51,600		\$34,400
		Totals:	\$567,600		\$378,400
		Engineering: 15.00%	\$141,900		
		Construction Phase: 5.00%	\$47,300		
		Project Management: 6.00%	\$56,760		
		Total Project Cost:	\$1,191,960		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,191,960	<b>Total Purchased Electricity Savings (kWh/yr):</b>	114,395
<b>Rebate/Incentive*:</b>	\$36,316	<b>Total Purchased Gas Savings (th/yr):</b>	22,698
<b>Net Project Cost:</b>	\$1,155,644	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$33,712
<b>Net Simple Payback Period (yrs):</b>	34.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3273**

**Project: Water Heater Replacement**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** VERANO 400

**Building Key:** 09C9653

**Basic Gross Area (sf):** 8,886

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2

**Start Preliminary Engineering:** 6/1/2010

**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	6,350
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 6,350

**Anticipated Gross Incentive:** \$6,350

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$114,000		\$76,000
		Contingency: 10.00%	\$11,400		\$7,600
		Totals:	\$125,400		\$83,600
		Engineering: 15.00%	\$31,350		
		Construction Phase: 5.00%	\$10,450		
		Project Management: 6.00%	\$12,540		
		Total Project Cost:	\$263,340		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$263,340	<b>Total Purchased Electricity Savings (kWh/yr):</b>	20,003
<b>Rebate/Incentive*:</b>	\$6,350	<b>Total Purchased Gas Savings (th/yr):</b>	3,969
<b>Net Project Cost:</b>	\$256,990	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$5,895
<b>Net Simple Payback Period (yrs):</b>	43.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3274**

**Project: BA Fans in Residential Dining IACHBS**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE		<b>Campus Prioritization and Schedule</b>
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$0

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$0
		Contingency: 10.00%	\$0		\$0
		Totals:	\$0		\$0
		Engineering: 15.00%	\$0		
		Construction Phase: 5.00%	\$0		
		Project Management: 6.00%	\$0		
		Total Project Cost:	\$0		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$0	<b>Total Purchased Electricity Savings (kWh/yr):</b>	0
<b>Rebate/Incentive*:</b>	\$0	<b>Total Purchased Gas Savings (th/yr):</b>	0
<b>Net Project Cost:</b>	\$0	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$0
<b>Net Simple Payback Period (yrs):</b>	#Num!		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3275**

**Project: Refrigerant Heat Recovery for Water Preheating in Dining Facilities**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE		<b>Campus Prioritization and Schedule</b>
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$0

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$0
		Contingency: 10.00%	\$0		\$0
		Totals:	\$0		\$0
		Engineering: 15.00%	\$0		
		Construction Phase: 5.00%	\$0		
		Project Management: 6.00%	\$0		
		Total Project Cost:	\$0		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$0	<b>Total Purchased Electricity Savings (kWh/yr):</b>	0
<b>Rebate/Incentive*:</b>	\$0	<b>Total Purchased Gas Savings (th/yr):</b>	0
<b>Net Project Cost:</b>	\$0	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$0
<b>Net Simple Payback Period (yrs):</b>	#Num!		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3276**

**Project: Dining Svcs Equip Replacement**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE - HOUSING

**Building Key:** 09CWIDEH

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$0

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$0
		Contingency: 10.00%	\$0		\$0
		Totals:	\$0		\$0
		Engineering: 15.00%	\$0		
		Construction Phase: 5.00%	\$0		
		Project Management: 6.00%	\$0		
		Total Project Cost:	\$0		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$0	<b>Total Purchased Electricity Savings (kWh/yr):</b>	0
<b>Rebate/Incentive*:</b>	\$0	<b>Total Purchased Gas Savings (th/yr):</b>	0
<b>Net Project Cost:</b>	\$0	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$0
<b>Net Simple Payback Period (yrs):</b>	#Num!		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3277**

**Project: AH Replacement (Deferred Maintenance)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BONNEY RES L

**Building Key:** 09C9081

**Basic Gross Area (sf):** 18,937

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Deferred Maintenance and Capital Renewal Projects.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$0

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$0
		Contingency: 10.00%	\$0		\$0
		Totals:	\$0		\$0
		Engineering: 15.00%	\$0		
		Construction Phase: 5.00%	\$0		
		Project Management: 6.00%	\$0		
		Total Project Cost:	\$0		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$0	<b>Total Purchased Electricity Savings (kWh/yr):</b>	0
<b>Rebate/Incentive*:</b>	\$0	<b>Total Purchased Gas Savings (th/yr):</b>	0
<b>Net Project Cost:</b>	\$0	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$0
<b>Net Simple Payback Period (yrs):</b>	#Num!		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3279**

**Project: CAV to VAV Fume Hoods Proposed from Previous MBCx study by EMC**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	GILLESPIE BLD	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09C9082	<b>Start Preliminary Engineering:</b>	6/1/2008
<b>Basic Gross Area (sf):</b>	82,920	<b>Scheduled Completion:</b>	12/15/2009
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Laboratory Air Handler Project 1. Convert Laboratory Air Handlers and Fume Hoods to Variable Air Volume.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	198,663
<b>Peak Demand (kW):</b>	266.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 198,663

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$47,679

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$126,000		\$84,000
		Contingency: 10.00%	\$12,600		\$8,400
		Totals:	\$138,600		\$92,400
		Engineering: 15.00%	\$34,650		
		Construction Phase: 5.00%	\$11,550		
		Project Management: 6.00%	\$13,860		
		Total Project Cost:	\$291,060		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$291,060	<b>Total Purchased Electricity Savings (kWh/yr):</b>	99,332
<b>Rebate/Incentive*:</b>	\$47,679	<b>Total Purchased Gas Savings (th/yr):</b>	9,858
<b>Net Project Cost:</b>	\$243,381	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$21,195
<b>Net Simple Payback Period (yrs):</b>	11.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3280**

**Project: Daylighting controls-MED SCI A,B,C,D**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Lighting Project 2. Interior Lighting Controls.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	35,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 35,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$8,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$30,000		\$20,000
		Contingency: 10.00%	\$3,000		\$2,000
		Totals:	\$33,000		\$22,000
		Engineering: 15.00%	\$8,250		
		Construction Phase: 5.00%	\$2,750		
		Project Management: 6.00%	\$3,300		
		Total Project Cost:	\$69,300		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$69,300	<b>Total Purchased Electricity Savings (kWh/yr):</b>	17,500
<b>Rebate/Incentive*:</b>	\$8,400	<b>Total Purchased Gas Savings (th/yr):</b>	1,737
<b>Net Project Cost:</b>	\$60,900	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,734
<b>Net Simple Payback Period (yrs):</b>	16.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3299**

**Project: Replace 5 Rooftop DX units**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** UCI STU CNTR

**Building Key:** 09C9005

**Basic Gross Area (sf):** 164,042

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	25,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 25,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$6,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$15,000		\$10,000
		Contingency: 10.00%	\$1,500		\$1,000
		Totals:	\$16,500		\$11,000
		Engineering: 15.00%	\$4,125		
		Construction Phase: 5.00%	\$1,375		
		Project Management: 6.00%	\$1,650		
		Total Project Cost:	\$34,650		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$34,650	<b>Total Purchased Electricity Savings (kWh/yr):</b>	12,500
<b>Rebate/Incentive*:</b>	\$6,000	<b>Total Purchased Gas Savings (th/yr):</b>	1,241
<b>Net Project Cost:</b>	\$28,650	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$2,667
<b>Net Simple Payback Period (yrs):</b>	10.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3300**

**Project: DM - 9 Complete Chilled Water AHU replacements**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** UCI STU CNTR

**Building Key:** 09C9005

**Basic Gross Area (sf):** 164,042

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$0

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$0		\$0
		Contingency: 10.00%	\$0		\$0
		Totals:	\$0		\$0
		Engineering: 15.00%	\$0		
		Construction Phase: 5.00%	\$0		
		Project Management: 6.00%	\$0		
		Total Project Cost:	\$0		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$0	<b>Total Purchased Electricity Savings (kWh/yr):</b>	0
<b>Rebate/Incentive*:</b>	\$0	<b>Total Purchased Gas Savings (th/yr):</b>	0
<b>Net Project Cost:</b>	\$0	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$0
<b>Net Simple Payback Period (yrs):</b>	#Num!		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3302**

**Project: Housing Parking Lot HID Fixture Retrofit**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Lighting Project 5. Parking Garage and Outdoor Pole Lighting.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	40,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	40,000
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$9,600

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$45,000		\$30,000
		Contingency: 10.00%	\$4,500		\$3,000
		Totals:	\$49,500		\$33,000
		Engineering: 15.00%	\$12,375		
		Construction Phase: 5.00%	\$4,125		
		Project Management: 6.00%	\$4,950		
		Total Project Cost:	\$103,950		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$103,950	<b>Total Purchased Electricity Savings (kWh/yr):</b>	20,000
<b>Rebate/Incentive*:</b>	\$9,600	<b>Total Purchased Gas Savings (th/yr):</b>	1,985
<b>Net Project Cost:</b>	\$94,350	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,268
<b>Net Simple Payback Period (yrs):</b>	22.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3303**

**Project: Housing Pathway/Exterior HID and Incan. Retrofit**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE - HOUSING	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09CWIDEH	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Lighting Project 5. Parking Garage and Outdoor Pole Lighting.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	40,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	40,000
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$9,600

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$45,000		\$30,000
		Contingency: 10.00%	\$4,500		\$3,000
		Totals:	\$49,500		\$33,000
		Engineering: 15.00%	\$12,375		
		Construction Phase: 5.00%	\$4,125		
		Project Management: 6.00%	\$4,950		
		Total Project Cost:	\$103,950		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$103,950	<b>Total Purchased Electricity Savings (kWh/yr):</b>	20,000
<b>Rebate/Incentive*:</b>	\$9,600	<b>Total Purchased Gas Savings (th/yr):</b>	1,985
<b>Net Project Cost:</b>	\$94,350	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,268
<b>Net Simple Payback Period (yrs):</b>	22.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3304**

**Project: Monitoring Based Commissioning**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	QURESHEY LAB	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09C9080	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>	18,900	<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Monitoring Based Commissioning.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,831
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	3,824
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	11,831
<b>Equivalent Gas Savings (th/yr):</b>	3,824
<b>Anticipated Gross Incentive:</b>	\$6,663

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$32,015		\$21,343
		Contingency: 10.00%	\$3,201		\$2,134
		Totals:	\$35,216		\$23,478
		Engineering: 15.00%	\$8,804		
		Construction Phase: 5.00%	\$2,935		
		Project Management: 6.00%	\$3,522		
		Total Project Cost:	\$73,954		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$73,954	<b>Total Purchased Electricity Savings (kWh/yr):</b>	17,961
<b>Rebate/Incentive*:</b>	\$6,663	<b>Total Purchased Gas Savings (th/yr):</b>	2,977
<b>Net Project Cost:</b>	\$67,291	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,812
<b>Net Simple Payback Period (yrs):</b>	14.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3305**

**Project: Low Pressure Drop Filters (Additional)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	250,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 250,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$60,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$90,000		\$60,000
		Contingency: 10.00%	\$9,000		\$6,000
		Totals:	\$99,000		\$66,000
		Engineering: 15.00%	\$24,750		
		Construction Phase: 5.00%	\$8,250		
		Project Management: 6.00%	\$9,900		
		Total Project Cost:	\$207,900		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$207,900	<b>Total Purchased Electricity Savings (kWh/yr):</b>	125,000
<b>Rebate/Incentive*:</b>	\$60,000	<b>Total Purchased Gas Savings (th/yr):</b>	12,405
<b>Net Project Cost:</b>	\$147,900	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$26,672
<b>Net Simple Payback Period (yrs):</b>	5.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3306**

**Project: Replace Chilled Water Valves With Delta P Valves**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	275,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 275,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$66,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$198,000		\$132,000
		Contingency: 10.00%	\$19,800		\$13,200
		Totals:	\$217,800		\$145,200
		Engineering: 15.00%	\$54,450		
		Construction Phase: 5.00%	\$18,150		
		Project Management: 6.00%	\$21,780		
		Total Project Cost:	\$457,380		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$457,380	<b>Total Purchased Electricity Savings (kWh/yr):</b>	137,500
<b>Rebate/Incentive*:</b>	\$66,000	<b>Total Purchased Gas Savings (th/yr):</b>	13,646
<b>Net Project Cost:</b>	\$391,380	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$29,339
<b>Net Simple Payback Period (yrs):</b>	13.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3307**

**Project: Wavelength Selective Window film**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	57,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 57,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$13,680

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$45,000		\$30,000
		Contingency: 10.00%	\$4,500		\$3,000
		Totals:	\$49,500		\$33,000
		Engineering: 15.00%	\$12,375		
		Construction Phase: 5.00%	\$4,125		
		Project Management: 6.00%	\$4,950		
		Total Project Cost:	\$103,950		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$103,950	<b>Total Purchased Electricity Savings (kWh/yr):</b>	28,500
<b>Rebate/Incentive*:</b>	\$13,680	<b>Total Purchased Gas Savings (th/yr):</b>	2,828
<b>Net Project Cost:</b>	\$90,270	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,081
<b>Net Simple Payback Period (yrs):</b>	14.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3308**

**Project: Lighting Efficiency Improvement - Buildings < 50k GSF not in SEP**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls. Revised per campus comments		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	1,100,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	1,100,000
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$264,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
		Raw Costs:			
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$264,000		\$176,000
		Contingency: 10.00%	\$26,400		\$17,600
		Totals:	\$290,400		\$193,600
		Engineering: 15.00%	\$72,600		
		Construction Phase: 5.00%	\$24,200		
		Project Management: 6.00%	\$29,040		
		Total Project Cost:	\$609,840		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$609,840	<b>Total Purchased Electricity Savings (kWh/yr):</b>	550,000
<b>Rebate/Incentive*:</b>	\$264,000	<b>Total Purchased Gas Savings (th/yr):</b>	54,582
<b>Net Project Cost:</b>	\$345,840	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$117,357
<b>Net Simple Payback Period (yrs):</b>	2.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3309**

**Project: Install Photo Sensors and Astronomical Time clocks to Control all exterior lighting.**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	CAMPUSWIDE	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09CWIDE	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>		<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	Campus provided estimate savings (4/29/08 Additional Projects List)		
<b>Project Description Reference(s):</b>	Campus initiated project.. Revised per campus comments		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	125,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 125,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$30,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$30,000		\$20,000
		Contingency: 10.00%	\$3,000		\$2,000
		Totals:	\$33,000		\$22,000
		Engineering: 15.00%	\$8,250		
		Construction Phase: 5.00%	\$2,750		
		Project Management: 6.00%	\$3,300		
		Total Project Cost:	\$69,300		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$69,300	<b>Total Purchased Electricity Savings (kWh/yr):</b>	62,500
<b>Rebate/Incentive*:</b>	\$30,000	<b>Total Purchased Gas Savings (th/yr):</b>	6,203
<b>Net Project Cost:</b>	\$39,300	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$13,336
<b>Net Simple Payback Period (yrs):</b>	2.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3310**

**Project: Replace -20/-30 Lab Freezers with Energy Star Units**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus Wide Project 2. Lab Freezers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2010  
**Scheduled Completion:** 12/15/2011

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	1,217,160
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 1,217,160

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$292,118

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,102,500		\$735,000
		Contingency: 10.00%	\$110,250		\$73,500
		Totals:	\$1,212,750		\$808,500
		Engineering: 15.00%	\$303,188		
		Construction Phase: 5.00%	\$101,063		
		Project Management: 6.00%	\$121,275		
		Total Project Cost:	\$2,546,775		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,546,775	<b>Total Purchased Electricity Savings (kWh/yr):</b>	608,580
<b>Rebate/Incentive*:</b>	\$292,118	<b>Total Purchased Gas Savings (th/yr):</b>	60,395
<b>Net Project Cost:</b>	\$2,254,657	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$129,857
<b>Net Simple Payback Period (yrs):</b>	17.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I3311

**Project:** Replace Copiers with Energy Star w/ Quick Standby Recovery Features

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

### Campus Prioritization and Schedule

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	68,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 68,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$16,320

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$72,000		\$48,000
		Contingency: 10.00%	\$7,200		\$4,800
		Totals:	\$79,200		\$52,800
		Engineering: 15.00%	\$19,800		
		Construction Phase: 5.00%	\$6,600		
		Project Management: 6.00%	\$7,920		
		Total Project Cost:	\$166,320		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$166,320	<b>Total Purchased Electricity Savings (kWh/yr):</b>	34,000
<b>Rebate/Incentive*:</b>	\$16,320	<b>Total Purchased Gas Savings (th/yr):</b>	3,374
<b>Net Project Cost:</b>	\$150,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,255
<b>Net Simple Payback Period (yrs):</b>	20.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3312**

**Project: Replace existing Ice Machines with Energy Star Units**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	57,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 57,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$13,680

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$87,000		\$58,000
		Contingency: 10.00%	\$8,700		\$5,800
		Totals:	\$95,700		\$63,800
		Engineering: 15.00%	\$23,925		
		Construction Phase: 5.00%	\$7,975		
		Project Management: 6.00%	\$9,570		
		Total Project Cost:	\$200,970		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$200,970	<b>Total Purchased Electricity Savings (kWh/yr):</b>	28,500
<b>Rebate/Incentive*:</b>	\$13,680	<b>Total Purchased Gas Savings (th/yr):</b>	2,828
<b>Net Project Cost:</b>	\$187,290	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$6,081
<b>Net Simple Payback Period (yrs):</b>	30.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3313**

**Project: Retrofit All Cold Room Compressors to Energy Star Replacement units.**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	260,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 260,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$62,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$516,000		\$344,000
		Contingency: 10.00%	\$51,600		\$34,400
		Totals:	\$567,600		\$378,400
		Engineering: 15.00%	\$141,900		
		Construction Phase: 5.00%	\$47,300		
		Project Management: 6.00%	\$56,760		
		Total Project Cost:	\$1,191,960		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,191,960	<b>Total Purchased Electricity Savings (kWh/yr):</b>	130,000
<b>Rebate/Incentive*:</b>	\$62,400	<b>Total Purchased Gas Savings (th/yr):</b>	12,901
<b>Net Project Cost:</b>	\$1,129,560	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$27,739
<b>Net Simple Payback Period (yrs):</b>	40.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3314**

**Project: Lab Freezer Replace Remaining ULT Freezers**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Campus Wide Project 2. Lab Freezers.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	650,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 650,000

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$156,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,890,000		\$1,260,000
		Contingency: 10.00%	\$189,000		\$126,000
		Totals:	\$2,079,000		\$1,386,000
		Engineering: 15.00%	\$519,750		
		Construction Phase: 5.00%	\$173,250		
		Project Management: 6.00%	\$207,900		
		Total Project Cost:	\$4,365,900		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,365,900	<b>Total Purchased Electricity Savings (kWh/yr):</b>	325,000
<b>Rebate/Incentive*:</b>	\$156,000	<b>Total Purchased Gas Savings (th/yr):</b>	32,253
<b>Net Project Cost:</b>	\$4,209,900	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$69,347
<b>Net Simple Payback Period (yrs):</b>	60.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3315**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BONNEY RES L

**Building Key:** 09C9081

**Basic Gross Area (sf):** 18,937

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Air Handler Project 6. Convert Air Handlers to Direct Digital Control. Revised per campus comments

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	32,818
<b>Peak Demand (kW):</b>	6.0
<b>Gas (th/yr):</b>	1,515
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 32,818

**Equivalent Gas Savings (th/yr):** 1,515

**Anticipated Gross Incentive:** \$9,391

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$78,000		\$52,000
		Contingency: 10.00%	\$7,800		\$5,200
		Totals:	\$85,800		\$57,200
		Engineering: 15.00%	\$21,450		
		Construction Phase: 5.00%	\$7,150		
		Project Management: 6.00%	\$8,580		
		Total Project Cost:	\$180,180		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$180,180	<b>Total Purchased Electricity Savings (kWh/yr):</b>	21,181
<b>Rebate/Incentive*:</b>	\$9,391	<b>Total Purchased Gas Savings (th/yr):</b>	2,575
<b>Net Project Cost:</b>	\$170,789	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,908
<b>Net Simple Payback Period (yrs):</b>	34.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3316**

**Project: Monitoring Based Commissioning**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BONNEY RES L

**Building Key:** 09C9081

**Basic Gross Area (sf):** 18,937

**Calculation File:** Campus provided estimate savings (4/29/08 Additional Projects List)

**Project Description Reference(s):** Monitoring Based Commissioning.

**Campus Prioritization and Schedule**

**Project Tier:** Tier 1  
**Start Preliminary Engineering:** 6/1/2009  
**Scheduled Completion:** 12/15/2010

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	11,831
<b>Peak Demand (kW):</b>	1.0
<b>Gas (th/yr):</b>	3,824
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies:  
 th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 11,831

**Equivalent Gas Savings (th/yr):** 3,824

**Anticipated Gross Incentive:** \$6,663

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Campus Cost Estimate (60%/40% Split Assumed)	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$10,200		\$6,800
		Contingency: 10.00%	\$1,020		\$680
		Totals:	\$11,220		\$7,480
		Engineering: 15.00%	\$2,805		
		Construction Phase: 5.00%	\$935		
		Project Management: 6.00%	\$1,122		
		Total Project Cost:	\$23,562		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$23,562	<b>Total Purchased Electricity Savings (kWh/yr):</b>	17,961
<b>Rebate/Incentive*:</b>	\$6,663	<b>Total Purchased Gas Savings (th/yr):</b>	2,977
<b>Net Project Cost:</b>	\$16,899	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$4,812
<b>Net Simple Payback Period (yrs):</b>	3.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: 13318

**Project:** Replace stairwell light fixtures with bi-level fixtures with occupancy sensors

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ADMIN BLDG

**Building Key:** 09C9003

**Basic Gross Area (sf):** 101,022

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,300
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,512

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	18	\$106.80	\$1,972	\$160.20	\$3,189
Raw Costs:			\$1,972		\$3,189
City: Anaheim	Sales Tax: 8.25%		\$163		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$256		\$383
City Index Labor Multiplier: 110.6%	Subtotals:		\$2,391		\$3,572
Contingency: 10.00%			\$239		\$357
Totals:			\$2,630		\$3,929
Engineering: 15.00%			\$984		
Construction Phase: 5.00%			\$328		
Project Management: 6.00%			\$394		
Total Project Cost:			\$8,265		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,265	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,150
<b>Rebate/Incentive*:</b>	\$1,512	<b>Total Purchased Gas Savings (th/yr):</b>	313
<b>Net Project Cost:</b>	\$6,753	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$672
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: 13319**

**Project: Replace stairwell light fixtures with bi-level fixtures with occupancy sensors**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CRAWFORD HAL

**Building Key:** 09C9300

**Basic Gross Area (sf):** 57,437

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	3,150
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 3,150

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$756

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	9	\$106.80	\$986	\$160.20	\$1,595
			Raw Costs:	\$986	\$1,595
City: Anaheim		Sales Tax: 8.25%	\$81		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$128		\$191
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,196		\$1,786
		Contingency: 10.00%	\$120		\$179
		Totals:	\$1,315		\$1,965
		Engineering: 15.00%	\$492		
		Construction Phase: 5.00%	\$164		
		Project Management: 6.00%	\$197		
		Total Project Cost:	\$4,133		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,133	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,575
<b>Rebate/Incentive*:</b>	\$756	<b>Total Purchased Gas Savings (th/yr):</b>	156
<b>Net Project Cost:</b>	\$3,377	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$336
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3320**

**Project: Replace stairwell light fixtures with bi-level fixtures with occupancy sensors**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** LANGSON LIB

**Building Key:** 09C9001

**Basic Gross Area (sf):** 150,883

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,300
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,512

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	18	\$106.80	\$1,972	\$160.20	\$3,189
Raw Costs:			\$1,972		\$3,189
City: Anaheim	Sales Tax: 8.25%		\$163		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$256		\$383
City Index Labor Multiplier: 110.6%	Subtotals:		\$2,391		\$3,572
Contingency: 10.00%			\$239		\$357
Totals:			\$2,630		\$3,929
Engineering: 15.00%			\$984		
Construction Phase: 5.00%			\$328		
Project Management: 6.00%			\$394		
Total Project Cost:			\$8,265		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,265	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,150
<b>Rebate/Incentive*:</b>	\$1,512	<b>Total Purchased Gas Savings (th/yr):</b>	313
<b>Net Project Cost:</b>	\$6,753	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$672
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: **I3321**

**Project:** Replace stairwell light fixtures with bi-level fixtures with occupancy sensors

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MCGAUGH HALL

**Building Key:** 09C9084

**Basic Gross Area (sf):** 213,717

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	6,300
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 6,300

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,512

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	18	\$106.80	\$1,972	\$160.20	\$3,189
Raw Costs:			\$1,972		\$3,189
City: Anaheim		Sales Tax: 8.25%	\$163		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$256		\$383
City Index Labor Multiplier: 110.6%		Subtotals:	\$2,391		\$3,572
		Contingency: 10.00%	\$239		\$357
		Totals:	\$2,630		\$3,929
		Engineering: 15.00%	\$984		
		Construction Phase: 5.00%	\$328		
		Project Management: 6.00%	\$394		
		Total Project Cost:	\$8,265		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$8,265	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,150
<b>Rebate/Incentive*:</b>	\$1,512	<b>Total Purchased Gas Savings (th/yr):</b>	313
<b>Net Project Cost:</b>	\$6,753	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$672
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3322

**Project:** Replace stairwell light fixtures with bi-level fixtures with occupancy sensors

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI A

**Building Key:** 09C9325

**Basic Gross Area (sf):** 13,418

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	2,100
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 2,100

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$504

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	6	\$106.80	\$657	\$160.20	\$1,063
Raw Costs:			\$657		\$1,063
City: Anaheim	Sales Tax: 8.25%		\$54		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$85		\$128
City Index Labor Multiplier: 110.6%	Subtotals:		\$797		\$1,191
Contingency: 10.00%			\$80		\$119
Totals:			\$877		\$1,310
Engineering: 15.00%			\$328		
Construction Phase: 5.00%			\$109		
Project Management: 6.00%			\$131		
Total Project Cost:			\$2,755		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,755	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,050
<b>Rebate/Incentive*:</b>	\$504	<b>Total Purchased Gas Savings (th/yr):</b>	104
<b>Net Project Cost:</b>	\$2,251	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$224
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3323**

**Project: Replace stairwell light fixtures with bi-level fixtures with occupancy sensors**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI B

**Building Key:** 09C9328

**Basic Gross Area (sf):** 35,864

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	3,150
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 3,150

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$756

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	9	\$106.80	\$986	\$160.20	\$1,595
Raw Costs:			\$986		\$1,595
City: Anaheim		Sales Tax: 8.25%	\$81		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$128		\$191
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,196		\$1,786
		Contingency: 10.00%	\$120		\$179
		Totals:	\$1,315		\$1,965
		Engineering: 15.00%	\$492		
		Construction Phase: 5.00%	\$164		
		Project Management: 6.00%	\$197		
		Total Project Cost:	\$4,133		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,133	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,575
<b>Rebate/Incentive*:</b>	\$756	<b>Total Purchased Gas Savings (th/yr):</b>	156
<b>Net Project Cost:</b>	\$3,377	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$336
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3324

**Project:** Replace stairwell light fixtures with bi-level fixtures with occupancy sensors

**Campus:** IRVINE

**Location:** IRVINE

**Campus Prioritization and Schedule**

**Building:** MED SCI C

**Project Tier:** Backup

**Building Key:** 09C9322

**Start Preliminary Engineering:**

**Basic Gross Area (sf):** 55,853

**Scheduled Completion:**

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	3,150
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 3,150

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$756

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	9	\$106.80	\$986	\$160.20	\$1,595
			Raw Costs:	\$986	\$1,595
City: Anaheim		Sales Tax: 8.25%	\$81		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$128		\$191
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,196		\$1,786
		Contingency: 10.00%	\$120		\$179
		Totals:	\$1,315		\$1,965
		Engineering: 15.00%	\$492		
		Construction Phase: 5.00%	\$164		
		Project Management: 6.00%	\$197		
		Total Project Cost:	\$4,133		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$4,133	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,575
<b>Rebate/Incentive*:</b>	\$756	<b>Total Purchased Gas Savings (th/yr):</b>	156
<b>Net Project Cost:</b>	\$3,377	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$336
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

SEP Project ID Number: I3325

**Project:** Replace stairwell light fixtures with bi-level fixtures with occupancy sensors

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MED SCI D

**Building Key:** 09C9323

**Basic Gross Area (sf):** 71,959

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	4,200
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,200

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,008

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	12	\$106.80	\$1,315	\$160.20	\$2,126
Raw Costs:			\$1,315		\$2,126
City: Anaheim		Sales Tax: 8.25%	\$108		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$171		\$255
City Index Labor Multiplier: 110.6%		Subtotals:	\$1,594		\$2,381
		Contingency: 10.00%	\$159		\$238
		Totals:	\$1,754		\$2,619
		Engineering: 15.00%	\$656		
		Construction Phase: 5.00%	\$219		
		Project Management: 6.00%	\$262		
		Total Project Cost:	\$5,510		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$5,510	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,100
<b>Rebate/Incentive*:</b>	\$1,008	<b>Total Purchased Gas Savings (th/yr):</b>	208
<b>Net Project Cost:</b>	\$4,502	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$448
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3326**

**Project: Replace stairwell light fixtures with bi-level fixtures with occupancy sensors**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** M SCI & TECH

**Building Key:** 09C9114

**Basic Gross Area (sf):** 63,111

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	2,100
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 2,100

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$504

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	6	\$106.80	\$657	\$160.20	\$1,063
			<b>Raw Costs:</b>		<b>\$1,063</b>
City: Anaheim		Sales Tax: 8.25%	\$54		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$85		\$128
		<b>Subtotals:</b>	<b>\$797</b>		<b>\$1,191</b>
City Index Labor Multiplier: 110.6%		Contingency: 10.00%	\$80		\$119
		<b>Totals:</b>	<b>\$877</b>		<b>\$1,310</b>
		Engineering: 15.00%	\$328		
		Construction Phase: 5.00%	\$109		
		Project Management: 6.00%	\$131		
		<b>Total Project Cost:</b>	<b>\$2,755</b>		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$2,755	<b>Total Purchased Electricity Savings (kWh/yr):</b>	1,050
<b>Rebate/Incentive*:</b>	\$504	<b>Total Purchased Gas Savings (th/yr):</b>	104
<b>Net Project Cost:</b>	\$2,251	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$224
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

SEP Project ID Number: I3327

**Project:** Replace stairwell light fixtures with bi-level fixtures with occupancy sensors

**Campus:** IRVINE

**Location:** IRVINE

**Building:** NAT SCI 2

**Building Key:** 09C9091

**Basic Gross Area (sf):** 136,305

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,250
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 5,250

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,260

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	15	\$106.80	\$1,644	\$160.20	\$2,658
			<b>Raw Costs:</b>		<b>\$2,658</b>
City: Anaheim		Sales Tax: 8.25%	\$136		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$214		\$319
City Index Labor Multiplier: 110.6%		<b>Subtotals:</b>	<b>\$1,993</b>		<b>\$2,977</b>
		Contingency: 10.00%	\$199		\$298
		<b>Totals:</b>	<b>\$2,192</b>		<b>\$3,274</b>
		Engineering: 15.00%	\$820		
		Construction Phase: 5.00%	\$273		
		Project Management: 6.00%	\$328		
		<b>Total Project Cost:</b>	<b>\$6,888</b>		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,888	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,625
<b>Rebate/Incentive*:</b>	\$1,260	<b>Total Purchased Gas Savings (th/yr):</b>	261
<b>Net Project Cost:</b>	\$5,628	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$560
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3328**

**Project: Replace stairwell light fixtures with bi-level fixtures with occupancy sensors**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL A

**Building Key:** 09C9212

**Basic Gross Area (sf):** 46,479

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,250
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 5,250

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,260

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	15	\$106.80	\$1,644	\$160.20	\$2,658
Raw Costs:			\$1,644		\$2,658
City: Anaheim	Sales Tax: 8.25%		\$136		N/A
City Index Material Multiplier: 102.6%	Contractor O&P: 12.00%		\$214		\$319
City Index Labor Multiplier: 110.6%	Subtotals:		\$1,993		\$2,977
Contingency: 10.00%			\$199		\$298
Totals:			\$2,192		\$3,274
Engineering: 15.00%			\$820		
Construction Phase: 5.00%			\$273		
Project Management: 6.00%			\$328		
Total Project Cost:			\$6,888		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,888	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,625
<b>Rebate/Incentive*:</b>	\$1,260	<b>Total Purchased Gas Savings (th/yr):</b>	261
<b>Net Project Cost:</b>	\$5,628	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$560
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3329**

**Project: Replace stairwell light fixtures with bi-level fixtures with occupancy sensors**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC SCI PL B

**Building Key:** 09C9221

**Basic Gross Area (sf):** 49,078

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,250
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 5,250

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,260

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	15	\$106.80	\$1,644	\$160.20	\$2,658
			<b>Raw Costs:</b>		<b>\$2,658</b>
City: Anaheim		Sales Tax: 8.25%	\$136		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$214		\$319
City Index Labor Multiplier: 110.6%		<b>Subtotals:</b>	<b>\$1,993</b>		<b>\$2,977</b>
		Contingency: 10.00%	\$199		\$298
		<b>Totals:</b>	<b>\$2,192</b>		<b>\$3,274</b>
		Engineering: 15.00%	\$820		
		Construction Phase: 5.00%	\$273		
		Project Management: 6.00%	\$328		
		<b>Total Project Cost:</b>	<b>\$6,888</b>		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,888	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,625
<b>Rebate/Incentive*:</b>	\$1,260	<b>Total Purchased Gas Savings (th/yr):</b>	261
<b>Net Project Cost:</b>	\$5,628	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$560
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3330**

**Project: Replace stairwell light fixtures with bi-level fixtures with occupancy sensors**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SPRAGUE HALL

**Building Key:** 09C9087

**Basic Gross Area (sf):** 90,211

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	4,200
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,200

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,008

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	12	\$106.80	\$1,315	\$160.20	\$2,126
			<b>Raw Costs:</b>		\$2,126
City: Anaheim		Sales Tax: 8.25%	\$108		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$171		\$255
City Index Labor Multiplier: 110.6%		<b>Subtotals:</b>	\$1,594		\$2,381
		Contingency: 10.00%	\$159		\$238
		<b>Totals:</b>	\$1,754		\$2,619
		Engineering: 15.00%	\$656		
		Construction Phase: 5.00%	\$219		
		Project Management: 6.00%	\$262		
		<b>Total Project Cost:</b>	\$5,510		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$5,510	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,100
<b>Rebate/Incentive*:</b>	\$1,008	<b>Total Purchased Gas Savings (th/yr):</b>	208
<b>Net Project Cost:</b>	\$4,502	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$448
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3331**

**Project: Replace stairwell light fixtures with bi-level fixtures with occupancy sensors**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** UCI STU CNTR

**Building Key:** 09C9005

**Basic Gross Area (sf):** 164,042

**Calculation File:** UCI Bi-level Stairwell Lighting Custom Calc AML 043008 Checked TLH.xls

**Project Description Reference(s):** Lighting Project 3. Stairwell Lighting.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	4,200
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

<b>Assumed Incentive Rates:</b>	<b>Central Plant Efficiencies:</b>
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 4,200

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,008

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Bi-level stairwell fixture with occupancy sensor	12	\$106.80	\$1,315	\$160.20	\$2,126
			<b>Raw Costs:</b>		\$2,126
City: Anaheim		Sales Tax: 8.25%	\$108		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$171		\$255
City Index Labor Multiplier: 110.6%		<b>Subtotals:</b>	\$1,594		\$2,381
		Contingency: 10.00%	\$159		\$238
		<b>Totals:</b>	\$1,754		\$2,619
		Engineering: 15.00%	\$656		
		Construction Phase: 5.00%	\$219		
		Project Management: 6.00%	\$262		
		<b>Total Project Cost:</b>	\$5,510		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$5,510	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,100
<b>Rebate/Incentive*:</b>	\$1,008	<b>Total Purchased Gas Savings (th/yr):</b>	208
<b>Net Project Cost:</b>	\$4,502	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$448
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3332**

**Project: Aircuity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BONNEY RES L

**Building Key:** 09C9081

**Basic Gross Area (sf):** 18,937

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	220,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	15,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 220,000

**Equivalent Gas Savings (th/yr):** 15,000

**Anticipated Gross Incentive:** \$67,800

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$99,567		\$66,378
		Contingency: 10.00%	\$9,957		\$6,638
		Totals:	\$109,524		\$73,016
		Engineering: 15.00%	\$27,381		
		Construction Phase: 5.00%	\$9,127		
		Project Management: 6.00%	\$10,952		
		Total Project Cost:	\$230,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$230,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	157,250
<b>Rebate/Incentive*:</b>	\$67,800	<b>Total Purchased Gas Savings (th/yr):</b>	20,291
<b>Net Project Cost:</b>	\$162,200	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$37,396
<b>Net Simple Payback Period (yrs):</b>	4.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3333**

**Project: CAV to VAV**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BONNEY RES L

**Building Key:** 09C9081

**Basic Gross Area (sf):** 18,937

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

## Campus Prioritization and Schedule

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	300,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	20,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 300,000

**Equivalent Gas Savings (th/yr):** 20,000

**Anticipated Gross Incentive:** \$92,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$216,450		\$144,300
		Contingency: 10.00%	\$21,645		\$14,430
		Totals:	\$238,095		\$158,730
		Engineering: 15.00%	\$59,524		
		Construction Phase: 5.00%	\$19,841		
		Project Management: 6.00%	\$23,810		
		Total Project Cost:	\$500,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$500,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	213,000
<b>Rebate/Incentive*:</b>	\$92,000	<b>Total Purchased Gas Savings (th/yr):</b>	27,386
<b>Net Project Cost:</b>	\$408,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$50,573
<b>Net Simple Payback Period (yrs):</b>	8.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3334**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BONNEY RES L

**Building Key:** 09C9081

**Basic Gross Area (sf):** 18,937

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	75,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	1,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 75,000

**Equivalent Gas Savings (th/yr):** 1,000

**Anticipated Gross Incentive:** \$19,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$32,468		\$21,645
		Contingency: 10.00%	\$3,247		\$2,165
		Totals:	\$35,714		\$23,810
		Engineering: 15.00%	\$8,929		
		Construction Phase: 5.00%	\$2,976		
		Project Management: 6.00%	\$3,571		
		Total Project Cost:	\$75,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$75,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	40,650
<b>Rebate/Incentive*:</b>	\$19,000	<b>Total Purchased Gas Savings (th/yr):</b>	4,347
<b>Net Project Cost:</b>	\$56,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,930
<b>Net Simple Payback Period (yrs):</b>	6.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3335**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CROUL HALL

**Building Key:** 09C9115

**Basic Gross Area (sf):** 66,170

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	85,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	1,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 85,000

**Equivalent Gas Savings (th/yr):** 1,000

**Anticipated Gross Incentive:** \$21,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$36,797		\$24,531
		Contingency: 10.00%	\$3,680		\$2,453
		Totals:	\$40,476		\$26,984
		Engineering: 15.00%	\$10,119		
		Construction Phase: 5.00%	\$3,373		
		Project Management: 6.00%	\$4,048		
		Total Project Cost:	\$85,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$85,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	45,650
<b>Rebate/Incentive*:</b>	\$21,400	<b>Total Purchased Gas Savings (th/yr):</b>	4,843
<b>Net Project Cost:</b>	\$63,600	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,997
<b>Net Simple Payback Period (yrs):</b>	6.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3336**

**Project: Additional Aircurity in Labs**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CROUL HALL

**Building Key:** 09C9115

**Basic Gross Area (sf):** 66,170

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	100,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	20,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 100,000

**Equivalent Gas Savings (th/yr):** 20,000

**Anticipated Gross Incentive:** \$44,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$64,935		\$43,290
		Contingency: 10.00%	\$6,494		\$4,329
		Totals:	\$71,429		\$47,619
		Engineering: 15.00%	\$17,857		
		Construction Phase: 5.00%	\$5,952		
		Project Management: 6.00%	\$7,143		
		Total Project Cost:	\$150,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$150,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	113,000
<b>Rebate/Incentive*:</b>	\$44,000	<b>Total Purchased Gas Savings (th/yr):</b>	17,462
<b>Net Project Cost:</b>	\$106,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$29,235
<b>Net Simple Payback Period (yrs):</b>	3.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3337**

**Project: Aircuity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG TOWER

**Building Key:** 09C9125

**Basic Gross Area (sf):** 113,941

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	300,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	60,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 300,000

**Equivalent Gas Savings (th/yr):** 60,000

**Anticipated Gross Incentive:** \$132,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$194,805		\$129,870
		Contingency: 10.00%	\$19,481		\$12,987
		Totals:	\$214,286		\$142,857
		Engineering: 15.00%	\$53,571		
		Construction Phase: 5.00%	\$17,857		
		Project Management: 6.00%	\$21,429		
		Total Project Cost:	\$450,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$450,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	339,000
<b>Rebate/Incentive*:</b>	\$132,000	<b>Total Purchased Gas Savings (th/yr):</b>	52,386
<b>Net Project Cost:</b>	\$318,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$87,705
<b>Net Simple Payback Period (yrs):</b>	3.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3338**

**Project: DM Component of Exhaust Fan Replacement**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	ENG TOWER	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09C9125	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>	113,941	<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	300,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	8,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	300,000
<b>Equivalent Gas Savings (th/yr):</b>	8,000
<b>Anticipated Gross Incentive:</b>	\$80,000
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$367,965		\$245,310
		Contingency: 10.00%	\$36,797		\$24,531
		Totals:	\$404,762		\$269,841
		Engineering: 15.00%	\$101,190		
		Construction Phase: 5.00%	\$33,730		
		Project Management: 6.00%	\$40,476		
		Total Project Cost:	\$850,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$850,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	175,200
<b>Rebate/Incentive*:</b>	\$80,000	<b>Total Purchased Gas Savings (th/yr):</b>	19,886
<b>Net Project Cost:</b>	\$770,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$39,433
<b>Net Simple Payback Period (yrs):</b>	19.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3339**

**Project: CAV to VAV**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG GATEWAY

**Building Key:** 09C9140

**Basic Gross Area (sf):** 132,090

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	450,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	89,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 450,000

**Equivalent Gas Savings (th/yr):** 89,000

**Anticipated Gross Incentive:** \$197,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$649,351		\$432,900
		Contingency: 10.00%	\$64,935		\$43,290
		Totals:	\$714,286		\$476,190
		Engineering: 15.00%	\$178,571		
		Construction Phase: 5.00%	\$59,524		
		Project Management: 6.00%	\$71,429		
		Total Project Cost:	\$1,500,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,500,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	505,350
<b>Rebate/Incentive*:</b>	\$197,000	<b>Total Purchased Gas Savings (th/yr):</b>	77,954
<b>Net Project Cost:</b>	\$1,303,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$130,628
<b>Net Simple Payback Period (yrs):</b>	10.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3340**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG GATEWAY

**Building Key:** 09C9140

**Basic Gross Area (sf):** 132,090

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	80,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	1,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 80,000

**Equivalent Gas Savings (th/yr):** 1,000

**Anticipated Gross Incentive:** \$20,200

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$43,290		\$28,860
		Contingency: 10.00%	\$4,329		\$2,886
		Totals:	\$47,619		\$31,746
		Engineering: 15.00%	\$11,905		
		Construction Phase: 5.00%	\$3,968		
		Project Management: 6.00%	\$4,762		
		Total Project Cost:	\$100,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$100,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	43,150
<b>Rebate/Incentive*:</b>	\$20,200	<b>Total Purchased Gas Savings (th/yr):</b>	4,595
<b>Net Project Cost:</b>	\$79,800	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,463
<b>Net Simple Payback Period (yrs):</b>	8.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3341**

**Project: Aircuity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ENG GATEWAY

**Building Key:** 09C9140

**Basic Gross Area (sf):** 132,090

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	175,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	35,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 175,000

**Equivalent Gas Savings (th/yr):** 35,000

**Anticipated Gross Incentive:** \$77,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$97,403		\$64,935
		Contingency: 10.00%	\$9,740		\$6,494
		Totals:	\$107,143		\$71,429
		Engineering: 15.00%	\$26,786		
		Construction Phase: 5.00%	\$8,929		
		Project Management: 6.00%	\$10,714		
		Total Project Cost:	\$225,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$225,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	197,750
<b>Rebate/Incentive*:</b>	\$77,000	<b>Total Purchased Gas Savings (th/yr):</b>	30,559
<b>Net Project Cost:</b>	\$148,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$51,161
<b>Net Simple Payback Period (yrs):</b>	2.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3342**

**Project: Zone DDC Controls (Lab Floors)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** GILLESPIE BLD

**Building Key:** 09C9082

**Basic Gross Area (sf):** 82,920

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	35,000
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	7,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 35,000

**Equivalent Gas Savings (th/yr):** 7,000

**Anticipated Gross Incentive:** \$15,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$130,736		\$87,157
		Contingency: 10.00%	\$13,074		\$8,716
		Totals:	\$143,810		\$95,873
		Engineering: 15.00%	\$35,952		
		Construction Phase: 5.00%	\$11,984		
		Project Management: 6.00%	\$14,381		
		Total Project Cost:	\$302,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$302,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	39,550
<b>Rebate/Incentive*:</b>	\$15,400	<b>Total Purchased Gas Savings (th/yr):</b>	6,112
<b>Net Project Cost:</b>	\$286,600	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$10,232
<b>Net Simple Payback Period (yrs):</b>	28.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3343**

**Project: Aircuity (Including Vivarium)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** GILLESPIE BLD

**Building Key:** 09C9082

**Basic Gross Area (sf):** 82,920

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	320,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	62,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 320,000

**Equivalent Gas Savings (th/yr):** 62,000

**Anticipated Gross Incentive:** \$138,800

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$259,740		\$173,160
		Contingency: 10.00%	\$25,974		\$17,316
		Totals:	\$285,714		\$190,476
		Engineering: 15.00%	\$71,429		
		Construction Phase: 5.00%	\$23,810		
		Project Management: 6.00%	\$28,571		
		Total Project Cost:	\$600,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$600,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	355,300
<b>Rebate/Incentive*:</b>	\$138,800	<b>Total Purchased Gas Savings (th/yr):</b>	54,628
<b>Net Project Cost:</b>	\$461,200	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$91,695
<b>Net Simple Payback Period (yrs):</b>	5.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incenti funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3344**

**Project: CAV to VAV**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** GILLESPIE BLD

**Building Key:** 09C9082

**Basic Gross Area (sf):** 82,920

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	198,663
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	2,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 198,663

**Equivalent Gas Savings (th/yr):** 2,000

**Anticipated Gross Incentive:** \$49,679

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$75,758		\$50,505
		Contingency: 10.00%	\$7,576		\$5,051
		Totals:	\$83,333		\$55,556
		Engineering: 15.00%	\$20,833		
		Construction Phase: 5.00%	\$6,944		
		Project Management: 6.00%	\$8,333		
		Total Project Cost:	\$175,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$175,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	105,632
<b>Rebate/Incentive*:</b>	\$49,679	<b>Total Purchased Gas Savings (th/yr):</b>	11,108
<b>Net Project Cost:</b>	\$125,321	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,052
<b>Net Simple Payback Period (yrs):</b>	5.4		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3345**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** GILLESPIE BLD

**Building Key:** 09C9082

**Basic Gross Area (sf):** 82,920

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	82,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	1,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 82,000

**Equivalent Gas Savings (th/yr):** 1,000

**Anticipated Gross Incentive:** \$20,680

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$45,455		\$30,303
		Contingency: 10.00%	\$4,545		\$3,030
		Totals:	\$50,000		\$33,333
		Engineering: 15.00%	\$12,500		
		Construction Phase: 5.00%	\$4,167		
		Project Management: 6.00%	\$5,000		
		Total Project Cost:	\$105,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$105,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	44,150
<b>Rebate/Incentive*:</b>	\$20,680	<b>Total Purchased Gas Savings (th/yr):</b>	4,694
<b>Net Project Cost:</b>	\$84,320	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,677
<b>Net Simple Payback Period (yrs):</b>	8.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3346**

**Project: Aircuity in Vivarium**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MCGAUGH HALL

**Building Key:** 09C9084

**Basic Gross Area (sf):** 213,717

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	400,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	12,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 400,000

**Equivalent Gas Savings (th/yr):** 12,000

**Anticipated Gross Incentive:** \$108,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$140,693		\$93,795
		Contingency: 10.00%	\$14,069		\$9,380
		Totals:	\$154,762		\$103,175
		Engineering: 15.00%	\$38,690		
		Construction Phase: 5.00%	\$12,897		
		Project Management: 6.00%	\$15,476		
		Total Project Cost:	\$325,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$325,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	237,800
<b>Rebate/Incentive*:</b>	\$108,000	<b>Total Purchased Gas Savings (th/yr):</b>	27,348
<b>Net Project Cost:</b>	\$217,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$53,815
<b>Net Simple Payback Period (yrs):</b>	4.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incenti funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3347**

**Project: Lowflow Fume Hoods**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MCGAUGH HALL

**Building Key:** 09C9084

**Basic Gross Area (sf):** 213,717

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	300,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	10,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 300,000

**Equivalent Gas Savings (th/yr):** 10,000

**Anticipated Gross Incentive:** \$82,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$432,900		\$288,600
		Contingency: 10.00%	\$43,290		\$28,860
		Totals:	\$476,190		\$317,460
		Engineering: 15.00%	\$119,048		
		Construction Phase: 5.00%	\$39,683		
		Project Management: 6.00%	\$47,619		
		Total Project Cost:	\$1,000,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,000,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	181,500
<b>Rebate/Incentive*:</b>	\$82,000	<b>Total Purchased Gas Savings (th/yr):</b>	21,136
<b>Net Project Cost:</b>	\$918,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$41,290
<b>Net Simple Payback Period (yrs):</b>	22.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3348**

**Project: Vivarium Efficiency Measures**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MCGAUGH HALL

**Building Key:** 09C9084

**Basic Gross Area (sf):** 213,717

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	250,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	18,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 250,000

**Equivalent Gas Savings (th/yr):** 18,000

**Anticipated Gross Incentive:** \$78,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$151,515		\$101,010
		Contingency: 10.00%	\$15,152		\$10,101
		Totals:	\$166,667		\$111,111
		Engineering: 15.00%	\$41,667		
		Construction Phase: 5.00%	\$13,889		
		Project Management: 6.00%	\$16,667		
		Total Project Cost:	\$350,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$350,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	181,700
<b>Rebate/Incentive*:</b>	\$78,000	<b>Total Purchased Gas Savings (th/yr):</b>	23,655
<b>Net Project Cost:</b>	\$272,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$43,382
<b>Net Simple Payback Period (yrs):</b>	6.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3349**

**Project: DM Component of Exhaust Fan Replacement**

<b>Campus:</b>	IRVINE	
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>
<b>Building:</b>	MCGAUGH HALL	<b>Project Tier:</b> Backup
<b>Building Key:</b>	09C9084	<b>Start Preliminary Engineering:</b>
<b>Basic Gross Area (sf):</b>	213,717	<b>Scheduled Completion:</b>
<b>Calculation File:</b>	Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)	
<b>Project Description Reference(s):</b>	Campus initiated project..	

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	390,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	10,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	390,000
<b>Equivalent Gas Savings (th/yr):</b>	10,000
<b>Anticipated Gross Incentive:</b>	\$103,600
Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.	

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$519,481		\$346,320
		Contingency: 10.00%	\$51,948		\$34,632
		Totals:	\$571,429		\$380,952
		Engineering: 15.00%	\$142,857		
		Construction Phase: 5.00%	\$47,619		
		Project Management: 6.00%	\$57,143		
		Total Project Cost:	\$1,200,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$1,200,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	226,500
<b>Rebate/Incentive*:</b>	\$103,600	<b>Total Purchased Gas Savings (th/yr):</b>	25,602
<b>Net Project Cost:</b>	\$1,096,400	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$50,891
<b>Net Simple Payback Period (yrs):</b>	21.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3350**

**Project: Med Sci A-B-C-D Aircurity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	480,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	70,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 480,000

**Equivalent Gas Savings (th/yr):** 70,000

**Anticipated Gross Incentive:** \$185,200

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$337,662		\$225,108
		Contingency: 10.00%	\$33,766		\$22,511
		Totals:	\$371,429		\$247,619
		Engineering: 15.00%	\$92,857		
		Construction Phase: 5.00%	\$30,952		
		Project Management: 6.00%	\$37,143		
		Total Project Cost:	\$780,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$780,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	460,500
<b>Rebate/Incentive*:</b>	\$185,200	<b>Total Purchased Gas Savings (th/yr):</b>	67,568
<b>Net Project Cost:</b>	\$594,800	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$116,191
<b>Net Simple Payback Period (yrs):</b>	5.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3351**

**Project: Med Sci A-B-C-D Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	100,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	1,100
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 100,000

**Equivalent Gas Savings (th/yr):** 1,100

**Anticipated Gross Incentive:** \$25,100

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$64,935		\$43,290
		Contingency: 10.00%	\$6,494		\$4,329
		Totals:	\$71,429		\$47,619
		Engineering: 15.00%	\$17,857		
		Construction Phase: 5.00%	\$5,952		
		Project Management: 6.00%	\$7,143		
		Total Project Cost:	\$150,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$150,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	53,465
<b>Rebate/Incentive*:</b>	\$25,100	<b>Total Purchased Gas Savings (th/yr):</b>	5,650
<b>Net Project Cost:</b>	\$124,900	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$11,690
<b>Net Simple Payback Period (yrs):</b>	10.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3352**

**Project: Aircuity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** NAT SCI 1

**Building Key:** 09C9090

**Basic Gross Area (sf):** 120,913

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	400,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	65,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 400,000

**Equivalent Gas Savings (th/yr):** 65,000

**Anticipated Gross Incentive:** \$161,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$281,385		\$187,590
		Contingency: 10.00%	\$28,139		\$18,759
		Totals:	\$309,524		\$206,349
		Engineering: 15.00%	\$77,381		
		Construction Phase: 5.00%	\$25,794		
		Project Management: 6.00%	\$30,952		
		Total Project Cost:	\$650,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$650,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	404,750
<b>Rebate/Incentive*:</b>	\$161,000	<b>Total Purchased Gas Savings (th/yr):</b>	60,473
<b>Net Project Cost:</b>	\$489,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$103,015
<b>Net Simple Payback Period (yrs):</b>	4.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3353**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** NAT SCI 1  
**Building Key:** 09C9090  
**Basic Gross Area (sf):** 120,913  
**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)  
**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup  
**Start Preliminary Engineering:**  
**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	90,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	850
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 90,000

**Equivalent Gas Savings (th/yr):** 850

**Anticipated Gross Incentive:** \$22,450

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$58,442		\$38,961
		Contingency: 10.00%	\$5,844		\$3,896
		Totals:	\$64,286		\$42,857
		Engineering: 15.00%	\$16,071		
		Construction Phase: 5.00%	\$5,357		
		Project Management: 6.00%	\$6,429		
		Total Project Cost:	\$135,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$135,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	47,678
<b>Rebate/Incentive*:</b>	\$22,450	<b>Total Purchased Gas Savings (th/yr):</b>	4,997
<b>Net Project Cost:</b>	\$112,550	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$10,391
<b>Net Simple Payback Period (yrs):</b>	10.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incenti funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3354**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** NAT SCI 2

**Building Key:** 09C9091

**Basic Gross Area (sf):** 136,305

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	90,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	850
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 90,000

**Equivalent Gas Savings (th/yr):** 850

**Anticipated Gross Incentive:** \$22,450

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$58,442		\$38,961
		Contingency: 10.00%	\$5,844		\$3,896
		Totals:	\$64,286		\$42,857
		Engineering: 15.00%	\$16,071		
		Construction Phase: 5.00%	\$5,357		
		Project Management: 6.00%	\$6,429		
		Total Project Cost:	\$135,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$135,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	47,678
<b>Rebate/Incentive*:</b>	\$22,450	<b>Total Purchased Gas Savings (th/yr):</b>	4,997
<b>Net Project Cost:</b>	\$112,550	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$10,391
<b>Net Simple Payback Period (yrs):</b>	10.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3355**

**Project: Aircuity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** QURESHEY LAB

**Building Key:** 09C9080

**Basic Gross Area (sf):** 18,900

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	85,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	8,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 85,000

**Equivalent Gas Savings (th/yr):** 8,000

**Anticipated Gross Incentive:** \$28,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$43,290		\$28,860
		Contingency: 10.00%	\$4,329		\$2,886
		Totals:	\$47,619		\$31,746
		Engineering: 15.00%	\$11,905		
		Construction Phase: 5.00%	\$3,968		
		Project Management: 6.00%	\$4,762		
		Total Project Cost:	\$100,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$100,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	67,700
<b>Rebate/Incentive*:</b>	\$28,400	<b>Total Purchased Gas Savings (th/yr):</b>	9,218
<b>Net Project Cost:</b>	\$71,600	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$16,495
<b>Net Simple Payback Period (yrs):</b>	4.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3356**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** QURESHEY LAB

**Building Key:** 09C9080

**Basic Gross Area (sf):** 18,900

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	42,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	4,500
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 42,000

**Equivalent Gas Savings (th/yr):** 4,500

**Anticipated Gross Incentive:** \$14,580

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$49,784		\$33,189
		Contingency: 10.00%	\$4,978		\$3,319
		Totals:	\$54,762		\$36,508
		Engineering: 15.00%	\$13,690		
		Construction Phase: 5.00%	\$4,563		
		Project Management: 6.00%	\$5,476		
		Total Project Cost:	\$115,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$115,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	35,175
<b>Rebate/Incentive*:</b>	\$14,580	<b>Total Purchased Gas Savings (th/yr):</b>	4,897
<b>Net Project Cost:</b>	\$100,420	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$8,658
<b>Net Simple Payback Period (yrs):</b>	11.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3357**

**Project: Aircuity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** REINES HALL

**Building Key:** 09C9108

**Basic Gross Area (sf):** 156,514

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	425,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	27,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 425,000

**Equivalent Gas Savings (th/yr):** 27,000

**Anticipated Gross Incentive:** \$129,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$207,792		\$138,528
		Contingency: 10.00%	\$20,779		\$13,853
		Totals:	\$228,571		\$152,381
		Engineering: 15.00%	\$57,143		
		Construction Phase: 5.00%	\$19,048		
		Project Management: 6.00%	\$22,857		
		Total Project Cost:	\$480,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$480,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	297,550
<b>Rebate/Incentive*:</b>	\$129,000	<b>Total Purchased Gas Savings (th/yr):</b>	37,964
<b>Net Project Cost:</b>	\$351,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$70,407
<b>Net Simple Payback Period (yrs):</b>	5.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3358**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** REINES HALL

**Building Key:** 09C9108

**Basic Gross Area (sf):** 156,514

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	80,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	7,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 80,000

**Equivalent Gas Savings (th/yr):** 7,000

**Anticipated Gross Incentive:** \$26,200

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$75,758		\$50,505
		Contingency: 10.00%	\$7,576		\$5,051
		Totals:	\$83,333		\$55,556
		Engineering: 15.00%	\$20,833		
		Construction Phase: 5.00%	\$6,944		
		Project Management: 6.00%	\$8,333		
		Total Project Cost:	\$175,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$175,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	62,050
<b>Rebate/Incentive*:</b>	\$26,200	<b>Total Purchased Gas Savings (th/yr):</b>	8,345
<b>Net Project Cost:</b>	\$148,800	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$15,033
<b>Net Simple Payback Period (yrs):</b>	9.9		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3359**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ROWLAND HALL

**Building Key:** 09C9100

**Basic Gross Area (sf):** 196,057

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	82,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	7,100
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 82,000

**Equivalent Gas Savings (th/yr):** 7,100

**Anticipated Gross Incentive:** \$26,780

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$80,087		\$53,391
		Contingency: 10.00%	\$8,009		\$5,339
		Totals:	\$88,095		\$58,730
		Engineering: 15.00%	\$22,024		
		Construction Phase: 5.00%	\$7,341		
		Project Management: 6.00%	\$8,810		
		Total Project Cost:	\$185,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$185,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	63,365
<b>Rebate/Incentive*:</b>	\$26,780	<b>Total Purchased Gas Savings (th/yr):</b>	8,506
<b>Net Project Cost:</b>	\$158,220	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$15,339
<b>Net Simple Payback Period (yrs):</b>	10.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3360**

**Project: Aircurity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ROWLAND HALL

**Building Key:** 09C9100

**Basic Gross Area (sf):** 196,057

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	475,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	34,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 475,000

**Equivalent Gas Savings (th/yr):** 34,000

**Anticipated Gross Incentive:** \$148,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$259,740		\$173,160
		Contingency: 10.00%	\$25,974		\$17,316
		Totals:	\$285,714		\$190,476
		Engineering: 15.00%	\$71,429		
		Construction Phase: 5.00%	\$23,810		
		Project Management: 6.00%	\$28,571		
		Total Project Cost:	\$600,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$600,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	344,600
<b>Rebate/Incentive*:</b>	\$148,000	<b>Total Purchased Gas Savings (th/yr):</b>	44,820
<b>Net Project Cost:</b>	\$452,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$82,239
<b>Net Simple Payback Period (yrs):</b>	5.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3361**

**Project: Zone DDC Upgrade**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY

**Building Key:** 09C9128

**Basic Gross Area (sf):** 55,000

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	55,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	1,800
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 55,000

**Equivalent Gas Savings (th/yr):** 1,800

**Anticipated Gross Incentive:** \$15,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$129,870		\$86,580
		Contingency: 10.00%	\$12,987		\$8,658
		Totals:	\$142,857		\$95,238
		Engineering: 15.00%	\$35,714		
		Construction Phase: 5.00%	\$11,905		
		Project Management: 6.00%	\$14,286		
		Total Project Cost:	\$300,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$300,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	33,170
<b>Rebate/Incentive*:</b>	\$15,000	<b>Total Purchased Gas Savings (th/yr):</b>	3,854
<b>Net Project Cost:</b>	\$285,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,539
<b>Net Simple Payback Period (yrs):</b>	37.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3362**

**Project: Aircuity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY2

**Building Key:** 09C9222

**Basic Gross Area (sf):** 35,753

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	185,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	19,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 185,000

**Equivalent Gas Savings (th/yr):** 19,000

**Anticipated Gross Incentive:** \$63,400

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$119,048		\$79,365
		Contingency: 10.00%	\$11,905		\$7,937
		Totals:	\$130,952		\$87,302
		Engineering: 15.00%	\$32,738		
		Construction Phase: 5.00%	\$10,913		
		Project Management: 6.00%	\$13,095		
		Total Project Cost:	\$275,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$275,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	152,350
<b>Rebate/Incentive*:</b>	\$63,400	<b>Total Purchased Gas Savings (th/yr):</b>	21,055
<b>Net Project Cost:</b>	\$211,600	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$37,375
<b>Net Simple Payback Period (yrs):</b>	5.7		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3363**

**Project: Exhaust Stack Discharge Reduction**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SOC ECOLOGY2

**Building Key:** 09C9222

**Basic Gross Area (sf):** 35,753

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	50,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	5,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 50,000

**Equivalent Gas Savings (th/yr):** 5,000

**Anticipated Gross Incentive:** \$17,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$54,113		\$36,075
		Contingency: 10.00%	\$5,411		\$3,608
		Totals:	\$59,524		\$39,683
		Engineering: 15.00%	\$14,881		
		Construction Phase: 5.00%	\$4,960		
		Project Management: 6.00%	\$5,952		
		Total Project Cost:	\$125,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$125,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	40,750
<b>Rebate/Incentive*:</b>	\$17,000	<b>Total Purchased Gas Savings (th/yr):</b>	5,606
<b>Net Project Cost:</b>	\$108,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,976
<b>Net Simple Payback Period (yrs):</b>	10.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3364**

**Project: Aircuity**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** STEINHAUS H

**Building Key:** 09C9075

**Basic Gross Area (sf):** 107,521

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	400,000
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	20,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 400,000

**Equivalent Gas Savings (th/yr):** 20,000

**Anticipated Gross Incentive:** \$116,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$183,983		\$122,655
		Contingency: 10.00%	\$18,398		\$12,266
		Totals:	\$202,381		\$134,921
		Engineering: 15.00%	\$50,595		
		Construction Phase: 5.00%	\$16,865		
		Project Management: 6.00%	\$20,238		
		Total Project Cost:	\$425,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$425,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	263,000
<b>Rebate/Incentive*:</b>	\$116,000	<b>Total Purchased Gas Savings (th/yr):</b>	32,348
<b>Net Project Cost:</b>	\$309,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$61,241
<b>Net Simple Payback Period (yrs):</b>	5.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3365**

**Project: Solar Hot Water for Showers and Laundry**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE		<b>Campus Prioritization and Schedule</b>
<b>Building:</b>	CRAWFORD HAL	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09C9300	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>	57,437	<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	10,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 10,000

**Anticipated Gross Incentive:** \$10,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$51,948		\$34,632
		Contingency: 10.00%	\$5,195		\$3,463
		Totals:	\$57,143		\$38,095
		Engineering: 15.00%	\$14,286		
		Construction Phase: 5.00%	\$4,762		
		Project Management: 6.00%	\$5,714		
		Total Project Cost:	\$120,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$120,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	31,500
<b>Rebate/Incentive*:</b>	\$10,000	<b>Total Purchased Gas Savings (th/yr):</b>	6,250
<b>Net Project Cost:</b>	\$110,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,283
<b>Net Simple Payback Period (yrs):</b>	11.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incenti funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3366**

**Project: Solar Hot Water for Showers and Laundry**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	ANT REC CTR	<b>Project Tier:</b>	Backup
<b>Building Key:</b>	09C9299	<b>Start Preliminary Engineering:</b>	
<b>Basic Gross Area (sf):</b>	89,320	<b>Scheduled Completion:</b>	
<b>Calculation File:</b>	Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)		
<b>Project Description Reference(s):</b>	Campus initiated project..		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	10,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 10,000

**Anticipated Gross Incentive:** \$10,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$51,948		\$34,632
		Contingency: 10.00%	\$5,195		\$3,463
		Totals:	\$57,143		\$38,095
		Engineering: 15.00%	\$14,286		
		Construction Phase: 5.00%	\$4,762		
		Project Management: 6.00%	\$5,714		
		Total Project Cost:	\$120,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$120,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	31,500
<b>Rebate/Incentive*:</b>	\$10,000	<b>Total Purchased Gas Savings (th/yr):</b>	6,250
<b>Net Project Cost:</b>	\$110,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,283
<b>Net Simple Payback Period (yrs):</b>	11.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incenti funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I3367**

**Project: Pool Covers**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** ANT REC CTR

**Building Key:** 09C9299

**Basic Gross Area (sf):** 89,320

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	11,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 11,000

**Anticipated Gross Incentive:** \$11,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$75,758		\$50,505
		Contingency: 10.00%	\$7,576		\$5,051
		Totals:	\$83,333		\$55,556
		Engineering: 15.00%	\$20,833		
		Construction Phase: 5.00%	\$6,944		
		Project Management: 6.00%	\$8,333		
		Total Project Cost:	\$175,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$175,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	34,650
<b>Rebate/Incentive*:</b>	\$11,000	<b>Total Purchased Gas Savings (th/yr):</b>	6,875
<b>Net Project Cost:</b>	\$164,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$10,211
<b>Net Simple Payback Period (yrs):</b>	16.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incenti funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3368**

**Project: Pool Covers**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CRAWFORD HAL

**Building Key:** 09C9300

**Basic Gross Area (sf):** 57,437

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	8,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 8,000

**Anticipated Gross Incentive:** \$8,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$60,606		\$40,404
		Contingency: 10.00%	\$6,061		\$4,040
		Totals:	\$66,667		\$44,444
		Engineering: 15.00%	\$16,667		
		Construction Phase: 5.00%	\$5,556		
		Project Management: 6.00%	\$6,667		
		Total Project Cost:	\$140,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$140,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	25,200
<b>Rebate/Incentive*:</b>	\$8,000	<b>Total Purchased Gas Savings (th/yr):</b>	5,000
<b>Net Project Cost:</b>	\$132,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$7,426
<b>Net Simple Payback Period (yrs):</b>	17.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3369**

**Project: Air Curtain at Loading Dock**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** MCGAUGH HALL

**Building Key:** 09C9084

**Basic Gross Area (sf):** 213,717

**Calculation File:** Campus provided estimate savings (Project to be added to SEP 05.20.08.xls)

**Project Description Reference(s):** Campus initiated project..

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	0
<b>Peak Demand (kW):</b>	
<b>Gas (th/yr):</b>	2,000
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 0

**Equivalent Gas Savings (th/yr):** 2,000

**Anticipated Gross Incentive:** \$2,000

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Constructino Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$7,792		\$5,195
		Contingency: 10.00%	\$779		\$519
		Totals:	\$8,571		\$5,714
		Engineering: 15.00%	\$2,143		
		Construction Phase: 5.00%	\$714		
		Project Management: 6.00%	\$857		
		Total Project Cost:	\$18,000		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$18,000	<b>Total Purchased Electricity Savings (kWh/yr):</b>	6,300
<b>Rebate/Incentive*:</b>	\$2,000	<b>Total Purchased Gas Savings (th/yr):</b>	1,250
<b>Net Project Cost:</b>	\$16,000	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$1,857
<b>Net Simple Payback Period (yrs):</b>	8.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3555**

**Project: Install controller on vending machine (e.g. Vending Miser)**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CAMPUSWIDE

**Building Key:** 09CWIDE

**Basic Gross Area (sf):**

**Calculation File:** Vending Machine Energy Savings by Campus 20080327 JCR.xls

**Project Description Reference(s):** Campus Wide Project 5. Install Controllers on Vending Machines .

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	5,241
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 5,241

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,258

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Vending Miser-Uncooled Snack Machine	15				
Vending Miser - Refrigerated Unit	31				
Cooling Miser - Uncooled Self Serve Sliding Door	39				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$13,383		\$2,913
		Contingency: 10.00%	\$1,338		\$291
		Totals:	\$14,721		\$3,204
		Engineering: 15.00%	\$2,689		
		Construction Phase: 5.00%	\$896		
		Project Management: 6.00%	\$1,076		
		Total Project Cost:	\$22,586		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$22,586	<b>Total Purchased Electricity Savings (kWh/yr):</b>	2,621
<b>Rebate/Incentive*:</b>	\$1,258	<b>Total Purchased Gas Savings (th/yr):</b>	260
<b>Net Project Cost:</b>	\$21,328	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$559
<b>Net Simple Payback Period (yrs):</b>	38.1		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3556**

**Project: Retrofit 32W T8 lamps with w/ 28W T8 lamps & Prem Eff RLO Ballast; Retrofit 32W T8 lamps with w/ 28W T8 lamps & Prem Eff NLO Ballast in high light areas; Add Occupancy Sensors and Daylighting**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	STDT HLTH CT	<b>Project Tier:</b>	Tier 1
<b>Building Key:</b>	09C9201	<b>Start Preliminary Engineering:</b>	6/1/2009
<b>Basic Gross Area (sf):</b>	14,558	<b>Scheduled Completion:</b>	12/15/2010
<b>Calculation File:</b>	UCI MC All Building List - Lighting Analysis 20080327 Checked AML.xls		
<b>Project Description Reference(s):</b>	Lighting Project 1. Interior Linear Fluorescent Lighting & Lighting Project 2. Interior Lighting Controls.		

## Project Energy Savings Summary

Building Energy Savings	
<b>Electric (kWh/yr):</b>	29,608
<b>Peak Demand (kW):</b>	7.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

## Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 29,608

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$7,106

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
4-foot F32T8 Lamps, Standard NLO Ballasts --> 28W T8 Lamps,	1	\$3,441.60	\$3,531	\$4,833.71	\$5,346
Daylighting	1	\$100.54	\$103	\$262.29	\$290
4-foot F32T8 Lamps, Standard NLO Ballasts [high intensity] --> 2	1	\$202.45	\$208	\$284.34	\$314
Occupancy Sensors	1	\$1,915.02	\$1,965	\$1,536.96	\$1,700
Raw Costs:			\$5,807		\$7,651
City: Anaheim		Sales Tax: 8.25%	\$479		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$754		\$918
City Index Labor Multiplier: 110.6%		Subtotals:	\$7,040		\$8,569
		Contingency: 10.00%	\$704		\$857
		Totals:	\$7,744		\$9,425
		Engineering: 15.00%	\$2,575		
		Construction Phase: 5.00%	\$858		
		Project Management: 6.00%	\$1,030		
		Total Project Cost:	\$21,634		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$21,634	<b>Total Purchased Electricity Savings (kWh/yr):</b>	14,804
<b>Rebate/Incentive*:</b>	\$7,106	<b>Total Purchased Gas Savings (th/yr):</b>	1,469
<b>Net Project Cost:</b>	\$14,528	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$3,159
<b>Net Simple Payback Period (yrs):</b>	4.6		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I3558**

**Project: Replace Old CRAC Units with New CRAC Units, Install Air Side Economizer & Separate Hot & Cold Aisle**

<b>Campus:</b>	IRVINE	
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>
<b>Building:</b>	ENG GATEWAY	<b>Project Tier:</b>
<b>Building Key:</b>	09C9140	<b>Start Preliminary Engineering:</b>
<b>Basic Gross Area (sf):</b>	132,090	<b>Scheduled Completion:</b>
<b>Calculation File:</b>	UCI CRAC Units.xls	
<b>Project Description Reference(s):</b>	UCI Custom Project 4. Replace Old CRAC units with New CRAC units, Separate Hot and Cold Aisles and Add Air Side Economizer.	

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	91,104
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 91,104

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$21,865

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$60,000		\$40,000
		Contingency: 10.00%	\$6,000		\$4,000
		Totals:	\$66,000		\$44,000
		Engineering: 15.00%	\$16,500		
		Construction Phase: 5.00%	\$5,500		
		Project Management: 6.00%	\$6,600		
		Total Project Cost:	\$138,600		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$138,600	<b>Total Purchased Electricity Savings (kWh/yr):</b>	45,552
<b>Rebate/Incentive*:</b>	\$21,865	<b>Total Purchased Gas Savings (th/yr):</b>	4,521
<b>Net Project Cost:</b>	\$116,735	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$9,720
<b>Net Simple Payback Period (yrs):</b>	12.0		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I6001**

**Project: CW Reset & MBCx Chiller Plant(in addition to MBCx of Building)**

<b>Campus:</b>	IRVINE		
<b>Location:</b>	IRVINE	<b>Campus Prioritization and Schedule</b>	
<b>Building:</b>	ANT REC CTR	<b>Project Tier:</b>	Tier 2
<b>Building Key:</b>	09C9299	<b>Start Preliminary Engineering:</b>	6/1/2011
<b>Basic Gross Area (sf):</b>	89,320	<b>Scheduled Completion:</b>	12/15/2012
<b>Calculation File:</b>	UCI 680 ARC Savings Calc.xls		
<b>Project Description Reference(s):</b>	Monitoring Based Commission for All SEP Buildings.		

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	316,372
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0
<b>Equivalent Electric Savings (kWh/yr):</b>	316,372
<b>Equivalent Gas Savings (th/yr):</b>	0
<b>Anticipated Gross Incentive:</b>	\$75,929

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$27,379		\$63,885
		Contingency: 10.00%	\$2,738		\$6,389
		Totals:	\$30,117		\$70,274
		Engineering: 15.00%	\$15,059		
		Construction Phase: 5.00%	\$5,020		
		Project Management: 6.00%	\$6,023		
		Total Project Cost:	\$126,492		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$126,492	<b>Total Purchased Electricity Savings (kWh/yr):</b>	158,186
<b>Rebate/Incentive*:</b>	\$75,929	<b>Total Purchased Gas Savings (th/yr):</b>	15,698
<b>Net Project Cost:</b>	\$50,563	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$33,753
<b>Net Simple Payback Period (yrs):</b>	1.5		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: **I6002**

**Project:** ECM- Install Air Curtain At Loading Dock (Bren Events Center)

**Campus:** IRVINE

**Location:** IRVINE

**Building:** BREN EVENTS

**Building Key:** 09C9314

**Basic Gross Area (sf):** 97,259

**Calculation File:** UCI Air Curtain BEC.xls

**Project Description Reference(s):** UCI Custom Project 1. Install Air Curtains.

### Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2012  
**Scheduled Completion:** 12/15/2013

## Project Energy Savings Summary

### Building Energy Savings

**Electric (kWh/yr):** -2,820  
**Peak Demand (kW):** 0.0  
**Gas (th/yr):** 0  
**Chilled Water (ton-hr/yr):** 0  
**HW/Steam (MMBTu/yr):** 172

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm  
 Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** -2,820

**Equivalent Gas Savings (th/yr):** 2,150

**Anticipated Gross Incentive:** \$1,473

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$7,759		\$4,032
		Contingency: 10.00%	\$776		\$403
		Totals:	\$8,535		\$4,435
		Engineering: 15.00%	\$1,946		
		Construction Phase: 5.00%	\$649		
		Project Management: 6.00%	\$778		
		Total Project Cost:	\$16,342		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

**Total Project Cost:** \$16,342      **Total Purchased Electricity Savings (kWh/yr):** 4,008  
**Rebate/Incentive\*:** \$1,473      **Total Purchased Gas Savings (th/yr):** 935  
**Net Project Cost:** \$14,869      **Total Purchased Annual Cost Savings (\$/yr):** \$1,296  
**Net Simple Payback Period (yrs):** 11.5

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.



# PROJECT DETAIL REPORT

**SEP Project ID Number: I6003**

**Project: Condenser Water Reset**

**Campus:** IRVINE  
**Location:** IRVINE  
**Building:** CENTRL PLANT  
**Building Key:** 09C9302  
**Basic Gross Area (sf):** 24,951  
**Calculation File:** UCI Central Plant Savings Calc.xls  
**Project Description Reference(s):** UCI Custom Project 3. Condenser Water Reset.

**Campus Prioritization and Schedule**

**Project Tier:** Backup  
**Start Preliminary Engineering:**  
**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	590,785
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates: Electricity \$0.24 per annual kWh  
 Natural Gas \$1 per annual therm

Central Plant Efficiencies: th/MMBTU: 12.5  
 kWh/ton-hr: 0.8  
 th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 590,785

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$141,788

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$33,950		\$38,700
		Contingency: 10.00%	\$3,395		\$3,870
		Totals:	\$37,345		\$42,570
		Engineering: 15.00%	\$11,987		
		Construction Phase: 5.00%	\$3,996		
		Project Management: 6.00%	\$4,795		
		Total Project Cost:	\$100,693		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$100,693	<b>Total Purchased Electricity Savings (kWh/yr):</b>	295,393
<b>Rebate/Incentive*:</b>	\$80,554	<b>Total Purchased Gas Savings (th/yr):</b>	29,315
<b>Net Project Cost:</b>	\$20,139	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$63,030
<b>Net Simple Payback Period (yrs):</b>	0.3		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

# PROJECT DETAIL REPORT

**SEP Project ID Number: I6004**

**Project: CHW Primary VFD**

**Campus:** IRVINE

**Location:** IRVINE

**Building:** CENTRL PLANT

**Building Key:** 09C9302

**Basic Gross Area (sf):** 24,951

**Calculation File:** UCI Central Plant Savings Calc.xls

**Project Description Reference(s):** UCI Custom Project 2. Variable Speed Drives on Pumps.

**Campus Prioritization and Schedule**

**Project Tier:** Backup

**Start Preliminary Engineering:**

**Scheduled Completion:**

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	224,419
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 224,419

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$53,861

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
Estimated Construction Cost	1				
Raw Costs:					
City: Anaheim		Sales Tax: 8.25%			N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%			
City Index Labor Multiplier: 110.6%		Subtotals:	\$12,530		\$8,800
		Contingency: 10.00%	\$1,253		\$880
		Totals:	\$13,783		\$9,680
		Engineering: 15.00%	\$3,519		
		Construction Phase: 5.00%	\$1,173		
		Project Management: 6.00%	\$1,408		
		Total Project Cost:	\$29,563		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$29,563	<b>Total Purchased Electricity Savings (kWh/yr):</b>	112,210
<b>Rebate/Incentive*:</b>	\$23,651	<b>Total Purchased Gas Savings (th/yr):</b>	11,136
<b>Net Project Cost:</b>	\$5,913	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$23,943
<b>Net Simple Payback Period (yrs):</b>	0.2		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## PROJECT DETAIL REPORT

SEP Project ID Number: I6005

**Project:** HHWP VFD Retrofit

**Campus:** IRVINE

**Location:** IRVINE

**Building:** SCILIBRARY

**Building Key:** 09C9073

**Basic Gross Area (sf):** 189,590

**Calculation File:** UCI VFD savings Science Library.xls

**Project Description Reference(s):** UCI Custom Project 2. Variable Speed Drives on Pumps.

### Campus Prioritization and Schedule

**Project Tier:** Tier 2  
**Start Preliminary Engineering:** 6/1/2008  
**Scheduled Completion:** 12/15/2009

## Project Energy Savings Summary

### Building Energy Savings

<b>Electric (kWh/yr):</b>	7,237
<b>Peak Demand (kW):</b>	0.0
<b>Gas (th/yr):</b>	0
<b>Chilled Water (ton-hr/yr):</b>	0
<b>HW/Steam (MMBTu/yr):</b>	0

### Incentive Calculation Basis

Assumed Incentive Rates:	Central Plant Efficiencies:
Electricity \$0.24 per annual kWh	th/MMBTU: 12.5
Natural Gas \$1 per annual therm	kWh/ton-hr: 0.8
	th/ton-hr: 0.0

**Equivalent Electric Savings (kWh/yr):** 7,237

**Equivalent Gas Savings (th/yr):** 0

**Anticipated Gross Incentive:** \$1,737

Note: Where the anticipated gross incentive exceeds 80% of the total project cost, the incentive is capped. The net incentive amount is shown below in the Project Cost Summary.

## Project Cost Summary

Equipment Description	Qty	Bare Material Cost per Unit (\$)	Extended Bare Material Cost (\$)	Bare Labor Cost per Unit (\$)	Extended Bare Labor Cost (\$)
7.5 hp VFD	1	\$2,300.00	\$2,360	\$1,290.00	\$1,427
Raw Costs:			\$2,360		\$1,427
City: Anaheim		Sales Tax: 8.25%	\$195		N/A
City Index Material Multiplier: 102.6%		Contractor O&P: 12.00%	\$307		\$171
City Index Labor Multiplier: 110.6%		Subtotals:	\$2,861		\$1,598
		Contingency: 10.00%	\$286		\$160
		Totals:	\$3,147		\$1,758
		Engineering: 15.00%	\$736		
		Construction Phase: 5.00%	\$245		
		Project Management: 6.00%	\$294		
		Total Project Cost:	\$6,180		

## Project Economic Summary, Including Cogeneration and Purchased Utility Impacts

<b>Total Project Cost:</b>	\$6,180	<b>Total Purchased Electricity Savings (kWh/yr):</b>	3,619
<b>Rebate/Incentive*:</b>	\$1,737	<b>Total Purchased Gas Savings (th/yr):</b>	359
<b>Net Project Cost:</b>	\$4,443	<b>Total Purchased Annual Cost Savings (\$/yr):</b>	\$772
<b>Net Simple Payback Period (yrs):</b>	5.8		

\*Highlighted incentives have been capped at 80% of the total project cost. It is recommended that these projects be bundled together with other projects to maximize incentive funding.

## 11. PROJECT LISTS & SUMMARY OF PROJECTS

Table 11.1 is a complete list of all projects identified through the SEP effort, organized by funding source and project types. Subtotals are provided for savings and costs by project type and fund source. It is anticipated that the campus may wish to sort and view the list in a number of different manners. A complete project list is also provided electronically with this report for this purpose. See Appendix C.

Table 11.2 is a project list based on the commitments and prioritization made by the campus upon review of the preliminary project list, and is organized by IOU program cycle and the campus designated Tier. The energy savings for the projects accepted by the campus as Tier 1 projects became the basis for the level of energy savings commitments to the Investor Owned Utilities, although the campuses are free to substitute projects as desired to achieve the level of committed energy savings. Tier 2 projects are the planned projects projected by the campus to achieve savings approximately 50% above the committed levels. The savings shown in Table 11.2 are based on the preliminary project list, which may have been refined in the course of the Strategic Energy Plan development.

Table 11.1: SEP Projects by Funding Source and Project Type

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
<b>State Funded Buildings</b>											
<b>MBCx Projects</b>											
I3075	09C9001	LANGSON LIB	Monitoring Based Commissioning	115,747	15.0	16,436	\$ 28,756	\$ 127,566	\$ 47,447	\$ 80,119	2.8
I3076	09C9003	ADMIN BLDG	Monitoring Based Commissioning	82,496	11.0	11,500	\$ 20,320	\$ 85,411	\$ 34,167	\$ 51,244	2.5
I3077	09C9005	UCI STU CNTR	Monitoring Based Commissioning	117,412	14.0	17,033	\$ 29,465	\$ 138,690	\$ 47,539	\$ 91,151	3.1
I3078	09C9035	HIB	Monitoring Based Commissioning	25,109	-	4,922	\$ 7,350	\$ 62,640	\$ 8,069	\$ 54,571	7.4
I3079	09C9050	W SMITH HALL	Monitoring Based Commissioning	9,216	1.0	1,225	\$ 2,221	\$ 7,996	\$ 3,915	\$ 4,081	1.8
I3080	09C9051	CTB THEATRE	Monitoring Based Commissioning	14,586	2.0	2,116	\$ 3,661	\$ 17,227	\$ 5,906	\$ 11,321	3.1
I3081	09C9052	SOTA DANCE	Monitoring Based Commissioning	9,122	1.0	1,323	\$ 2,289	\$ 10,778	\$ 3,694	\$ 7,084	3.1
I3082	09C9053	SOTA PROD ST	Monitoring Based Commissioning	3,253	-	493	\$ 833	\$ 4,381	\$ 1,283	\$ 3,098	3.7
I3083	09C9054	SOTA DRAMA	Monitoring Based Commissioning	16,060	3.0	1,881	\$ 3,663	\$ 7,416	\$ 7,237	\$ 1,483	0.4
I3084	09C9055	UNIV ART GAL	Monitoring Based Commissioning	6,386	1.0	926	\$ 1,603	\$ 7,541	\$ 2,585	\$ 4,956	3.1
I3085	09C9056	SOTA ART STD	Monitoring Based Commissioning	9,585	1.0	1,298	\$ 2,329	\$ 8,937	\$ 4,032	\$ 4,905	2.1
I3086	09C9057	SOTA SCULPTR	Monitoring Based Commissioning	13,522	2.0	1,699	\$ 3,178	\$ 9,210	\$ 5,905	\$ 3,305	1.0
I3088	09C9073	SCILIBRARY	Monitoring Based Commissioning	107,666	10.0	16,904	\$ 28,073	\$ 160,290	\$ 41,487	\$ 118,803	4.2
I3089	09C9075	STEINHAUS H	Monitoring Based Commissioning	169,128	23.0	23,603	\$ 41,679	\$ 181,810	\$ 70,006	\$ 111,804	2.7
I3304	09C9080	QURESHEY LAB	Monitoring Based Commissioning	17,961	1.0	2,977	\$ 4,812	\$ 73,954	\$ 6,663	\$ 67,291	14.0
I3316	09C9081	BONNEY RES L	Monitoring Based Commissioning	17,961	1.0	2,977	\$ 4,812	\$ 23,562	\$ 6,663	\$ 16,899	3.5
I3091	09C9088	HEWITT HALL	Monitoring Based Commissioning	205,398	35.0	25,385	\$ 47,929	\$ 133,365	\$ 90,393	\$ 42,972	0.9
I3092	09C9091	NAT SCI 2	Monitoring Based Commissioning	155,480	25.0	19,901	\$ 36,842	\$ 115,242	\$ 67,303	\$ 47,939	1.3
I3093	09C9100	ROWLAND HALL	Monitoring Based Commissioning	310,644	42.0	43,262	\$ 76,480	\$ 331,516	\$ 128,732	\$ 202,784	2.7
I3095	09C9108	REINES HALL	Monitoring Based Commissioning	259,191	36.0	35,648	\$ 63,444	\$ 264,653	\$ 108,145	\$ 156,508	2.5
I3096	09C9114	M SCI & TECH	Monitoring Based Commissioning	17,961	1.0	2,977	\$ 4,812	\$ 53,357	\$ 6,663	\$ 46,694	9.7
I3097	09C9115	CROUL HALL	Monitoring Based Commissioning	98,634	13.0	13,985	\$ 24,487	\$ 111,889	\$ 40,467	\$ 71,422	2.9
I3099	09C9125	ENG TOWER	Monitoring Based Commissioning	119,086	11.0	19,044	\$ 31,335	\$ 192,665	\$ 45,319	\$ 147,346	4.7
I3100	09C9126	COMP SCI BLD	Monitoring Based Commissioning	96,142	13.0	13,389	\$ 23,670	\$ 102,601	\$ 39,841	\$ 62,760	2.7
I3101	09C9128	SOC ECOLOGY	Monitoring Based Commissioning	87,145	12.0	12,136	\$ 21,455	\$ 93,001	\$ 36,113	\$ 56,888	2.7
I3102	09C9132	IRVINE HALL	Monitoring Based Commissioning	53,572	4.0	8,780	\$ 14,271	\$ 92,357	\$ 20,038	\$ 72,319	5.1
I3103	09C9140	ENG GATEWAY	Monitoring Based Commissioning	213,236	29.0	29,538	\$ 52,368	\$ 223,353	\$ 88,624	\$ 134,729	2.6
I3104	09C9204	SOCSCI TOWER	Monitoring Based Commissioning	100,269	17.0	12,701	\$ 23,650	\$ 70,887	\$ 43,621	\$ 27,266	1.2
I3106	09C9212	SOC SCI PL A	Monitoring Based Commissioning	33,267	4.0	4,826	\$ 8,348	\$ 39,296	\$ 13,469	\$ 25,827	3.1
I3107	09C9221	SOC SCI PL B	Monitoring Based Commissioning	35,127	4.0	5,096	\$ 8,815	\$ 41,493	\$ 14,223	\$ 27,270	3.1
I3108	09C9222	SOC ECOLOGY2	Monitoring Based Commissioning	29,379	4.0	4,088	\$ 7,230	\$ 30,227	\$ 12,180	\$ 18,047	2.5
I3110	09C9300	CRAWFORD HAL	Monitoring Based Commissioning	53,655	8.0	7,209	\$ 12,994	\$ 48,560	\$ 22,666	\$ 25,894	2.0
I3111	09C9302	CENTRL PLANT	MBCx Central Plant	564,000	86.0	74,715	\$ 135,714	\$ 693,000	\$ 240,000	\$ 453,000	3.3
I3112	09C9314	BREN EVENTS	Monitoring Based Commissioning	69,612	8.0	10,098	\$ 17,470	\$ 82,229	\$ 28,185	\$ 54,044	3.1
I3113	09C9322	MED SCI C	Monitoring Based Commissioning	124,460	20.0	15,893	\$ 29,461	\$ 94,443	\$ 53,936	\$ 40,507	1.4
I3114	09C9323	MED SCI D	Monitoring Based Commissioning	96,020	11.0	14,092	\$ 24,231	\$ 121,677	\$ 38,610	\$ 83,067	3.4
I3115	09C9325	MED SCI A	Monitoring Based Commissioning	21,261	3.0	2,961	\$ 5,234	\$ 22,687	\$ 8,810	\$ 13,877	2.7
I3116	09C9328	MED SCI B	Monitoring Based Commissioning	25,670	3.0	3,724	\$ 6,442	\$ 30,322	\$ 10,394	\$ 19,928	3.1
I3117	09C9329	MED SURG 2	Monitoring Based Commissioning	95,895	13.0	13,337	\$ 23,594	\$ 101,859	\$ 39,769	\$ 62,090	2.6
I3125	09CTBD1	BREN HALL	Monitoring Based Commissioning	105,912	13.0	15,364	\$ 26,579	\$ 125,107	\$ 42,883	\$ 82,224	3.1
<b>Subtotal, State Funded, MBCx Projects</b>				<b>3,706,223</b>	<b>501.0</b>	<b>515,463</b>	<b>\$ 911,901</b>	<b>\$ 4,143,193</b>	<b>\$ 1,536,982</b>	<b>\$ 2,606,211</b>	<b>2.9</b>
<b>New Construction Projects</b>											
I3087	09C9058	ARTS TECH	SBD, New/Renov - Arts Building	150,925	22.0	20,533	\$ 36,759	\$ 384,568	\$ 63,338	\$ 321,230	8.7
I3105	09C9208	SCH BUSINESS	SBD, New/Renov - School of Business Building	198,585	29.0	27,018	\$ 48,368	\$ 506,008	\$ 83,340	\$ 422,668	8.7
I3126	09CTBD2	BIOLOGICAL SCIENCES 3 LABORATORY	SBD, New/Renov - Biological Sciences 3 Laboratory Conversion	134,256	24.0	16,398	\$ 31,168	\$ 342,762	\$ 59,404	\$ 283,358	9.1
I3127	09CTBD3	BIOMEDICAL RESEARCH FACILITY 4 - STEM CELL	SBD, New/Renov - Irvine Biomedical Research Facility - 4 (Stem Cell)	455,945	80.0	55,688	\$ 105,849	\$ 1,164,065	\$ 201,742	\$ 962,323	9.1
I3128	09CTBD4	HEALTH SCIENCES ACADEMIC BUILDING	SBD, New/Renov - Health Sciences Academic Building	156,921	28.0	19,166	\$ 36,430	\$ 400,634	\$ 69,433	\$ 331,201	9.1
I3129	09CTBD5	TELEMEDICINE/PRIME-LC FACILITY	SBD, New/Renov - Telemedicine/PRIME-LC Facilities	261,536	46.0	31,943	\$ 60,716	\$ 667,721	\$ 115,722	\$ 551,999	9.1
I3155	09CWIDE	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	67,204	10.0	9,143	\$ 16,368	\$ 171,240	\$ 28,204	\$ 143,036	8.7

Table 11.1: SEP Projects by Funding Source and Project Type (Continued)

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
I3154	09CWIDE	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	67,204	10.0	9,143	\$ 16,368	\$ 171,240	\$ 28,204	\$ 143,036	8.7
I3153	09CWIDE	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	67,204	10.0	9,143	\$ 16,368	\$ 171,240	\$ 28,204	\$ 143,036	8.7
I3152	09CWIDE	CAMPUSWIDE	SBD, New/Renov - Classroom Renovations Phase 6	17,873	3.0	2,432	\$ 4,353	\$ 45,541	\$ 7,501	\$ 38,040	8.7
I3151	09CWIDE	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	67,204	10.0	9,143	\$ 16,368	\$ 171,240	\$ 28,204	\$ 143,036	8.7
<b>Subtotal, State Funded, New Construction Projects</b>				<b>1,644,857</b>	<b>272.0</b>	<b>209,751</b>	<b>\$ 389,117</b>	<b>\$ 4,196,261</b>	<b>\$ 713,296</b>	<b>\$ 3,482,965</b>	<b>9.0</b>
<b>HVAC Projects</b>											
I3090	09C9084	MCGAUGH HALL	Compressor and control upgrades, walk-in refrigeration units in McGaugh Hall. (18 units)	64,394	22.0	6,390	\$ 13,740	\$ 596,119	\$ 30,909	\$ 565,210	41.1
I3012	09C9001	LANGSON LIB	Zone DDC Upgrade	50,636	13.0	6,156	\$ 11,732	\$ 539,877	\$ 22,451	\$ 517,426	44.1
I3011	09C9001	LANGSON LIB	Demand Control Ventilation	5,668	12.0	562	\$ 1,209	\$ 35,757	\$ 2,721	\$ 33,036	27.3
I1018	09C9001	LANGSON LIB	AHU-3 thru AHU 16 - CAV to VAV and Economizers	306,315	(2.0)	73,120	\$ 100,392	\$ 549,230	\$ 172,837	\$ 376,393	3.7
I3014	09C9003	ADMIN BLDG	Zone DDC Upgrade	33,904	9.0	4,122	\$ 7,856	\$ 359,918	\$ 15,032	\$ 344,886	43.9
I3013	09C9003	ADMIN BLDG	Demand Control Ventilation	3,795	8.0	377	\$ 810	\$ 6,704	\$ 1,822	\$ 4,882	6.0
I1003	09C9003	ADMIN BLDG	AHU-3 (AC-3) SP reset	11,037	-	1,850	\$ 2,974	\$ 26,956	\$ 5,885	\$ 21,071	7.1
I1002	09C9003	ADMIN BLDG	AHU-2 (S-2) SP reset	6,846	-	1,086	\$ 1,794	\$ 24,841	\$ 3,624	\$ 21,217	11.8
I1001	09C9003	ADMIN BLDG	AHU-1 (S-1) Spot Cooling and SP reset	128,757	-	25,611	\$ 37,997	\$ 179,023	\$ 64,673	\$ 114,350	3.0
I3300	09C9005	UCI STU CNTR	DM - 9 Complete Chilled Water AHU replacements	-	-	-	\$ -	\$ -	\$ -	\$ -	-
I3299	09C9005	UCI STU CNTR	Replace 5 Rooftop DX units	12,500	-	1,241	\$ 2,667	\$ 34,650	\$ 6,000	\$ 28,650	10.7
I3015	09C9005	UCI STU CNTR	Demand Control Ventilation	6,162	13.0	612	\$ 1,315	\$ 6,704	\$ 2,958	\$ 3,746	2.8
I1060	09C9005	UCI STU CNTR	AHU 2,3 SP reset	43,780	-	7,857	\$ 12,222	\$ 5,494	\$ 22,986	\$ 1,099	0.1
I1059	09C9005	UCI STU CNTR	AHU 1 SP reset	25,343	-	4,214	\$ 6,801	\$ 2,747	\$ 12,901	\$ 549	0.1
I3016	09C9035	HIB	Demand Control Ventilation	2,783	6.0	276	\$ 594	\$ 6,704	\$ 1,336	\$ 5,368	9.0
I1015	09C9035	HIB	AHU 2H, 3H - SP Reset	37,491	-	8,953	\$ 12,290	\$ 2,747	\$ 21,131	\$ 549	0.0
I1014	09C9035	HIB	AHU 1H - CAV to VAV & SP Reset	12,241	-	3,275	\$ 4,302	\$ 69,996	\$ 7,567	\$ 62,429	14.5
I1064	09C9050	W SMITH HALL	AHU 1 - CAV to VAV	42,468	-	14,121	\$ 17,185	\$ 155,304	\$ 33,681	\$ 121,623	7.1
I3270	09C9051	CTB THEATRE	DDC Conversion	17,225	-	2,178	\$ 4,060	\$ 103,950	\$ 7,500	\$ 96,450	23.8
I1078	09C9051	CTB THEATRE	AHU-1 (AC-1) - SP reset	37,909	(1.0)	10,862	\$ 13,911	\$ 24,360	\$ 22,367	\$ 4,872	0.4
I1061	09C9052	SOTA DANCE	AHU-1 SP reset	8,055	-	2,152	\$ 2,828	\$ 20,803	\$ 4,678	\$ 16,125	5.7
I1053	09C9053	SOTA PROD ST	AHU 1 - CAV to VAV, DCV, SP Reset	13,334	1.0	2,255	\$ 3,609	\$ 40,476	\$ 7,082	\$ 33,394	9.3
I1052	09C9053	SOTA PROD ST	AHU 1 - CAV to VAV & DCV	6,464	-	816	\$ 1,523	\$ 39,486	\$ 2,956	\$ 36,530	24.0
I1051	09C9054	SOTA DRAMA	AHU-1- SP Reset	4,316	-	1,172	\$ 1,531	\$ 21,188	\$ 2,515	\$ 18,673	12.2
I1063	09C9055	UNIV ART GAL	AHU 1 - CAV to VAV, SP Reset and DCV	14,333	-	1,785	\$ 3,356	\$ 37,254	\$ 7,658	\$ 29,596	8.8
I1050	09C9056	SOTA ART STD	AHU-1- SP Reset	4,146	-	957	\$ 1,332	\$ 21,668	\$ 2,223	\$ 19,445	14.6
I6005	09C9073	SCILIBRARY	HHWP VFD Retrofit	3,619	-	359	\$ 772	\$ 6,180	\$ 1,737	\$ 4,443	5.8
I1075	09C9073	SCILIBRARY	AHU 1 thru 5 - SP Reset & DCV	191,945	(1.0)	42,195	\$ 59,937	\$ 27,493	\$ 108,511	\$ 5,499	0.1
I3364	09C9075	STEINHAUS H	Aircuity	263,000	-	32,348	\$ 61,241	\$ 425,000	\$ 116,000	\$ 309,000	5.0
I3018	09C9075	STEINHAUS H	Zone DDC Upgrade	36,086	9.0	4,387	\$ 8,361	\$ 382,770	\$ 16,000	\$ 366,770	43.9
I1058	09C9075	STEINHAUS H	AHU 1,2 - Reduce ACH from 7 to 6	412,265	70.0	73,304	\$ 114,528	\$ 942,678	\$ 222,769	\$ 719,909	6.3
I3356	09C9080	QURESHEY LAB	Exhaust Stack Discharge Reduction	35,175	-	4,897	\$ 8,658	\$ 115,000	\$ 14,580	\$ 100,420	11.6
I3355	09C9080	QURESHEY LAB	Aircuity	67,700	-	9,218	\$ 16,495	\$ 100,000	\$ 28,400	\$ 71,600	4.3
I3334	09C9081	BONNEY RES L	Exhaust Stack Discharge Reduction	40,650	-	4,347	\$ 8,930	\$ 75,000	\$ 19,000	\$ 56,000	6.3
I3333	09C9081	BONNEY RES L	CAV to VAV	213,000	-	27,386	\$ 50,573	\$ 500,000	\$ 92,000	\$ 408,000	8.1
I3332	09C9081	BONNEY RES L	Aircuity	157,250	-	20,291	\$ 37,396	\$ 230,000	\$ 67,800	\$ 162,200	4.3
I3315	09C9081	BONNEY RES L	Zone DDC Upgrade	21,181	6.0	2,575	\$ 4,908	\$ 180,180	\$ 9,391	\$ 170,789	34.8
I3277	09C9081	BONNEY RES L	AH Replacement (Deferred Maintenance)	-	-	-	\$ -	\$ -	\$ -	\$ -	-
I3345	09C9082	GILLESPIE BLD	Exhaust Stack Discharge Reduction	44,150	-	4,694	\$ 9,677	\$ 105,000	\$ 20,680	\$ 84,320	8.7
I3344	09C9082	GILLESPIE BLD	CAV to VAV	105,632	-	11,108	\$ 23,052	\$ 175,000	\$ 49,679	\$ 125,321	5.4
I3343	09C9082	GILLESPIE BLD	Aircuity (Including Vivarium)	355,300	-	54,628	\$ 91,695	\$ 600,000	\$ 138,800	\$ 461,200	5.0
I3342	09C9082	GILLESPIE BLD	Zone DDC Controls (Lab Floors)	39,550	-	6,112	\$ 10,232	\$ 302,000	\$ 15,400	\$ 286,600	28.0
I3279	09C9082	GILLESPIE BLD	CAV to VAV Fume Hoods Proposed from Previous MBCx study by EMC	99,332	266.0	9,858	\$ 21,195	\$ 291,060	\$ 47,679	\$ 243,381	11.5
I3019	09C9082	GILLESPIE BLD	Demand Control Ventilation	3,115	7.0	309	\$ 665	\$ 4,470	\$ 1,495	\$ 2,975	4.5
I1011	09C9082	GILLESPIE BLD	AHU 1 - VAV Aircuity (4 ACH Occ & 2 Unocc)	462,904	61.0	83,524	\$ 129,593	\$ 180,740	\$ 248,587	\$ 36,148	0.3
I1010	09C9082	GILLESPIE BLD	AHU 2 - Reduce ACH from 15 to 8 for 5 Hoods in Vivarium	226,921	34.0	42,393	\$ 64,716	\$ 249,134	\$ 115,767	\$ 133,367	2.1
I3348	09C9084	MCGAUGH HALL	Vivarium Efficiency Measures	181,700	-	23,655	\$ 43,382	\$ 350,000	\$ 78,000	\$ 272,000	6.3

Table 11.1: SEP Projects by Funding Source and Project Type (Continued)

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
I3347	09C9084	MCGAUGH HALL	Lowflow Fume Hoods	181,500		21,136	\$ 41,290	\$ 1,000,000	\$ 82,000	\$ 918,000	22.2
I3346	09C9084	MCGAUGH HALL	Aircuity in Vivarium	237,800		27,348	\$ 53,815	\$ 325,000	\$ 108,000	\$ 217,000	4.0
I3022	09C9084	MCGAUGH HALL	Zone DDC Upgrade	71,723	18.0	8,720	\$ 16,618	\$ 762,684	\$ 31,801	\$ 730,883	44.0
I3021	09C9084	MCGAUGH HALL	Demand Control Ventilation	7,470	17.0	741	\$ 1,594	\$ 6,704	\$ 3,585	\$ 3,119	2.0
I3020	09C9084	MCGAUGH HALL	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc	760,452	-	149,222	\$ 222,741	\$ 658,233	\$ 387,607	\$ 270,626	1.2
I1071	09C9084	MCGAUGH HALL	AHU 1, 2, 3 - Reduce ACH from 14 to 6	820,501	424.0	161,130	\$ 240,433	\$ 642,116	\$ 473,658	\$ 168,458	0.7
I3025	09C9087	SPRAGUE HALL	EF VFDs	281,400	32.0	27,926	\$ 60,044	\$ 58,265	\$ 135,072	\$ 11,653	0.2
I3024	09C9087	SPRAGUE HALL	Demand Control Ventilation	3,389	7.0	336	\$ 723	\$ 6,704	\$ 1,626	\$ 5,078	7.0
I3023	09C9087	SPRAGUE HALL	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc	253,842	-	49,811	\$ 74,352	\$ 216,830	\$ 129,383	\$ 87,447	1.2
I1055	09C9087	SPRAGUE HALL	AHU 1,2- SP Reset & VFD exhaust	248,806	(4.0)	25,489	\$ 53,743	\$ 57,052	\$ 120,706	\$ 11,410	0.2
I1054	09C9087	SPRAGUE HALL	AHU 3 - SP Reset	14,391	-	2,536	\$ 3,979	\$ 2,747	\$ 6,798	\$ 549	0.1
I3226	09C9088	HEWITT HALL	EF VFDs	260,294	30.0	25,832	\$ 55,541	\$ 87,239	\$ 124,941	\$ 17,448	0.3
I3027	09C9088	HEWITT HALL	Demand Control Ventilation	2,963	6.0	294	\$ 632	\$ 6,704	\$ 1,422	\$ 5,282	8.4
I3026	09C9088	HEWITT HALL	Aircuity - Reduce Vivarium from 15 to 8 ACH, Labs from 6 ACH to 4 & 2 ACH	190,703	-	37,421	\$ 55,858	\$ 162,622	\$ 97,201	\$ 65,421	1.2
I1013	09C9088	HEWITT HALL	AHU 3 - SP Reset	13,580	-	3,038	\$ 4,284	\$ 2,747	\$ 6,970	\$ 549	0.1
I1012	09C9088	HEWITT HALL	AHU 1, 2 - Reduce ACH from 15 to 8 for 5 Hoods in Vivarium (Overall AHU goes from 8.36 to 6.52)	302,827	51.0	51,002	\$ 81,795	\$ 236,969	\$ 152,572	\$ 84,397	1.0
I3353	09C9090	NAT SCI 1	Exhaust Stack Discharge Reduction	47,678		4,997	\$ 10,391	\$ 135,000	\$ 22,450	\$ 112,550	10.8
I3352	09C9090	NAT SCI 1	Aircuity	404,750		60,473	\$ 103,015	\$ 650,000	\$ 161,000	\$ 489,000	4.7
I3028	09C9090	NAT SCI 1	Demand Control Ventilation	4,542	10.0	451	\$ 969	\$ 8,939	\$ 2,180	\$ 6,759	7.0
I1073	09C9090	NAT SCI 1	AHU 2,3,4 - SP Reset & VFD on Exhaust	274,702	53.0	28,198	\$ 59,383	\$ 39,866	\$ 133,217	\$ 7,973	0.1
I1033	09C9090	NAT SCI 1	AHU 1 - SP Reset	39,975	-	9,618	\$ 13,163	\$ 2,747	\$ 23,105	\$ 549	0.0
I3354	09C9091	NAT SCI 2	Exhaust Stack Discharge Reduction	47,678		4,997	\$ 10,391	\$ 135,000	\$ 22,450	\$ 112,550	10.8
I3227	09C9091	NAT SCI 2	EF VFDs	17,183	2.0	1,705	\$ 3,666	\$ 11,243	\$ 8,248	\$ 2,995	0.8
I3030	09C9091	NAT SCI 2	Demand Control Ventilation	5,120	11.0	508	\$ 1,092	\$ 8,939	\$ 2,458	\$ 6,481	5.9
I3029	09C9091	NAT SCI 2	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc	384,708	-	75,490	\$ 112,683	\$ 332,989	\$ 196,087	\$ 136,902	1.2
I1074	09C9091	NAT SCI 2	AHU 1,2,4 - SP Reset & VFD on Exhaust	344,526	(5.0)	35,527	\$ 74,609	\$ 52,018	\$ 167,531	\$ 10,404	0.1
I1034	09C9091	NAT SCI 2	AHU 3 - SP Reset	60,862	-	13,881	\$ 19,416	\$ 2,747	\$ 35,180	\$ 549	0.0
I3360	09C9100	ROWLAND HALL	Aircuity	344,600		44,820	\$ 82,239	\$ 600,000	\$ 148,000	\$ 452,000	5.5
I3359	09C9100	ROWLAND HALL	Exhaust Stack Discharge Reduction	63,365		8,506	\$ 15,339	\$ 185,000	\$ 26,780	\$ 158,220	10.3
I1036	09C9100	ROWLAND HALL	AHU 1,2,3,4 - DDC Upgrade, CAV to VAV Fume Hoods & SP Reset	2,206,653	(1.0)	397,326	\$ 617,086	\$ 2,360,290	\$ 1,137,405	\$ 1,222,885	2.0
I3094	09C9107	BERKELEY PL	Replace air handlers in Berkeley Place (Deferred Maintenance, to be combined with other retrofits)	174,737	56.0	20,846	\$ 40,159	\$ 990,990	\$ 78,129	\$ 912,861	22.7
I3033	09C9107	BERKELEY PL	Zone DDC Upgrade	38,258	10.0	4,651	\$ 8,864	\$ 408,479	\$ 16,963	\$ 391,516	44.2
I3032	09C9107	BERKELEY PL	Demand Control Ventilation	4,283	9.0	425	\$ 914	\$ 17,878	\$ 2,056	\$ 15,822	17.3
I1040	09C9107	BERKELEY PL	North Wing -AC-2,3 SP Reset	31,412	-	4,972	\$ 8,223	\$ 43,144	\$ 12,038	\$ 31,106	3.8
I1039	09C9107	BERKELEY PL	North AC-1 SP Reset	10,545	-	1,698	\$ 2,784	\$ 21,572	\$ 3,994	\$ 17,578	6.3
I1038	09C9107	BERKELEY PL	South Wing -AC-2,3,4 SP Reset	19,060	-	3,025	\$ 4,996	\$ 63,563	\$ 7,291	\$ 56,272	11.3
I1037	09C9107	BERKELEY PL	AC-1 SP Reset	6,860	-	1,097	\$ 1,805	\$ 21,092	\$ 2,611	\$ 18,481	10.2
I3358	09C9108	REINES HALL	Exhaust Stack Discharge Reduction	62,050		8,345	\$ 15,033	\$ 175,000	\$ 26,200	\$ 148,800	9.9
I3357	09C9108	REINES HALL	Aircuity	297,550		37,964	\$ 70,407	\$ 480,000	\$ 129,000	\$ 351,000	5.0
I3036	09C9108	REINES HALL	EF VFDs	3,132	-	311	\$ 668	\$ 11,738	\$ 1,503	\$ 10,235	15.3
I3035	09C9108	REINES HALL	Zone DDC Upgrade	52,525	14.0	6,386	\$ 12,170	\$ 559,873	\$ 23,289	\$ 536,584	44.1
I3034	09C9108	REINES HALL	Demand Control Ventilation	5,880	13.0	583	\$ 1,255	\$ 4,470	\$ 2,822	\$ 1,648	1.3
I1035	09C9108	REINES HALL	AHU 1,2 - Reduce ACH from 8.5 to 6	1,005,529	169.0	179,844	\$ 280,202	\$ 5,766,132	\$ 544,142	\$ 5,221,990	18.6
I3038	09C9114	M SCI & TECH	Zone DDC Upgrade	21,181	6.0	2,575	\$ 4,908	\$ 225,663	\$ 9,391	\$ 216,272	44.1
I3037	09C9114	M SCI & TECH	Demand Control Ventilation	2,371	5.0	235	\$ 506	\$ 4,470	\$ 1,138	\$ 3,332	6.6
I1032	09C9114	M SCI & TECH	AHU 1,2 - VIV to VAV & SP Reset	73,976	5.0	17,313	\$ 23,961	\$ 36,396	\$ 39,866	\$ 7,279	0.3
I3336	09C9115	CROUL HALL	Additional Aircuity in Labs	113,000	-	17,462	\$ 29,235	\$ 150,000	\$ 44,000	\$ 106,000	3.6
I3335	09C9115	CROUL HALL	Exhaust Stack Discharge Reduction	45,650	-	4,843	\$ 9,997	\$ 85,000	\$ 21,400	\$ 63,600	6.4
I3225	09C9115	CROUL HALL	EF VFDs	187,610	21.0	18,618	\$ 40,032	\$ 48,707	\$ 90,053	\$ 9,741	0.2
I1004	09C9115	CROUL HALL	AHU 1 SP Reset	9,674	-	2,323	\$ 3,182	\$ 2,747	\$ 5,717	\$ 549	0.2
I3337	09C9125	ENG TOWER	Aircuity	339,000	-	52,386	\$ 87,705	\$ 450,000	\$ 132,000	\$ 318,000	3.6
I3042	09C9125	ENG TOWER	Zone DDC Upgrade	38,240	10.0	4,649	\$ 8,860	\$ 405,622	\$ 16,955	\$ 388,667	43.9
I3041	09C9125	ENG TOWER	Demand Control Ventilation	4,280	9.0	425	\$ 913	\$ 8,939	\$ 2,054	\$ 6,885	7.5
I1009	09C9125	ENG TOWER	AHU 10 and 20 - SP Reset	22,804	-	2,509	\$ 5,068	\$ 47,759	\$ 10,910	\$ 36,849	7.3
I1008	09C9125	ENG TOWER	AHU-1,2 - CAV to VAV, SP Reset & Add Economizer	140,595	-	60,456	\$ 68,133	\$ 1,718,777	\$ 119,141	\$ 1,599,636	23.5

Table 11.1: SEP Projects by Funding Source and Project Type (Continued)

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
I3044	09C9126	COMP SCI BLD	Zone DDC Upgrade	20,363	5.0	2,476	\$ 4,718	\$ 217,094	\$ 9,029	\$ 208,065	44.1
I3043	09C9126	COMP SCI BLD	Demand Control Ventilation	2,280	5.0	226	\$ 486	\$ 4,470	\$ 1,094	\$ 3,376	6.9
I1067	09C9126	COMP SCI BLD	AHU-2 SP reset & VIV to VAV & Add Economizer	11,148	-	3,158	\$ 4,061	\$ 26,710	\$ 8,043	\$ 18,667	4.6
I1066	09C9126	COMP SCI BLD	AHU-1 SP reset & Add Economizer Controls	22,610	-	8,073	\$ 9,605	\$ 75,878	\$ 17,694	\$ 58,184	6.1
I3361	09C9128	SOC ECOLOGY	Zone DDC Upgrade	33,170	-	3,854	\$ 7,539	\$ 300,000	\$ 15,000	\$ 285,000	37.8
I3045	09C9128	SOC ECOLOGY	Demand Control Ventilation	2,066	4.0	205	\$ 441	\$ 8,939	\$ 992	\$ 7,947	18.0
I1043	09C9128	SOC ECOLOGY	AHU 4 - Reduce ACH from 7 to 6	24,411	4.0	4,470	\$ 6,888	\$ 59,447	\$ 13,292	\$ 46,155	6.7
I1042	09C9128	SOC ECOLOGY	AHU 2,3 - SP Reset	2,608	-	384	\$ 659	\$ 5,494	\$ 1,446	\$ 4,048	6.1
I1041	09C9128	SOC ECOLOGY	AHU 1 - SP Reset	3,024	-	427	\$ 749	\$ 2,747	\$ 1,648	\$ 1,099	1.5
I3046	09C9132	IRVINE HALL	Zone DDC Upgrade	18,331	5.0	2,229	\$ 4,247	\$ 194,242	\$ 8,127	\$ 186,115	43.8
I1017	09C9132	IRVINE HALL	AHU 2,3,4A,4B, ATU 1,2,3 - SP Reset	80,164	-	13,361	\$ 21,538	\$ 303,270	\$ 40,577	\$ 262,693	12.2
I1016	09C9132	IRVINE HALL	AHU 1, 5, 6, 7, 8, - SP Reset	65,269	-	14,471	\$ 20,481	\$ 104,400	\$ 35,063	\$ 69,337	3.4
I3558	09C9140	ENG GATEWAY	Replace Old CRAC Units with New CRAC Units, Install Air Side Economizer & Separate Hot & Cold Aisle	45,552	-	4,521	\$ 9,720	\$ 138,600	\$ 21,865	\$ 116,735	12.0
I3341	09C9140	ENG GATEWAY	Aircuity	197,750	-	30,559	\$ 51,161	\$ 225,000	\$ 77,000	\$ 148,000	2.9
I3340	09C9140	ENG GATEWAY	Exhaust Stack Discharge Reduction	43,150	-	4,595	\$ 9,463	\$ 100,000	\$ 20,200	\$ 79,800	8.4
I3339	09C9140	ENG GATEWAY	CAV to VAV	505,350	-	77,954	\$ 130,628	\$ 1,500,000	\$ 197,000	\$ 1,303,000	10.0
I3048	09C9140	ENG GATEWAY	Zone DDC Upgrade	44,329	11.0	5,389	\$ 10,271	\$ 471,322	\$ 19,655	\$ 451,667	44.0
I1007	09C9140	ENG GATEWAY	AHU 10 SP Reset & DCV	571	-	40	\$ 108	\$ 2,235	\$ 270	\$ 1,965	18.2
I1006	09C9140	ENG GATEWAY	AHU 3 thru 8 - Reduce ACH from 7 to 6 for 20 Hoods	297,911	-	48,949	\$ 79,463	\$ 1,170,871	\$ 154,586	\$ 1,016,285	12.8
I1005	09C9140	ENG GATEWAY	AHU 1 and 2 - SP Reset	11,324	-	2,791	\$ 3,784	\$ 2,747	\$ 6,697	\$ 549	0.1
I3271	09C9202	SOCSCI HALL	Air Handler Replacement	19,420	-	2,490	\$ 4,605	\$ 166,320	\$ 8,400	\$ 157,920	34.3
I3050	09C9204	SOCSCI TOWER	Zone DDC Upgrade	28,137	7.0	3,421	\$ 6,519	\$ 299,932	\$ 12,476	\$ 287,456	44.1
I1049	09C9204	SOCSCI TOWER	AHU C1 - CAV to VAV, DCV, SP Reset	13,946	-	2,709	\$ 4,062	\$ 40,860	\$ 7,717	\$ 33,143	8.2
I1048	09C9204	SOCSCI TOWER	AHU-B3, B4 - SP Reset & Add Economizer	36,392	1.0	9,361	\$ 12,480	\$ 61,126	\$ 21,680	\$ 39,446	3.2
I1047	09C9204	SOCSCI TOWER	AHU-B1,B2,D1,D2 - SP Reset & Add Economizer	51,808	-	15,134	\$ 19,249	\$ 123,405	\$ 33,801	\$ 89,604	4.7
I3052	09C9212	SOC SCI PL A	Zone DDC Upgrade	15,600	4.0	1,897	\$ 3,615	\$ 165,677	\$ 6,917	\$ 158,760	43.9
I3051	09C9212	SOC SCI PL A	Demand Control Ventilation	1,746	4.0	173	\$ 373	\$ 2,235	\$ 838	\$ 1,397	3.7
I1045	09C9212	SOC SCI PL A	AHU 1 - SP Reset	21,232	-	2,714	\$ 5,028	\$ 25,130	\$ 10,042	\$ 15,088	3.0
I3054	09C9221	SOC SCI PL B	Zone DDC Upgrade	16,471	4.0	2,003	\$ 3,816	\$ 174,246	\$ 7,303	\$ 166,943	43.7
I3053	09C9221	SOC SCI PL B	Demand Control Ventilation	1,844	4.0	183	\$ 393	\$ 2,235	\$ 885	\$ 1,350	3.4
I1046	09C9221	SOC SCI PL B	AHU 2 - SP Reset	34,792	-	7,658	\$ 10,872	\$ 24,553	\$ 19,363	\$ 5,190	0.5
I3363	09C9222	SOC ECOLOGY2	Exhaust Stack Discharge Reduction	40,750	-	5,606	\$ 9,976	\$ 125,000	\$ 17,000	\$ 108,000	10.8
I3362	09C9222	SOC ECOLOGY2	Aircuity	152,350	-	21,055	\$ 37,375	\$ 275,000	\$ 63,400	\$ 211,600	5.7
I3055	09C9222	SOC ECOLOGY2	Demand Control Ventilation	1,437	3.0	143	\$ 307	\$ 4,470	\$ 690	\$ 3,780	12.3
I1076	09C9222	SOC ECOLOGY2	AHU 3H - Reduce ACH from 7 to 6	34,011	8.0	3,494	\$ 7,354	\$ 178,681	\$ 16,225	\$ 162,456	22.1
I1044	09C9222	SOC ECOLOGY2	AHU 3C - SP Reset	28,966	-	3,872	\$ 6,998	\$ 25,130	\$ 13,441	\$ 11,689	1.7
I1069	09C9300	CRAWFORD HAL	AHU 2 - CAV to VAV	3,820	-	548	\$ 953	\$ 30,988	\$ 1,692	\$ 29,296	30.7
I1068	09C9300	CRAWFORD HAL	DCV for a CAV system - AHU 1, 3 and 4	77,114	(1.0)	8,677	\$ 17,294	\$ 122,834	\$ 36,155	\$ 86,679	5.0
I6004	09C9302	CENTRL PLANT	CHW Primary VFD	112,210	-	11,136	\$ 23,943	\$ 29,563	\$ 53,861	\$ 5,913	0.2
I6003	09C9302	CENTRL PLANT	Condenser Water Reset	295,393	-	29,315	\$ 63,030	\$ 100,693	\$ 141,788	\$ 20,139	0.3
I3269	09C9302	CENTRL PLANT	Equipment Efficiency Upgrade	167,250	-	21,284	\$ 39,530	\$ 693,000	\$ 72,600	\$ 620,400	15.7
I6002	09C9314	BREN EVENTS	ECM- Install Air Curtain At Loading Dock (Bren Events Center)	4,008	-	935	\$ 1,296	\$ 16,342	\$ 1,473	\$ 14,869	11.5
I3074	09C9314	BREN EVENTS	Retrofit existing 1000-watt HID's with fluorescent high bays, multiple switching	55,080	37.0	5,466	\$ 11,753	\$ 61,937	\$ 26,438	\$ 35,499	3.0
I3057	09C9314	BREN EVENTS	Zone DDC Upgrade	32,640	8.0	3,968	\$ 7,562	\$ 348,492	\$ 14,472	\$ 334,020	44.2
I1077	09C9314	BREN EVENTS	AHU 4 and 6 - VIV to VAV and SP reset	20,511	(1.0)	5,151	\$ 6,932	\$ 107,423	\$ 12,888	\$ 94,535	13.6
I1057	09C9314	BREN EVENTS	DCV for a CAV system - AHU 2 and AHU 5	22,046	-	3,293	\$ 5,610	\$ 73,167	\$ 11,033	\$ 62,134	11.1
I1056	09C9314	BREN EVENTS	AHU 1 and 3 - Convert to VAV and SP reset	307,545	(4.0)	70,585	\$ 98,476	\$ 570,110	\$ 185,451	\$ 384,659	3.9
I3058	09C9322	MED SCI C	Zone DDC Upgrade	18,746	5.0	2,279	\$ 4,344	\$ 199,955	\$ 8,312	\$ 191,643	44.1
I1024	09C9322	MED SCI C	AHU C2, C3 - Reduce ACH from 7 to 6	131,928	24.0	20,996	\$ 34,631	\$ 263,125	\$ 69,396	\$ 193,729	5.6
I1023	09C9322	MED SCI C	AHU C1 - SP Reset	14,372	-	3,051	\$ 4,399	\$ 21,668	\$ 8,027	\$ 13,641	3.1
I3060	09C9323	MED SCI D	Zone DDC Upgrade	24,150	6.0	2,936	\$ 5,595	\$ 257,084	\$ 10,708	\$ 246,376	44.0
I1026	09C9323	MED SCI D	AHU D2, D3 - Reduce ACH from 7 to 6	157,088	29.0	25,001	\$ 41,236	\$ 234,288	\$ 82,629	\$ 151,659	3.7
I1025	09C9323	MED SCI D	AHU D1 - SP Reset	15,888	-	3,417	\$ 4,899	\$ 21,957	\$ 8,865	\$ 13,092	2.7
I3062	09C9325	MED SCI A	Zone DDC Upgrade	4,503	1.0	547	\$ 1,043	\$ 48,560	\$ 1,996	\$ 46,564	44.6
I1019	09C9325	MED SCI A	AHU A1,A2, - Reduce ACH from 13.72 to 8	55,313	29.0	10,770	\$ 16,133	\$ 40,315	\$ 31,841	\$ 8,474	0.5
I1064	09C9328	MED SCI B	Zone DDC Upgrade	12,037	3.0	1,463	\$ 2,789	\$ 128,542	\$ 5,337	\$ 123,205	44.2



Table 11.1: SEP Projects by Funding Source and Project Type (Continued)

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
I1022	09C9328	MED SCI B	AHU B2, B3 - Reduce ACH from 7 to 6	108,100	20.0	17,204	\$ 28,377	\$ 120,776	\$ 56,860	\$ 63,916	2.3
I1021	09C9328	MED SCI B	AHU B1 - SP Reset	15,690	-	3,371	\$ 4,835	\$ 21,380	\$ 8,833	\$ 12,547	2.6
I3066	09C9329	MED SURG 2	Zone DDC Upgrade	20,217	5.0	2,458	\$ 4,684	\$ 214,237	\$ 8,964	\$ 205,273	43.8
I1031	09C9329	MED SURG 2	AHU 8 - SP reset	2,694	-	376	\$ 664	\$ 20,322	\$ 1,274	\$ 19,048	28.7
I1030	09C9329	MED SURG 2	AHU-7 - CAV to VAV and SP Reset	117,850	(1.0)	37,101	\$ 45,979	\$ 443,081	\$ 82,170	\$ 360,911	7.8
I1029	09C9329	MED SURG 2	AHU-4 - SP reset	7,398	-	1,586	\$ 2,277	\$ 20,803	\$ 3,721	\$ 17,082	7.5
I1028	09C9329	MED SURG 2	AHU-5 - SP reset	9,083	-	1,984	\$ 2,826	\$ 20,899	\$ 4,835	\$ 16,064	5.7
I1027	09C9329	MED SURG 2	AHU-3, 6 - SP reset	63,021	1.0	21,452	\$ 25,910	\$ 46,029	\$ 44,685	\$ 9,206	0.4
I3067	09CTBD1	BREN HALL	Demand Control Ventilation	5,559	12.0	552	\$ 1,186	\$ 4,470	\$ 2,668	\$ 1,802	1.5
I3351	09CWIDE	CAMPUSWIDE	Med Sci A-B-C-D Exhaust Stack Discharge Reduction	53,465	-	5,650	\$ 11,690	\$ 150,000	\$ 25,100	\$ 124,900	10.7
I3350	09CWIDE	CAMPUSWIDE	Med Sci A-B-C-D Aircurty	460,500	-	67,568	\$ 116,191	\$ 780,000	\$ 185,200	\$ 594,800	5.1
I3313	09CWIDE	CAMPUSWIDE	Retrofit All Cold Room Compressors to Energy Star Replacement units.	130,000	-	12,901	\$ 27,739	\$ 1,191,960	\$ 62,400	\$ 1,129,560	40.7
I3306	09CWIDE	CAMPUSWIDE	Replace Chilled Water Valves With Delta P Valves	137,500	-	13,646	\$ 29,339	\$ 457,380	\$ 66,000	\$ 391,380	13.3
I3305	09CWIDE	CAMPUSWIDE	Low Pressure Drop Filters (Additional)	125,000	-	12,405	\$ 26,672	\$ 207,900	\$ 60,000	\$ 147,900	5.5
I3268	09CWIDE	CAMPUSWIDE	DDC Conversion and Control Upgrade - Buildings < 50k GSF not in SEP	220,065	-	26,556	\$ 50,825	\$ 3,118,500	\$ 97,900	\$ 3,020,600	59.4
I3265	09CWIDE	CAMPUSWIDE	Install Efficient HTW Solution for Health Sciences	1,086,750	-	215,625	\$ 320,264	\$ 11,088,000	\$ 345,000	\$ 10,743,000	33.5
I3264	09CWIDE	CAMPUSWIDE	Chillers, heat exchangers, air-handlers, duct streamlining measures (e.g., radial ducts where right-angle transitions exist), pumps, controls, and motors with <10 year payback.	112,500	-	11,165	\$ 24,005	\$ 1,074,150	\$ 54,000	\$ 1,020,150	42.5
I3262	09CWIDE	CAMPUSWIDE	EMS Control Upgrade - Buildings < 50k GSF not in SEP	393,375	-	46,067	\$ 89,701	\$ 3,465,000	\$ 177,300	\$ 3,287,700	36.7
I3261	09CWIDE	CAMPUSWIDE	Upgrade and Enhance EMS as needed to manage, monitor, and maintain measures embodied in the SEP.	710,250	-	81,419	\$ 160,517	\$ 4,851,000	\$ 323,000	\$ 4,528,000	28.2
I3260	09CWIDE	CAMPUSWIDE	HVAC Efficiency Improvement - Buildings < 50k GSF not in SEP	377,250	-	57,744	\$ 97,147	\$ 2,425,500	\$ 147,800	\$ 2,277,700	23.4
I3258	09CWIDE	CAMPUSWIDE	Remove Sound Attenuators to Reduce Pressure Drop on Fan System	92,500	-	9,180	\$ 19,737	\$ 582,120	\$ 44,400	\$ 537,720	27.2
I3257	09CWIDE	CAMPUSWIDE	Reduce ACH Using Low Flow Fumehoods	354,800	-	48,331	\$ 86,465	\$ 2,079,000	\$ 148,800	\$ 1,930,200	22.3
I3254	09CWIDE	CAMPUSWIDE	Replace Stand Alone Packaged DX Units < 8 SEER	97,875	-	10,494	\$ 21,525	\$ 526,680	\$ 45,700	\$ 480,980	22.3
I3253	09CWIDE	CAMPUSWIDE	Replace Chillers, Heat Exchangers, Air Handlers, Pumps, Motors, and Controls with < 10 Yr. Payback.	387,500	-	38,456	\$ 82,684	\$ 2,079,000	\$ 186,000	\$ 1,893,000	22.9
I3251	09CWIDE	CAMPUSWIDE	Reduced Exhaust Stack Velocity and Eliminate Make Up Air in Lab Exhaust Systems	403,750	-	47,878	\$ 92,555	\$ 1,940,400	\$ 181,000	\$ 1,759,400	19.0
I3249	09CWIDE	CAMPUSWIDE	Data Center Energy Efficiency Project	38,500	-	3,821	\$ 8,215	\$ 152,460	\$ 18,480	\$ 133,980	16.3
I3247	09CWIDE	CAMPUSWIDE	Occupancy Based Ventilation Control	128,880	-	14,415	\$ 28,832	\$ 450,450	\$ 59,200	\$ 391,250	13.6
I3245	09CWIDE	CAMPUSWIDE	Implement Demand Control Ventilation - Buildings < 50k GSF not in SEP	244,925	-	27,274	\$ 54,695	\$ 665,280	\$ 112,700	\$ 552,580	10.1
I3243	09CWIDE	CAMPUSWIDE	Monitoring Based Commissioning - Buildings < 50k GSF not in SEP	732,700	-	90,832	\$ 171,199	\$ 1,212,750	\$ 322,000	\$ 890,750	5.2
I3241	09CWIDE	CAMPUSWIDE	Aircuity Installation as Applicable	-	-	-	\$ -	\$ -	\$ -	\$ -	-
I3236	09CWIDE	CAMPUSWIDE	Chilled Beams or Fan Coil Units for Isolated Heat Loads	36,000	-	3,573	\$ 7,682	\$ 519,750	\$ 17,280	\$ 502,470	65.4
I3228	09CWIDE	CAMPUSWIDE	Auto-Sash Closers	410,250	-	51,647	\$ 96,504	\$ 1,178,100	\$ 179,000	\$ 999,100	10.4
I3158	09CWIDE	CAMPUSWIDE	Install brilliant white "cool roof" roofing material at the Bren Events Center and Med Sci A-C	4,108	-	408	\$ 876	\$ 1,187,543	\$ 1,972	\$ 1,185,571	1,352.7
I3157	09CWIDE	CAMPUSWIDE	Install occupancy sensor switches for restroom fans, and right size motors wherever cost-feasible campus wide.	131,743	30.0	13,074	\$ 28,111	\$ 342,342	\$ 63,236	\$ 279,106	9.9
I3156	09CWIDE	CAMPUSWIDE	Retrofit office trailers with high efficiency heat pumps and occupancy sensors for air-conditioning.	62,500	25.0	6,203	\$ 13,336	\$ 166,320	\$ 30,000	\$ 136,320	10.2
<b>Subtotal, State Funded, HVAC Projects</b>				<b>25,212,757</b>	<b>1,808.0</b>	<b>3,915,283</b>	<b>\$ 6,538,616</b>	<b>\$ 81,440,159</b>	<b>\$ 12,031,760</b>	<b>\$ 69,408,399</b>	<b>10.6</b>
<b>Lighting Projects</b>											
I3320	09C9001	LANGSON LIB	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	3,150	-	313	\$ 672	\$ 8,265	\$ 1,512	\$ 6,753	10.0
I3185	09C9001	LANGSON LIB	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	67,167	36.0	6,666	\$ 14,332	\$ 147,810	\$ 32,240	\$ 115,570	8.1
I3318	09C9003	ADMIN BLDG	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	3,150	-	313	\$ 672	\$ 8,265	\$ 1,512	\$ 6,753	10.0

**Table 11.1: SEP Projects by Funding Source and Project Type (Continued)**

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
I3186	09C9003	ADMIN BLDG	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	59,120	28.0	5,867	\$ 12,615	\$ 158,333	\$ 28,377	\$ 129,956	10.3
I3331	09C9005	UCI STU CNTR	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	2,100	-	208	\$ 448	\$ 5,510	\$ 1,008	\$ 4,502	10.0
I3187	09C9005	UCI STU CNTR	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	122,661	64.0	12,173	\$ 26,173	\$ 91,968	\$ 58,877	\$ 33,091	1.3
I3188	09C9035	HIB	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	64,761	33.0	6,427	\$ 13,818	\$ 158,781	\$ 31,085	\$ 127,696	9.2
I3189	09C9050	W SMITH HALL	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	7,632	4.0	757	\$ 1,628	\$ 14,130	\$ 3,663	\$ 10,467	6.4
I3190	09C9051	CTB THEATRE	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	16,004	8.0	1,588	\$ 3,415	\$ 7,834	\$ 7,682	\$ 1,567	0.5
I3017	09C9052	SOTA DANCE	Retrofit 400W MH Low bays with 200W ceramic EHID low bays w/daylight controls	15,500	8.0	1,538	\$ 3,307	\$ 24,936	\$ 7,440	\$ 17,496	5.3
I3191	09C9053	SOTA PROD ST	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	1,827	1.0	181	\$ 390	\$ 2,146	\$ 877	\$ 1,269	3.3
I3192	09C9054	SOTA DRAMA	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	5,285	2.0	524	\$ 1,128	\$ 14,407	\$ 2,537	\$ 11,870	10.5
I3193	09C9055	UNIV ART GAL	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	5,244	3.0	520	\$ 1,119	\$ 9,052	\$ 2,517	\$ 6,535	5.8
I3194	09C9056	SOTA ART STD	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	4,022	2.0	399	\$ 858	\$ 5,498	\$ 1,931	\$ 3,567	4.2
I3195	09C9057	SOTA SCULPTR	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	3,984	2.0	395	\$ 850	\$ 5,056	\$ 1,912	\$ 3,144	3.7
I3196	09C9073	SCILIBRARY	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	87,236	47.0	8,657	\$ 18,614	\$ 198,291	\$ 41,873	\$ 156,418	8.4
I3197	09C9075	STEINHAUS H	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	40,016	21.0	3,971	\$ 8,538	\$ 69,568	\$ 19,208	\$ 50,360	5.9
I3321	09C9084	MCGAUGH HALL	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	3,150	-	313	\$ 672	\$ 8,265	\$ 1,512	\$ 6,753	10.0
I3198	09C9084	MCGAUGH HALL	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	72,269	38.0	7,172	\$ 15,420	\$ 107,349	\$ 34,689	\$ 72,660	4.7
I3330	09C9087	SPRAGUE HALL	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	2,100	-	208	\$ 448	\$ 5,510	\$ 1,008	\$ 4,502	10.0
I3199	09C9088	HEWITT HALL	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install daylighting sensors where appropriate	13,446	-	1,334	\$ 2,869	\$ 44,688	\$ 6,454	\$ 38,234	13.3
I3200	09C9090	NAT SCI 1	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	80,111	44.0	7,950	\$ 17,094	\$ 152,182	\$ 38,453	\$ 113,729	6.7
I3327	09C9091	NAT SCI 2	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	2,625	-	261	\$ 560	\$ 6,888	\$ 1,260	\$ 5,628	10.0
I3201	09C9091	NAT SCI 2	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	52,994	33.0	5,259	\$ 11,308	\$ 101,720	\$ 25,437	\$ 76,283	6.7
I3202	09C9100	ROWLAND HALL	Retrofit T12 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	280,174	158.0	27,804	\$ 59,783	\$ 250,127	\$ 134,484	\$ 115,643	1.9
I3203	09C9107	BERKELEY PL	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	29,080	21.0	2,886	\$ 6,205	\$ 45,956	\$ 13,958	\$ 31,998	5.2
I3204	09C9108	REINES HALL	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	55,111	29.0	5,469	\$ 11,759	\$ 87,876	\$ 26,453	\$ 61,423	5.2
I3326	09C9114	M SCI & TECH	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	1,050	-	104	\$ 224	\$ 2,755	\$ 504	\$ 2,251	10.0

**Table 11.1: SEP Projects by Funding Source and Project Type (Continued)**

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
I3205	09C9114	M SCI & TECH	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	52,693	25.0	5,229	\$ 11,243	\$ 101,569	\$ 25,292	\$ 76,277	6.8
I3206	09C9115	CROUL HALL	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	16,270	10.0	1,615	\$ 3,472	\$ 30,833	\$ 7,810	\$ 23,023	6.6
I3208	09C9125	ENG TOWER	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	42,984	22.0	4,266	\$ 9,172	\$ 76,170	\$ 20,632	\$ 55,538	6.1
I3209	09C9126	COMP SCI BLD	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	30,096	15.0	2,987	\$ 6,422	\$ 71,786	\$ 14,446	\$ 57,340	8.9
I3210	09C9128	SOC ECOLOGY	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	26,902	13.0	2,670	\$ 5,740	\$ 63,199	\$ 12,913	\$ 50,286	8.8
I3211	09C9132	IRVINE HALL	Install occupancy and daylighting sensors where appropriate	8,786	3.0	872	\$ 1,875	\$ 39,780	\$ 4,217	\$ 35,563	19.0
I3212	09C9140	ENG GATEWAY	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	51,875	27.0	5,148	\$ 11,069	\$ 96,962	\$ 24,900	\$ 72,062	6.5
I3213	09C9204	SOCSCI TOWER	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	37,435	19.0	3,715	\$ 7,988	\$ 81,202	\$ 17,969	\$ 63,233	7.9
I3328	09C9212	SOC SCI PL A	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	2,625	-	261	\$ 560	\$ 6,888	\$ 1,260	\$ 5,628	10.0
I3214	09C9212	SOC SCI PL A	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	40,635	21.0	4,033	\$ 8,671	\$ 99,741	\$ 19,505	\$ 80,236	9.3
I3329	09C9221	SOC SCI PL B	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	2,625	-	261	\$ 560	\$ 6,888	\$ 1,260	\$ 5,628	10.0
I3215	09C9221	SOC SCI PL B	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	43,195	22.0	4,287	\$ 9,217	\$ 106,345	\$ 20,734	\$ 85,611	9.3
I3216	09C9222	SOC ECOLOGY2	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	27,763	14.0	2,755	\$ 5,924	\$ 61,400	\$ 13,326	\$ 48,074	8.1
I3319	09C9300	CRAWFORD HAL	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	1,575	-	156	\$ 336	\$ 4,133	\$ 756	\$ 3,377	10.0
I3218	09C9300	CRAWFORD HAL	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	35,384	17.0	3,512	\$ 7,550	\$ 99,615	\$ 16,984	\$ 82,631	10.9
I3056	09C9300	CRAWFORD HAL	Gym Lighting Retrofit - Implement recommendations in AEI Lighting Survey, with occupancy sensors	38,640	10.0	3,835	\$ 8,245	\$ 22,484	\$ 18,547	\$ 4,497	0.5
I3219	09C9314	BREN EVENTS	Retrofit T12 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	28,242	13.0	2,803	\$ 6,026	\$ 65,414	\$ 13,556	\$ 51,858	8.6
I3324	09C9322	MED SCI C	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	1,575	-	156	\$ 336	\$ 4,133	\$ 756	\$ 3,377	10.0
I3220	09C9322	MED SCI C	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	4,531	2.0	450	\$ 967	\$ 20,382	\$ 2,175	\$ 18,207	18.8
I3325	09C9323	MED SCI D	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	2,100	-	208	\$ 448	\$ 5,510	\$ 1,008	\$ 4,502	10.0
I3221	09C9323	MED SCI D	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	5,536	2.0	549	\$ 1,181	\$ 24,923	\$ 2,657	\$ 22,266	18.9
I3322	09C9325	MED SCI A	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	1,050	-	104	\$ 224	\$ 2,755	\$ 504	\$ 2,251	10.0
I3323	09C9328	MED SCI B	Replace stairwell light fixtures with bi-level fixtures with occupancy sensors	1,575	-	156	\$ 336	\$ 4,133	\$ 756	\$ 3,377	10.0
I3222	09C9328	MED SCI B	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	2,494	1.0	247	\$ 532	\$ 11,216	\$ 1,197	\$ 10,019	18.8
I3223	09C9329	MED SURG 2	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	40,239	22.0	3,993	\$ 8,586	\$ 75,415	\$ 19,315	\$ 56,100	6.5

Table 11.1: SEP Projects by Funding Source and Project Type (Continued)

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
I3224	09CTBD1	BREN HALL	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install daylighting sensors where appropriate	75,609	54.0	7,503	\$ 16,133	\$ 164,283	\$ 36,292	\$ 127,991	7.9
I3309	09CWIDE	CAMPUSWIDE	Install Photo Sensors and Astronomical Time clocks to Control all exterior lighting.	62,500	-	6,203	\$ 13,336	\$ 69,300	\$ 30,000	\$ 39,300	2.9
I3308	09CWIDE	CAMPUSWIDE	Lighting Efficiency Improvement - Buildings < 50k GSF not in SEP	550,000	-	54,582	\$ 117,357	\$ 609,840	\$ 264,000	\$ 345,840	2.9
I3280	09CWIDE	CAMPUSWIDE	Daylighting controls-MED SCI A,B,C,D Path, Area, and Parking Lot Lighting Upgrade to LED, High Efficiency Lighting Systems	17,500	-	1,737	\$ 3,734	\$ 69,300	\$ 8,400	\$ 60,900	16.3
I3250	09CWIDE	CAMPUSWIDE	Daylighting controls-MED SCI A,B,C,D Path, Area, and Parking Lot Lighting Upgrade to LED, High Efficiency Lighting Systems	392,500	-	38,952	\$ 83,750	\$ 1,663,200	\$ 188,400	\$ 1,474,800	17.6
<b>Subtotal, State Funded, Lighting Projects</b>				<b>2,745,898</b>	<b>894.0</b>	<b>272,503</b>	<b>\$ 585,911</b>	<b>\$ 5,501,962</b>	<b>\$ 1,318,030</b>	<b>\$ 4,183,932</b>	<b>7.1</b>
<b>Other Projects</b>											
I3237	09CWIDE	CAMPUSWIDE	Extend 12KV Campus Primary Grid to Middle Earth and East Campus Housing	750,000	-	74,430	\$ 160,033	\$ 14,553,000	\$ 360,000	\$ 14,193,000	88.7
I3231	09CWIDE	CAMPUSWIDE	Install Power Factor Correction with < 10 YR. Payback.	117,500	-	11,661	\$ 25,072	\$ 485,100	\$ 56,400	\$ 428,700	17.1
I3001	09C9073	SCILIBRARY	Elevator Retrofit - MG to VVVF	28,208	20.0	2,799	\$ 6,019	\$ 866,668	\$ 13,540	\$ 853,128	141.7
I3002	09C9075	STEINHAUS H	Elevator Retrofit - MG to VVVF	10,250	10.0	1,017	\$ 2,187	\$ 433,334	\$ 4,920	\$ 428,414	195.9
I3369	09C9084	MCGAUGH HALL	Air Curtain at Loading Dock	6,300	-	1,250	\$ 1,857	\$ 18,000	\$ 2,000	\$ 16,000	8.6
I3368	09C9300	CRAWFORD HAL	Pool Covers	25,200	-	5,000	\$ 7,426	\$ 140,000	\$ 8,000	\$ 132,000	17.8
I3365	09C9300	CRAWFORD HAL	Solar Hot Water for Showers and Laundry	31,500	-	6,250	\$ 9,283	\$ 120,000	\$ 10,000	\$ 110,000	11.8
I3555	09CWIDE	CAMPUSWIDE	Install controller on vending machine (e.g. Vending Miser)	2,621	-	260	\$ 559	\$ 22,586	\$ 1,258	\$ 21,328	38.1
I3314	09CWIDE	CAMPUSWIDE	Lab Freezer Replace Remaining ULT Freezers	325,000	-	32,253	\$ 69,347	\$ 4,365,900	\$ 156,000	\$ 4,209,900	60.7
I3312	09CWIDE	CAMPUSWIDE	Replace existing Ice Machines with Energy Star Units	28,500	-	2,828	\$ 6,081	\$ 200,970	\$ 13,680	\$ 187,290	30.8
I3311	09CWIDE	CAMPUSWIDE	Replace Copiers with Energy Star w/ Quick Standby Recovery Features	34,000	-	3,374	\$ 7,255	\$ 166,320	\$ 16,320	\$ 150,000	20.7
I3310	09CWIDE	CAMPUSWIDE	Replace -20/-30 Lab Freezers with Energy Star Units	608,580	-	60,395	\$ 129,857	\$ 2,546,775	\$ 292,118	\$ 2,254,657	17.4
I3184	09CWIDE	CAMPUSWIDE	Server Virtualization Phase 3 of 3: 10 VM Installations	140,000	35.0	13,894	\$ 29,873	\$ 291,060	\$ 67,200	\$ 223,860	7.5
I3183	09CWIDE	CAMPUSWIDE	Server Virtualization Phase 2 of 3: 10 VM Installations	140,000	35.0	13,894	\$ 29,873	\$ 291,060	\$ 67,200	\$ 223,860	7.5
I3182	09CWIDE	CAMPUSWIDE	Server Virtualization Phase 1 of 3: 10 VM Installations	140,000	35.0	13,894	\$ 29,873	\$ 291,060	\$ 67,200	\$ 223,860	7.5
I3307	09CWIDE	CAMPUSWIDE	Wavelength Selective Window film	28,500	-	2,828	\$ 6,081	\$ 103,950	\$ 13,680	\$ 90,270	14.8
I3256	09CWIDE	CAMPUSWIDE	Compressed and Vacuum Air System Efficiency Retrofit	175,000	-	17,367	\$ 37,341	\$ 970,200	\$ 84,000	\$ 886,200	23.7
I3239	09CWIDE	CAMPUSWIDE	Cool Roof Replacement on Select Buildings as they become available	-	-	-	\$ -	\$ -	\$ -	\$ -	-
I3181	09CWIDE	CAMPUSWIDE	LCD Phase 6 of 6: 565 Verdiem (PC Power Management) Installations and 23 CRT Replacements	60,398	15.0	5,994	\$ 12,887	\$ 38,725	\$ 28,991	\$ 9,734	0.8
I3180	09CWIDE	CAMPUSWIDE	LCD Phase 5 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	106,898	27.0	10,609	\$ 22,810	\$ 68,191	\$ 51,311	\$ 16,880	0.7
I3179	09CWIDE	CAMPUSWIDE	LCD Phase 4 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	106,898	27.0	10,609	\$ 22,810	\$ 68,191	\$ 51,311	\$ 16,880	0.7
I3178	09CWIDE	CAMPUSWIDE	LCD Phase 3 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	106,898	27.0	10,609	\$ 22,810	\$ 68,191	\$ 51,311	\$ 16,880	0.7
I3177	09CWIDE	CAMPUSWIDE	LCD Phase 2 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	106,898	27.0	10,609	\$ 22,810	\$ 68,191	\$ 51,311	\$ 16,880	0.7
I3176	09CWIDE	CAMPUSWIDE	LCD Phase 1 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	106,898	27.0	10,609	\$ 22,810	\$ 68,191	\$ 51,311	\$ 16,880	0.7
I3175	09CWIDE	CAMPUSWIDE	Refrigerators Phase 6 of 6: 9 Energy Star Refrigerator Replacements	10,094	2.0	1,002	\$ 2,154	\$ 8,707	\$ 4,845	\$ 3,862	1.8
I3174	09CWIDE	CAMPUSWIDE	Refrigerators Phase 5 of 6: 100 Energy Star Refrigerator Replacements	112,150	26.0	11,130	\$ 23,930	\$ 96,743	\$ 53,832	\$ 42,911	1.8
I3173	09CWIDE	CAMPUSWIDE	Refrigerators Phase 4 of 6: 100 Energy Star Refrigerator Replacements	112,150	26.0	11,130	\$ 23,930	\$ 96,743	\$ 53,832	\$ 42,911	1.8
I3172	09CWIDE	CAMPUSWIDE	Refrigerators Phase 3 of 6: 100 Energy Star Refrigerator Replacements	112,150	26.0	11,130	\$ 23,930	\$ 96,743	\$ 53,832	\$ 42,911	1.8
I3171	09CWIDE	CAMPUSWIDE	Refrigerators Phase 2 of 6: 100 Energy Star Refrigerator Replacements	112,150	26.0	11,130	\$ 23,930	\$ 96,743	\$ 53,832	\$ 42,911	1.8
I3170	09CWIDE	CAMPUSWIDE	Refrigerators Phase 1 of 6: 100 Energy Star Refrigerator Replacements	112,150	26.0	11,130	\$ 23,930	\$ 96,743	\$ 53,832	\$ 42,911	1.8
I3169	09CWIDE	CAMPUSWIDE	Refrigerators Phase 4 of 4: 20 Energy Star Refrigerator Replacements	22,430	5.0	2,226	\$ 4,786	\$ 19,349	\$ 10,766	\$ 8,583	1.8

Table 11.1: SEP Projects by Funding Source and Project Type (Continued)

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
I3168	09CWIDE	CAMPUSWIDE	Refrigerators Phase 3 of 4: 100 Energy Star Refrigerator Replacements	112,150	26.0	11,130	\$ 23,930	\$ 96,743	\$ 53,832	\$ 42,911	1.8
I3167	09CWIDE	CAMPUSWIDE	Refrigerators Phase 2 of 4: 100 Energy Star Refrigerator Replacements	112,150	26.0	11,130	\$ 23,930	\$ 96,743	\$ 53,832	\$ 42,911	1.8
I3166	09CWIDE	CAMPUSWIDE	Refrigerators Phase 1 of 4: 100 Energy Star Refrigerator Replacements	112,150	26.0	11,130	\$ 23,930	\$ 96,743	\$ 53,832	\$ 42,911	1.8
I3165	09CWIDE	CAMPUSWIDE	Lab Freezers Phase 3 of 3: 5 Lab Freezer Replacements	9,660	2.0	959	\$ 2,061	\$ 97,020	\$ 4,637	\$ 92,383	44.8
I3164	09CWIDE	CAMPUSWIDE	Lab Freezers Phase 2 of 3: 20 Lab Freezer Replacements	38,640	9.0	3,835	\$ 8,245	\$ 388,080	\$ 18,547	\$ 369,533	44.8
I3163	09CWIDE	CAMPUSWIDE	Lab Freezers Phase 1 of 3: 20 Lab Freezer Replacements	38,640	9.0	3,835	\$ 8,245	\$ 388,080	\$ 18,547	\$ 369,533	44.8
I3073	09CWIDE	CAMPUSWIDE	Install controller on vending machine (e.g. Vending Miser)	46,362	-	4,601	\$ 9,893	\$ 20,551	\$ 22,254	\$ 4,110	0.4
I3071	09CWIDE	CAMPUSWIDE	Solar Pool Water Heater - Crawford Pool	87,617	-	17,384	\$ 25,821	\$ 287,531	\$ 27,815	\$ 259,716	10.1
<b>Subtotal, State Funded, Other Projects</b>				<b>4,336,689</b>	<b>520.0</b>	<b>445,310</b>	<b>\$ 937,597</b>	<b>\$ 28,228,923</b>	<b>\$ 2,057,129</b>	<b>\$ 26,171,794</b>	<b>27.9</b>
<b>Savings by Design (SBD) - Deferred Maintenance &amp; Capital Renewal Projects</b>											
I3150	09CWIDE	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2014	89,488	-	17,756	\$ 26,372	\$ 346,500	\$ 28,409	\$ 318,091	12.1
I3149	09CWIDE	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2014	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3148	09CWIDE	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2014	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3147	09CWIDE	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2013	89,488	-	17,756	\$ 26,372	\$ 346,500	\$ 28,409	\$ 318,091	12.1
I3146	09CWIDE	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2013	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3145	09CWIDE	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2013	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3144	09CWIDE	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2012	89,488	-	17,756	\$ 26,372	\$ 346,500	\$ 28,409	\$ 318,091	12.1
I3143	09CWIDE	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2012	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3142	09CWIDE	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2012	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3141	09CWIDE	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2011	89,488	-	17,756	\$ 26,372	\$ 346,500	\$ 28,409	\$ 318,091	12.1
I3140	09CWIDE	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2011	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3139	09CWIDE	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2011	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3138	09CWIDE	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2010	89,488	-	17,756	\$ 26,372	\$ 346,500	\$ 28,409	\$ 318,091	12.1
I3137	09CWIDE	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2010	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3136	09CWIDE	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2010	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3135	09CWIDE	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	89,488	-	17,756	\$ 26,372	\$ 346,500	\$ 28,409	\$ 318,091	12.1
I3134	09CWIDE	CAMPUSWIDE	Second Electric Savings Component of DM and CR Projects 2009	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3133	09CWIDE	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2009	227,275	52.0	22,555	\$ 48,495	\$ 693,000	\$ 109,092	\$ 583,908	12.0
I3349	09C9084	MCGAUGH HALL	DM Component of Exhaust Fan Replacement	226,500	-	25,602	\$ 50,891	\$ 1,200,000	\$ 103,600	\$ 1,096,400	21.5
I3338	09C9125	ENG TOWER	DM Component of Exhaust Fan Replacement	175,200	-	19,886	\$ 39,433	\$ 850,000	\$ 80,000	\$ 770,000	19.5
<b>Subtotal, State Funded, (SBD) - Deferred Maintenance &amp; Capital Renewal Projects</b>				<b>3,665,930</b>	<b>624.0</b>	<b>422,679</b>	<b>\$ 830,499</b>	<b>\$ 12,445,000</b>	<b>\$ 1,663,158</b>	<b>\$ 10,781,842</b>	<b>13.0</b>
<b>Subtotal, State Funded Projects</b>				<b>41,312,354</b>	<b>4,619.0</b>	<b>5,780,988</b>	<b>\$ 10,193,641</b>	<b>\$ 135,955,498</b>	<b>\$ 19,320,355</b>	<b>\$ 116,635,143</b>	<b>11.4</b>
<b>Housing Funded</b>											
<b>New Construction</b>											
I3121	09C9653	VERANO 400	SBD, New/Renov - Verano Place Unit 4 Renovation	168,897	24.0	22,979	\$ 41,137	\$ 430,361	\$ 70,881	\$ 359,480	8.7
I3122	09C9655	VERANO 600	SBD, New/Renov - Verano Place Unit 6 Renovation	152,327	22.0	20,724	\$ 37,101	\$ 388,138	\$ 63,927	\$ 324,211	8.7
<b>Subtotal, Housing, New Construction</b>				<b>321,224</b>	<b>46.0</b>	<b>43,703</b>	<b>\$ 78,238</b>	<b>\$ 818,500</b>	<b>\$ 134,808</b>	<b>\$ 683,692</b>	<b>8.7</b>

Table 11.1: SEP Projects by Funding Source and Project Type (Continued)

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
<b>Other Retrofits</b>											
I3276	09CWIDEH	CAMPUSWIDE - HOUSING	Dining Svcs Equip Replacement	-	-	-	\$ -	\$ -	\$ -	\$ -	
I3242	09CWIDEH	CAMPUSWIDE - HOUSING	Replace Refrigerators with Energy Star units	487,500	-	48,380	\$ 104,021	\$ 554,400	\$ 234,000	\$ 320,400	3.1
I3235	09CWIDEH	CAMPUSWIDE - HOUSING	Replace Electric Range with Energy Star unit	18,500	-	1,836	\$ 3,947	\$ 242,550	\$ 8,880	\$ 233,670	59.2
I3234	09CWIDEH	CAMPUSWIDE - HOUSING	Retrofit All Single Glazed Windows with Insulated Glass Windows.	14,175	-	2,813	\$ 4,177	\$ 166,320	\$ 4,500	\$ 161,820	38.7
I3233	09CWIDEH	CAMPUSWIDE - HOUSING	Improve Insulation in Attics and Stud Spaces.	119,700	-	23,750	\$ 35,275	\$ 1,178,100	\$ 38,000	\$ 1,140,100	32.3
<b>Subtotal, Housing, Other Retrofits</b>				<b>639,875</b>	<b>-</b>	<b>76,778</b>	<b>\$ 147,421</b>	<b>\$ 2,141,370</b>	<b>\$ 285,380</b>	<b>\$ 1,855,990</b>	<b>12.6</b>
<b>HVAC Projects</b>											
I3118	09C9518	MESA CEN SER	Mesa Commons Kitchen Hood Controls	16,281	12.0	1,714	\$ 3,555	\$ 32,225	\$ 7,654	\$ 24,570	6.9
I3119	09C9530	M E BRDYWINE	Brandywine Kitchen Hood Controls	3,477	5.0	377	\$ 768	\$ 12,474	\$ 1,616	\$ 10,858	14.1
I3120	09C9557	ME PIPPIN	Pippin Kitchen Hood Controls	14,990	12.0	1,559	\$ 3,257	\$ 32,225	\$ 7,077	\$ 25,148	7.7
I3273	09C9653	VERANO 400	Water Heater Replacement	20,003	-	3,969	\$ 5,895	\$ 263,340	\$ 6,350	\$ 256,990	43.6
I3272	09C9653	VERANO 400	Replace Heating Furnace (780 units)	114,395	-	22,698	\$ 33,712	\$ 1,191,960	\$ 36,316	\$ 1,155,644	34.3
I3238	09C9653	VERANO 400	Wall Furnace Replacement	14,175	-	2,813	\$ 4,177	\$ 148,302	\$ 4,500	\$ 143,802	34.4
I3275	09CWIDEH	CAMPUSWIDE - HOUSING	Refrigerant Heat Recovery for Water Preheating in Dining Facilities	-	-	-	\$ -	\$ -	\$ -	\$ -	
I3274	09CWIDEH	CAMPUSWIDE - HOUSING	BA Fans in Residential Dining IACHBS	-	-	-	\$ -	\$ -	\$ -	\$ -	
I3267	09CWIDEH	CAMPUSWIDE - HOUSING	Install Solar Water Heating System in Housing Units with Central Heating Water Heating System	47,250	-	9,375	\$ 13,925	\$ 623,700	\$ 15,000	\$ 608,700	43.7
I3266	09CWIDEH	CAMPUSWIDE - HOUSING	Replace All Hot Water Heaters w/ Highest Efficiency Units	42,525	-	8,438	\$ 12,532	\$ 450,450	\$ 13,500	\$ 436,950	34.9
I3263	09CWIDEH	CAMPUSWIDE - HOUSING	Replace Kitchen Appliances with Energy Star units where opportunities exist.	29,820	-	3,834	\$ 7,080	\$ 277,200	\$ 12,880	\$ 264,320	37.3
I3259	09CWIDEH	CAMPUSWIDE - HOUSING	Replace remaining old Boilers with high Efficient units.	81,900	-	16,250	\$ 24,136	\$ 519,750	\$ 26,000	\$ 493,750	20.5
I3255	09CWIDEH	CAMPUSWIDE - HOUSING	Replace Inefficient Packaged HVAC and Chiller units with high SEER units.	75,415	-	8,765	\$ 17,142	\$ 415,800	\$ 34,100	\$ 381,700	22.3
I3252	09CWIDEH	CAMPUSWIDE - HOUSING	Install Occupancy Sensors in Laundry Rooms and Restrooms to control Exhaust Fans.	47,500	-	4,714	\$ 10,135	\$ 242,550	\$ 22,800	\$ 219,750	21.7
I3248	09CWIDEH	CAMPUSWIDE - HOUSING	Install Occupancy Sensors wherever applicable and Retrofit Lighting systems.	62,500	-	6,203	\$ 13,336	\$ 242,550	\$ 30,000	\$ 212,550	15.9
I3240	09CWIDEH	CAMPUSWIDE - HOUSING	Replace Heating Furnaces with Energy Star Units	-	-	-	\$ -	\$ -	\$ -	\$ -	
I3232	09CWIDEH	CAMPUSWIDE - HOUSING	Install Solar Hot Water Systems in Dining and Residential Buildings with Central Hot Water Systems.	135,450	-	26,875	\$ 39,917	\$ 1,316,700	\$ 43,000	\$ 1,273,700	31.9
I3229	09CWIDEH	CAMPUSWIDE - HOUSING	Replace Heating Furnace (200 units)	19,943	-	3,957	\$ 5,877	\$ 304,920	\$ 6,331	\$ 298,589	50.8
<b>Subtotal, Housing, HVAC Projects</b>				<b>725,623</b>	<b>29.0</b>	<b>121,539</b>	<b>\$ 195,445</b>	<b>\$ 6,074,145</b>	<b>\$ 267,124</b>	<b>\$ 5,807,021</b>	<b>29.7</b>
<b>Lighting Projects</b>											
I3303	09CWIDEH	CAMPUSWIDE - HOUSING	Housing Pathway/Exterior HID and Incan. Retrofit	20,000	-	1,985	\$ 4,268	\$ 103,950	\$ 9,600	\$ 94,350	22.1
I3302	09CWIDEH	CAMPUSWIDE - HOUSING	Housing Parking Lot HID Fixture Retrofit	20,000	-	1,985	\$ 4,268	\$ 103,950	\$ 9,600	\$ 94,350	22.1
I3246	09CWIDEH	CAMPUSWIDE - HOUSING	Install Bi-level Stairwell Fixture, Replace Incandescent Lamps w/ CFLs	225,000	-	22,329	\$ 48,010	\$ 623,700	\$ 108,000	\$ 515,700	10.7
I3244	09CWIDEH	CAMPUSWIDE - HOUSING	Install LED w/ Occupancy Sensors in Restrooms, Dimmable Photo Sensing Ballast in Common Areas	112,500	-	11,165	\$ 24,005	\$ 242,550	\$ 54,000	\$ 188,550	7.9
<b>Subtotal, Housing, Lighting Projects</b>				<b>377,500</b>	<b>-</b>	<b>37,463</b>	<b>\$ 80,550</b>	<b>\$ 1,074,150</b>	<b>\$ 181,200</b>	<b>\$ 892,950</b>	<b>11.1</b>
<b>Subtotal, Housing Funded Projects</b>				<b>2,064,222</b>	<b>75.0</b>	<b>279,483</b>	<b>\$ 501,653</b>	<b>\$ 10,108,165</b>	<b>\$ 868,512</b>	<b>\$ 9,239,653</b>	<b>18.4</b>
<b>Other Fund Source</b>											
<b>MBCx</b>											
I3098	09C9118	CAL (IT)2	Monitoring Based Commissioning	147,578	16.0	22,247	\$ 37,723	\$ 202,673	\$ 58,379	\$ 144,294	3.8
I6001	09C9299	ANT REC CTR	CW Reset & MBCx Chiller Plant(in addition to MBCx of Building)	158,186	-	15,698	\$ 33,753	\$ 126,492	\$ 75,929	\$ 50,563	1.5
I3109	09C9299	ANT REC CTR	Monitoring Based Commissioning	72,094	8.0	10,894	\$ 18,449	\$ 75,516	\$ 28,476	\$ 47,040	2.5
<b>Subtotal, Other Fund Source MBCx Projects</b>				<b>377,857</b>	<b>24.0</b>	<b>48,839</b>	<b>\$ 89,925</b>	<b>\$ 404,682</b>	<b>\$ 162,784</b>	<b>\$ 241,898</b>	<b>2.7</b>
<b>HVAC Projects</b>											
I3040	09C9118	CAL (IT)2	Demand Control Ventilation	4,503	10.0	447	\$ 961	\$ 15,644	\$ 2,161	\$ 13,483	14.0
I3039	09C9118	CAL (IT)2	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc	345,583	-	67,813	\$ 101,224	\$ 294,269	\$ 176,145	\$ 118,124	1.2
I1065	09C9118	CAL (IT)2	AHU 5,6,7 SP Reset	28,146	-	4,763	\$ 7,621	\$ 67,409	\$ 14,450	\$ 52,959	6.9

Table 11.1: SEP Projects by Funding Source and Project Type (Continued)

SEP Project ID	Building Key	Building Name	Project Name	Total Purchased Electricity Savings (kWh/yr)	Demand Savings (kW)	Total Purchased Gas Savings (th/yr)	Total Cost Savings (\$/yr)	Estimated Project Cost (\$)	Gross Estimated Utility Incentive (\$)	Net Project Cost (\$)	Net Simple Payback (yrs)
I3072	09C9299	ANT REC CTR	High Efficiency Boiler Replacement - Anteater Pool	14,046	-	2,787	\$ 4,139	\$ 117,650	\$ 4,459	\$ 113,191	27.3
I3068	09C9299	ANT REC CTR	Variable Speed Circulation Pump - Anteater Pool	17,757	-	1,762	\$ 3,789	\$ 18,940	\$ 8,523	\$ 10,417	2.7
I1072	09C9299	ANT REC CTR	AHU3,4,5,7 Convert to VAV & DCV from CAV system	59,515	(10.0)	5,785	\$ 12,600	\$ 152,729	\$ 28,766	\$ 123,963	9.8
I1020	09C9299	ANT REC CTR	DCV & Scheduling Controls for a VAV system (1A, 1B, 2 and 6)	111,998	31.0	17,109	\$ 28,813	\$ 70,790	\$ 43,934	\$ 26,856	0.9
<b>Subtotal, Other Fund Source HVAC</b>				<b>581,546</b>	<b>31.0</b>	<b>100,466</b>	<b>\$ 159,147</b>	<b>\$ 737,431</b>	<b>\$ 278,438</b>	<b>\$ 458,993</b>	<b>2.9</b>
<b>Lighting Projects</b>											
I3010	09C9012	PARK STRUC 1	Retrofit existing HID roof lights with PSMH kits	4,696	-	466	\$ 1,002	\$ 6,882	\$ 2,254	\$ 4,628	4.6
I3004	09C9012	PARK STRUC 1	Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control	160,815	31.0	15,959	\$ 34,314	\$ 136,841	\$ 77,191	\$ 59,650	1.7
I3008	09C9013	MESA PKG STR	Retrofit existing HID roof lights with PSMH kits	5,869	-	582	\$ 1,252	\$ 8,602	\$ 2,817	\$ 5,785	4.6
I3003	09C9013	MESA PKG STR	Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control	128,444	19.0	12,747	\$ 27,407	\$ 161,911	\$ 61,653	\$ 100,258	3.7
I3009	09C9022	SS PRKING ST	Retrofit existing HID roof lights with PSMH kits	14,967	-	1,485	\$ 3,194	\$ 21,936	\$ 7,184	\$ 14,752	4.6
I3005	09C9022	SS PRKING ST	Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control	292,002	49.0	28,978	\$ 62,306	\$ 304,714	\$ 140,161	\$ 164,553	2.6
I3207	09C9118	CAL (IT)2	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	58,747	41.0	5,830	\$ 12,535	\$ 124,684	\$ 28,199	\$ 96,485	7.7
I3556	09C9201	STDT HLTH CT	Retrofit 32W T8 lamps with w/ 28W T8 lamps & Prem Eff RLO Ballast; Retrofit 32W T8 lamps with w/ 28W T8 lamps & Prem Eff NLO Ballast in high light areas; Add Occupancy Sensors and Daylighting	14,804	7.0	1,469	\$ 3,159	\$ 21,634	\$ 7,106	\$ 14,528	4.6
I3007	09C9256	ENG PARK STR	Retrofit existing HID roof lights with PSMH kits	7,043	-	699	\$ 1,503	\$ 10,323	\$ 3,381	\$ 6,942	4.6
I3006	09C9256	ENG PARK STR	Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control	261,118	54.0	25,913	\$ 55,717	\$ 253,137	\$ 125,337	\$ 127,800	2.3
I3217	09C9299	ANT REC CTR	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	83,913	43.0	8,327	\$ 17,905	\$ 219,763	\$ 40,278	\$ 179,485	10.0
<b>Subtotal, Other Fund Source Lighting</b>				<b>1,032,416</b>	<b>244.0</b>	<b>102,457</b>	<b>\$ 220,294</b>	<b>\$ 1,270,427</b>	<b>\$ 495,561</b>	<b>\$ 774,866</b>	<b>3.5</b>
<b>Other Projects</b>											
I3230	09CWIDE0	CAMPUSWIDE - OTHER	Install Power Misers or Replace All Vending Machines with Energy Star Units.	72,500	-	7,195	\$ 15,470	\$ 173,250	\$ 34,800	\$ 138,450	8.9
I3367	09C9299	ANT REC CTR	Pool Covers	34,650	-	6,875	\$ 10,211	\$ 175,000	\$ 11,000	\$ 164,000	16.1
I3366	09C9299	ANT REC CTR	Solar Hot Water for Showers and Laundry	31,500	-	6,250	\$ 9,283	\$ 120,000	\$ 10,000	\$ 110,000	11.8
I3070	09C9299	ANT REC CTR	Solar Pool Water Heater - Anteater Pool	43,810	-	8,693	\$ 12,911	\$ 143,765	\$ 13,908	\$ 129,857	10.1
<b>Subtotal, Other Fund Source Other Projects</b>				<b>182,460</b>	<b>-</b>	<b>29,012</b>	<b>\$ 47,875</b>	<b>\$ 612,015</b>	<b>\$ 69,708</b>	<b>\$ 542,307</b>	<b>11.3</b>
<b>Subtotal, Other Fund Source Projects</b>				<b>2,174,279</b>	<b>299.0</b>	<b>280,775</b>	<b>\$ 517,240</b>	<b>\$ 3,024,554</b>	<b>\$ 1,006,491</b>	<b>\$ 2,018,063</b>	<b>3.9</b>
<b>UC Irvine Total</b>				<b>45,550,855</b>	<b>4,993.0</b>	<b>6,341,246</b>	<b>\$ 11,212,535</b>	<b>\$ 149,088,217</b>	<b>\$ 21,195,358</b>	<b>\$ 127,892,859</b>	<b>11.4</b>

**Table 11.2: Project Commitments by Campus**

SEP ID#	Building Key	Building Name	Project Name	Project Tier	Project Delivery Method	Start Preliminary Engineering	Project Complete	Committed Electric Savings (kWh/yr)*	Committed Gas Savings (Therms/yr)*
<b>2009-11 Program Cycle</b>									
<b>2009-11 Tier 1 Projects</b>									
I1001	09C9003	ADMIN BLDG	AHU-1 (S-1) Spot Cooling and SP reset	Tier 1	Undecided	6/1/2008	12/15/2009	150,719	28,500
I1002	09C9003	ADMIN BLDG	AHU-2 (S-2) SP reset	Tier 1	Undecided	6/1/2008	12/15/2009	13,070	488
I1003	09C9003	ADMIN BLDG	AHU-3 (AC-3) SP reset	Tier 1	Undecided	6/1/2008	12/15/2009	20,457	975
I1004	09C9115	CROUL HALL	AHU 1 SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	16,583	1,738
I1005	09C9140	ENG GATEWAY	AHU 1 and 2 - SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	18,687	2,212
I1009	09C9125	ENG TOWER	AHU 10 and 20 - SP Reset	Tier 1	Undecided	6/1/2010	12/15/2011	42,541	700
I1012	09C9088	HEWITT HALL	AHU 1, 2 - Reduce ACH from 15 to 8 for 5 Hoods in Vivarium (Overall AHU goes from 8.36 to 6.52)	Tier 1	Undecided	6/1/2009	12/15/2010	530,173	25,331
I1013	09C9088	HEWITT HALL	AHU 3 - SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	19,980	2,175
I1015	09C9035	HIB	AHU 2H, 3H - SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	53,357	8,325
I1016	09C9132	IRVINE HALL	AHU 1, 5, 6, 7, 8, - SP Reset	Tier 1	Undecided	6/1/2009	12/15/2010	85,732	14,488
I1017	09C9132	IRVINE HALL	AHU 2,3,4A,4B, ATU 1,2,3 - SP Reset	Tier 1	Design - Bid	6/1/2009	12/15/2010	125,268	10,512
I1021	09C9328	MED SCI B	AHU B1 - SP Reset	Tier 1	Undecided	6/1/2009	12/15/2010	26,282	2,525
I1023	09C9322	MED SCI C	AHU C1 - SP Reset	Tier 1	Undecided	6/1/2009	12/15/2010	23,760	2,325
I1025	09C9323	MED SCI D	AHU D1 - SP Reset	Tier 1	Undecided	6/1/2009	12/15/2010	25,686	2,700
I1033	09C9090	NAT SCI 1	AHU 1 - SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	62,520	8,100
I1034	09C9091	NAT SCI 2	AHU 3 - SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	103,458	10,350
I1035	09C9108	REINES HALL	AHU 1,2 - Reduce ACH from 8.5 to 6	Tier 1	Undecided	6/1/2009	12/15/2011	1,830,956	104,712
I1036	09C9100	ROWLAND HALL	AHU 1,2,3,4 - SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	3,910,947	198,778
I1037	09C9107	BERKELEY PL	AC-1 SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	5,323	1,333
I1038	09C9107	BERKELEY PL	South Wing -AC-2,3,4 SP Reset	Tier 1	Undecided	6/1/2010	12/15/2011	15,264	3,628
I1039	09C9107	BERKELEY PL	North AC-1 SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	7,955	2,085
I1040	09C9107	BERKELEY PL	North Wing -AC-2,3 SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	25,421	5,937
I1045	09C9212	SOC SCI PL A	AHU 1 - SP Reset	Tier 1	Undecided	6/1/2010	12/15/2011	34,237	1,825
I1046	09C9221	SOC SCI PL B	AHU 2 - SP Reset	Tier 1	Undecided	6/1/2010	12/15/2011	53,805	6,450
I1054	09C9087	SPRAGUE HALL	AHU 3 - SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	20,692	1,832
I1055	09C9087	SPRAGUE HALL	AHU 1,2- SP Reset & VFD exhaust	Tier 1	Undecided	6/1/2009	12/15/2010	503,255	(75)
I1065	09C9118	CAL (IT)2	AHU 5,6,7 SP Reset	Tier 1	Undecided	6/1/2008	12/15/2009	45,469	3,538
I1068	09C9300	CRAWFORD HAL	DCV for a CAV system - AHU 1, 3 and 4	Tier 1	Undecided	6/1/2009	12/15/2010	133,563	4,100
I1069	09C9300	CRAWFORD HAL	AHU 2 - CAV to VAV	Tier 1	Undecided	6/1/2009	12/15/2010	4,238	675
I1070	09C9300	CRAWFORD HAL	AHU 5 - CAV to VAV & Economizer	Tier 1	Undecided	6/1/2009	12/15/2010	18,185	38
I3003	09C9013	MESA PKG STR	Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control	Tier 1	Undecided	6/1/2008	12/15/2009	256,887	-
I3004	09C9012	PARK STRUC 1	Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control	Tier 1	Undecided	6/1/2008	12/15/2009	321,630	-
I3005	09C9022	SS PRKING ST	Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control	Tier 1	Undecided	6/1/2008	12/15/2009	584,003	-
I3006	09C9256	ENG PARK STR	Replace metal halide fixtures one-for-one with 2L-F32T8 HLO Fixtures and Install Occupancy Sensors for Bi-Level Control	Tier 1	Undecided	6/1/2009	12/15/2010	522,236	-
I3007	09C9256	ENG PARK STR	Retrofit existing HID roof lights with PSMH kits	Tier 1	Undecided	6/1/2009	12/15/2010	14,086	-
I3008	09C9013	MESA PKG STR	Retrofit existing HID roof lights with PSMH kits	Tier 1	Undecided	6/1/2008	12/15/2009	11,738	-
I3009	09C9022	SS PRKING ST	Retrofit existing HID roof lights with PSMH kits	Tier 1	Undecided	6/1/2008	12/15/2009	29,933	-
I3010	09C9012	PARK STRUC 1	Retrofit existing HID roof lights with PSMH kits	Tier 1	Undecided	6/1/2008	12/15/2009	9,391	-
I3012	09C9001	LANGSON LIBR	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	78,459	3,621
I3013	09C9003	ADMIN BLDG	Demand Control Ventilation	Tier 1	Undecided	6/1/2008	12/15/2009	7,590	-



**Table 11.2: Project Commitments by Campus (Continued)**

SEP ID#	Building Key	Building Name	Project Name	Project Tier	Project Delivery Method	Start Preliminary Engineering	Project Complete	Committed Electric Savings (kWh/yr)*	Committed Gas Savings (Therms/yr)*
I3014	09C9003	ADMIN BLDG	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	52,531	2,425
I3017	09C9052	SOTA DANCE	Retrofit 400W MH Low bays with 200W ceramic EHID low bays w/daylight controls	Tier 1	Undecided	6/1/2008	12/15/2009	31,000	-
I3018	09C9075	STEINHAUS H	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	55,911	2,581
I3019	09C9082	GILESPIE BLD	Demand Control Ventilation	Tier 1	Undecided	6/1/2009	12/15/2010	6,230	-
I3022	09C9084	MCGAUGH HALL	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	111,133	5,129
I3023	09C9087	SPRAGUE HALL	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc	Tier 1	Undecided	6/1/2010	12/15/2011	325,503	51,262
I3029	09C9091	NAT SCI 2	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc	Tier 1	Undecided	6/1/2009	12/15/2010	493,332	77,688
I3033	09C9107	BERKELEY PL	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	59,280	2,736
I3035	09C9108	REINES HALL	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	81,387	3,756
I3039	09C9118	CAL (IT)2	Aircuity - Reduce from 6 ACH to 4 ACH Occ & 2 Unocc	Tier 1	Undecided	6/1/2009	12/15/2010	443,155	69,788
I3042	09C9125	ENG TOWER	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	59,249	2,735
I3044	09C9126	COMP SCI BLD	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	31,553	1,456
I3046	09C9132	IRVINE HALL	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	28,402	1,311
I3048	09C9140	ENG GATEWAY	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	68,687	3,170
I3050	09C9204	SOCSCI TOWER	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	43,599	2,012
I3052	09C9212	SOC SCI PL A	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	24,169	1,116
I3054	09C9221	SOC SCI PL B	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	25,521	1,178
I3056	09C9300	CRAWFORD HAL	Gym Lighting Retrofit - Implement recommendations in AEI Lighting Survey, with occupancy sensors	Tier 1	Undecided	6/1/2008	12/15/2009	77,280	-
I3058	09C9322	MED SCI C	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	29,044	1,341
I3060	09C9323	MED SCI D	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	37,419	1,727
I3062	09C9325	MED SCI A	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	6,977	322
I3064	09C9328	MED SCI B	Zone DDC Upgrade	Tier 1	Undecided	6/1/2008	12/15/2009	18,649	861
I3074	09C9314	BREN EVENTS	Retrofit existing 1000-watt HID's with fluorescent high bays, multiple switching	Tier 1	Undecided	6/1/2009	12/15/2010	110,160	-
I3076	09C9003	ADMIN BLDG	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2010	12/15/2011	98,167	10,607
I3078	09C9035	HIB	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2009	12/15/2010	1,210	7,779
I3088	09C9073	SCILIBRARY	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2008	12/15/2009	89,918	19,907
I3089	09C9075	STEINHAUS H	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2010	12/15/2011	200,745	21,827
I3090	09C9084	MCGAUGH HALL	Compressor and control upgrades, walk-in refrigeration units in McGaugh Hall. (18 units)	Tier 1	Undecided	6/1/2009	12/15/2010	128,788	-
I3091	09C9088	HEWITT HALL	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2008	12/15/2009	309,927	16,011
I3092	09C9091	NAT SCI 2	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2009	12/15/2010	220,794	14,312
I3093	09C9100	ROWLAND HALL	Monitoring Based Commissioning	Tier 1	Undecided	6/1/2010	12/15/2011	370,548	39,800
I3096	09C9114	M SCI & TECH	Monitoring Based Commissioning	Tier 1	Undecided	6/1/2010	12/15/2011	11,831	3,824
I3097	09C9115	CROUL HALL	Monitoring Based Commissioning	Tier 1	Undecided	6/1/2009	12/15/2010	112,640	13,433
I3098	09C9118	CAL (IT)2	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2008	12/15/2009	141,864	24,332
I3100	09C9126	COMP SCI BLD	Monitoring Based Commissioning	Tier 1	Undecided	6/1/2010	12/15/2011	114,681	12,318
I3102	09C9132	IRVINE HALL	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2010	12/15/2011	37,290	11,088
I3103	09C9140	ENG GATEWAY	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2008	12/15/2009	257,543	26,814
I3106	09C9212	SOC SCI PL A	Monitoring Based Commissioning	Tier 1	Undecided	6/1/2009	12/15/2010	35,789	4,880
I3110	09C9300	CRAWFORD HAL	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2010	12/15/2011	69,314	6,031
I3113	09C9322	MED SCI C	Monitoring Based Commissioning	Tier 1	Undecided	6/1/2010	12/15/2011	177,490	11,338
I3114	09C9323	MED SCI D	Monitoring Based Commissioning	Tier 1	Undecided	6/1/2010	12/15/2011	100,010	14,608
I3115	09C9325	MED SCI A	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2010	12/15/2011	25,360	2,724
I3116	09C9328	MED SCI B	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2010	12/15/2011	27,615	3,766
I3156	09CWIDE	CAMPUSWIDE	Retrofit office trailers with high efficiency heat pumps and occupancy sensors for air-conditioning.	Tier 1	Undecided	6/1/2008	12/15/2009	125,000	-

**Table 11.2: Project Commitments by Campus (Continued)**

SEP ID#	Building Key	Building Name	Project Name	Project Tier	Project Delivery Method	Start Preliminary Engineering	Project Complete	Committed Electric Savings (kWh/yr)*	Committed Gas Savings (Therms/yr)*
I3163	09CWIDE	CAMPUSWIDE	Lab Freezers Phase 1 of 3: 20 Lab Freezer Replacements	Tier 1	Undecided	6/1/2008	12/15/2009	77,280	-
I3164	09CWIDE	CAMPUSWIDE	Lab Freezers Phase 2 of 3: 20 Lab Freezer Replacements	Tier 1	Undecided	6/1/2009	12/15/2010	77,280	-
I3165	09CWIDE	CAMPUSWIDE	Lab Freezers Phase 3 of 3: 5 Lab Freezer Replacements	Tier 1	Undecided	6/1/2010	12/15/2011	19,320	-
I3166	09CWIDE	CAMPUSWIDE	Refrigerators Phase 1 of 4: 100 Energy Star Refrigerator Replacements	Tier 1	Undecided	6/1/2008	12/15/2009	224,300	-
I3167	09CWIDE	CAMPUSWIDE	Refrigerators Phase 2 of 4: 100 Energy Star Refrigerator Replacements	Tier 1	Undecided	6/1/2008	12/15/2009	224,300	-
I3168	09CWIDE	CAMPUSWIDE	Refrigerators Phase 3 of 4: 100 Energy Star Refrigerator Replacements	Tier 1	Undecided	6/1/2009	12/15/2010	224,300	-
I3169	09CWIDE	CAMPUSWIDE	Refrigerators Phase 4 of 4: 20 Energy Star Refrigerator Replacements	Tier 1	Undecided	6/1/2009	12/15/2010	44,860	-
I3176	09CWIDE	CAMPUSWIDE	LCD Phase 1 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	Tier 1	Undecided	6/1/2008	12/15/2009	213,796	-
I3178	09CWIDE	CAMPUSWIDE	LCD Phase 3 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	Tier 1	Undecided	6/1/2009	12/15/2010	213,796	-
I3180	09CWIDE	CAMPUSWIDE	LCD Phase 5 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	Tier 1	Undecided	6/1/2010	12/15/2011	213,796	-
I3182	09CWIDE	CAMPUSWIDE	Server Virtualization Phase 1 of 3: 10 VM Installations	Tier 1	Undecided	6/1/2008	12/15/2009	280,000	-
I3185	09C9001	LANGSON LIBR	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	134,334	-
I3186	09C9003	ADMIN BLDG	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	118,239	-
I3188	09C9035	HIB	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	129,521	-
I3189	09C9050	W SMITH HALL	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	15,263	-
I3190	09C9051	CTB THEATRE	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	32,008	-
I3191	09C9053	SOTA PROD ST	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	3,654	-
I3192	09C9054	SOTA DRAMA	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	10,569	-
I3193	09C9055	UNIV ART GAL	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	10,488	-
I3194	09C9056	SOTA ART STD	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	8,044	-
I3195	09C9057	SOTA SCULPTR	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	7,968	-
I3196	09C9073	SCILIBRARY	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	174,472	-
I3197	09C9075	STEINHAUS H	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	80,032	-
I3198	09C9084	MCGAUGH HALL	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	144,537	-
I3200	09C9090	NAT SCI 1	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	160,222	-
I3201	09C9091	NAT SCI 2	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	105,987	-

**Table 11.2: Project Commitments by Campus (Continued)**

SEP ID#	Building Key	Building Name	Project Name	Project Tier	Project Delivery Method	Start Preliminary Engineering	Project Complete	Committed Electric Savings (kWh/yr)*	Committed Gas Savings (Therms/yr)*
I3202	09C9100	ROWLAND HALL	Retrofit T12 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	560,348	-
I3203	09C9107	BERKELEY PL	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	58,160	-
I3204	09C9108	REINES HALL	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	110,221	-
I3205	09C9114	M SCI & TECH	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	105,385	-
I3206	09C9115	CROUL HALL	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	32,540	-
I3207	09C9118	CAL (IT)2	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	117,494	-
I3208	09C9125	ENG TOWER	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	85,968	-
I3209	09C9126	COMP SCI BLD	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	60,192	-
I3210	09C9128	SOC ECOLOGY	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	53,804	-
I3212	09C9140	ENG GATEWAY	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	103,750	-
I3213	09C9204	SOCSCI TOWER	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	74,870	-
I3214	09C9212	SOC SCI PL A	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	81,270	-
I3215	09C9221	SOC SCI PL B	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	86,390	-
I3216	09C9222	SOC ECOLOGY2	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	55,525	-
I3217	09C9299	ANT REC CTR	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2009	12/15/2010	167,825	-
I3218	09C9300	CRAWFORD HAL	Replace 32W T8 lamps with 25W T8 lamps, and install occupancy and daylighting sensors in appropriate areas	Tier 1	Undecided	6/1/2008	12/15/2009	70,768	-
I3219	09C9314	BREN EVENTS	Retrofit T12 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 1	Undecided	6/1/2009	12/15/2010	306,179	-
I3224	09CTBD1	BREN HALL	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install daylighting sensors where appropriate	Tier 1	Undecided	6/1/2008	12/15/2009	151,218	-
I3305	09CWIDE	CAMPUSWIDE	Low Pressure Drop Filters (Additional)	Tier 1	Undecided	6/1/2008	12/15/2009	250,000	-
I3306	09CWIDE	CAMPUSWIDE	Replace Chilled Water Valves With Delta P Valves	Tier 1	Undecided	6/1/2009	12/15/2010	275,000	-
I3307	09CWIDE	CAMPUSWIDE	Wavelength Selective Window film	Tier 1	Undecided	6/1/2008	12/15/2009	57,000	-
I3308	09CWIDE	CAMPUSWIDE	Lighting Efficiency Improvement - Buildings < 50k GSF not in SEP	Tier 1	Undecided	6/1/2009	12/15/2010	1,100,000	-
I3309	09CWIDE	CAMPUSWIDE	Install Photo Sensors and Astronomical Time clocks to Control all exterior lighting.	Tier 1	Undecided	6/1/2009	12/15/2010	125,000	-
I3310	09CWIDE	CAMPUSWIDE	Replace -20/-30 Lab Freezers with Energy Star Units	Tier 1	Undecided	6/1/2010	12/15/2011	1,217,160	-
I3311	09CWIDE	CAMPUSWIDE	Replace Copiers with Energy Star w/ Quick Standby Recovery Features	Tier 1	Undecided	6/1/2009	12/15/2010	68,000	-
I3312	09CWIDE	CAMPUSWIDE	Replace existing Ice Machines with Energy Star Units	Tier 1	Undecided	6/1/2009	12/15/2010	57,000	-
I3313	09CWIDE	CAMPUSWIDE	Retrofit All Cold Room Compressors to Energy Star Replacement units.	Tier 1	Undecided	6/1/2008	12/15/2009	260,000	-

**Table 11.2: Project Commitments by Campus (Continued)**

SEP ID#	Building Key	Building Name	Project Name	Project Tier	Project Delivery Method	Start Preliminary Engineering	Project Complete	Committed Electric Savings (kWh/yr)*	Committed Gas Savings (Therms/yr)*
I3314	09CWIDE	CAMPUSWIDE	Lab Freezer Replace Remaining ULT Freezers	Tier 1	Undecided	6/1/2009	12/15/2010	650,000	-
I3315	09C9081	BONNEY RES L	Zone DDC Upgrade	Tier 1	Undecided	6/1/2009	12/15/2010	32,818	1,515
I3316	09C9081	BONNEY RES L	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2009	12/15/2010	11,831	3,824
<b>Subtotal, 2009-11 Tier 1 Projects</b>								23,974,313	963,253
<b>2009-11 Tier 2 Projects</b>									
I1006	09C9140	ENG GATEWAY	AHU 3 thru 8 - Reduce ACH from 7 to 6 for 20 Hoods	Tier 2		6/1/2009	12/15/2010	86,745	4,875
I1007	09C9140	ENG GATEWAY	AHU 10 SP Reset & DCV	Tier 2	Undecided	6/1/2008	12/15/2009	1,282	(38)
I1008	09C9125	ENG TOWER	AHU-1,2 - CAV to VAV, SP Reset & Add Economizer	Tier 2	Undecided	6/1/2010	12/15/2011	354,284	34,112
I1010	09C9082	GILESPIE BLD	AHU 2 - Reduce ACH from 15 to 8 for 5 Hoods in Vivarium	Tier 2	Undecided	6/1/2008	12/15/2009	382,236	24,030
I1011	09C9082	GILESPIE BLD	AHU 1 - VAV Aircurty (4 ACH Occ & 2 Unocc)	Tier 2		6/1/2009	12/15/2010	813,643	53,312
I1014	09C9035	HIB	AHU 1H - CAV to VAV & SP Reset	Tier 2	Undecided	6/1/2008	12/15/2009	21,061	2,512
I1018	09C9001	LANGSON LIBR	AHU-3 thru AHU 16 - CAV to VAV and DART & Economizers	Tier 2	Undecided	6/1/2010	12/15/2011	438,382	67,625
I1019	09C9325	MED SCI A	AHU A1,A2, - Reduce ACH from 13.72 to 8	Tier 2	Undecided	6/1/2009	12/15/2010	112,515	4,838
I1020	09C9299	ANT REC CTR	DCV & Scheduling Controls for a VAV system (1A, 1B, 2 and 6)	Tier 2	Undecided	6/1/2010	12/15/2011	103,098	19,190
I1022	09C9328	MED SCI B	AHU B2, B3 - Reduce ACH from 7 to 6	Tier 2	Undecided	6/1/2009	12/15/2010	201,606	8,475
I1024	09C9322	MED SCI C	AHU C2, C3 - Reduce ACH from 7 to 6	Tier 2	Undecided	6/1/2009	12/15/2010	246,077	10,338
I1026	09C9323	MED SCI D	AHU D2, D3 - Reduce ACH from 7 to 6	Tier 2	Undecided	6/1/2009	12/15/2010	292,986	12,312
I1032	09C9114	M SCI & TECH	AHU 1,2 - VIV to VAV & SP Reset	Tier 2	Undecided	6/1/2009	12/15/2010	119,733	11,130
I1041	09C9128	SOC ECOLOGY	AHU 1 - SP Reset	Tier 2	Undecided	6/1/2009	12/15/2010	6,866	-
I1042	09C9128	SOC ECOLOGY	AHU 2,3 - SP Reset	Tier 2	Undecided	6/1/2009	12/15/2010	6,026	-
I1043	09C9128	SOC ECOLOGY	AHU 4 - Reduce ACH from 7 to 6	Tier 2	Undecided	6/1/2010	12/15/2011	44,236	2,675
I1044	09C9222	SOC ECOLOGY2	AHU 3C - SP Reset	Tier 2	Undecided	6/1/2009	12/15/2010	41,995	3,362
I1047	09C9204	SOCSCI TOWER	AHU-B1,B2,D1,D2 - SP Reset & Add Economizer	Tier 2	Undecided	6/1/2010	12/15/2011	95,158	10,962
I1048	09C9204	SOCSCI TOWER	AHU-B3, B4 - SP Reset & Add Economizer	Tier 2	Undecided	6/1/2010	12/15/2011	57,575	7,862
I1049	09C9204	SOCSCI TOWER	AHU C1 - CAV to VAV, DCV, SP Reset	Tier 2	Undecided	6/1/2010	12/15/2011	24,967	1,725
I1050	09C9056	SOTA ART STD	AHU-1- SP Reset	Tier 2	Undecided	6/1/2010	12/15/2011	4,990	1,025
I1051	09C9054	SOTA DRAMA	AHU-1- SP Reset	Tier 2	Undecided	6/1/2009	12/15/2010	5,533	1,188
I1059	09C9005	UCI STU CNTR	AHU 1 SP reset	Tier 2	Undecided	6/1/2009	12/15/2010	40,526	3,175
I1060	09C9005	UCI STU CNTR	AHU 2,3 SP reset	Tier 2	Undecided	6/1/2009	12/15/2010	71,554	5,812
I1061	09C9052	SOTA DANCE	AHU-1 SP reset	Tier 2	Undecided	6/1/2009	12/15/2010	63,207	12,938
I1063	09C9055	UNIV ART GAL	AHU 1 - CAV to VAV, SP Reset and DCV	Tier 2	Undecided	6/1/2008	12/15/2009	33,418	(362)
I1064	09C9050	W SMITH HALL	AHU 1 - CAV to VAV	Tier 2	Undecided	6/1/2009	12/15/2010	126,068	22,862
I1066	09C9126	COMP SCI BLD	AHU-1 SP reset & Add Economizer Controls	Tier 2	Undecided	6/1/2008	12/15/2009	58,465	3,662
I1067	09C9126	COMP SCI BLD	AHU-2 SP reset & VIV to VAV & Add Economizer	Tier 2	Undecided	6/1/2009	12/15/2010	30,126	812
I1071	09C9084	MCGAUGH HALL	AHU 1, 2, 3 - Reduce ACH from 14 to 6	Tier 2	Undecided	6/1/2009	12/15/2010	1,669,096	73,075
I1072	09C9299	ANT REC CTR	AHU3,4,5,7 Convert to VAV & DCV from CAV system	Tier 2	Undecided	6/1/2009	12/15/2010	121,474	(388)
I1075	09C9073	SCILIBRARY	AHU 1 thru 5 - SP Reset & DCV	Tier 2	Undecided	6/1/2008	12/15/2009	316,191	32,625
I1076	09C9222	SOC ECOLOGY2	AHU 3H - Reduce ACH from 7 to 6	Tier 2	Undecided	6/1/2010	12/15/2011	65,627	475
I1078	09C9051	CTB THEATRE	AHU-1 (AC-1) Spot Cooling and SP reset	Tier 2	Undecided	6/1/2009	12/15/2010	45,540	11,438
I3011	09C9001	LANGSON LIBR	Demand Control Ventilation	Tier 2	Undecided	6/1/2010	12/15/2011	11,336	-
I3015	09C9005	UCI STU CNTR	Demand Control Ventilation	Tier 2	Undecided	6/1/2009	12/15/2010	12,324	-
I3016	09C9035	HIB	Demand Control Ventilation	Tier 2	Undecided	6/1/2009	12/15/2010	5,566	-
I3024	09C9087	SPRAGUE HALL	Demand Control Ventilation	Tier 2	Undecided	6/1/2009	12/15/2010	6,777	-
I3026	09C9088	HEWITT HALL	Aircuity - Reduce Vivarium from 15 to 8 ACH, Labs from 6 ACH to 4 & 2 ACH	Tier 2	Undecided	6/1/2009	12/15/2010	244,534	38,512
I3027	09C9088	HEWITT HALL	Demand Control Ventilation	Tier 2	Undecided	6/1/2009	12/15/2010	5,925	-
I3028	09C9090	NAT SCI 1	Demand Control Ventilation	Tier 2	Undecided	6/1/2008	12/15/2009	9,084	-

**Table 11.2: Project Commitments by Campus (Continued)**

SEP ID#	Building Key	Building Name	Project Name	Project Tier	Project Delivery Method	Start Preliminary Engineering	Project Complete	Committed Electric Savings (kWh/yr)*	Committed Gas Savings (Therms/yr)*
I3030	09C9091	NAT SCI 2	Demand Control Ventilation	Tier 2	Undecided	6/1/2008	12/15/2009	10,240	-
I3032	09C9107	BERKELEY PL	Demand Control Ventilation	Tier 2	Undecided	6/1/2009	12/15/2010	8,565	-
I3037	09C9114	M SCI & TECH	Demand Control Ventilation	Tier 2	Undecided	6/1/2009	12/15/2010	4,741	-
I3038	09C9114	M SCI & TECH	Zone DDC Upgrade	Tier 2	Undecided	6/1/2008	12/15/2009	32,818	1,515
I3040	09C9118	CAL (IT)2	Demand Control Ventilation	Tier 2	Undecided	6/1/2010	12/15/2011	9,005	-
I3041	09C9125	ENG TOWER	Demand Control Ventilation	Tier 2	Undecided	6/1/2010	12/15/2011	8,560	-
I3043	09C9126	COMP SCI BLD	Demand Control Ventilation	Tier 2	Undecided	6/1/2009	12/15/2010	4,559	-
I3045	09C9128	SOC ECOLOGY	Demand Control Ventilation	Tier 2	Undecided	6/1/2010	12/15/2011	4,132	-
I3049	09C9140	ENG GATEWAY	EF VFDs	Tier 2	Undecided	6/1/2008	12/15/2009	290,796	-
I3051	09C9212	SOC SCI PL A	Demand Control Ventilation	Tier 2	Undecided	6/1/2010	12/15/2011	3,492	-
I3053	09C9221	SOC SCI PL B	Demand Control Ventilation	Tier 2	Undecided	6/1/2010	12/15/2011	3,687	-
I3055	09C9222	SOC ECOLOGY2	Demand Control Ventilation	Tier 2	Undecided	6/1/2010	12/15/2011	2,873	-
I3067	09CTBD1	BREN HALL	Demand Control Ventilation	Tier 2	Undecided	6/1/2009	12/15/2010	11,117	-
I3073	09CWIDE	CAMPUSWIDE	Install controller on vending machine (e.g. Vending Miser)	Tier 2	Undecided	6/1/2009	12/15/2010	92,724	-
I3077	09C9005	UCI STU CNTR	Monitoring Based Commissioning	Tier 2	Design - Bid	6/1/2010	12/15/2011	126,312	17,224
I3079	09C9050	W SMITH HALL	Monitoring Based Commissioning	Tier 2	Undecided	6/1/2009	12/15/2010	12,176	993
I3080	09C9051	CTB THEATRE	Monitoring Based Commissioning	Tier 2	Design - Bid	6/1/2009	12/15/2010	15,690	2,140
I3081	09C9052	SOTA DANCE	Monitoring Based Commissioning	Tier 2	In House	6/1/2009	12/15/2010	9,815	1,338
I3082	09C9053	SOTA PROD ST	Monitoring Based Commissioning	Tier 2	Design - Bid	6/1/2009	12/15/2010	3,079	544
I3083	09C9054	SOTA DRAMA	Monitoring Based Commissioning	Tier 2	Design - Bid	6/1/2009	12/15/2010	26,317	921
I3084	09C9055	UNIV ART GAL	Monitoring Based Commissioning	Tier 2	Undecided	6/1/2009	12/15/2010	6,868	937
I3086	09C9057	SOTA SCULPTR	Monitoring Based Commissioning	Tier 2	Undecided	6/1/2009	12/15/2010	19,836	1,144
I3094	09C9107	BERKELEY PL	Replace air handlers in Berkeley Place (Deferred Maintenance, to be combined with other retrofits)	Tier 2	Undecided	6/1/2010	12/15/2011	278,788	11,220
I3095	09C9108	REINES HALL	Monitoring Based Commissioning	Tier 2	Design - Bid	6/1/2009	12/15/2010	318,219	31,772
I3101	09C9128	SOC ECOLOGY	Monitoring Based Commissioning	Tier 2	Undecided	6/1/2009	12/15/2010	103,950	11,165
I3108	09C9222	SOC ECOLOGY2	Monitoring Based Commissioning	Tier 2	Undecided	6/1/2009	12/15/2010	35,108	3,754
I3117	09C9329	MED SURG 2	Monitoring Based Commissioning	Tier 2	Design - Bid	6/1/2010	12/15/2011	114,754	12,228
I3118	09C9518	MESA CEN SER	Mesa Commons Kitchen Hood Controls	Tier 2	Undecided	6/1/2009	12/15/2010	30,578	315
I3119	09C9530	M E BRDYWINE	Brandywine Kitchen Hood Controls	Tier 2	Undecided	6/1/2009	12/15/2010	6,305	103
I3120	09C9557	ME PIPPIN	Pippin Kitchen Hood Controls	Tier 2	Undecided	6/1/2009	12/15/2010	28,530	230
I3121	09C9653	VERANO 400	SBD, New/Renov - Verano Place Unit 4 Renovation	Tier 2	Undecided	6/1/2009	12/15/2010	212,411	19,902
I3122	09C9655	VERANO 600	SBD, New/Renov - Verano Place Unit 6 Renovation	Tier 2	Undecided	6/1/2010	12/15/2011	191,575	17,949
I3125	09CTBD1	BREN HALL	Monitoring Based Commissioning	Tier 2	Design - Bid	6/1/2009	12/15/2010	113,941	15,537
I3126	09CTBD2	BIOLOGICAL SCIENCES 3 LABORATORY	SBD, New/Renov - Biological Sciences 3 Laboratory Conversion	Tier 2	Undecided	6/1/2009	12/15/2010	206,514	9,841
I3133	09CWide	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2009	Tier 2	Undecided	6/1/2008	12/15/2009	454,550	-
I3135	09CWide	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	Tier 2	Undecided	6/1/2008	12/15/2009	-	28,409
I3136	09CWide	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2010	Tier 2	Undecided	6/1/2009	12/15/2010	454,550	-
I3138	09CWide	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	Tier 2	Undecided	6/1/2009	12/15/2010	-	28,409
I3139	09CWide	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2011	Tier 2	Undecided	6/1/2010	12/15/2011	454,550	-
I3141	09CWide	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	Tier 2	Undecided	6/1/2010	12/15/2011	-	28,409
I3151	09CWIDE	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	Tier 2	Undecided	6/1/2008	12/15/2009	84,519	7,919
I3152	09CWIDE	CAMPUSWIDE	SBD, New/Renov - Classroom Renovations Phase 6	Tier 2	Undecided	6/1/2008	12/15/2009	22,478	2,106
I3153	09CWIDE	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	Tier 2	Undecided	6/1/2009	12/15/2010	84,519	7,919
I3154	09CWIDE	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	Tier 2	Undecided	6/1/2010	12/15/2011	84,519	7,919
I3157	09CWIDE	CAMPUSWIDE	Install occupancy sensor switches for restroom fans, and right size motors wherever cost-feasible campus wide.	Tier 2	Undecided	6/1/2009	12/15/2010	263,485	-

**Table 11.2: Project Commitments by Campus (Continued)**

SEP ID#	Building Key	Building Name	Project Name	Project Tier	Project Delivery Method	Start Preliminary Engineering	Project Complete	Committed Electric Savings (kWh/yr)*	Committed Gas Savings (Therms/yr)*
I3170	09CWIDE	CAMPUSWIDE	Refrigerators Phase 1 of 6: 100 Energy Star Refrigerator Replacements	Tier 2	Undecided	6/1/2008	12/15/2009	224,300	-
I3171	09CWIDE	CAMPUSWIDE	Refrigerators Phase 2 of 6: 100 Energy Star Refrigerator Replacements	Tier 2	Undecided	6/1/2009	12/15/2010	224,300	-
I3172	09CWIDE	CAMPUSWIDE	Refrigerators Phase 3 of 6: 100 Energy Star Refrigerator Replacements	Tier 2	Undecided	6/1/2009	12/15/2010	224,300	-
I3173	09CWIDE	CAMPUSWIDE	Refrigerators Phase 4 of 6: 100 Energy Star Refrigerator Replacements	Tier 2	Undecided	6/1/2009	12/15/2010	224,300	-
I3174	09CWIDE	CAMPUSWIDE	Refrigerators Phase 5 of 6: 100 Energy Star Refrigerator Replacements	Tier 2	Undecided	6/1/2009	12/15/2010	224,300	-
I3175	09CWIDE	CAMPUSWIDE	Refrigerators Phase 6 of 6: 9 Energy Star Refrigerator Replacements	Tier 2	Undecided	6/1/2009	12/15/2010	20,187	-
I3177	09CWIDE	CAMPUSWIDE	LCD Phase 2 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	Tier 2	Undecided	6/1/2008	12/15/2009	213,796	-
I3179	09CWIDE	CAMPUSWIDE	LCD Phase 4 of 6: 1000 Verdiem (PC Power Management) Installations and 40 CRT Replacements	Tier 2	Undecided	6/1/2009	12/15/2010	213,796	-
I3181	09CWIDE	CAMPUSWIDE	LCD Phase 6 of 6: 565 Verdiem (PC Power Management) Installations and 23 CRT Replacements	Tier 2	Undecided	6/1/2010	12/15/2011	120,795	-
I3183	09CWIDE	CAMPUSWIDE	Server Virtualization Phase 2 of 3: 10 VM Installations	Tier 2	Undecided	6/1/2009	12/15/2010	280,000	-
I3184	09CWIDE	CAMPUSWIDE	Server Virtualization Phase 3 of 3: 10 VM Installations	Tier 2	Undecided	6/1/2010	12/15/2011	280,000	-
I3187	09C9005	UCI STU CNTR	Retrofit T8 fixtures with 25W T8 lamps and RLO ballasts, and install occupancy and daylighting sensors where appropriate	Tier 2	Undecided	6/1/2009	12/15/2010	245,322	-
I3242	09CWIDEH	CAMPUSWIDE - HOUSING	Replace Refrigerators with Energy Star units	Tier 2	Undecided	6/1/2010	12/15/2011	975,000	-
I3243	09CWIDE	CAMPUSWIDE	Monitoring Based Commissioning - Buildings < 50k GSF not in SEP	Tier 2	Undecided	6/1/2010	12/15/2011	1,100,000	58,000
I3244	09CWIDEH	CAMPUSWIDE - HOUSING	Install LED w/ Occupancy Sensors in Restrooms, Dimmable Photo Sensing Ballast in Common Areas	Tier 2	Undecided	6/1/2010	12/15/2011	225,000	-
I3245	09CWIDE	CAMPUSWIDE	Implement Demand Control Ventilation - Buildings < 50k GSF not in SEP	Tier 2	Undecided	6/1/2010	12/15/2011	430,000	9,500
I3246	09CWIDEH	CAMPUSWIDE - HOUSING	Install Bi-level Stairwell Fixture, Replace Incandescent Lamps w/ CFLs	Tier 2	Undecided	6/1/2010	12/15/2011	450,000	-
I3247	09CWIDE	CAMPUSWIDE	Occupancy Based Ventilation Control	Tier 2	Undecided	6/1/2009	12/15/2010	225,000	5,200
I3248	09CWIDEH	CAMPUSWIDE - HOUSING	Install Occupancy Sensors wherever applicable and Retrofit Lighting systems.	Tier 2	Undecided	6/1/2009	12/15/2010	125,000	-
I3249	09CWIDE	CAMPUSWIDE	Data Center Energy Efficiency Project	Tier 2	Undecided	6/1/2009	12/15/2010	77,000	-
I3250	09CWIDE	CAMPUSWIDE	Path, Area, and Parking Lot Lighting Upgrade to LED, High Efficiency Lighting Systems	Tier 2	Undecided	6/1/2009	12/15/2010	785,000	-
I3251	09CWIDE	CAMPUSWIDE	Reduced Exhaust Stack Velocity and Eliminate Make Up Air in Lab Exhaust Systems	Tier 2	Undecided	6/1/2009	12/15/2010	650,000	25,000
I3252	09CWIDEH	CAMPUSWIDE - HOUSING	Install Occupancy Sensors in Laundry Rooms and Restrooms to control Exhaust Fans.	Tier 2	Undecided	6/1/2009	12/15/2010	95,000	-
I3253	09CWIDE	CAMPUSWIDE	Replace Chillers, Heat Exchangers, Air Handlers, Pumps, Motors, and Controls with < 10 Yr. Payback.	Tier 2	Undecided	6/1/2009	12/15/2010	775,000	-
I3254	09CWIDE	CAMPUSWIDE	Replace Stand Alone Packaged DX Units < 8 SEER	Tier 2	Undecided	6/1/2010	12/15/2011	180,000	2,500
I3255	09CWIDEH	CAMPUSWIDE - HOUSING	Replace Inefficient Packaged HVAC and Chiller units with high SEER units.	Tier 2	Undecided	6/1/2010	12/15/2011	125,000	4,100
I3256	09CWIDE	CAMPUSWIDE	Compressed and Vacuum Air System Efficiency Retrofit	Tier 2	Undecided	6/1/2010	12/15/2011	350,000	-
I3257	09CWIDE	CAMPUSWIDE	Reduce ACH Using Low Flow Fumehoods	Tier 2	Undecided	6/1/2010	12/15/2011	445,000	42,000

**Table 11.2: Project Commitments by Campus (Continued)**

SEP ID#	Building Key	Building Name	Project Name	Project Tier	Project Delivery Method	Start Preliminary Engineering	Project Complete	Committed Electric Savings (kWh/yr)*	Committed Gas Savings (Therms/yr)*
I3258	09CWIDE	CAMPUSWIDE	Remove Sound Attenuators to Reduce Pressure Drop on Fan System	Tier 2	Undecided	6/1/2010	12/15/2011	185,000	-
I3259	09CWIDEH	CAMPUSWIDE - HOUSING	Replace remaining old Boilers with high Efficient units.	Tier 2	Undecided	6/1/2010	12/15/2011	-	26,000
I3260	09CWIDE	CAMPUSWIDE	HVAC Efficiency Improvement - Buildings < 50k GSF not in SEP	Tier 2	Undecided	6/1/2009	12/15/2010	345,000	65,000
I3261	09CWIDE	CAMPUSWIDE	Upgrade and Enhance EMS as needed to manage, monitor, and maintain measures embodied in the SEP.	Tier 2	Undecided	6/1/2009	12/15/2010	1,200,000	35,000
I3262	09CWIDE	CAMPUSWIDE	EMS Control Upgrade - Buildings < 50k GSF not in SEP	Tier 2	Undecided	6/1/2009	12/15/2010	645,000	22,500
I3263	09CWIDEH	CAMPUSWIDE - HOUSING	Replace Kitchen Appliances with Energy Star units where opportunities exist.	Tier 2	Undecided	6/1/2009	12/15/2010	42,000	2,800
I3264	09CWIDE	CAMPUSWIDE	Chillers, heat exchangers, air-handlers, duct streamlining measures (e.g., radial ducts where right-angle transitions exist), pumps, controls, and motors with <10 year payback.	Tier 2	Undecided	6/1/2009	12/15/2010	225,000	-
I3265	09CWIDE	CAMPUSWIDE	Install Efficient HTW Solution for Health Sciences	Tier 2	Undecided	6/1/2009	12/15/2010	-	345,000
I3266	09CWIDEH	CAMPUSWIDE - HOUSING	Replace All Hot Water Heaters w/ Highest Efficiency Units	Tier 2	Undecided	6/1/2009	12/15/2010	-	13,500
I3267	09CWIDEH	CAMPUSWIDE - HOUSING	Install Solar Water Heating System in Housing Units with Central Heating Water Heating System	Tier 2	Undecided	6/1/2009	12/15/2010	-	15,000
I3268	09CWIDE	CAMPUSWIDE	DDC Conversion and Control Upgrade - Buildings < 50k GSF not in SEP	Tier 2	Undecided	6/1/2008	12/15/2009	345,000	15,100
I3269	09C9302	CENTRL PLANT	Equipment Efficiency Upgrade	Tier 2	Undecided	6/1/2010	12/15/2011	240,000	15,000
I3270	09C9051	CTB THEATRE	DDC Conversion	Tier 2	Undecided	6/1/2010	12/15/2011	25,000	1,500
I3271	09C9202	SOCSCI HALL	Air Handler Replacement	Tier 2	Undecided	6/1/2010	12/15/2011	27,500	1,800
I3272	09C9653	VERANO 400	Replace Heating Furnace (780 units)	Tier 2	Undecided	6/1/2008	12/15/2009	-	36,316
I3273	09C9653	VERANO 400	Water Heater Replacement	Tier 2	Undecided	6/1/2010	12/15/2011	-	6,350
I3279	09C9082	GILESPIE BLD	CAV to VAV Fume Hoods Proposed from Previous MBCx study by EMC	Tier 2	Undecided	6/1/2008	12/15/2009	198,663	-
I3280	09C9125	CAMPUSWIDE	Daylighting controls-MED SCI A,B,C,D	Tier 2	Undecided	6/1/2008	12/15/2009	35,000	-
I3299	09C9005	UCI STU CNTR	Replace 5 Rooftop DX units	Tier 2	Undecided	6/1/2010	12/15/2011	25,000	-
I3302	09CWIDEH	CAMPUSWIDE - HOUSING	Housing Parking Lot HID Fixture Retrofit	Tier 2	Undecided	6/1/2009	12/15/2010	40,000	-
I3303	09CWIDEH	CAMPUSWIDE - HOUSING	Housing Pathway/Exterior HID and Incan. Retrofit	Tier 2	Undecided	6/1/2009	12/15/2010	40,000	-
I3304	09C9080	QURESHEY LAB	Monitoring Based Commissioning	Tier 2	Undecided	6/1/2009	12/15/2010	11,831	3,824
I6005	09C9073	SCILIBRARY	HHWP VFD Retrofit	Tier 2	Undecided	6/1/2008	12/15/2009	7,237	-
<b>Subtotal, 2009-11 Tier 2 Projects</b>								23,793,704	1,508,998
<b>2012-14 Program Cycle</b>									
<b>2012-14 Tier 1 Projects</b>									
I3075	09C9001	LANGSON LIBR	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2011	12/15/2012	131,684	15,843
I3099	09C9125	ENG TOWER	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2011	12/15/2012	92,453	23,130
I3104	09C9204	SOCSCI TOWER	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2011	12/15/2012	145,072	8,804
I3107	09C9221	SOC SCI PL B	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2011	12/15/2012	37,790	5,153
I3112	09C9314	BREN EVENTS	Monitoring Based Commissioning	Tier 1	Design - Bid	6/1/2012	12/15/2013	74,889	10,212
<b>Subtotal, 2012-14 Tier 1 Projects</b>								481,888	63,142

**Table 11.2: Project Commitments by Campus (Continued)**

SEP ID#	Building Key	Building Name	Project Name	Project Tier	Project Delivery Method	Start Preliminary Engineering	Project Complete	Committed Electric Savings (kWh/yr)*	Committed Gas Savings (Therms/yr)*
<b>2012-14 Tier 2 Projects</b>									
I1056	09C9314	BREN EVENTS	AHU 1 and 3 - Convert to VAV and SP reset	Tier 2	Undecided	6/1/2011	12/15/2012	603,650	40,575
I1057	09C9314	BREN EVENTS	DCV for a CAV system - AHU 2 and AHU 5	Tier 2	Undecided	6/1/2011	12/15/2012	37,169	2,112
I1077	09C9314	BREN EVENTS	AHU 4 and 6 - VIV to VAV and SP reset	Tier 2	Undecided	6/1/2011	12/15/2012	41,250	2,988
I3057	09C9314	BREN EVENTS	Zone DDC Upgrade	Tier 2	Undecided	6/1/2011	12/15/2012	50,575	2,334
I3059	09C9322	MED SCI C	EF VFDs	Tier 2	Undecided	6/1/2011	12/15/2012	84,423	-
I3061	09C9323	MED SCI D	EF VFDs	Tier 2	Undecided	6/1/2011	12/15/2012	78,158	-
I3063	09C9325	MED SCI A	EF VFDs	Tier 2	Undecided	6/1/2011	12/15/2012	203,212	-
I3065	09C9328	MED SCI B	EF VFDs	Tier 2	Undecided	6/1/2011	12/15/2012	73,475	-
I3070	09CWide	CAMPUSWIDE	Solar Pool Water Heater - Anteater Pool	Tier 2	Undecided	6/1/2011	12/15/2012	-	13,908
I3085	09C9056	SOTA ART STD	Monitoring Based Commissioning	Tier 2	Design - Bid	6/1/2011	12/15/2012	12,176	1,110
I3087	09C9058	ARTS TECH	SBD, New/Renov - Arts Building	Tier 2	Undecided	6/1/2011	12/15/2012	189,810	17,784
I3105	09C9208	SCH BUSINESS	SBD, New/Renov - School of Business Building	Tier 2	Undecided	6/1/2011	12/15/2012	249,750	23,400
I3109	09C9299	ANT REC CTR	Monitoring Based Commissioning	Tier 2	Design - Bid	6/1/2011	12/15/2012	68,776	11,970
I3127	09CTBD3	BIOMEDICAL RESEARCH FACILITY 4 - STEM CELL HEALTH SCIENCES	SBD, New/Renov - Irvine Biomedical Research Facility - 4 (Stem Cell)	Tier 2	Undecided	6/1/2011	12/15/2012	701,343	33,420
I3128	09CTBD4	ACADEMIC BUILDING TELEMEDICINE/PRIME-LC	SBD, New/Renov - Health Sciences Academic Building	Tier 2	Undecided	6/1/2012	12/15/2013	241,380	11,502
I3129	09CTBD5	FACILITY	SBD, New/Renov - Telemedicine/PRIME-LC Facilities	Tier 2	Undecided	6/1/2011	12/15/2012	402,300	19,170
I3142	09CWide	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2012	Tier 2	Undecided	6/1/2011	12/15/2012	454,550	-
I3144	09CWide	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	Tier 2	Undecided	6/1/2011	12/15/2012	-	28,409
I3145	09CWide	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2013	Tier 2	Undecided	6/1/2012	12/15/2013	454,550	-
I3147	09CWide	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	Tier 2	Undecided	6/1/2012	12/15/2013	-	28,409
I3148	09CWide	CAMPUSWIDE	First Electric Savings Component of DM and CR Projects 2014	Tier 2	Undecided	6/1/2013	12/15/2014	454,550	-
I3150	09CWide	CAMPUSWIDE	Natural Gas Component of DM and CR Projects 2009	Tier 2	Undecided	6/1/2013	12/15/2014	-	28,409
I3155	09CWide	CAMPUSWIDE	SBD, New/Renov - Campus Approved Projects Under \$5 Million	Tier 2	Undecided	6/1/2011	12/15/2012	84,519	7,919
I6001	09C9299	ANT REC CTR	CW Reset & MBCx Chiller Plant(in addition to MBCx of Building)	Tier 2	Undecided	6/1/2011	12/15/2012	316,372	-
I6002	09C9314	BREN EVENTS	ECM- Install Air Curtain At Loading Dock (Bren Events Center)	Tier 2	Undecided	6/1/2012	12/15/2013	(2,820)	2,150
I3558	09C9140	ENG GATEWAY	Replace Old CRAC Units with New CRAC Units, Install Air Side Economizer & Separate Hot & Cold Aisle					91,104	
<b>Subtotal, 2012-14 Tier 1 Projects</b>								4,890,272	275,569
<b>Total Campus Tier 1 &amp; 2 Projects</b>								53,140,177	2,810,962

\* Committed energy savings based on preliminary project list published March 28, 2008 and may vary slightly from final energy savings in this report



## 12. ENERGY & GHG FORECAST

The University of California 2007 Policy of Sustainable Practices sets the goal of reducing greenhouse gas emissions to 2000 levels by 2014 and to 1990 levels by 2020. Each campus will need to develop complete greenhouse gas emissions calculations for the baseline years of 1990 and 2000. In order to determine the potential impact of energy efficiency and renewable energy projects identified in the Strategic Energy Plan, current, past, and future greenhouse gas emissions from purchased electricity and natural gas have been estimated based on information provided on energy purchases for fiscal years 1999-2000 and 2006-2007. Greenhouse gas emissions savings for the projects identified have also been calculated in order to compare their impact with the greenhouse gas emissions reduction goals. While these emissions calculations do not include all sources of campus greenhouse gas emissions, they do provide a way of measuring the impact of the projects identified in the SEP in relation to electricity and natural gas usage.

### 12.1 Electricity Emissions Factors

Although some California utilities publish greenhouse gas emissions factors for their delivered power, a complete record of historical and current factors is not available. Therefore, in accordance with the California Climate Action Registry (CCAR) General Reporting Protocol, EPA's eGRID emissions factor for the CALI – WECC California subregion for 2000 of 0.000366 metric tons of CO<sub>2</sub>e/kWh was used to calculate greenhouse gas emissions from purchased electricity. This number includes greenhouse gas emissions of carbon dioxide, methane, and nitrous oxide and uses global warming potential factors published in the IPCC's Third Assessment Report to convert methane and nitrous oxide emissions to carbon dioxide equivalents. The emissions factor is reported in metric tons of carbon dioxide equivalent per kWh (CO<sub>2</sub>e/kWh) of electricity purchased. While the emissions factor does normally vary by year based on the actual fuel mix used, a constant value was used to isolate the impacts of energy efficiency and renewable energy projects. Each campus may choose to develop utility and year specific emissions factors when filing their greenhouse gas emissions with the California Climate Action Registry.

### 12.2 Gas Emissions Factors

The emission factors provided in the California Climate Action Registry General Reporting Protocol, Tables C.5 and C.6 were used to calculate the greenhouse gas emissions associated with natural gas purchases. This number is 0.005295 metric tons of CO<sub>2</sub>e per therm.

### 12.3 Current Energy Usage and Emissions

Current emissions from purchased utilities are shown in Table 1.1

### 12.4 2014 Goals

The University of California has set the goal of meeting 2000 greenhouse gas emission by 2014. In 2000 many campuses were purchasing their energy from Enron which relied on a different power mix than the state-wide average. This information is not accurately reflected in the average state-wide emissions factor and therefore actual greenhouse gas emissions for campuses purchasing Enron power will be much higher than calculated. In addition to

the campus wide greenhouse gas emissions goal, the campus also needs to meet the goal of reducing growth adjusted electricity consumption to 10% below 2000 levels by 2014. The energy consumption and greenhouse gas emissions associated with the 2014 goals are shown in Table 1.1. The emissions are based on the statewide average emissions factor.

#### 12.5 2020 Goals

While the goal of achieving a reduction of greenhouse gas emissions to 1990 levels by 2020 has been set, the lack of data on energy consumption and emission factors in 1990 has made it infeasible to determine an accurate baseline.

#### 12.6 SEP Energy Efficiency and Renewable Energy Projects

The Strategic Energy Plan has identified energy efficiency and renewable energy projects to help meet the greenhouse gas emissions targets of each campus. The impact of these proposed projects on greenhouse gas emissions is shown in Table 1.1. If the campus chooses to install the photovoltaic systems proposed in the SEP, they will need to retain ownership of the renewable energy credits (RECs) associated with the production of electricity from the PV panels in order to claim credit for the greenhouse gas emissions reductions from the system.

## 13. CONCLUSIONS

### 13.1 Next Steps and Recommendations

#### 13.1.1 Action Plan

The UC Strategic Energy Plan was driven by the UC's Policy on Sustainable Practices, Section II d., which stipulates that the system (1) reduce systemwide growth-adjusted energy consumption by 10 percent or more by 2014 from the year 2000 base consumption level, and (2) reduce GHG emissions to 2000 levels by 2014.

To accomplish these goals, the campus must create a strategic action plan for implementing energy-saving projects through the year 2014. The plan should address both State and Non-state funded facilities. The SEP project list should be used as a starting point to guide these action plans, but the University should continuously evaluate the feasibility of additional energy-saving measures. Every campus has begun to develop an action plan through 2011. For each year in the six year program, the University should re-evaluate and modify the action plan to reflect actual progress towards goals and necessary future steps.

#### 13.1.2 College Performance: Measurement and Reporting

To ensure meeting the goals and requirements of the UC Policy on Sustainable Practices, the campus must measure, evaluate, and report energy use and greenhouse gas emissions regularly.

A Climate Change Working Group at each campus is currently developing a protocol to allow for growth adjustment and normalization of data and accurate reporting procedures. These Working Groups will monitor progress toward reaching the stated goals for GHG reduction, and will evaluate suggestions for programs to reach these goals.

### 13.2 Funding Sources

Significant financial investment will be required to accomplish the UC Policy on Sustainable Practices goals. A variety of financing programs and funding sources are available to the Universities. Two major funding sources designed specifically to support energy efficiency projects are the Utility Incentive Programs and the UCOP's Energy Efficiency Financing program.

#### 13.2.1 Utility Incentive Programs

Most Utilities in California offer incentives to customers to support the implementation of energy-saving projects.

The University of California/California State University/Investor-Owned Utility (UC/CSU/IOU) Energy Efficiency Partnership Program provides funding to all campuses served by San Diego Gas and Electric (SDG&E), Southern California Gas (SCG), Southern California Edison (SCE), Pacific Gas and Electric (PG&E). Through the Partnership, these IOUs distribute incentives from Public Purpose Programs (formerly Publics Good Charges) that customers pay on their utility bills. Since 2004, the IOUs have paid UC almost \$20 million in incentives through this Partnership, and the IOUs have offered to increase UC funding in

future years. As a preliminary step within the Strategic Energy Plan, commitments were made to the IOUs to coincide with CPUC filing deadlines and it is anticipated that funding levels will be granted for the commitment. Current UC/CSU/IOU Partnership incentive rates are \$0.24 per kilowatt-hour saved in the first year and \$1.00 per therm saved in the first year, and the Partnership will pay up to 80% of the project cost. This incentive structure is anticipated to remain unchanged in the future program years.

Publicly-Owned Utilities, such as Los Angeles Department of Public Works (LADWP), Sacramento Municipal Utility District (SMUD), Riverside Public Utilities (RPU) also manage energy efficiency incentive programs that have historically paid substantial incentives to Universities in their territories. There have been discussions with each of these utilities to negotiate similar incentive rates, which may be firmed up in the coming months. In either case, Universities served by these Utilities are strongly encouraged to participate in the Utility incentive programs available.

### 13.2.2 UCOP Energy Efficiency Financing

UCOP has designed a program to work in concert with the Utility incentive programs to provide low-interest loan to cover the cost to the campuses after the incentives. Campuses will pay back the loans to UCOP using the energy cost savings. To do so will require Department of Finance approval to allow for capital debt service to be paid with energy cost savings. In order to be eligible for the UCOP borrowed funds, a portfolio of projects must meet minimum, although liberal, project cost return requirement. The anticipated criteria include a 85% ratio of loan payment to energy savings, which equates to approximately 15 year simple payback on the portfolio of projects.

UCOP is prepared to lend up to \$500 million to campuses through 2014 to support energy-saving projects.

To learn more about UCOP Energy Efficiency Project Financing, contact

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## **APPENDICES**





**Appendix A**  
**Field Data Forms**

(Electronic copies only – see folder “Appendix A - Field Data Forms” on disk)







**Appendix B**  
**Savings Calculations**

(Electronic copies only – see folder “Appendix B- Savings Calculations” on disk)





**Appendix C**  
**Other Calculations and Data**

