University of California
Hazard Mitigation Progress Report

University of California
Office of the President
CFO Division
Office of Risk Services
2017

I. Executive Summary

The hazard mitigation measures, programs, and projects summarized in this document reflects the University's commitment to reducing, preventing or eliminating potential risks and impacts of natural and human-caused disasters and keeping our campus communities as safe and disaster-resilient as possible. By working to reduce the University's vulnerability to the multiple hazards we face in California, our locations are able to recover more quickly and less expensively from disasters and the economic, academic, operational, and environmental impacts from these disasters will be minimized. The systemwide Hazard Vulnerability Assessment (HVA) initiative completed in 2005 continues to provide us with a road map on how to most effectively prioritize and manage a wide range of catastrophic risks.

By a wide margin, the greatest physical threat/risk facing the University is a catastrophic earthquake. In the HVA analysis, this was ranked as the highest threat by all UC campuses except for those located in the seismically inactive Central Valley (Davis and Merced). In recognition and response to the magnitude of the threat, the University began its systemwide structural seismic safety retrofit capital program in 1979, and is continually reviewing the seismic safety of its facilities, prioritizing buildings for remediation, and implementing seismic upgrades. Between 1979 and 2010-11, the University invested more than $4 billion in seismic safety retrofits, hospital replacement, and various seismic hazard mitigation projects. Since 2011, UC has devoted more than $1.2 billion to projects that included seismic and life-safety corrections work. Major projects include UC Berkeley's Student Union and Memorial Stadium - both of which had major seismic components to their multi-faceted renovations - and projects that involve complete demolition and rebuild, such as the UC Berkeley Tolman Hall seismic replacement project. UC is also undertaking large hospital seismic projects such as UCSF's Parnassus Seismic Renovation Program, which consists of a series of renovations including retrofitting the Clinical Sciences Building. Furthermore, UC has undertaken at least 39 smaller seismic projects on 9 campuses and 3 medical centers with total construction costs of $174 million (excludes "soft costs" such as design and engineering). Seismic hazard mitigation represents the vast majority of all University investment in hazard mitigation, commensurate with the degree of catastrophic risk.

All University locations pay into the systemwide self-insurance program. The University has been successful in managing its risk by investing in proactive loss prevention and loss control programs as part of an overall Enterprise Risk Management strategy. In particular, the 'Be Smart About Safety' (BSAS) loss prevention program has reduced losses and thereby reduced the total cost of risk.

Since FY2011-12, the program has funded many campus hazard mitigation projects and programs through BSAS and other insurance program funding sources. BSAS alone has funded 153 mitigation projects totaling $12.2 million that are directly related to the University's top ten-highest ranked threats. The program has also spent $7.3 million on various campus threat and security measures, mainly security assessments and enhancements. In addition, the program has also invested $7 million in staffing campus mission continuity planner positions, in addition to approximately $440,000 on continuity planning software development. Furthermore, UC spent approximately $5 million on campus wellness programs aimed at improving the health and wellbeing of the campus community.

The following table highlights the University's significant investments in non-seismic hazard mitigation through December 2016.

Expenditures for UC Hazard Mitigation, Non-Seismic (1979-2016)

Hazard Mitigation Project/Program	Fund Source	Amount
Campus Building Fire Prevention/Life Safety Projects and Staffing	BSAS	$4,776,473
Campus Workplace Violence Programs/Staffing	BSAS	$4,340,509
Campus Threat and Security Measures	OPRS	$7, 293,873
Campus Animal Research Facility Security/Surveillance Measures	BSAS	$311,511
Campus High Wind Tree Hazard Projects	BSAS	$68,500
Campus Public Event Crowd Control Measures	BSAS	$26,900
Public Health/Pandemic Control Measures	BSAS	$1,428,117
Wildland Fire Hazard Mitigation Measures	BSAS	$100,000
Mission Continuity Software Development	OPRS	$440,000
Campus Mission Continuity Planner Staffing	OPRS	$6,090,235
General Emergency Response/Hazard Mitigation Measures	OPRS	$887,265
	Total	**$18,469,510**

II. Background

In Fall 2003, the UC Office of the President formed the systemwide Safety, Security and Anti-Terrorism (SSAT) Committee to assess the state of the University with respect to overall security, exposure to threats, and ability to respond to physical hazards, including natural hazards, human-caused events, technological hazards, and terrorist acts.

The mission of the SSAT was to strengthen security and safeguards at the campuses and to enhance crisis and consequence management capabilities across the University of California system. The primary goal of the SSAT was to create a consistent and comprehensive systemwide framework for physical hazard identification, risk assessment, and mitigation strategy development that allows for individual campus flexibility and maintains campuses' prerogative to respond to campus-specific concerns and priorities.

To fulfill its charge, the SSAT conducted an assessment of the University's approaches to hazard mitigation, preparedness, response, and recovery efforts by facilitating a comprehensive risk assessment, or Hazard Vulnerability Assessment (HVA), for each campus. Specific objectives of the HVA were to conduct individual campus risk assessments and to develop a systemwide ranking for the relative risk of a threat event; to identify vulnerable campus locations or critical/irreplaceable/highly valued facilities or assets; and to identify and assess both existing and potential interim and long-term mitigation measures. The HVA report was issued in 2005: http://www.ucop.edu/riskmgt/emergprep/documents/hva_summaryrpt.doc

III. Systemwide Risk Assessment (HVA) Results

A systemwide threat event ranking was subsequently developed based on the results of the individual campus HVA risk assessments (see following table). All ten campus ordinal rankings were then combined for each individual threat event to produce a systemwide relative risk ranking score (far right column) for each threat event.

The compilation of campus relative risk threat event rankings produced a statistical breakpoint or cutoff that identified eleven (11) threat events that were most significant for the University. In descending order of relative risk, the highest systemwide threat events or hazards were:

1. Catastrophic Earthquake
2. Laboratory Building Fire
3. Workplace Violence
4. Animal or Crop Eco-terrorism
5. Residential Building Fire
6. Truck Bomb
7. Active Shooter
8. High Winds
9. Public/Sports Event Disturbance
10. Public Health Emergency
11. Wildland-Urban Interface Fire

THREAT EVENT/ HAZARD	CAMPUS RISK ASSESSMENT RANKINGS										
Natural Hazards Technological Human-Caused Terrorist Acts	Berkeley	Davis	Irvine	Los Angeles	Merced	Riverside	San Diego	San Francisco	Santa Barbara	Santa Cruz	Systemwide Relative Risk Ranking Score
Catastrophic Earthquake	1	17	1	1	20	1	1	1	1	1	45
Lab Building Fire	11	3	2	6	9	6	6	4	11	2	60
Workplace Violence	9	2	6	2	7	10	8	7	2	8	61
Animal/Crop Eco-terrorism	2	1	10	4	1	4	13	3	15	17	70
Residential Building Fire	5	6	3	15	10	3	7	21	5	5	80
Truck Bomb	14	10	7	8	3	9	2	9	10	11	83
Active Shooter	7	5	11	10	4	5	10	17	6	13	88
High Winds	20	9	9	13	5	2	3	22	4	6	93
Sports/Public Event Disturbance	10	4	4	3	12	7	15	11	13	18	97
Public Health Emergency	17	16	5	12	13	13	5	12	7	4	104
Wildland Fire	4	8	17	22	6	15	4	14	8	10	108
Mail/Package Bomb	8	15	15	11	8	11	9	8	19	16	120
Intentional Biological Agent Release	15	13	14	5	15	16	11	10	16	14	129
Power Failure	6	12	16	18	18	18	18	2	20	3	131
Flood	13	11	21	19	2	8	16	18	9	15	132
Civil Disturbance	3	7	18	9	11	17	24	23	14	9	135
Accidental Hazmat Release	22	14	8	14	16	14	17	13	12	7	137
Intentional Radiological Release	16	19	12	7	20	12	12	6	21	20	145
Landslide - Mudslide	12	23	23	17	20	21	14	5	3	12	150
IT Infrastructure Disruption	18	18	19	21	14	19	21	15	18	19	182
Theft of 'Select Agent'	19	20	20	16	20	20	20	19	23	24	201
Water Supply Disruption	21	22	13	20	19	23	19	24	24	21	206
Telecommunications System Failure	24	21	22	23	17	22	22	25	25	22	223
Coastal Tsunami	23	24	24	24	20	24	23	20	22	23	227

IV. Summary of Systemwide Hazard Mitigation

For each of their "top ten" threat events, the campuses identified specific campus sites or critical/irreplaceable/high-value facilities or collections (if applicable) that would be vulnerable. Taking into consideration these vulnerable locations and assets, campuses also identified mitigation measures that had already been implemented, as well as potential interim and long-term mitigation measures. Each campus could also choose to conduct mitigation measure analyses for any or all of the other threats determined to be significant based on campus experience, institutional priorities, special interests, and irreplaceable at-risk assets. Campuses then submitted their campus mitigation measure information to UCOP under attorney- client privilege for further analysis so that any significant systemwide vulnerabilities as well as best practices could be identified.

V. 'Be Smart About Safety' (BSAS) Hazard Mitigation Funding Program

Since FY08-09, funding for many campus hazard mitigation projects and programs has occurred through the 'Be Smart About Safety' (BSAS) loss prevention program. See the UC Hazard Mitigation Progress Report dated 2011 for relevant BSAS measures prior to 2011. The table below shows BSAS-funded campus mitigation projects and programs for FY11-16 in each of the ten highest ranked systemwide threat events based on the results of the Hazard Vulnerability Assessment (HVA) as well as a general category applicable to multiple hazards. In FY11-16 BSAS funded 153 mitigation projects/programs directly related to these threats, returning a total of $12,203,640 to the locations to invest in hazard mitigation.

BSAS-Funded Campus Hazard Mitigation Projects (FY11-16)

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
Hazard Mitigation Project/Program	Administer program to ensure the campus is adequately prepared to respond to campus and community emergencies	FY11/12	$ 79,930	UCSB	General
ALS Paramedic Program Equipment and Supplies	Supplies and equipment to upgrade UCSC Fire Dept's Emergency Medical Services from Basic Life Support to Advanced Fire Support/Paramedic.	FY11/12	$ 60,000	UCSC	General

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
BruinAlert Outdoor "Big Voice" Siren	Install outdoor speaker/warning system at specific locations to increase awareness of campus emergencies	FY11/12	$ 45,818	UCLA	General
BruinAlert Outdoor "Big Voice" Siren	Install outdoor speaker/warning system at specific locations to increase awareness of campus emergencies	FY11/12	$ 45,818	UCLA	General
Backup critical emergency management information	Critical emergency management information provided to every department in electronic format	FY11/12	$ 7,000	UCSF	General
Complete programming of on-line emergency action plans	Enables UCSF to adequately prepare Emergency Action Plans	FY11/12	$ 50,000	UCSF	General
Evacuation mapping	Hospital evacuation map survey, map design and installation	FY11/12	$ 50,000	UCSFMC	General
WarnMe	Implement mass notification system	FY12/13	$ 25,000	UCD	General
Facilities Management - EOC Emergency Generator	Emergency Generator to provide power for the Facilities Management EOC	FY12/13	$ 10,000	UCI	General
Emergency Management Posters	Ensure “Emergency Management Procedure” posters are supplied to all buildings	FY12/13	$ 2,500	UCI	General
Campus Emergency Preparedness Manager	Administers campus emergency management program.	FY12/13	$ 84,000	UCSB	General
Campus Emergency Response Team (CERT) Safety Supplies	Jackets, hats, helmets, tools, and other equipment needed for CERT members.	FY12/13	$ 25,000	UCSF	General
Campus Emergency Preparedness Manager	Emergency management	FY13/14	$ 84,000	UCSB	General
Emergency Action Plan System Improvements	Enhancements to the online Emergency Action Plan System	FY13/14	$ 30,000	UCSF	General

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
Campus Emergency Response Team Training	Train 100 Campus Emergency Response Team (CERT) members in first aid, CPR, and AED use.	FY13/14	$ 8,000	UCSF	General
Emergency Alert System	Implement an improved system	FY14/15	$ 51,000	UCD	General
Emergency Mobile Application	Enhanced capability to reach campus community	FY14/15	$ 10,000	UCD	General
Campus Emergency Preparedness Manager	Administers campus emergency management program.	FY14/15	$ 77,275	UCSB	General
Emergency management notification systems	Implementation of mass notification system.	FY15/16	$ 66,924	UCD	General
Evacuation/Emergency Lighting Kits	Purchase and distribute evacuation supplies and emergency lighting.	FY15/16	$ 75,000	UCSDMC	General
Fire hazard removal	Removal of fire-prone footbridge and obsolete building	FY11/12	$ 31,000	UCB	BF
Low Static Pressure Issue Review	Increase water flow pressures for fire hazard abatement	FY11/12	$ 108,075	UCD	BF
Fire Truck	Acquire new fire truck	FY11/12	$ 175,000	UCD	BF
Fire Prevention	Improve fire prevention equipment	FY11/12	$ 5,734	UCDMC	BF
Lab and Building Fixes	Improve lab safety including fixing electrical hazards	FY11/12	$ 100,000	UCI	BF
Fire Safety Specialists	Administer fire prevention programs	FY11/12	$ 266,000	UCI	BF
Fire Safety Repairs	Improve fire alarms and sprinklers	FY11/12	$ 200,000	UCI	BF
Lecture Bottle Removal Program	Reduce fire risk associated with aged and corroded lecture bottles	FY11/12	$ 20,000	UCI	BF
Campus Fire Marshal	Conduct, refine, and improve Title 19 Program	FY11/12	$ 80,778	UCLA	BF

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
Clean Room Fire Prevention Project	Install a multi-spectral electro-optical fire detector system, which is able to detect fire in a clean room environment	FY11/12	$ 10,395	UCM	BF
Install fireproof key and supply boxes	Install fire proof boxes that house key for fire department access and campus information including maps	FY11/12	$ 3,500	UCSB	BF
Improved fire prevention program	Web based fire violation data for use in the field	FY11/12	$ 2,500	UCSB	BF
Title 19 inspection	Inspect, identify, and implement orders for repair, maintenance, and upgrades of fire and life safety systems.	FY11/12	$ 99,373	UCSB	BF
Fire Prevention Specialist	Administers campus fire prevention program.	FY11/12	$ 170,000	UCSD	BF
Expanding Asst. Fire Marshal duties	High rise inspections, fire and evacuation drills, employee training, hot work and special events permits, building plans review, fire and accident investigations, etc.	FY11/12	$ 54,000	UCSF	BF
Safety improvement to delivery of standby power	Hard pipe conduit routing to ensure safe delivery of standby power to the animal care facility	FY11/12	$ 40,000	UCSF	BF
Bull's-eye Fire extinguisher training	Fire prevention	FY11/12	$ 16,000	UCSFMC	BF
Correction of Title 19 Fire Marshal inspection & training	Signage and training to prevent storage of materials that may interfere with sprinkler head clearance.	FY11/12	$ 10,000	UCSFMC	BF
Life Safety Abatement	Equipment and materials to correct deficiencies identified to life safety, specifically improving fire walls and clearing vegetation.	FY11/12	$ 100,000	UCSFMC	BF
Fire Truck	Replace existing fire truck that is beyond	FY12/13	$ 175,000	UCD	BF

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
	its useful service life.				
Fire Safety Repairs	Fire Safety Repairs to test, fix, and maintain fire alarms and sprinklers before failure.	FY12/13	$ 125,000	UCI	BF
Fire Safety Specialists	Administer fire prevention programs	FY12/13	$ 182,000	UCI	BF
Lecture Bottle Removal Program	Reduce fire risk associated with aged and corroded lecture bottles	FY12/13	$ 20,000	UCI	BF
Fire Marshal	Continue to conduct, refine and improve the Title 19 Program	FY12/13	$ 93,127	UCLA	BF
Title 19 Fire Inspector	Inspect, identify, and implement orders for repair, maintenance, and upgrades of fire and life safety systems.	FY12/13	$ 21,000	UCSB	BF
Fire Prevention Specialist + supplies expenses	Administration of campus fire prevention program.	FY12/13	$ 191,000	UCSD	BF
Fire Marshal	Administers fire prevention program.	FY12/13	$ 54,028	UCSF	BF
Fire Prevention Specialist + Supplies and Expenses	Administration of campus fire prevention program.	FY13/14	$ 214,000	UCSD	BF
Theater Safety	Eliminate significant fire hazard associated with a wooden shelving system in the basement.	FY13/14	$ 36,125	UCD	BF
Arc Flash Hazard Assessment (phase 2)	Complete campuswide electrical hazard assessment	FY13/14	$ 100,000	UCD	BF
Lecture Bottle Removal Program	Reduce fire risk associated with aged and corroded lecture bottles	FY13/14	$ 11,000	UCI	BF
Gas valve replacements	Prevent gas leaks by replacing existing gas valves in specified research labs	FY13/14	$ 1,000	UCI	BF
Laboratory Safety	Eliminate use of extension cords as specified laboratory	FY13/14	$ 6,000	UCI	BF

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
Fire Safety Repairs	Test, fix, and maintain fire alarms and sprinklers before failure	FY13/14	$ 20,000	UCI	BF
Undergraduate Housing Fire Safety Awareness training	Educates students about fire hazards and prevention	FY13/14	$ 8,000	UCI	BF
GFI Installation	Installation of Ground Fault Interrupter (GFI) electrical equipment	FY13/14	$ 6,000	UCI	BF
Fire Safety Specialists	Administer fire prevention programs	FY13/14	$ 182,000	UCLA	BF
Lab School Lighting Replacement	Averts the risk of fire by replacing specified halogen wall packs with new LED wall packs.	FY13/14	$ 12,000	UCLA	BF
Fire Marshal	Conduct, refine, and improve Title 19 Program	FY13/14	$ 93,127	UCLA	BF
Title 19 Fire Inspector	Inspect, identify, and implement orders for repair, maintenance, and upgrades of fire and life safety systems.	FY13/14	$ 66,253	UCSB	BF
Assistant Fire Marshal	Assure compliance with Cal-OSHA Title 8, 19 and CA Fire Code.	FY13/14	$ 54,000	UCSF	BF
Arc Flash Hazard Assessment	Continued hazard assessment in accordance with NFPA 70 (e)	FY14/15	$ 50,000	UCD	BF
Lecture Bottle Removal Program	Reduce fire risk associated with aged and corroded lecture bottles.	FY14/15	$ 10,000	UCI	BF
Infrared Training	Training on infrared testing of electrical systems.	FY14/15	$ 42,000	UCLA	BF
Fire Marshal Title 19 Program	Administers fire prevention program.	FY14/15	$ 95,920	UCLA	BF
Fire Alarm / Public Annunciator Performance Survey	Weekend activation of alarms/lights and documentation with recommendations.	FY14/15	$ 1,800	UCOP	BF

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
Title 19 Fire Inspector	Fire prevention.	FY14/15	$ 36,579	UCSB	BF
Fire Prevention Specialist + Supplies and Expenses	Administration of campus fire prevention program.	FY14/15	$ 210,000	UCSD	BF
Assistant Fire Marshal	Administers fire prevention program.	FY14/15	$ 54,028	UCSF	BF
Fire Shutters	Replace five fire shutters that protect large glass panels at a UCSF facility in Fresno.	FY14/15	$ 33,780	UCSF	BF
Replace ABC Fire Extinguishers With Distilled Water Mist	Change out all portable ABC type fire extinguishers to distilled water mist in all areas of the Hospital and Medical Center clinics dealing with direct patient care in accordance with California Code of Regulations, Title 19, Division 1, Section 566(f).	FY15/16	$ 537,600	UCDMC	BF
Animal barn fire safety upgrades	Eliminate electrical hazards and modernize structural elements (rescue windows)	FY15/16	$ 14,450	UCD	BF
Fire Extinguisher Training Program	Familiarize employees with general principles of fire extinguishing	FY15/16	$ 12,000	UCDMC	BF
NFPA arc flash hazard assessments Phase 3	Ongoing assessments	FY15/16	$ 50,000	UCD	BF
Fire Marshal Title 19 Program	Administers fire prevention program.	FY15/16	$ 86,273	UCLA	BF
Infrared Testing	Training on infrared testing of electrical systems.	FY15/16	$ 40,000	UCLA	BF
Fire Prevention Specialist + Supplies and Expenses	Administration of campus fire prevention program.	FY15/16	$ 220,000	UCSD	BF
Assistant Fire Marshal	Administers fire prevention programs.	FY15/16	$ 54,028	UCSF	BF

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
Genentech Hall fire door replacement	Removes existing manual fire release mechanisms and installs new/improved fire door operators.	FY15/16	$ 30,000	UCSF	BF
Firewall Protection	Conduct repairs to ensure integrity of firewalls and prevent further damage caused by moveable equipment at specified building (at Mission Bay).	FY15/16	$ 35,000	UCSF	BF
Notification System	Warning system to notify campus community of hazards	FY11/12	$ 20,000	UCD	ED
Athletic Field Blue Light	Install emergency blue light and with annunciator.	FY13/14	$ 6,900	UCM	ED
Lab Safety Projects	Improve lab safety including seismic restraints to anchor lab equipment	FY11/12	$ 40,000	UCI	EQ
Earthquake bracing platform	Installation of an earthquake bracing platform for data center	FY11/12	$ 4,000	UCI	EQ
Separate Gas Feed to Generator at Natural Science Building	Enables installation of a seismic gas shutoff valve.	FY11/12	$ 5,270	UCSC	EQ
Earthquake Safety Improvements	Brace shelves at Institute for Transportation Studies Library	FY12/13	$ 2,100	UCB	EQ
Structural Engineering Review	Structural Engineering review of the 'Shakespeare in the Park' stage and audience seating 'in-the-round' theater.	FY12/13	$ 9,000	UCI	EQ
Gas Shutoff Valves	Install gas shut off valves in various locations throughout the campus.	FY12/13	$ 42,285	UCLA	EQ
Seismic bracing	Furniture and Equipment seismic bracing design standards	FY12/13	$ 25,000	UCSF	EQ
Campus building seismic review	Conduct seismic review of various buildings of potential concern	FY13/14	$ 20,000	UCI	EQ

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
Gas Line Shutoff Valves	Install gas shut off valves in various locations throughout the campus.	FY13/14	$ 27,500	UCLA	EQ
Seismic shutoff valves	Install valves to shut off gas supply during earthquake	FY13/14	$ 28,710	UCSC	EQ
Academic Data Center - Earthquake Mitigation	Install more Isobase equipment to house server racks to protect against a severe earthquake.	FY14/15	$ 7,500	UCI	EQ
Earthquake hazard mitigation project	Install restraints and bracing on laboratory equipment/furniture	FY14/15	$ 10,000	UCI	EQ
Seismic Freezer Bracing	Improve earthquake bracing for research equipment.	FY14/15	$ 25,000	UCSF	EQ
Seismic Shut Off Valves	Install seismic shutoff valves at specified locations.	FY15/16	$ 18,000	UCLA	EQ
Vivarium Safety Officer	Protects animal research-related facility.	FY12/13	$ 86,000	UCI	ET
Vivarium Threat Assessment	Ensure that vivaria on campus are adequately protected using the method of crime prevention through environmental design.	FY12/13	$ 25,000	UCLA	ET
Vivarium Project	Improve the safety and security as it relates to sensitive animal research.	FY12/13	$ 50,000	UCLA	ET
Vivarium Safety Officer	Protects animal research-related facility.	FY13/14	$ 84,520	UCI	ET
Vivarium Card Readers	Prevents unauthorized access to animal research-related facility.	FY14/15	$ 65,991	UCLA	ET
Remove 3 Sycamore trees	Eliminate hazardous trees.	FY11/12	$ 13,500	UCSB	HW
Greek Theatre Tree Removal	Pruning, cabling, or removal of high-risk trees	FY12/13	$ 30,000	UCB	HW
Safety Tree Removal	Remove hazardous trees.	FY12/13	$ 15,000	UCSB	HW

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
Tree removal/replacement	Remove hazardous tree and replace it with non-	FY13/14	$ 10,000	UCSF	HW
Public Health Specialist	Administer campus health/public health initiatives.	FY11/12	$ 123,000	UCB	PH
Occupational Health Services	Expansion and continued implementation of vaccination and surveillance services to at-risk occupational groups.	FY11/12	$ 598,000	UCSF	PH
Occupational/Public Health Specialist	Leads campus health/public health initiatives	FY12/13	$ 123,000	UCB	PH
Public Health Program	Manage employee health and surveillance program, develop emergency response and treatment protocols, manage and follow up on campus exposures to communicable and non-communicable biological agents.	FY12/13	$ 128,000	UCSF	PH
Public Health Officer	Administers campus health surveillance program, develops emergency response and treatment protocols, and follows up on campus employee exposures involving infectious biological materials.	FY13/14	$ 128,000	UCSF	PH
Public Health Program	Manage employee health and surveillance program, develop emergency response and treatment protocols, manage and follow up on campus exposures to communicable and non-communicable biological agents.	FY14/15	$ 128,117	UCSF	PH
Bio-Event Preparedness Program	Develop an ongoing program for bio-event safety/infection control	FY15/16	$ 100,000	UCIMC	PH
Public Health Program	Manage employee health and surveillance program, develop emergency response and treatment protocols, manage and follow up on campus exposures to communicable and	FY15/16	$ 100,000	UCSF	PH

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
	non-communicable biological agents.				
Fire-Brush Abatement	Abate brush in canyons adjacent to Health System property	FY13/14	$ 100,000	UCSDMC	WF
CARE Service Counselor	Expanded counseling and training services.	FY11/12	$ 49,656	UCB	WV
Video Monitoring System	Upgrade cameras along outdoor walkway	FY11/12	$ 9,399	UCB	WV
Change Management Workshops	Trainings aimed at managing/coping with stress	FY11/12	$ 11,000	UCI	WV
Stress Reduction Training	A series of stress reduction training workshops for grad students and researchers	FY11/12	$ 5,000	UCI	WV
Staff & Faculty Counseling Center FY11-12	Assists employees in coping with work related issues such as stress and conflict.	FY11/12	$ 225,423	UCLA	WV
Behavioral Threat Assessment Training	Training to assist with preventing, responding, and recovering from incidents that involve threatening behavior	FY11/12	$ 6,000	UCLA	WV
Workplace Violence Officer	Administer workplace violence prevention program	FY11/12	$ 132,975	UCLA	WV
Enhance Threat Management Team	Install software to assist with assessing, reducing, and managing potential threats of violence	FY11/12	$ 15,000	UCSB	WV
Panic/Duress Button	Install panic/duress buttons at the Students First Center	FY11/12	$ 1,073	UCM	WV
Diversity Training	A series of trainings to increase diversity awareness in the workplace	FY11/12	$ 6,000	UCM	WV

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
Equipment for Rape Aggression Defense Self Defense Program	Self-defense program	FY11/12	$ 8,000	UCSF	WV
Staff and Faculty Counseling Center FY 2012-13	Assists employees in coping with work related issues such as stress and conflict.	FY12/13	$ 391,471	UCLA	WV
Threat Assessment/Workplace Violence Prevention	Administration of workplace violence prevention program.	FY12/13	$ 142,076	UCLA	WV
Threat Assessment	Continued use of integrative threat assessment model	FY12/13	$ 25,000	UCLA	WV
Child care security	Security improvements to campus child care facilities.	FY12/13	$ 150,000	UCLA	WV
Diversity Training	Increase diversity awareness	FY12/13	$ 8,000	UCM	WV
CARE Services Behavioral Risk Management	Develop common educational tools for campus around violence potential and serve as primary resources for consultation and case management involving behavioral risk factors	FY12/13	$ 49,656	UCB	WV
Behavioral Threat Assessment	Assist with preventing, responding, and recovering from incidents that involve threatening behavior.	FY13/14	$ 25,000	UCLA	WV
Police Sergeant Workplace Violence Coordinator	Administer threat management program.	FY13/14	$ 146,731	UCLA	WV
Staff and Faculty Counseling Center FY 2013-14	Assists employees in coping with work related issues such as stress and conflict.	FY13/14	$ 423,217	UCLA	WV
Behavior Management Training	Training for staff in de-escalation tactics to diffuse situations with disruptive patients and visitors as a preventive measure, reducing the risk of harm to	FY13/14	$ 26,000	UCSFMC	WV

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
	staff and patients.				
Panic Buttons for Daycare Centers	Panic buttons with a link to UCPD	FY14/15	$ 45,000	UCB	WV
Diversity Training	Diversity Inclusion online program	FY14/15	$ 15,000	UCI	WV
Child care security	Security improvements to campus child care facilities.	FY14/15	$ 5,000	UCI	WV
Counseling center security measures	Panic button installation	FY14/15	$ 5,000	UCI	WV
Staff and Faculty Counseling Center	Assists employees in coping with work related issues such as stress and conflict.	FY14/15	$ 480,398	UCLA	WV
Threat Management Team Coordination	Administers threat management program.	FY14/15	$ 118,236	UCLA	WV
Childcare Security	Security improvements to campus child care facilities.	FY14/15	$ 123,407	UCLA	WV
Behavioral Threat Assessment	Security and threat assessments by third parties.	FY14/15	$ 25,000	UCLA	WV
Workplace Violence Coordinator	Administer threat management program.	FY14/15	$ 165,295	UCLA	WV
Child Care Center Security	Security improvements to campus child care facilities.	FY14/15	$ 18,000	UCSF	WV
ShotSpotter Installation	Aims to reduce the UCPD's response time to a live shooter incident.	FY15/16	$ 88,000	UCB	WV
Workplace Violence Prevention Program	Aims to identify, reduce or eliminate employee exposures to conditions that lead to injury or even death from violence in the workplace	FY15/16	$ 384,000	UCIMC	WV
Childcare Security	Security improvements to campus child	FY15/16	$ 68,000	UCLA	WV

Campus Project Title	Hazard Mitigation Project/Program	FY(s)	Amount	Campus	Hazard Code
	care facilities.				
Staff and Faculty Counseling Center	Assists employees in coping with work related issues such as stress and conflict.	FY15/16	$ 536,802	UCLA	WV
Workplace Violence Coordinator	Administer threat management program.	FY15/16	$ 166,325	UCLA	WV
Threat Management Team Coordination		FY15/16	$ 118,369	UCLA	WV
Behavioral Intervention Fund		FY15/16	$ 25,000	UCLA	WV
Behavior Management Training	Trains medical center staff on de-escalation techniques/violence prevention.	FY15/16	$ 52,000	UCSFMC	WV
Child Care Center Security	Security improvements to campus child care facilities.	FY15/16	$ 45,000	UCSF	WV
		Total	**$ 12,203,640**		

Hazard Codes:

BF = Building Fire
ED = Event-related Disturbance
EQ = Earthquake
ET = Eco-Terrorism
HW = High Winds
PH = Public Health Emergency
WF = Wildfire
WV = Workplace Violence

VI. Hazard-Specific Mitigation Measures and Funding

The following sections summarize campus mitigation measures for each of the highest ranked systemwide threat events as reported by the campuses, and a summary of campus hazard mitigation projects funded by the program under the 'Be Smart About Safety' (BSAS) loss prevention program since FY11-12.

1. Catastrophic Earthquake

By a significant margin, most campuses (except for those located in the less seismically active Central Valley) ranked a major earthquake (of the maximum credible magnitude) as their highest threat. The University has experienced two relatively recent major earthquakes: Loma Prieta (1989) and Northridge (1994). These events resulted in varying levels of campus utilities and communications disruption, hazardous materials releases, and structural building damage. Luckily, no serious casualties or extended campus closures resulted from these events. The more recent South Napa earthquake (2014) did not significantly disrupt University activities but was felt throughout Northern California and served as a poignant reminder of the region's earthquake risk.

Potential exposure to risk varies depending primarily on the number of structures at the campus rated seismically "poor," which ranges widely on the campuses. Earthquake preparedness has long been the focus of both University and statewide emergency planning and mitigation programs. The Board of Regents approved the University's initial Seismic Safety Policy in 1975. There are two universal mitigation strategies: (1) structural building retrofits; and (2) non-structural hazard mitigation for building fixtures, furnishings, equipment, and other contents.

The University's Seismic Safety Program is an ongoing systemwide structural retrofit program overseen by each campus. Proposed seismic correctional work is coordinated with fire protection, health and safety upgrades, and rehabilitation or renovations for functional and programmatic improvements, and integrated into the University's Capital Improvement Program. From 1979 to 2016, seismic retrofit corrective and mitigation work has been a part of more than 329 structural improvement projects, 247 of which have been completed as of 2013.

All new University construction meets or exceeds life-safety-based seismic building codes. However, new and retrofitted buildings are designed and built to standards meant only to ensure sufficient structural integrity to allow building occupants to survive and exit the building safely. Building codes and seismic retrofits do not preclude extensive damage or even the total loss of the building. The University anticipates that state or federal disaster relief funding would be available to repair or rebuild damaged or destroyed buildings; however, this does not take into account the long-term campus impacts or the interim loss of research assets and the potential loss of current and future researchers and graduate students to other institutions. This is true of laboratory research facilities, data centers, and key administrative buildings that are highly specialized and not easily or quickly replaced.

The University's seismic safety program also addresses utilities infrastructure (power, gas, water, sewer, and steam). Many campuses have installed some redundant or backup utility systems. Some campuses still need to assess the vulnerability of their utilities infrastructure and implement engineering measures to ensure survivability.

Even in new or retrofitted buildings, there are potentially substantial non-structural content hazards, especially in laboratory buildings, libraries, and museums where extensive critical, irreplaceable, and highly valued equipment, collections, and research assets are located. Laboratory buildings also contain large quantities of hazardous materials, further complicating and increasing risks. Many campuses have campus wide non-structural hazard mitigation policies and programs. Some campuses perform regular safety or fire inspections to identify non-structural hazards in a systematic fashion.

Systemwide Building Seismic Gas Shutoff Valve Program

OPRS created a campus reimbursement program funded by a policy holder insurance rebate to install seismic gas shutoff valves on natural gas mains outside campus buildings to prevent the possibility of an uncontrolled release of gas into buildings that could lead to catastrophic fire loss. Property loss prevention building evaluations were conducted in 2007-2009 by the insurer's engineering personnel on all University buildings with total property value of at least $10 million. As part of this engineering assessment, a prioritized list of campus buildings needing shutoff valves was developed based on the likelihood of a gas main leak/break and the severity of impact should that occur. Likelihood was based on seismicity (earthquake zones), whereas severity was based on building fire protection (sprinkler systems). Gas main size was also taken into account for both likelihood and severity, as larger gas mains are inherently less flexible and therefore more likely to break during an earthquake, releasing larger volumes of gas into buildings resulting in more severe fire conditions. Under this program to date, eight locations have installed valves at a total cost of $99,481.

BSAS-Funded Seismic Hazard Mitigation Projects (FY11-16)

The following fourteen (14) seismic hazard mitigation projects funded by the Be Smart About Safety (BSAS) program have been implemented by the campuses since FY11-12:

- UCI non-structural bracing of lab equipment (FY11/12) $40,000
- UCI bracing platform for data center (FY11/12) $ 4,000
- UCSC gas line work enabling automatic gas shutoff valve (FY11/12) $ 5,270
- UCB non-structural bracing of library shelves (FY12/13) $ 2,100
- UCI structural engineering review of theater (FY12/13) $ 9,000

- UCLA automatic gas shutoff valve installations (FY12/13) $42,285
- UCSF non-structural bracing of furniture and equipment (FY12/13) $25,000
- UCI seismic review of buildings of potential concern (FY13/14) $20,000
- UCLA automatic gas shutoff valve installations (FY13/14) $27,500
- UCSC automatic gas shutoff valve installations (FY13/14) $28,710
- UCI seismic isolation platforms for protecting IT equipment (FY14/15) $ 7,500
- UCI non-structural bracing of furniture and equipment (FY14/15) $10,000
- UCSF non-structural bracing of research equipment (FY14/15) $25,000
- UCLA automatic gas shutoff valve installations (FY15/16) $18,000

TOTAL BSAS-Funded Seismic Mitigation Projects (FY11-16) $264,365

2. Laboratory Building Fire

Laboratory building fire was ranked as the second-highest systemwide threat. Eight campuses included this hazard in their "top 10" threat list. One campus chose to evaluate a major fire in its central administration building in lieu of a lab building fire. The University has experienced four significant lab fires since 2001 at three different campuses, including two fires in the same lab; the latter fire occurred after that building underwent sprinkler retrofit and resulted in damage and dollar loss of $0.8M, versus $8.2M in damages from the original incident. Campus exposure to risk varies, depending on the number of lab buildings without sprinklers, which varies from only one or two, to twenty or more per campus.

All new buildings undergo plan review and are designed and built to comply with current fire and building codes requiring sprinklers and fire alarm systems. However, there are many older buildings lacking modern fire protection. Some campuses are working on master plans for prioritizing upgrades of fire protection systems. Most campuses have recommended retrofitting sprinklers in currently unprotected buildings, and many campuses have recommended enhancing fire detection/alarm systems. Some campuses have recommended compartmentalizing older buildings by installing fire resistive walls. At least one campus installs fire extinguishing systems in high hazard lab fume hoods.

Fire prevention programs vary by campus with responsibilities spread among different departments. Campus buildings are inspected by fire prevention or facilities staff. One campus has created a comprehensive fire/life safety hazard tracking database to prioritize surveyed buildings and track mitigation efforts. Campus fire prevention programs conduct building occupant training and education, and periodic evacuation fire drills.

Campuses coordinate closely with municipal fire departments to provide building orientation briefings, ensure fire apparatus access, and provide laboratory building chemical inventories.

Most campuses have chemical inventory systems in place to identify hazardous materials and the quantities of these materials in individual labs. Some inventory systems generate lab door placards that summarize hazard types and quantities. Many campuses use fire-rated metal flammable liquid storage cabinets, but some campuses have identified the need to replace or upgrade existing storage cabinets. Systemwide fire and health and safety workgroups have created new safer procedures for solvent distillation/purification operations, and have also recently developed a laboratory procedures guide in direct response to the recent campus lab fires.

BSAS-Funded Building Fire Mitigation Projects (FY11-16)

The following 60 fire safety/prevention mitigation projects or programs funded by the Be Smart About Safety (BSAS) program have been implemented by the campuses since FY11-12:

- UCB removal of fire hazards (FY11/12) $ 31,000
- UCD improvements to water flow pressures (FY11/12) $108,075
- UCD new fire truck (FY11/12) $175,000
- UCDMC improved fire prevention equipment (FY11/12) $ 5,734
- UCI fix electrical hazards in labs (FY11/12) $100,000
- UCI staffing for fire prevention program (FY11/12) $266,000
- UCI improve fire alarms and sprinklers (FY11/12) $200,000
- UCI reduce fire risk associated with aged/corroded lecture bottles (FY11/12) $ 20,000
- UCLA campus fire marshal staffing (FY11/12) $ 80,778
- UCM clean room fire prevention project (FY11/12) $ 10,395
- UCSB install fireproof key and supply boxes (FY11/12) $ 3,500
- UCSB improved fire prevention program (FY11/12) $ 2,500
- UCSB Title 19 inspection (FY11/12) $ 99,373
- UCSD campus fire prevention specialist staffing (FY11/12) $170,000
- UCSF fire marshal support (FY11/12) $ 54,000
- UCSF safer delivery of standby power at specified facility (FY11/12) $ 40,000
- UCSFMC fire prevention training (FY11/12) $ 16,000
- UCSFMC fire prevention signage and training (FY11/12) $ 10,000
- UCD new fire truck (FY12/13) $175,000
- UCI fire alarm and sprinkler maintenance (FY12/13) $125,000

- UCI fire safety specialists staffing (FY12/13) $182,000
- UCI reduce fire risk associated with aged/corroded lecture bottles (FY12/13) $ 20,000
- UCLA campus fire marshal staffing (FY12/13) $ 93,127
- UCSB fire inspector (FY12/13) $ 21,000
- UCSD campus fire specialists staffing (FY12/13) $191,000
- UCSF campus fire marshal staffing (FY12/13) $ 54,028
- UCD fire prevention in theater (FY13/14) $ 36,125
- UCD continuation of campus-wide electrical hazard assessment (FY13/14) $100,000
- UCI reduce fire risk associated with aged/corroded lecture bottles (FY13/14) $ 11,000
- UCI gas valve replacements in specified research labs (FY13/14) $ 1,000
- UCI fire prevention by eliminating need for extension cord use (FY13/14) $ 6,000
- UCI fire alarm and sprinkler maintenance (FY13/14) $ 20,000
- UCI fire prevention training for undergraduates in campus housing (FY13/14) $ 8,000
- UCI installation of GFI electrical equipment (FY13/14) $ 6,000
- UCI campus fire specialists staffing (FY13/14) $182,000
- UCLA fire prevention through lighting changes: halogen to LED (FY13/14) $ 12,000
- UCSB fire inspector (FY13/14) $ 66,253
- UCSF campus asst. fire marshal staffing (FY13/14) $ 54,000
- UCD continuation of campus-wide electrical hazard assessment (FY14/15) $ 50,000
- UCI reduce fire risk associated with aged/corroded lecture bottles (FY14/15) $ 10,000
- UCLA training on infrared testing of electrical systems (FY14/15) $ 42,000
- UCLA campus fire marshal staffing (FY14/15) $ 95,920
- UCOP fire alarm/public annunciator performance test and report (FY14/15) $ 1,800
- UCSB fire inspector (FY14/15) $ 36,579
- UCLA campus fire marshal staffing (FY13/14) $ 93,127
- UCSD campus fire specialists staffing (FY14/15) $210,000
- UCSF campus asst. fire marshal staffing (FY14/15) $ 54,028
- UCSF Fresno fire shutter replacement (FY14/15) $ 33,780
- UCDMC replace ABC Fire Extinguishers With Distilled Water Mist (FY15/16) $537,600
- UCD animal barn fire safety upgrades (FY15/16) $ 14,450
- UCDMC fire extinguisher training program (FY15/16) $ 12,000
- UCD continuation of campus-wide electrical hazard assessment (FY15/16) $ 50,000
- UCLA campus fire marshal staffing (FY15/16) $ 86,273
- UCLA training on infrared testing of electrical systems (FY15/16) $ 40,000
- UCSD campus fire specialists staffing (FY15/16) $220,000
- UCSF campus asst. fire marshal staffing (FY15/16) $ 54,028
- UCSF fire door replacement (FY15/16) $ 30,000

- UCSF firewall protection (FY15/16) $ 35,000
- UCSDMC fire prevention/life safety abatement (FY11/12) $100,000
- UCSD campus fire specialists staffing (FY13/14) $214,000

TOTAL BSAS-Funded Building Fire Hazard Mitigation Projects FY11-12 to FY15-16: $4,803,373

3. Workplace Violence

Workplace violence was the third-highest ranked systemwide threat, and was the leading human-related threat. All ten campuses included this event in their "top 10" threat lists. The University has experienced significant incidents of workplace violence in the past, including the widely reported June 1, 2016 homicide-suicide at UCLA which resulted in the death of an engineering professor at the hands of a former student. Campus exposure to risk of workplace violence is constant; it addressed by a wide array of campus policies, programs, procedures, and threat assessment and security measures as described below.

Incidents of threatening or violent workplace behavior can happen anywhere on campus and at any time. Incidents may be triggered by disgruntled current or former students, staff, or faculty or a disturbed partner or spouse. In addition to aberrant behavior by a person related to the campus, violent incidents may also be carried out by individuals from outside the campus community targeting either the institution or a specific person on campus, or motivated by criminal intent such as robbery or theft.

In order to reduce the threat of workplace violence, most campuses have comprehensive workplace violence prevention and response programs that include multi-disciplinary behavioral risk assessment and response teams. Campuses have also established related programs for complaint resolution, employee and student assistance and counseling, and sexual harassment. Campuses provide workplace violence training and education for staff, supervisors, faculty, and students. These programs typically cover prevention, early detection and intervention, conflict resolution/mediation, supervisory response, policies, referral/response procedures, and anger/stress management, as well as general personal safety and security. Efforts to mitigate workplace violence also serve to mitigate the threat of active shooter incidents (addressed in #7, below); the U.S. Department of Homeland Security advises preventing active shooters/targeted violence events by (1) fostering a respectful workplace and (2) being aware of indications of workplace violence and taking remedial actions accordingly when indications are identified.

The UC Davis Police Department internally developed an active shooter response training and demonstration program for the campus community. OPRS has sponsored this expert training class on a systemwide basis, including videotaping the class for future educational sessions. In addition, OPRS also offers an external training video, 'Shots Fired', to all campuses via the Learning Management System. OPRS has also obtained a UC systemwide membership to NaBITA, the National Behavioral Intervention Team Association, to facilitate campus behavioral risk assessment team access to current reference materials and resources.

There are a number of administrative, management, and supervisory controls and procedures in place to prevent, assess, mitigate, and respond to potential workplace violence. Some campuses have established "Zero Tolerance" policies in accordance with "Principles of Community." At least one campus has instituted "Quality Hiring Practices" that include screening, checking references, background checks, and avoiding the use of temporary or outsourced labor. Some campuses perform background criminal checks on all new employees. UC Police Departments have developed campuswide security plans and sponsor escort programs for nighttime safety.

Campuses have a number of physical security measures and safeguards in place such as building access controls, surveillance systems, panic and alarm systems, cashier office security measures, and designs for high-risk office that incorporate multiple safety features and prevent unrestricted access. In the event of an incident, UC Police Departments have response plans and protocols, and related active-shooter response training and equipment.

BSAS-Funded Workplace Violence Mitigation Projects (FY11-FY16)

The following forty (40) workplace violence mitigation programs funded by the Be Smart About Safety (BSAS) program have been implemented by the campuses since FY11-12:

- UCB CARE counseling and training services (FY11/12) $ 49,656
- UCB Video Monitoring System upgrades (FY11/12) $ 9,399
- UCI Change Management Workshops (FY11/12) $ 11,000
- UCI Stress Reduction Training (FY11/12) $ 5,000
- UCLA Staff & Faculty Counseling Center (FY11-12) $225,423
- UCLA Behavioral Threat Assessment Training (FY11/12) $ 6,000
- UCLA Workplace Violence Officer (FY11/12) $132,975
- UCSB Enhance Threat Management Team (FY11/12) $ 15,000
- UCM Panic/Duress Button (FY11/12) $ 1,073
- UCM Diversity in the Workplace Training (FY11/12) $ 6,000

- UCSF Equipment for Self Defense Program (FY11/12) $ 8,000
- UCLA Staff and Faculty Counseling Center (FY12/13) $391,471
- UCLA Threat Assessment/Workplace Violence Prevention (FY12/13) $142,076
- UCLA Threat Assessment (FY12/13) $ 25,000
- UCLA safety improvements to campus child care facilities (FY12/13) $150,000
- UCM Diversity Training (FY12/13) $ 8,000
- UCB CARE Services Behavioral Risk Management (FY12/13) $ 49,656
- UCLA Behavioral Threat Assessment (FY13/14) $ 25,000
- UCLA Police Sergeant Workplace Violence Coordinator (FY13/14) $146,731
- UCLA Staff and Faculty Counseling Center (FY13/14) $423,217
- UCSFMC Behavior Management Training (FY13/14) $ 26,000
- UCB Panic Buttons for Daycare Centers (FY14/15) $ 45,000
- UCI Diversity Training (FY14/15) $ 15,000
- UCI security improvements to campus child care facilities (FY14/15) $ 5,000
- UCI Counseling center security measures (FY14/15) $ 5,000
- UCLA Staff and Faculty Counseling Center (FY14/15) $480,398
- UCLA Threat Management Team Coordination (FY14/15) $118,236
- UCLA Security improvements to campus child care facilities (FY14/15) $123,407
- UCLA Behavioral Threat Assessment (FY14/15) $ 25,000
- UCLA Workplace Violence Coordinator (FY14/15) $165,295
- UCSF Security improvements to campus child care facilities (FY14/15) $ 18,000
- UCB ShotSpotter: to reduce response time to a shooter incident (FY15/16) $ 88,000
- UCIMC Workplace Violence Prevention Program (FY15/16) $384,000
- UCLA Security improvements to campus child care facilities (FY15/16) $ 68,000
- UCLA Staff and Faculty Counseling Center (FY15/16) $536,802
- UCLA Workplace Violence Coordinator (FY15/16) $166,325
- UCLA Threat Management Team Coordination (FY15/16) $118,369
- UCLA Behavioral Intervention Fund (FY15/16) $ 25,000
- UCSFMC Behavior Management Training (FY15/16) $ 52,000
- UCSF Security improvements to campus child care facilities (FY15/16) $ 45,000

TOTAL BSAS-Funded Workplace Violence Hazard Mitigation Programs: $4,340,509

4. <u>Animal Facility or Crop Eco-terrorism</u>

Eco-terrorism was the fourth-highest ranked systemwide threat, and highest-ranked terrorism threat. Seven campuses included this in their “top 10” threat list. The two campuses that did

not rank earthquakes as their highest threat ranked eco-terrorism highest instead. All campuses conducting animal or agricultural research have experienced eco-terrorism perpetrated by animal rights or environmental groups including acts of vandalism, arson, criminal mischief, and harassment or threats against researchers. Campus exposure to risk varies depending on the number and visibility of animal or crop research facilities and vivaria at the campus, which ranges widely from none to several central campus locations and off-site research facilities.

All campuses have implemented a number of security measures including various facility access controls, security, surveillance, and alarm systems. One campus has even installed bulletproof glass in ground floor windows. UC Police are responsible for patrol and enforcement, as well as inter-agency law enforcement coordination related to gathering and sharing intelligence, response and event planning, and threat recognition and evaluation. UC Police also conduct facility security surveys, provide dedicated security officer staffing at high-risk locations as needed, and conduct background checks on new animal lab staff. Campuses provide security and safety training and education to animal lab staff, and have laboratory facility security plans, procedures, and policies in place.

Many campuses reach out to the general public and campus community to educate them on animal/crop research. At least one campus has a standing Animal Program Threat Assessment & Strategy Team, and another campus has an Animal Housing Security Mitigation Program. All campuses have some type of multi- disciplinary animal use or research oversight committee, and at least one campus has been accredited by an outside lab animal care organization. Between FY11/12 and FY15/16, spending on protection and threat and security assessments and enhancements totaled $7,293,873.

BSAS-Funded Eco-terrorism Mitigation Projects (FY11-16)

The following five (5) eco-terrorism mitigation projects funded by the Be Smart About Safety (BSAS) program have been implemented by the campuses since FY11-12:

• UCI Vivarium Safety Officer (FY12/13)	$ 86,000
• UCLA Vivarium Threat Assessment (FY12/13)	$ 25,000
• UCLA Vivarium Project to improve safety and security (FY12/13)	$ 50,000
• UCI Vivarium Safety Officer (FY13/14)	$ 84,520
• UCLA Vivarium Card Readers (FY14/15)	$ 65,991
TOTAL BSAS-Funded Eco-terrorism Hazard Mitigation Projects:	**$311,511**

5. Residential Building Fire

Multi-unit residential building fire was ranked the fifth-highest systemwide threat, and is closely related in many ways to laboratory building fires but with generally higher life safety risks. Eight campuses included this hazard in their "top 10" threat list. Campus exposure to risk varies depending on the number of residential buildings without sprinklers, which ranges from none to several housing complexes per campus. The University has not experienced a major residential building fire, although there have been multiple smaller fires generally confined to a single room.

All new residential construction complies with standards and specifications that meet or exceed current life safety and fire building codes. All campus residential buildings also have fire alarm systems. Although newer residential halls and complexes have fire sprinklers, many older buildings do not. Many campuses have long- term plans to retrofit older buildings with sprinklers or to demolish substandard housing. At least one campus has conducted fire life safety risk assessments of all campus housing units and prioritized them for future upgrades.

Campus fire prevention programs place a priority on residential buildings for fire and life safety inspections and code enforcement. Campuses have regularly scheduled building inspections conducted by campus fire prevention, facilities, or housing staff. Campus fire prevention programs provide fire and life safety training and education to residence hall staff and occupants, and conduct periodic evacuation fire drills. Campuses without their own fire departments provide building orientation briefings to municipal fire departments.

Most campus residential complexes have 24-hour on-site supervision and security systems or access controls to enhance life safety. Some campuses have policies prohibiting smoking, open flames (such as candles), and torchieres in residence halls. Some campuses include fire safety requirements in student housing contracts.

For a summary of BSAS-funded mitigation measures, see the section on Laboratory Building Fires.

6. Truck Bomb

A truck bomb, or "vehicle-borne improvised explosive device (VBIED)," was ranked the sixth-highest systemwide threat, and second-highest terrorism threat. Eight campuses initially included this hazard in their "top 10" threat list, although four campuses reconsidered and downgraded this threat because they deemed it very unlikely to occur, and therefore did not

consider or report mitigation measures. Campus exposure to risk varies somewhat depending on the campus profile within its community, the degree of controversial research being conducted, the availability of alternative local targets, and national trends. To date, very few truck bombs have been detonated anywhere in the country.

All campuses rely on general central campus vehicle access and parking controls, and critical facility security and surveillance systems to mitigate this threat. Some campuses restrict service vehicle access at high-risk locations, and have procedures for scheduling and screening truck deliveries. Our campuses are designed as open public places, so in many cases there is no efficient or effective way to secure the campus or a specific critical asset, even if a credible terrorism threat is identified. Many of the mitigation measures listed under Eco-terrorism also apply to this threat event.

7. Active Shooter/Targeted Violence Events

An active shooter was ranked the seventh-highest systemwide threat in the HVA report issued in 2005, and is closely related to the threat of workplace violence. Seven campuses listed this threat in their "top 10" threat list at that time. In the intervening years the frequency of massing events has increased (FBI, 2014). Campus exposure to risk is constant, and all mitigation measures listed under workplace violence also apply to this threat. Efforts to mitigate workplace violence also serve to mitigate the threat of active shooter incidents: the U.S. Department of Homeland Security advises preventing active shooters/targeted violence events by (1) fostering a respectful workplace and (2) being aware of indications of workplace violence and taking remedial actions accordingly when indications are identified. However, a random shooter not associated with the University would be practically impossible to prevent as our campuses are intentionally designed as public open places without pedestrian access controls.

All campuses rely primarily on the UC Police Department tactical training and special equipment to rapidly respond to and handle active shooter/targeted violence incidents. In addition to UC Police resources, campuses also rely on campuswide and specific building security and safety measures and systems, such as those listed under the section on eco-terrorism. All campuses require extra security staffing at public or special events. Every campus also provides general safety and security education and violent crime awareness training to faculty, staff, and students.

For a summary of BSAS-funded mitigation measures, see the sections on Workplace Violence and Eco-terrorism.

8. High Winds

A severe windstorm or tornado was ranked as the eighth-highest systemwide threat, and second-highest natural hazard. Seven campuses listed this hazard in their "top 10" threat list. Extreme winds are often associated with strong winter storms or seasonal Santa Ana wind conditions in Southern California. High winds also commonly contribute to wildland fires and widespread power outages. Although the statewide risk from tornados is low, the Central Valley campuses are at relatively higher risk than other campuses. Campus exposure to risk varies geographically and depends primarily on the number, size, age, and condition of trees located near campus structures and above-ground utilities. However, any object that could topple over (light standards, antenna towers, etc.), any materials or objects that are stored or placed outdoors, and all rooftop structures also pose a risk to people and property under extreme wind conditions.

Most campuses have preventive maintenance programs to care for central campus trees located in proximity to structures, roads, parking lots, and paths. Some campuses maintain inventories of tree and/or light standard conditions. Some campuses have policies and procedures for anchoring or securing vulnerable or lightweight objects. Some campuses have even built windbreaks to mitigate high wind conditions.

Several UC campuses have been recognized by the National Weather Service as StormReady, which means their preparation for all types of severe weather – from winter storms to wildfires – has been evaluated. UC Irvine, UCLA, UC Merced, UC Santa Barbara, UC San Francisco, and UC San Diego are all StormReady campuses; UC Santa Barbara has additionally been recognized as TsunamiReady. To achieve the distinction those campuses met rigorous criteria in the areas of communications, planning, training and exercises, and community preparedness.

BSAS-Funded High Wind Mitigation Projects (FY11-FY16)

The following four (4) windstorm mitigation projects funded by the Be Smart About Safety (BSAS) program have been implemented by the campuses since FY11/12:

- UCSB Hazardous Tree Removal (FY11/12) $ 13,500
- UCB Greek Theatre Tree Removal (FY12/13) $ 30,000
- UCSB Hazardous Tree Removal (FY12/13) $ 15,000
- UCSF Hazardous Tree Removal/Replacement (FY13/14) $ 10,000

TOTAL BSAS-Funded High Wind Hazard Mitigation Projects/Programs: $ 68,500

9. Public/Sports Event Disturbance

A civil disturbance related to a scheduled campus event (sports, concert, controversial speaker, etc.) was ranked as the ninth-highest systemwide threat. Five campuses listed this event in their "top 10" threat list. Some campuses have experienced this type of incident, resulting in minor or no casualties and minimal property damage. Campus exposure to risk varies, depending on the number and size of campus public, sports, or performance event venues, as well as the number and types of controversial speakers or public events occurring on campus. Mitigation measures related to external civil disturbances and active shooter incidents also apply to this threat event.

Campuses pre-plan large or controversial public events to determine security levels, coordinate between campus departments, and develop tactical operational plans. Campuses provide additional security for large public events and implement entry screening procedures (including some use of metal detectors) and access controls. Some campuses have crowd control systems and barriers and traffic control equipment. At least one campus has a crowd control policy.

UC Police are well trained and experienced in crowd control tactics. Some UC Police Departments have specialized resources such as dignitary protection teams, special response (SWAT) teams, bomb squads, and K-9 units. UC Police coordinate with their respective local law enforcement agencies and have mutual aid agreements in place as needed.

BSAS-Funded Public Event Disturbance Mitigation Projects (FY11-FY16)

The following two (2) public/sports events disturbance mitigation project funded by the Be Smart About Safety (BSAS) program has been implemented by the campuses since FY11/12:

- UCD Notification System $ 20,000
- UCM Athletic Field Blue Light $ 6,900

TOTAL BSAS-Funded Event Disturbance Hazard Mitigation Projects: $ 26,900

10. Public Health Emergency

A campus public health emergency was ranked as the tenth-highest systemwide threat. Four campuses listed this in their "top 10" threat list. A public health emergency may result from a communicable disease, food- borne illness, or zoonotic disease affecting the campus

community. Examples of relevant public health emergencies include the H1N1 Flu in 2009-10 and Ebola Virus Disease in 2014-15. Campus exposure to risk is constant.

Potential for exposure to infectious diseases increases at hospitals and healthcare centers. Similar increased risks can occur in close housing environments such as residence halls and other campus multi-unit residential complexes, childcare facilities, and any environment where large numbers of people gather. Global travel allows communicable diseases to spread quickly, and students and faculty traveling abroad can become a conduit for communicable diseases. Graduation ceremonies typically assemble large numbers of recent global travelers. Campuses have experienced minor outbreaks of contagious diseases such as meningitis or measles but have not experienced a major public health emergency.

Campus resources and approaches to disease outbreaks vary. Campuses with an associated medical center may have the benefit of local expertise and access to additional medical resources. All medical centers have infection control programs and access to infectious disease services to prevent, detect, and respond to outbreaks or public health emergencies. Medical centers also have related policies and procedures in place to deal with specific pathogens of concern, handling of infectious patients, and protection of staff.

All campuses coordinate closely with their local public health agencies and some campuses are integrated into local public health response plans. Most campuses have established multi-disciplinary teams to plan and respond to public health issues and deal with potentially infectious individuals. All campuses take a pro-active approach to enable rapid response to emerging public health threats. Campuses rely on education, prevention, surveillance, and various controls to manage public health issues. Prompt campuswide education and information during a public health emergency is critical for effective management. Some campuses have quarantine contingency plans to protect staff and students from exposure, and all campuses have vaccination programs.

BSAS-Funded Public Health Mitigation Projects (FY08-FY11)

The following eight (8) public health mitigation projects/programs funded by the Be Smart About Safety (BSAS) program have been implemented by the campuses since FY11/12:

- UCB Public Health Specialist(FY11/12) $123,000
- UCSF Occupational Health Services (FY11/12) $598,000
- UCB Occupational/Public Health Specialist (FY12/13) $123,000
- UCSF Public Health Program(FY12/13) $128,000

- UCSF Public Health Officer (FY13/14) $128,000
- UCSF Public Health Program (FY14/15) $128,117
- UCIMC Bio-Event Preparedness Program (FY15/16) $100,000
- UCSF Public Health Program (FY15/16) $100,000

TOTAL BSAS-Funded Public Health Hazard Mitigation Projects/Programs: $1,428,117

11. Wildland – Urban Interface Fire

A wildland-urban interface fire that encroaches on the central campus was ranked as the eleventh-highest systemwide threat, and third-highest natural hazard. Six campuses listed this natural hazard in their "top 10" threat list. The severity of wildland fires depends upon vegetation type, moisture and fuel loads, topography, and weather conditions. Campuses are most vulnerable to wild fires annually in late summer and early fall when vegetation and weather conditions combine to create an extreme fire hazard. Seasonal high winds often trigger "red flag" high fire danger conditions that can lead to catastrophic wildfires. Campus exposure to risk varies depending on the number, types, and fire resistance of facilities located within or adjacent to wildland areas. Localized topography, wildland vegetation conditions and fuel loads, and fire protection resources are also major factors. Several campuses have been indirectly impacted by catastrophic wildland fires in recent years, resulting in closure and/or impacts to individual members of the campus community (loss of homes, etc.). Examples of recent major wildfires in California with structure losses include the Valley Fire (Lake County) and the Butte Fire (Amador County), both of which occurred in 2015. Combined, they destroyed thousands of homes and other structures, were blamed for at least six deaths, and resulted in a loss of almost 2 billion dollars.

Campuses reduce the threat of wildfire by actively managing or clearing vegetation, creating and maintaining firebreaks, and clearing defensible space around buildings. Campuses conduct wildland fire safety patrols, and some campuses limit access to wildlands during "red flag" high fire danger conditions. Some campuses have no smoking policies and require permits for entry into sensitive wild land reserve areas.

UC Davis operates its own Fire Department, whereas all other campuses rely on municipal fire services. At least one campus has enhanced firefighting water supply or pumping capacity in locations adjacent to wild land areas, and has upgraded the fire resistance of some vulnerable non-conforming structures to current building and fire codes. Fire prevention program and building construction mitigation measures listed in the sections on laboratory and residential building fire threats also apply to this hazard.

The Berkeley Campus Fire Mitigation Committee has been established to develop and oversee the program to manage the fire risk on campus hill area wildlands. The campus program manager annually plans and develops treatment prescriptions to reduce/remove fuel hazards, and coordinates and manages each year's work. Staff-supervised temporary student crews have been employed during summer season to carry out those aspects of the work not involving above-normal physical risk and not requiring professional timber harvesting services. Goat contractors are engaged to carry out grazing prescriptions, and professional logging contractors conduct fuel removal projects where appropriate.

UC Berkeley has partnered with the City of Oakland and the East Bay Regional Park District on a FEMA-funded project to remove thousands of high-fire-danger trees on UC property in Strawberry and Claremont canyons in Oakland. The goal of the plan is to reduce the chance and severity of wildfires, protecting life and property.

BSAS-Funded Wildland Fire Mitigation Projects (FY11-16)

The following (1) wildland fire mitigation project funded by the Be Smart About Safety (BSAS) program has been implemented by the campuses since FY08-09:

- UCSDMC Fire-Brush Abatement $100,000

TOTAL BSAS-Funded Wildland Fire Hazard Mitigation Projects: $100,000

VII. Mission Continuity (Business Recovery) Planning

Continuity planning is generally synonymous with business resumption or recovery planning. It is an integral part of the emergency management paradigm encompassing mitigation/prevention, preparedness, response, and recovery.

In recognition of the importance of enterprise continuity planning, OPRS partnered with the UC Berkeley campus to implement the "UC Ready" mission continuity planning program. This is a systemwide program that enables all of our campuses, medical centers and national laboratory to better prepare to meet the challenges of resuming business operations after a major event occurs.

Such major events can be:

- All encompassing (major earthquake, pandemic illness, etc.)

- Localized (Fire in a building, basement flood, etc.)
- Personal (Failure of a hard drive)

Whatever the event, our goal is to become "event-ready" so that we can continue our teaching, research, healthcare, and public service mission with minimal interruption. The UC Ready continuity tool is an on-line program that allows all departments to easily produce a continuity plan that identifies both strategies for coping with events when they occur and preparations that can be done in advance.

Systemwide rollout and implementation of the complete UC Ready program including the web-based planning tool and staff support was launched in 2009 with funding from the program. In 2015, an enhanced version of UC Ready – designed collaboratively by staff from all of the UC campuses and medical centers – was rolled out to all UC campuses and is now in use systemwide. To date, the program has invested approximately $440,000 in software development and programming of the online tool.

Since 2008-09, OPRS has offered matching program funding of up to $100,000 per location (both campus and medical center) to staff a business continuity planner position. Matching funds can be in the form of a full- time emergency manager at the location. To date, the program has funded $9,314,372 for campus continuity planner staff positions.

VIII. Conclusion

The University has made significant long-term progress and remains committed to mitigating seismic and other catastrophic risks. Investing in hazard mitigation is a proven and prudent cost-effective strategy to reduce, prevent, and eliminate potential risks and impacts of both natural and human-caused disasters. The Hazard Vulnerability Assessment (HVA) continues to guide us on how to most effectively prioritize and manage a wide range of catastrophic risks across the University system.

The Office of Risk Services will continue to support, track, and periodically report on Hazard Mitigation activities, programs, and projects across the University system. For more information, contact Robert.Charbonneau@ucop.edu or at 510.987.9594.