DISASTER RESISTANT CALIFORNIA COMMUNITY COLLEGES

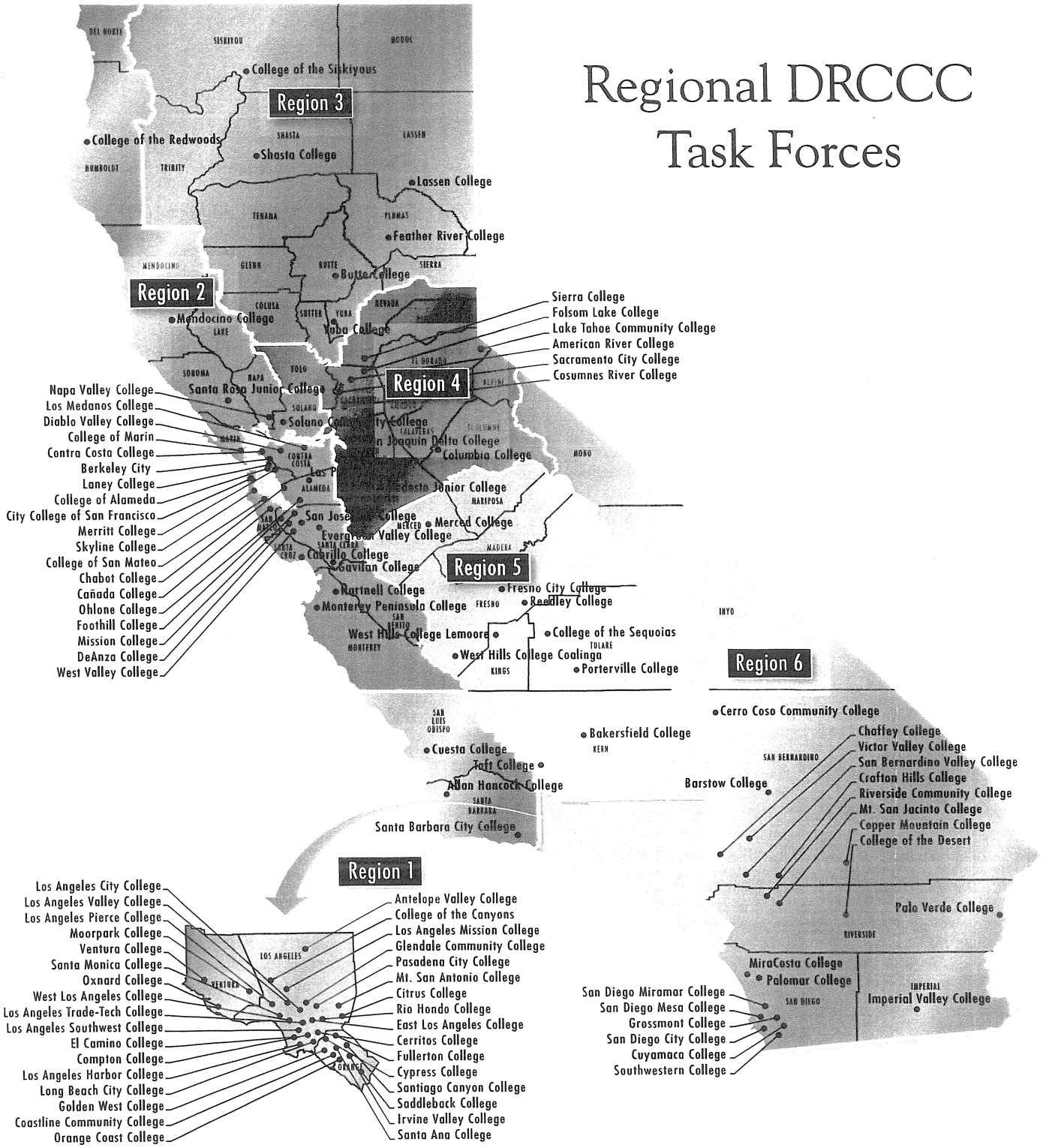
Risk and Vulnerability Assessment

DRCCC Project

2007

Disaster Resistant California Community Colleges Training Matrix **National Incident Management System (NIMS) Standardized Emergency Management System (SEMS)**	**Progress Required by October 2007**									**Required by October 2008**	
	SEMS Introduction 1-2 hours	**SEMS (EOC)** 8 hours	**SEMS Executive** 1-2 hours	**ICS 100 (IS 100)** 1-2 hours	**ICS 200 (IS 200)** 7 hours	**ICS 402** 1-2 hours	**NIMS (IS 700)** 2-4 hours	**NRP (IS 800)** 3-4 hours	**SEMS-NIMS-ICS Combined (ICS 100 & 200, IS 700)** 8 hours	**ICS 300** 16 hours	**ICS 400** 14 hours
All faculty and staff personnel who may be asked to provide support during any disaster or incident, and all employees not listed elsewhere including adjunct faculty and staff	X			X			X		X		
Faculty and staff of critical areas including Public Safety and Police, Administration, Environmental Health and Safety, Risk Management, Facilities and Grounds	X	X		X	X		X		X		
All leads in the Incident Command System (ICS) structure as well as those performing critical roles in the field under the Emergency Operations Center	X	X		X	X		X	X	X	X	
All command staff in an Incident Command Post or Emergency Operations Center (EOC)	X			X	X		X	X	X	X	X
Executives and Senior Administrators including Chancellors, Superintendents, Presidents, Vice Chancellors and Vice Presidents			X			X	X	X			

Regional DRCCC Task Forces



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Disaster Resistant California Community Colleges (DRCCC)

State of California

DISASTER RESISTANT CALIFORNIA COMMUNITY COLLEGES
RISK ASSESSMENT PROCESS

Introduction

Completion of the attached standardized DRCCC Risk Assessment matrix is a first step in sustaining current and future CCCCO funding. It is also an opportunity to establish standardized policies and procedures in CCC emergency management practices.

Funding for the DRCCC project requires that we conduct a standardized Risk Assessment (RA) for all California Community Colleges. The RA outcomes will also be used as a critical planning and exercise component during our August and September workshops so we require completion of the RA to the extent possible before attending the RA workshops.

The RA requires input by various members of your campus community. It is strongly recommended that you do not complete the RA alone but rather as a member of your campus community or district emergency and response team. If you don't have such a team, form one now to complete this risk assessment exercise.

The generic threats that exist at community colleges may be taken for granted, e.g., fires, traffic accidents, accidents involving transport of people, hazardous materials, and building collapse. The purpose at this assessment process is to review, re-evaluate and note the generic hazards, including any particular features of these specific to the campus and region, and then to add the hazards that are specific to your local area. These hazards fall into four categories:

- Natural
- Technological
- Civil (including terrorism)
- Transportation

Methodology

Each team should select and rate the hazards that are present in its area and enter them in the automated Excel spreadsheet that is provided at the end of this document. Any hazards on the list that are not relevant should be left blank and new relative hazards may be added to produce a complete list.

For each identified risk, impacts and frequencies are listed to assist in the subsequent planning, training, and exercises for the community colleges. Risks, hazards and vulnerabilities to the community colleges and their likely point of impact will emerge from this assessment activity.

This crucial examination of the impact of the risks and hazards identified will serve as the foundation of this DRCCC program and of the community college's future emergency plans. The severity of consequences to life and health, property and infrastructure, and the environment are part of this evaluation. The likelihood of occurrence should also be considered and the resulting judgment recorded will influence each college's preparedness planning.

Impact

The type or nature of impact of each hazard event should be considered, including impact on life, health and residual welfare of a community, social / environmental impact, such as disruption and displacement of people affected by the event, environmental impact on the physical area; economic impact in terms of costs of property and infrastructure damage, as well as recovery costs or loss of revenue streams.

It is also important to take into account the potential for escalation of an event or the "domino effect" when combined with other hazards. A simple approach to assessing likelihood is proposed, expressed in terms of the probability of an event occurring that reflects the judgment of people involved in this field, rather than being a strict mathematical probability.

The spreadsheet provides a means of recording information about the risks and hazards and their potential impact and likelihood, with a view to identifying a likely position on the risk matrix. The prevention, control and mitigation measures, already in place or planned will help in mitigation and management of these risks.

Probability & Severity Metrics

The following questions are to be used to help determine the likelihood and severity of hazards events that may affect your campus.

Probability, Severity and Impact

Probability

Consider the number of occurrences on your campus over the past 25 years, the number of similar events at other universities, and any changes or trends that could affect the frequency of this event on your campus.

Estimate the likelihood this event will occur in next 25 years.

1. Not applicable (will not occur)
2. Doubtful (not likely)
3. Possible (could occur)
4. Probable (very likely to occur)
5. Inevitable (will occur)

Severity

Human Impact

1. If this event has occurred in the past on your campus, what was the extent of injuries and deaths that occurred?

   - ☐ None, or this event has never occurred on campus
   - ☐ Few minor injuries
   - ☐ Multiple minor injuries or a major injury
   - ☐ Multiple major injuries or a death
   - ☐ Multiple deaths and major injuries

2. Consider the potential for injuries or deaths from this event on your campus or from similar events at other universities, and any changes or trends that would affect future injuries and deaths from this type of event.

   Estimate the number of injuries and deaths that could result from this event.

   - ☐ None
   - ☐ Few minor injuries
   - ☐ Multiple minor injuries or possible major injury
   - ☐ Multiple major injuries or possible death
   - ☐ Multiple deaths and major injuries

Facilities Impact

1. Consider the vulnerability of your central campus facilities to each event and estimate the extent of damage..

   - ☐ Little or no damage
   - ☐ Mild damage to several facilities
   - ☐ Moderate damage to multiple facilities
   - ☐ Severe damage to multiple facilities
   - ☐ Extensive damage to most facilities

2. Considering the extent of damage to central campus facilities, estimate the total cost to respond to the event and repair or replace all damaged facilities.

   - ☐ Less than $1 million
   - ☐ Between $1 million and $10 million
   - ☐ Between $10 million and $100 million
   - ☐ Between $100 million and $1 billion
   - ☐ More than $1 billion

Institutional Impact

1. If this event occurred on your campus, estimate the duration of interruption to campus-wide teaching, research activities and business operations.

   - ☐ Hours
   - ☐ Days
   - ☐ Weeks
   - ☐ Months
   - ☐ Year or longer

2. To what extent would this event negatively impact the campus reputation or public image over the long term?

   - ☐ None
   - ☐ Minor
   - ☐ Moderate
   - ☐ Significant
   - ☐ Severe

Risk Assessment Model

The Risk Assessment model is designed to quantify and document the probability and overall severity of various types of threat events or hazards (natural, technological, human, and terrorism).

For each threat event, the probability and impact estimates from the OptionFinder voting tool are combined [(Probability x Impact)] to quantify the relative risk of each threat event. The relative risk provides a basis to identify and evaluate existing mitigation and recovery efforts to determine if there are significant campus vulnerabilities.

The Risk Assessment model is based on an Excel spreadsheet using straightforward calculations. Participants will use OptionFinder to determine an average score for each question that will then be used to complete the spreadsheet model.

For each threat event, participants will answer one question representing probability of occurrence, and then evaluate six impact questions across three different categories (human impact, facilities impact and institutional impact).

All six estimates for impact are averaged to produce an overall severity score. The assumption is that threat events that affect all three categories would have greater overall impact to a campus than events whose impacts are limited to just facilities or people. The overall severity score and the probability are then combined to create a relative risk score for each threat event.

Once all the threat events have been evaluated, the results are sorted from high to low to produce a relative risk ranking of threat exposures. The results will then be discussed with the group to determine reasonableness and validity. The results of this risk assessment should provide a basis to evaluate adequacy of campus mitigation measures and recovery planning for the most significant campus threats.

THREAT EVENT/ HAZARD	PROBABILITY	SEVERITY = MAGNITUDE of IMPACTS						SEVERITY IMPACTS	RELATIVE RISK
		HUMAN IMPACT		FACILITIES IMPACT		INSTITUTIONAL IMPACT			
	Relative likelihood this will occur	*Potential deaths or injuries*		*Physical damage and costs*		*Interruption in research and teaching. Impact on reputation/image.*		*Overall Impact (Average)*	*Probability x Impact Severity*
Hazards Natural, Techno--logical, Human, Terrorism	*1 = Not occur 2 = Doubtful 3 = Possible 4 = Probable 5 = Inevitable*	*Question 1*	*Question 2*	*Question 1*	*Question 2*	*Question 1*	*Question 2*	*1 = Lowest 5 = Highest*	*1 = Lowest 25 = Highest*

THREAT EVENT/ HAZARD	PROBABILITY	SEVERITY = MAGNITUDE of IMPACTS						SEVERITY IMPACTS	RELATIVE RISK
		HUMAN IMPACT		FACILITIES IMPACT		INSTITUTIONAL IMPACT			
	Relative likelihood this will occur	*Potential deaths or injuries*		*Physical damage and costs*		*Interruption in research and teaching. Impact on reputation/image*		*Overall Impact (Average)*	*Probability x Impact Severity*
Hazards Natural, Technological, Human, Terrorism	*1 = Not occur 2 = Doubtful 3 = Possible 4 = Probable 5 = Inevitable*	*Question 1*	*Question 2*	*Question 1*	*Question 2*	*Question 1*	*Question 2*	*1 = Lowest 5 = Highest*	*1 = Lowest 25 = Highest*
Natural									
Avalanche	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**1.00**
Drought	3.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**3.00**
Dust/Sand Storms	2.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**2.00**
Earthquake	5.00	1.00	4.00	1.00	3.00	2.00	2.00	**2.17**	**10.83**
Erosion	2.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**2.00**
Extreme Cold	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**1.00**
Fire: Forest/Range/Wild/Urban Interface	2.00	1.00	2.00	1.00	1.00	2.00	1.00	**1.33**	**2.67**
Flood/Flashflood	2.00	1.00	1.00	1.00	1.00	2.00	1.00	**1.17**	**2.33**
Heat Wave	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**1.00**
Hurricane/Storm Surge	2.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**2.00**
Land/Earth Shift	3.00	1.00	3.00	1.00	2.00	2.00	1.00	**1.67**	**5.00**
Lightning	3.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**3.00**
Sinkholes	2.00	1.00	1.00	1.00	1.00	2.00	1.00	**1.17**	**2.33**
Snowstorm/Icestorm/Hailstorm/Hailstorm/Blizzard	2.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**2.00**
Thunderstorm/Wind Storm/Tropical Storm	5.00	1.00	1.00	2.00	1.00	1.00	1.00	**1.17**	**5.83**
Tornado	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**1.00**
Tsunamis/Tidal wave	3.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**3.00**
Volcanic Eruption	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**1.00**
Technological									
Biological Hazard Release	3.00	1.00	1.00	1.00	1.00	2.00	2.00	**1.33**	**4.00**
Building Structure Collapse	3.00	1.00	4.00	1.00	2.00	4.00	1.00	**2.17**	**6.50**
Chemical Release	3.00	2.00	3.00	1.00	1.00	2.00	2.00	**1.83**	**5.50**
Dam/Levee Failure	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**1.00**
Extreme Air Pollution (Smog)	2.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**2.00**
Fire/Explosion	4.00	1.00	3.00	1.00	2.00	3.00	2.00	**2.00**	**8.00**
Fuel Shortage	2.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**2.00**
Gas Leak	4.00	1.00	2.00	1.00	1.00	1.00	1.00	**1.17**	**4.67**
Hazardous Materials Accident: Transportation or Storage	3.00	1.00	2.00	1.00	1.00	1.00	1.00	**1.17**	**3.50**
Nuclear Hazard Release	2.00	1.00	4.00	1.00	1.00	2.00	3.00	**2.00**	**4.00**
Pipeline Break/Damage	3.00	1.00	2.00	1.00	1.00	1.00	1.00	**1.17**	**3.50**
Power Outage	5.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**5.00**
Power/Utility Failure	5.00	1.00	1.00	2.00	1.00	1.00	1.00	**1.17**	**5.83**
Radioactive Accident	2.00	1.00	3.00	1.00	1.00	2.00	2.00	**1.67**	**3.33**
Transportation Accident: Motor Vehicle, Rail, Marine Vessel, Aircraft	3.00	1.00	2.00	2.00	1.00	1.00	1.00	**1.33**	**4.00**
Human-induced Hazards									
Arson	3.00	1.00	3.00	1.00	2.00	2.00	1.00	**1.67**	**5.00**
Biological Warfare	2.00	1.00	2.00	1.00	1.00	3.00	2.00	**1.67**	**3.33**
Bombing	3.00	1.00	3.00	1.00	2.00	2.00	2.00	**1.83**	**5.50**
Chemical Warfare	3.00	1.00	2.00	1.00	1.00	1.00	2.00	**1.33**	**4.00**
Economic Emergency	3.00	1.00	1.00	1.00	1.00	4.00	2.00	**1.67**	**5.00**
Enemy Attack	1.00	1.00	1.00	1.00	1.00	2.00	3.00	**1.50**	**1.50**
Hostage Incident	3.00	1.00	3.00	1.00	1.00	2.00	3.00	**1.83**	**5.50**
Active Shooter	4.00	1.00	4.00	1.00	1.00	2.00	3.00	**2.00**	**8.00**
Large-scale Strike	2.00	1.00	1.00	1.00	1.00	3.00	1.00	**1.33**	**2.67**
Nuclear Warfare	2.00	1.00	4.00	1.00	3.00	4.00	4.00	**2.83**	**5.67**
Pandemic Disease Outbreak	3.00	1.00	4.00	1.00	1.00	4.00	4.00	**2.50**	**7.50**
Protest/Demonstration	3.00	1.00	1.00	1.00	1.00	1.00	2.00	**1.17**	**3.50**
Riot/Civil Disturbance	3.00	1.00	2.00	1.00	1.00	1.00	1.00	**1.17**	**3.50**
Sabotage in Private Sector	3.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**3.00**
Special Events (such as Inaugurals, Parades, Football Games, Olympic Games, etc.)	3.00	1.00	1.00	1.00	1.00	1.00	1.00	**1.00**	**3.00**
Terrorism									
Terrorist Act	3.00	1.00	3.00	1.00	1.00	3.00	2.00	**1.83**	**5.50**
Biological	3.00	1.00	3.00	1.00	1.00	3.00	2.00	**1.83**	**5.50**
Chemical	2.00	1.00	3.00	1.00	1.00	3.00	2.00	**1.83**	**3.67**
Explosion	3.00	1.00	3.00	1.00	2.00	3.00	2.00	**2.00**	**6.00**
Nuclear	3.00	1.00	3.00	1.00	2.00	3.00	2.00	**2.00**	**6.00**
Explosion	3.00	1.00	3.00	1.00	2.00	3.00	2.00	**2.00**	**6.00**
AVERAGE SCORE	**2.62**	**1.03**	**1.76**	**1.00**	**1.19**	**1.49**	**1.27**	**1.29**	**3.38**