Developing Effective Local Government Programs in Earthquake Mitigation

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Hazard Exposure and Risk Assessment
Earthquake-Related Hazards

- Ground Shaking
- Fault Rupture
- Liquefaction
- Landslides
- Tsunamis
Weather-Related Hazards

- Flooding
- Landslides
- Wildfires
- Drought/Levees
What Is DMA 2000?
The federal Disaster Mitigation Act of 2000 (DMA 2000) focuses on –

- Mitigation before, rather than after, disasters
- Ties future mitigation funding to cities, counties, and special districts having “Local Hazard Mitigation Plans” completed
MITIGATION Strategies in “Umbrella” Hazard Mitigation Plan
Two ways to deal with hazards

- Increase emergency response capability – police/fire/OES role
- Increase actions taken to reduce or eliminate the impacts of future incidents – planning (CEQA and General Plans), public works, building, risk management role
MITIGATION Decisions –

Costs of ACTION vs. INACTION

COSTS vs. LOSS REDUCTION

- Deaths and injury
- Damage – property dollar loss
- Disruption – downtime due to inoperable functioning
**GOAL** -
To develop a disaster-resistant region by

- Reducing the potential loss of life, property damage, and environmental degradation from natural disasters, while
- Speeding economic recovery from those disasters.
Setting Priorities

- Existing Program
- Very High – NOW!
- High – need money
- Moderate – if money
- Under Study
- Not Applicable
- Not Yet Considered
1. Government Services - ABAG worked with public works/fire depts., OES, and risk managers to develop strategies.
1. Government Services (cont.)

- Emergency Operations Centers
- City Hall
- Fire and Police Stations
- County Public Health Services
- Public Works Facilities
- Community Centers
- Libraries
Funding Sources for Retrofit

- General Fund
- Certificates of Participation
- Federal Grants
- State Grants
- Other -
  - Lease Revenue Bonds
  - Capital Improvement Plan Funds
  - Community Development Agency Funds
  - Redevelopment Agency Funds
- Private Donations
Case Study – City of Berkeley
Cities Respond to Disaster

- After the 1989 Loma Prieta earthquake and 1991 East Bay Hills Fire, Bay Area cities enacted preparedness/mitigation programs
- Early efforts centered on public sector safety improvements to fire stations, schools and emergency centers
- Private sector safety initiatives follow
One City Mirrors Many

● Berkeley as an example of community investment in safety measures

● With multi-hazard approach through local legislation, special funding measures and damage prevention programs, risk reduction is incorporated into daily life

● Community engagement and political support integral to success
Berkeley’s Investments in Community Sustainability

• Special taxes dedicated to hazard mitigation

• Every public school, fire station, many City buildings seismically resistant

• Fiscal, technical and administrative incentives for private sector retrofit – up to 65% of single family homes made safer using these programs

• On-going funding for disaster preparedness and response programs
Berkeley’s Risk Reduction Initiatives

- Voters approved local tax bond measures to seismically upgrade public facilities and schools
- Received $65 million from State bond funds and federal grants for seismic work
- Property Transfer Tax Rebate and Permit Fee Waiver for homeowner incentives to retrofit
- Loan and grant upgrade programs for low-income seniors and disabled residents
Berkeley’s Mitigation Tax Measures

• 1992 – Berkeley voters approve two bond measures to rebuild all Berkeley public schools and fire stations
  - Measure A - $158 million
  - Measure G - $55 million

• 1992 – Special Fire Assessment District established to fund safety programs
Tax Measures, Continued

• 1996 – Measure S provides $49 million for additional civic safety projects
• 2000 – Measure AA funds $116 million for additional schools projects
• 2000 – Measure Q for $8 million for fire safety equipment and water system
• 2000 -- Disaster Resilient Berkeley recognized by FEMA; Seed funding boosted local investment for the three year program
Comprehensive Plan to Reduce Risk

- Community forum on mitigation held in 2003: “Promoting a Disaster Resistant Berkeley” with 100 leaders from neighborhoods, government and the University of California, Berkeley
- Planning future cooperation on community safety
- July, 2004 adopted comprehensive Disaster Mitigation Plan as long-term framework
  - Specific actions defined to accomplish systematic risk reduction
“Make Berkeley a disaster-resistant community that can survive, recover from and thrive after a disaster. We see the way to making this a reality by identifying and reducing vulnerabilities; improving emergency response and preparation; and by using disaster-resistant land use planning.”
2. Education - ABAG worked with State Div of State Architect, school districts, and the Red Cross to develop strategies.
2. Education (cont.) –

- Establishing priorities
- Lining up funding
- “Nonstructural” architectural features, contents and equipment
- Use of schools as shelters
- Use of schools as conduit for info to families
Case Study – Berkeley School District
3. Housing - ABAG worked with building/fire depts., SSC, and contractors to develop strategies & outreach
3. Housing – Single-Family Home Cripple Walls and Split Level Homes

- Retrofit of cripple walls
- Retrofit standards
- Financial incentives
- Contractor work/training
3. Housing (cont.) -

- Retrofit standards
- Contractor training
- Homeowner education
- Financial incentives
Case Study – City of Berkeley

Financial Incentives for Homeowners

Fiscal, technical and administrative incentives for private sector retrofit – up to 65% of single family homes made safer using these programs

Soft-Story Program
4. **Economy** – ABAG worked with building/fire depts., SSC, and contractors to develop strategies and outreach.
4. Economy (cont.) –

- Downtowns and unreinforced masonry buildings
- Manufacturing and large commercial chains
Case Study – City of Berkeley
5. Infrastructure -
ABAG worked with special districts and local public works depts. to develop strategies for each hazard.
5. Infrastructure (cont. -)

INFR-a-3-Retrofit or replace critical lifeline facilities ... that are shown to be vulnerable to damage in natural disasters.

INFR-a-6-Plan for speeding the repair and functional restoration of lifeline systems through stockpiling of shoring materials, temporary pumps, surface pipelines, portable hydrants, and other supplies...
5. Infrastructure (cont.)-

INFR-b-3-Include “areas subject to high ground shaking, earthquake-induced ground failure, and surface fault rupture” in the list of criteria used for determining a replacement schedule for pipelines ...

INFR-b-4-Replace or retrofit water-retention structures that are determined to be structurally deficient.
5. Infrastructure (cont.)-

INFR-d-12- Provide a mechanism to expedite the repair or replacement of levees that are vulnerable to collapse from earthquake-induced shaking or liquefaction, rodents, and other concerns, particularly those protecting critical infrastructure.

INFR-g-3- Provide materials to the public related to coping with reductions in water supply or contamination of that supply.
6. **Health** - ABAG worked with county public health depts. and health experts to develop mitigation strategies for hospitals, aux. health care facilities, and envir. health
6. Health (cont.) -

- Work with critical health care facilities to ensure structural soundness
- Encourage use of “BORP”
- Ensure facilities can be self-contained (air, water, power)

Other Issues –

- Ancillary health care facilities
- National and State interaction
- Environmental health issues
7. Environment - ABAG worked with CEQA, environmental, and geotechnical specialists
8. Land Use – focus of CEQA and General Plans

- ABAG worked with CEQA, environmental, Smart Growth, and geotechnical specialists
8. Land Use - focus of CEQA and General Plans

- State laws
- Local government "twists"
- Land use controls versus building codes
Where is ABAG’s Local Hazard Mitigation Plan information on the internet?

http://quake.abag.ca.gov/mitigation

/plan.html to download plan and annexes

/strategies.html to search list