

School & Health Care Systems

Bay Area Disaster Mitigation and Recovery Priorities

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ABAG coordinating the Bay Area Hazard **Mitigation** Plan

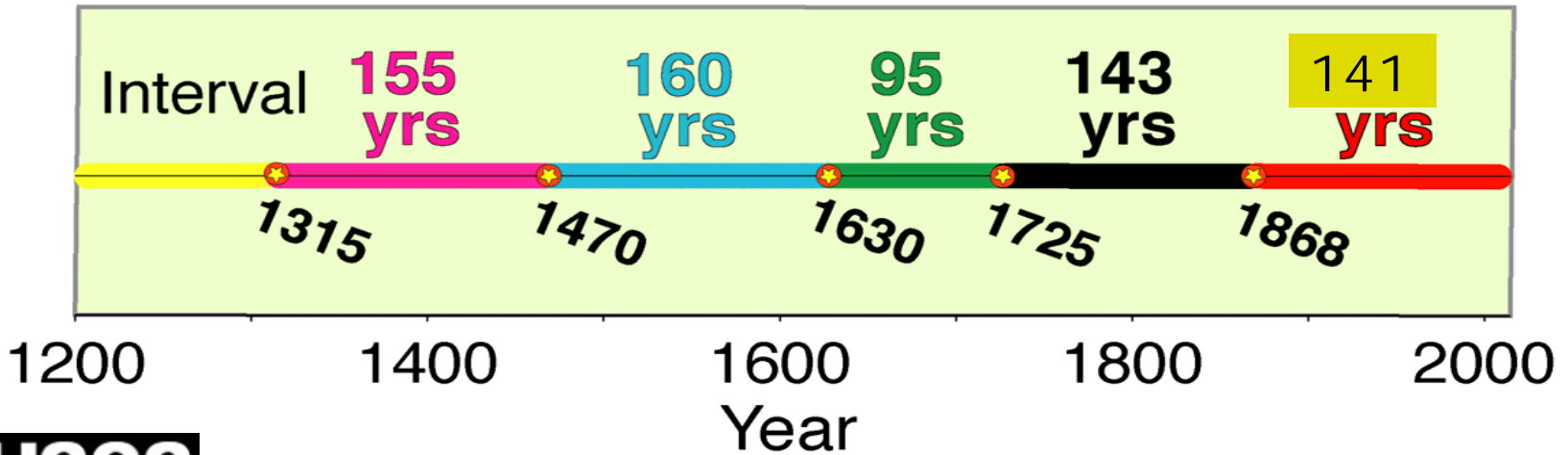
- The “Multi-Jurisdictional Local Hazard Mitigation Plan” is a federal requirement
- Originally adopted in 2005 – ABAG is updating the MJ-LHMP now (required)
- 2009-2010 MJ-LHMP will have about **97** participating jurisdictions – 10 more than in 2005

Earthquake-Related Hazards

- Ground Shaking
- Fault Rupture
- Liquefaction
- Landslides
- Tsunamis



The Last Five Hayward Fault Earthquakes Have Been 140 Years Apart on Average



Realistically – earthquakes dominate any analysis.

Weather-Related Hazards

- Flooding
- Landslides
- Wildfires
- Drought
- Climate Change



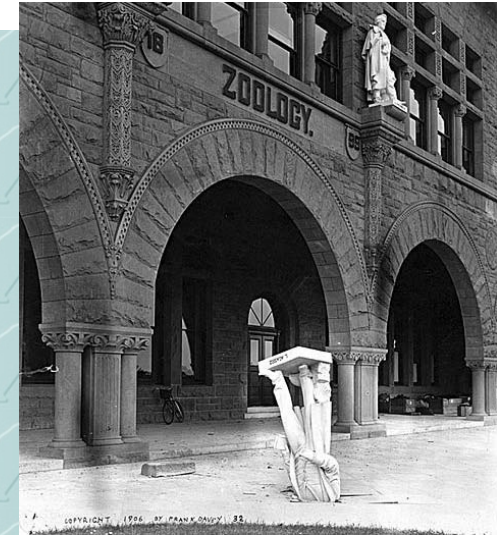
Mitigation Strategies Organized by Function

- **Infrastructure (Transportation, Water, Sewer, Power)**
- **Health Services (more than hospitals)**
- **Housing**
- **Economy (Commercial and Industrial)**



Strategies Organized by Function (cont.)

- **Government Services**
- **Education**
- **Environment (including climate change policies)**
- **Land Use**



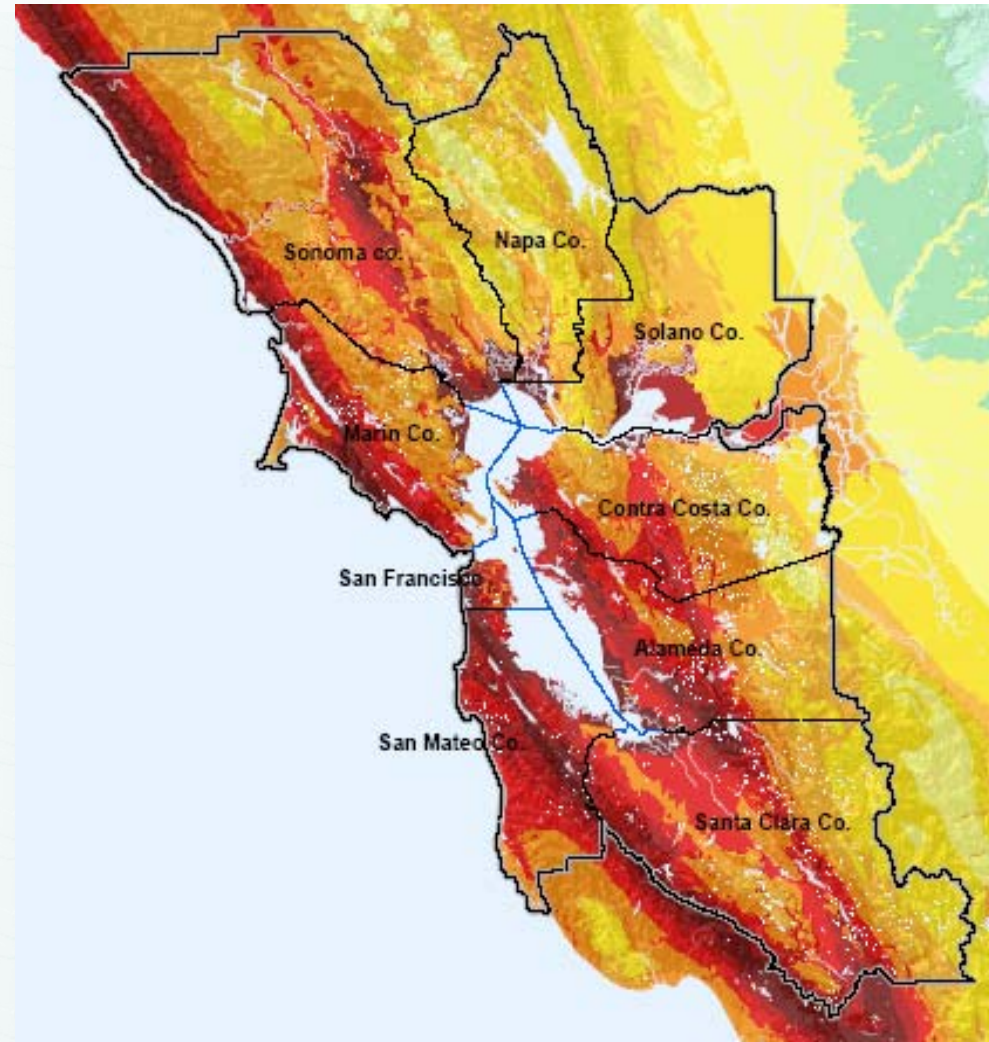
ABAG also has a Bay Area **Recovery** Planning Initiative

- Financing Disaster Recovery
- Long-Term Recovery of Housing
- Long-Term Recovery of Businesses and the Economy
- Recovery of Government Facilities and Services
- Recovery of Transportation and Critical Lifeline Infrastructure
- **Recovery of the Health Care System (not just hospitals)**
- **Recovery of K-12 Schools and Universities**
- **Recovery and Land Use Change Policy**

Shaking Hazard Exposure of Health Facilities

**98% exposed to
Extremely High
Shaking (vs. 93%
for Housing)**

**78% exposed to
Extremely High
Shaking (vs. 52%
for Housing)**



Weather Hazard Exposure of Health Facilities

39% exposed to Wildland-Urban Interface (WUI) fire threat (vs. 58% for Housing)

0% exposed to extreme wildfire threat (vs. 0% for Housing)

4% in 100-year flood zone (vs. 4% for Housing)

0.5% in landslide hazard areas (vs. 10% of Housing)



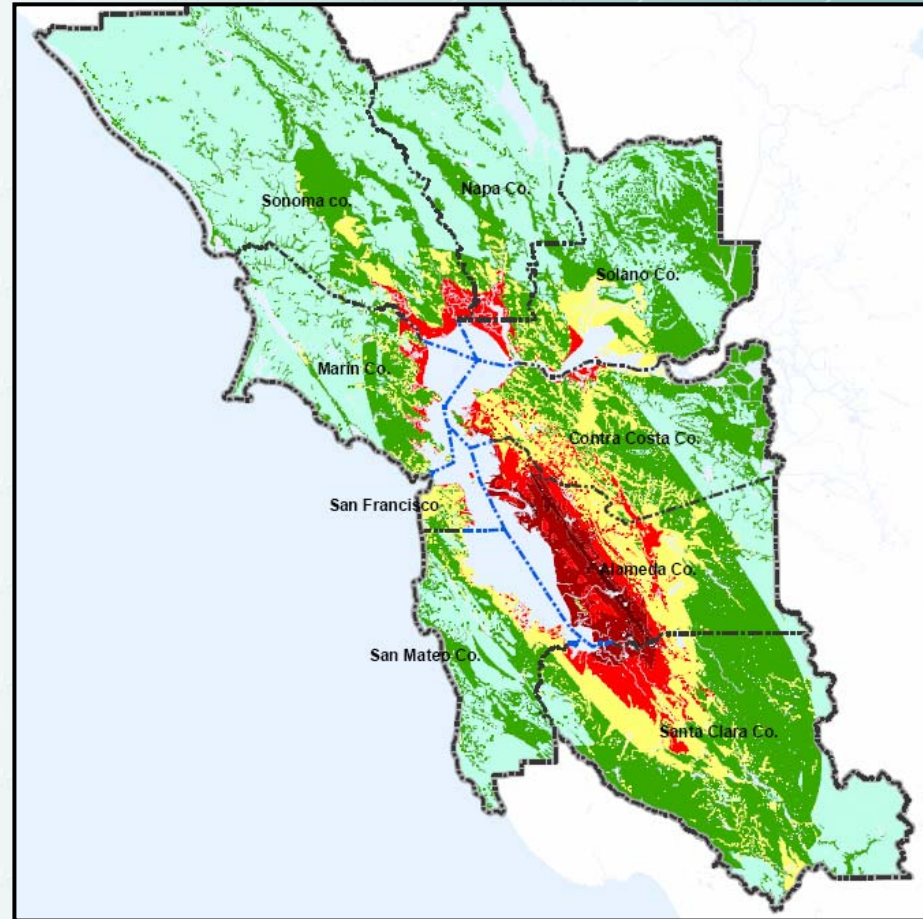
The Health Care System

- Focus since 1971 San Fernando earthquake = **FIX Hospitals**
- Since 1971 = Health care NOT in hospitals and “just in time” supplies
 - (1) Eye glasses, hearing aids, pharmacies, doctor and dentists offices, mental health counseling – all can be in any kind of building, including an unreinforced masonry building – in a non-ductile collapse hazard building – in any kind of building at all
 - (2) Cities and counties understand the issue but do not have the resources to work with these businesses.



What Happens IMMEDIATELY- M 6.7 on Southern Hayward

- **Loma Prieta –**
- 66 people killed
- BUT over 4,000 injured
- **Hayward –**
- Can easily have 10s of thousands of people injured





**BUT Nightmare Goes On
and On...**

**Medicines, Dentists,
Doctors, Hearing Aides,
Eye Glasses, Counseling, Etc.**

ALL not in hospitals

Resiliency of Health Care KEY FACILITIES

- Coordinate with the State OSHPD program**
- Encourage hospital plans for speeding reoccupancy**
- Learn about hospital plans to treat fire/smoke exposure**
- Encourage hospitals plans for back-up water and power**
- Learn about hospitals plans for isolation capacity if pandemic**
- Encourage family disaster plans for hospital employees**

Resiliency of Health Care ANCILLARY FACILITIES

- Identify these facilities in your community**
- Contact these facilities to develop hazard MITIGATION plans (including looking at their own buildings) – Problem = often are renters**
- Contact these facilities to develop disaster and business CONTINUITY plans**

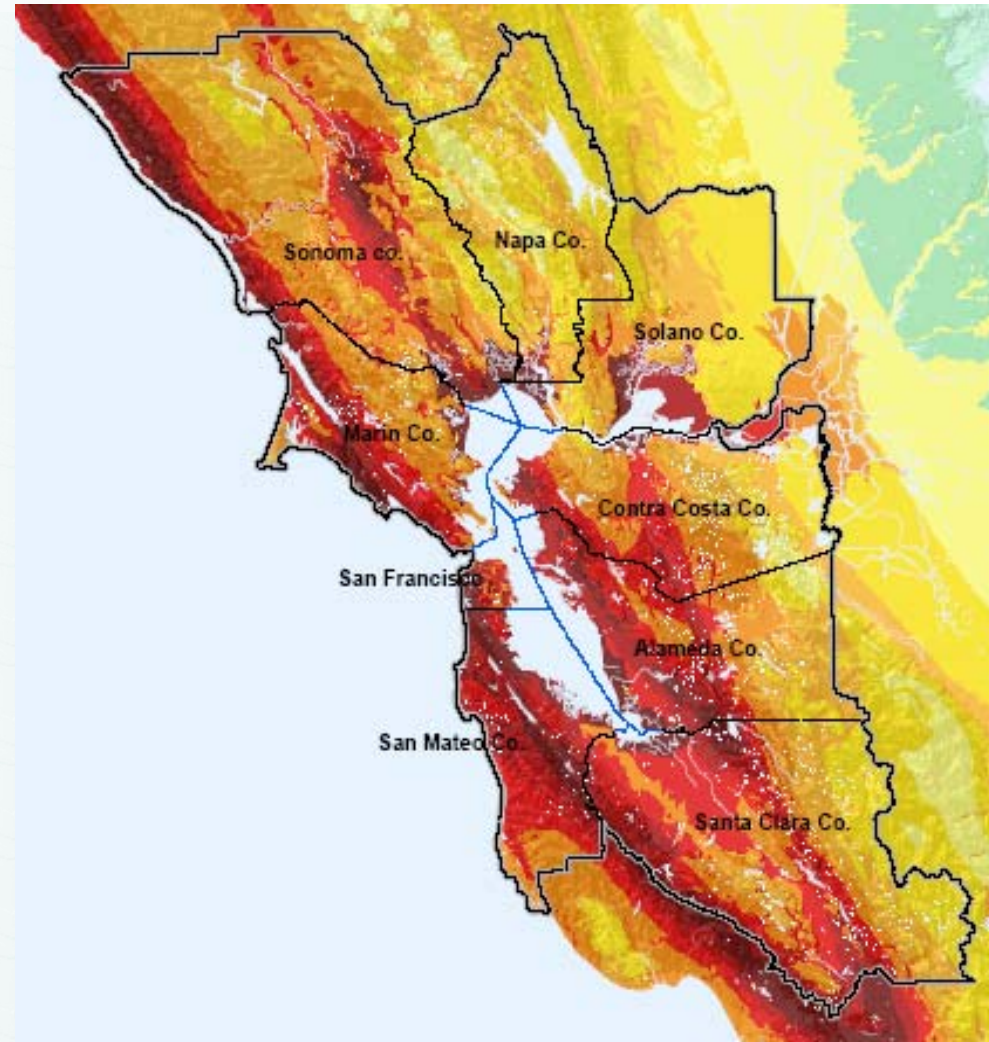
Resiliency of Health Care COORDINATION INITIATIVES

- Identify distribution points for medicines**
- Learn about the Metropolitan Medical Response System**
- Learn about the National Disaster Medical System**
- Plan for hazmat releases**
- Create discussion forums for food and health personnel**
- Work for continuity of mental health services**

Shaking Hazard Exposure of School Facilities

**97% exposed to
Extremely High
Shaking (vs. 93%
for Housing)**

**70% exposed to
Extremely High
Shaking (vs. 52%
for Housing)**



Weather Hazard Exposure of School Facilities

49% exposed to Wildland-Urban Interface (WUI) fire threat (vs. 58% for Housing)

0% exposed to extreme wildfire threat (vs. 0% for Housing)

4% in 100-year flood zone (vs. 4% for Housing)

1% in landslide hazard areas (vs. 10% of Housing)



K-12 Schools and Universities

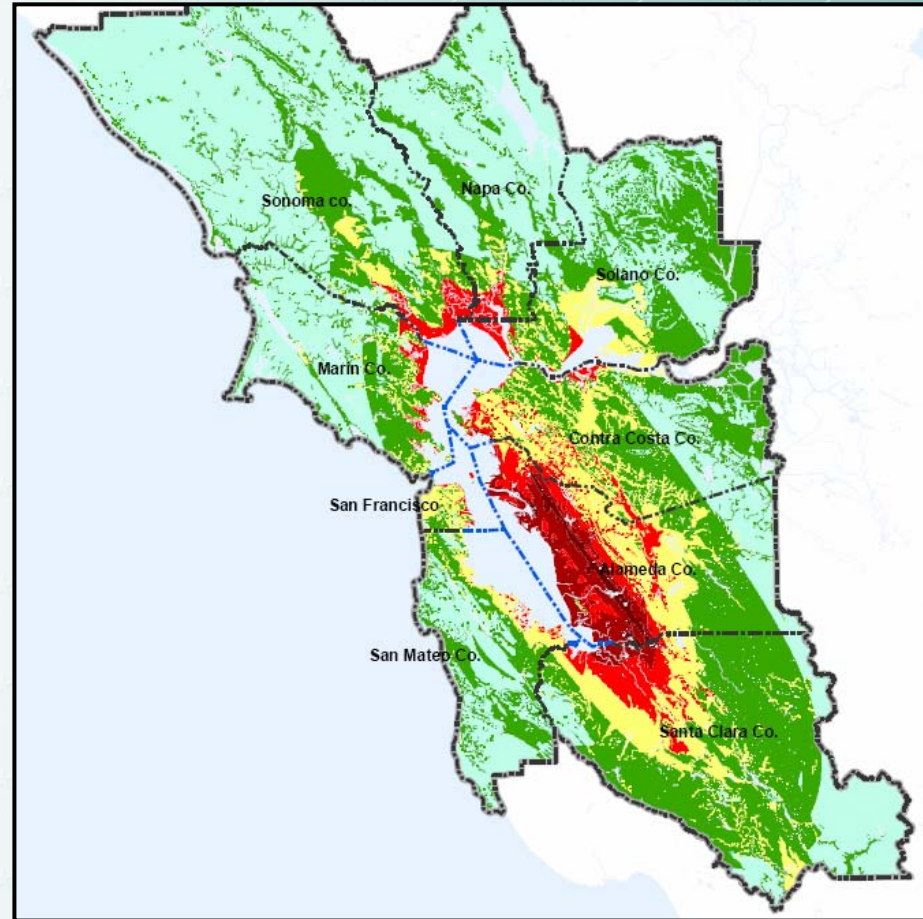
Mission of Schools Pre-Disaster = Education

Mission of Schools Post-Disaster Changes

- (1) K-12 schools are critical to sheltering those displaced from their homes.
- (2) K-12 schools become conduits for information to parents and others in the community.
- (3) Schools could become distribution points for food and water.
- (4) K-12 schools are day-care providers for parents with school-age children.
- (5) Children and teens need the stability that school and sports provide.
- (6) K-12 schools and colleges/universities are a major employer and driver of the Bay Area economy.

What Happens - M 6.7 on Southern Hayward Fault

- **93,000** uninhabitable housing units
- (300,000 – Katrina)
- **220,000** people displaced
- (1,700,000 – Katrina)
- **70,000** people in shelters





**The Nightmare Goes On
and On...**

SHELTERING

**Peak - 70,000 people on day 7
25,000 in shelters on day 90**

K-12 Schools and Universities

Mission of Schools Pre-Disaster = Education

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Resiliency of Education

KEY FACILITIES

- Assess vulnerability of critical school facilities to hazards**
- Retrofit the facilities if needed**
- Mitigate non-structural hazards with contents**
- Assess vulnerability of non-critical school facilities**
- Assess vulnerability of private schools**
- Encourage hospital plans for speeding reoccupancy**

Using Education Facilities as Emergency SHELTERS

- **Work cooperatively with the American Red Cross for Memoranda of Understanding for use as shelters**
- **Ensure that schools understand that being pre-designation as a shelter does not mean that the school is structurally sound**
- **Ensure that school personnel understand they become “disaster service workers” should students need to remain at the school**

Disaster Preparedness of Education Systems

- **Ensure that school personnel have appropriate family disaster plans**
- **Develop plans for sheltering in place of school children, if needed**
- **Offer CERT classes to teachers**
- **Offer Student-ERT classes to students**
- **Develop plans for sheltering for up to 48 hours**
- **Develop continuity of operations plans**

Using Education Facilities to Communicate with Parents

- **Develop disaster communication plans**
- **Ensure that materials used are culturally appropriate**

ABAG's Earthquake and Hazard Planning Info:

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

<http://quake.abag.ca.gov/recovery>