

# SHAKEN AWAKE!

Creative Ways to Strengthen Housing and Promote  
Community Resilience in Today's Economy

## CONFERENCE SUMMARY

Association of  
Bay Area  
Governments



## HOUSING IS KEY TO RECOVERY

A major earthquake will not just affect one city; it will be a regional issue. Failure to retrofit vulnerable housing will delay recovery and impact the entire Bay Area economy.

Increasing seismic retrofits of homes, apartments, and condos as a mechanism to speed post-disaster recovery was the focus for more than 100 people at ABAG's *Shaken Awake!* housing conference on June 13, 2011.

More and more cities across the region are beginning to recognize the vulnerability of their housing stock. Some cities have taken great strides to identify these buildings and begin to address their vulnerabilities, while other cities are just beginning to recognize the need within their own jurisdiction.

**That major earthquakes are going to strike the Bay Area is a certainty. It is up to us to decide whether earthquakes devastate our region or we endure and emerge stronger from the experience.**

The conference was organized into four panel discussions focusing on mitigation, recovery, and policy issues. The full conference agenda and video can be found online at <http://quake.abag.ca.gov/housing/shaken-awake/>. Attendees represented a broad range of interests – elected officials, local government staff, engineers, contractors, building owners, and consultants – from all corners of the Bay Area. They shared experiences, learned from one another, and identified ways to encourage effective retrofitting and speed recovery.

This summary is organized by the major themes and policy issues that emerged during these panel discussions.

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## THE NEXT BAY AREA EARTHQUAKE

Shaking from the next Bay Area earthquake will be very violent, but it will not be so violent that we cannot design new buildings or retrofit existing buildings to survive – even next to the fault. This good news results from the fact that shaking near the fault does not increase significantly with larger earthquakes, a phenomenon called saturation.

In addition, we have learned that earthquakes tend to cluster together, that is, when one large earthquake occurs, it is much more likely that another large earthquake will follow. Thus, rapid recovery is important to enable economic recovery from a later earthquake.

Jack Boatwright, USGS Seismologist, kicked off the morning with this good news / bad news presentation summarizing the lessons we've learned about shaking intensity and earthquake probability in the last ten years.

Because the Bay Area is underlain by a complex web of faults, the seismic hazard does not simply lie along the San Andreas fault, but spreads across the entire Bay Area as far east as Livermore and Fairfield. In the next 30 years, the earthquake hazard is highest in the East Bay.

In the last 230 years, the Bay Area has experienced four large events in 1838, 1868, 1906, and 1989. But, earthquake activity varies over time. In the century before the Spanish arrived in Baja California,

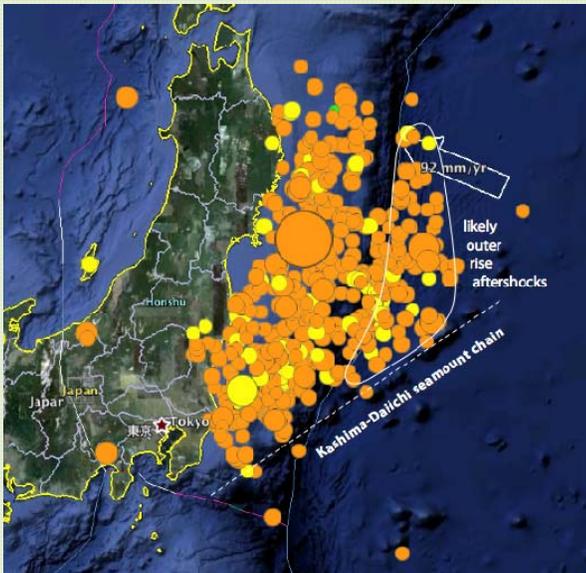
*Article continued on page 2.*

## THE NEXT BAY AREA EARTHQUAKE, CONT.

there were seven large earthquakes that geologists have found by digging trenches across the active faults in the Bay Area.

Some of these large earthquakes found in trenches dug across Bay Area faults are of particular concern because they may have been the same earthquake. If so, they were larger than previously thought.

For example, the northern and southern Hayward fault can rupture at the same time as the Healdsburg-Rodgers Creek fault near Santa Rosa, creating a much larger earthquake. Though this event is less likely than a smaller earthquake on the southern Hayward fault, failure to plan for these larger events is the mistake that the Japanese made in the recent Tohoku earthquake.



Ross Stein 20 Mar 2011

Lessons learned from the earthquake-generated tsunami that devastated the coast of Sendai and produced a nuclear crisis will have enormous ramifications in all of our lifetimes. They failed to plan for the consequences of such an earthquake.

## IMPROVING RETROFIT QUALITY

Studies have shown that about **two-thirds of retrofits are not being done properly and provide little to no benefit**. Panelists agreed that there are two important ways for the State of California to act to improve the situation:

**1. Develop a state retrofit license for contractors** similar to a plumbing or electrical license. This would help ensure that contractors performing seismic retrofits are properly trained.

**2. Adopt statewide seismic retrofit standards.** While the State of California has recently passed a standard for single-family homes (International Building Code, Chapter A3), it only applies to very specific housing types and there remains no adopted standard for multi-family buildings. This lack of standard means that permits will be issued for voluntary seismic retrofits that may not be adequate.

But local governments may not be able to wait for state action. Bay Area cities and ABAG need to develop improved retrofit training for single-family homes and encourage homeowners to hire contractors that have been trained.

**The City of San Leandro** was the first to develop and offer a prescriptive plan set, which has now been accepted by most of the region (Plan Set A). The City has also developed a handbook to accompany the plan set. To encourage proper use of the plan set, the City offers workshops to San Leandro residents (non-residents are welcome to attend) that walk homeowners through application of the plan set (<http://tinyurl.com/4ydvby8>). At the end of the course, homeowners can take their completed plan set to the building department to receive a permit for a flat fee of \$75. They also have access to the City's tool lending library, and City inspectors will make as many trips to the home during the construction process as necessary at no extra cost to make sure the work gets done properly. Financial assistance for low-income residents is also sometimes available.

A number of cities in the region have followed suit and adopted Plan Set A and offered a flat permit fee for homeowners who used the plan set or obtained an engineering design. Work is also underway to widen the scope of Plan Set A to apply to hillside homes and homes with tall cripple walls, for example.

## MOTIVATING OWNERS TO ACT

For a short period of time after the Japan earthquake, homeowner requests for retrofit work increased significantly because people became fearful that their home would be damaged in an earthquake. But there are ways to motivate mitigation other than earthquakes.

### Creating a Culture of Mitigation

Retrofitting takes political will and a community desire to create a culture that encourages retrofitting. In the 1990s, the **City of San Leandro** retrofitted City Hall and the main library, as well as replaced two fire stations. Recently a new senior center has been completed and will double as an EOC during an emergency. Similarly, the cities of **Oakland and San Francisco** repaired and retrofitted their city halls following the Loma Prieta earthquake. In the early 1990's the **City of Berkeley** also retrofitted its fire stations, City Hall, and all of its schools, while UC Berkeley has retrofitted many of its buildings on campus. Many other Bay Area cities have taken similar steps to retrofit their own facilities.

Contractor Tom Anderson noted that people retrofit when someone they trust, like a family member or neighborhood leader, says to do it. To the extent that the city itself retrofits its own buildings, it can assume this leadership role, confirming that retrofitting is feasible.

Anderson has also noticed that people who retrofit tend to have more education; they understand the risk and recognize that retrofitting works. They are also more likely to be able to afford to act on that knowledge. **San Leandro** tries to get the word out about the need for seismic retrofitting by visiting middle school science classes, making presentations to Home Owner's Associations and publishing articles about seismic safety in the City's newsletter.

Mandating retrofit of certain classes of buildings sends a powerful message that the city takes earthquakes seriously. The **City of Berkeley**, through its soft-story evaluation program (<http://tinyurl.com/3e3db4l>), demonstrated that even the threat of future mandates will compel a certain number of people to act.



## Financial Incentives for Single-Family Homeowners

Typical single-family home retrofits cost between \$5,000 and \$10,000. Owners of these homes tend to be more proactive about retrofitting, but the cost can still be a barrier. Providing retrofit incentives can also be a way to educate the public about vulnerable housing types and mandate that the retrofits are done properly – an issue that persists.

**Berkeley's** most successful retrofit program is its real estate transfer tax program (<http://tinyurl.com/3dj3hqk>). The City raised the transfer tax from 1% to 1.5% and then offered to refund new homebuyers the 0.5% difference if it was used to seismically strengthen their home. Since its implementation, 600-800 homeowners have taken advantage of the program and it costs the City very little since the owners themselves are actually paying for it. Many people point to the time of sale as the opportune time to convince people to

retrofit. Prospective owners are paying close attention to all kinds of structural and safety issues at that time and the cost can be figured into the new mortgage.

Beginning in July 2008, when the **City of Oakland** had a budget surplus, it set aside \$1 million in real estate transfer taxes to provide incentives to new homebuyers.

Buyers who signed up for the program within 60 days of purchase, met the City's seismic retrofit standards, and completed the work within 18 months, were eligible for up to \$5,000 in rebates.

Prior to the program, only 6 permits were issued for seismic retrofits. During the two years of the program, 360 people took out permits. This showed the City that **incentives do work – they do not have to cover 100% of the cost, and that the most effective way to reach homeowners is at the time of sale** when it is easy to add the cost of the retrofit to the mortgage. A brochure was developed to insert in homebuyer materials and the City provided training to real estate agents, mortgage brokers and insurance agents about the program. When the economy improves, the City plans to offer this program again.

To assist low-income owners, the **City of Oakland** used redevelopment money to provide up to a \$5,000 grant for half

the cost of retrofitting (<http://tinyurl.com/3lul66e>). Low cost loans provided the remainder of the cost. This program has not been as effective: only 33 people have taken advantage so far. The City plans to work on better marketing of this program.

The **California Earthquake Authority** (CEA) plans to provide some assistance to homeowners through a statewide retrofit program. The CEA has approximately \$20 million set aside from annual premiums and currently plans



to offer a \$1,000 flat rebate to homeowners. Some believe that \$1,000 is not enough to motivate owners who would otherwise be unable to afford the retrofit or are not interested in the first place. Oakland Mayor Jean Quan commented that she would like to have a higher incentive available to cities with a higher risk, like Oakland and Bay Area cities along faults. Jeanne Perkins suggested that the CEA could employ a risk-based formula for calculated incentives, similar to the formula already used to calculate annual premiums, which run between a few hundred to a few thousand dollars.

### Identifying Soft-Story Multi-Family Buildings

After verifying the accuracy of an inventory of soft-story buildings conducted after the Loma Prieta earthquake, the **City of Berkeley** passed Phase One of its soft-story ordinance. Owners of 450 buildings had two years to complete an engineering analysis of their building. While Phase Two of the ordinance, mandatory retrofit, is on hold because of the economy, the analysis did motivate nearly 20% of owners to act on their own. Many of them realized that the report itself is expensive and knowing that a mandatory ordinance was coming, it made sense for some to retrofit immediately. The City offers a 15-year exemption to those owners to any future mandatory retrofit ordinances. The Berkeley Building

Department is now working with City Council on rent control issues that may make retrofitting more feasible for owners.

With the assistance of ABAG, the **City of Oakland** identified about 1,500 potential soft-story buildings (<http://tinyurl.com/43rqg3m>). In July 2009, City Council passed an ordinance requiring property owners of identified buildings

to complete a simple, low-cost screening to verify that the building is likely soft-story and has not been previously retrofitted. When the survey is completed by 2012, Council will determine the next steps of the program. This may take the form of a mandatory engineering report, mandatory retrofitting, or voluntary retrofitting. Some of the issues the City faces in implementing the next steps are the cost of retrofitting, unavailability of commercial loans for owners, rent control that limits how much owners can pass

through to tenants, lack of a market for rental units that have been retrofitted, and the slow turnover of these buildings, which would allow the City to take advantage of point of sale programs which proved successful in single-family homes.

### Disclosure of Building Vulnerabilities

While many soft-story buildings have already been identified or evaluated, most tenants have not been notified of the condition of the building they live in. Notification is one way to create a market for seismically safe buildings and to nudge owners to retrofit.

Berkeley's soft-story ordinance requires that owners post a notice on buildings determined to have a soft-story condition, but Building Official Joan MacQuarrie noted that they have had little effect because the public does not value safer buildings. Jill Broadhurst of the Rental Housing Association of Northern Alameda County remarked that if a tenant receives notice that their building is unsafe, they may decide that they do not want to live there anymore and new tenants may not move in. This creates less cash flow for owners to be able to finance the retrofit.

The cities of **San Francisco, San Leandro, Alameda, and Fremont** have all completed soft-story inventories and are working to notify owners and retrofit the buildings.

## Financing Soft-Story Retrofits

Lack of adequate financing for seismic retrofits of soft-story multi-family buildings has prevented many cities from moving forward with

policies to require or encourage retrofits.

Typical soft-story retrofits cost \$10,000-\$15,000 per unit. A number of cities have inventoried

their soft-story housing stock, including **San Francisco, Oakland, Berkeley, and Alameda**. Each of these cities wants to mandate retrofits, but in the current economy and with the price of the retrofits, these cities feel that it would be poor policy to mandate retrofits without being able to provide some financial support. Cities recognize that retrofitting buildings benefits not only the owners and tenants, but also the entire community; therefore, the cost should be shared among the building owners and the city.

Cities view a revolving loan program through a voluntary assessment district, similar to those being developed for solar installations, as the best possible solution to provide financing to as many owners as possible. These loans are paid back on the property tax bill. The loan stays with the building and not with the owner when the building changes hands and can be spread out over a 30-year loan period. Cities wishing to implement these programs must also come up with an initial pot of money that can be used to distribute the loan.

The **City of Oakland** is working with banks, insurance companies, and others to amass funds for a revolving loan.

### TIPS FOR INCENTIVIZING SOFT-STORY RETROFITS

- ❖ Waive plan check fee and offer flat permit fees.
- ❖ Offer low cost loans with long repayment periods.
- ❖ Temporarily reduce or waive owner's business tax.
- ❖ Offer an ombudsman to walk owners through the process.

They are also looking into the potential for discounts on fire insurance, or reducing local business taxes for owners that retrofit.

Even when financing mechanisms are in place, someone needs to demonstrate to owners how the cash flow will work for them to take advantage of the program. A city ombudsman might be a good tool to shepherd owners through the process.

Homy Sikaroudi of West Coast Premier Construction suggested that cities extend free plan checks and flat permit fees to soft-story buildings, especially as they consider mandating retrofit of these buildings. Studies have shown that even small gestures such as these go a long way in the eyes of building owners.

## Rent Control Issues

One of the most important issues for lenders is for owners to demonstrate sufficient cash flow before initiating a loan. Lenders do not look favorably on rent ordinances that limit the potential for increased income. Even when owners are allowed to pass on 100% of the capital cost, many tenants aren't willing to pay the increased cost and may choose another building. So, rent control ordinance itself is not necessarily the problem. But there does need to be a mechanism for sharing costs between the owner and tenant.

The **City of San Francisco's** CAPSS study (see *Leadership and Political Will* section) recommends that the

City reconsider rent control laws to allow 100% pass through of retrofit costs to tenants. On the other hand, some argue that costs are more appropriate to be maintained by the owner.

In **Oakland**, with its rent control ordinance, the cost could be passed through to renters for a 5-year window, but may increase rents on the order of \$200 a month. In **Berkeley**, only about 1/3 of

the rental units are currently below market rate. These are the only units where pass through would be allowed, but they also tend to house low-income tenants.



## Owner Liability: a New Incentive to Act? The case of Myrick v. Mastagni, Paso Robles, CA

ABAG's legal counsel Ken Moy, summarized a recent appellate court decision which upheld a trial court award of \$1.9 million in damages against a property owner for bodily injury caused by their unreinforced masonry building (URM) during an earthquake.

The appellate court decision found that the ordinance requiring retrofit of URM buildings, which had a compliance date in the future, did not shield the owners from liability because the goal of the ordinance was to improve public safety. The compliance date was an arbitrary deadline that defined a minimum standard of conduct.

The jury concluded that the building owner was negligent in failing to perform a seismic retrofit that could have prevented these deaths. Moy pointed out that what we do not know is what role the failure to retrofit, the cost-benefit analysis of the retrofit, the building's historic status, the nature of the proposed retrofit or the city's retrofit ordinance played in the jury's conclusion that the owner was negligent.

Extending this to case to multi-family soft-story buildings, Moy sees some similarities. Owner notification programs such as those taking place in Berkeley, Oakland, and Alameda are part of a broader societal trend recognizing the seismic hazards of soft-story buildings that will make it harder for owners to avoid liability in future court cases. This exposure is something that owners will have to take into account when deciding how they will operate their buildings.

**The more soft-story vulnerability and the technical fixes to improve them becomes general knowledge, the harder it will be for an owner to deny liability when their building injures someone.**

There is no exclusion for earthquake damage in the standard commercial general liability insurance. So the owner is actually covered for the liability of injuries or death caused by vulnerable buildings. This is somewhat positive because it provides owners some coverage while they figure out how to bring the building up to the next level of earthquake safety. Moy believes that if these third party insurers had "more skin in the game" when it comes to covering claims for death and injury, it would incentivize them to work toward retrofits of these vulnerable buildings.

## Communicating Risk: Finding the Right Message

The CEA, in partnership with the Earthquake Country Alliance, California Seismic Safety Commission, and California Emergency Management Agency just completed a \$3.5 million study to determine what kind of messages will be most effective in compelling people to prepare for earthquakes. In 2008, the project performed a study and found that California residents are inundated with messages and programs designed to encourage earthquake preparedness. In spite of this, most households have only taken simple preparations, and few have significant effort to reduce injuries and losses.

Based on these findings, the study recommended that earthquake agencies and information providers disseminate a standardized message to households about earthquake preparedness and mitigation and coordinate the content and dissemination efforts so that they constitute an ongoing stream of communication across time and targets. The study recommended that future messages not scare residents with increased probabilities, which do little to motivate, but instead focus on actions that residents can take to help their families survive and recover from earthquakes.

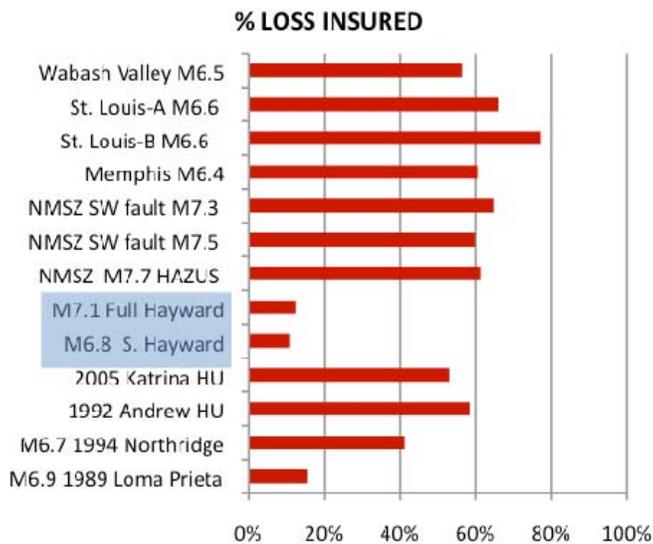
## NEED FOR BETTER EARTHQUAKE INSURANCE COVERAGE

Until the 1994 Northridge earthquake, earthquake insurance was relatively common and affordable. Following that earthquake, most insurers dropped out of the market, forcing the State of California to create the publically managed and privately funded California Earthquake Authority.

The role earthquake insurance coverage plays in our ability to quickly recover was the topic of May Lou

Zoback's keynote address. What was most striking about her presentation was just how unprecedented our current lack of insurance coverage is and how unique it is in the nation.

Insurance take up rates since 1994 have dramatically declined. **Today only about 6-7% of residential losses will be covered by insurance in the next Bay Area earthquake.** The chart below compares this to 60-80% of losses covered for an earthquake occurring in the Midwest and 50% of losses covered in Hurricane Katrina. Likewise, every other type of disaster – floods, tornado, fire, and hurricanes



**THE BAY AREA IS DRAMATICALLY UNDERINSURED FOR FUTURE EARTHQUAKES.**  
 SOURCE: RMS SPECIAL REPORT ON NEW MADRID EARTHQUAKE RISK

are reasonably well covered by homeowner or special insurance policies. This lack of coverage is truly an unprecedented problem that requires our attention before a major earthquake strikes.

### Cost of Insurance Remains a Barrier

Zoback believes that earthquake insurance rarely makes economic sense. The deductible is sufficiently high that most homeowners who have retrofitted their homes will never have enough damage to meet the deductible. In addition, the high annual premium might be better spent retrofitting and preventing damage to the home.

Zoback offered some solutions to the insurance crisis (see sidebar), but none of them truly helps us reach our goal of reducing losses in the first place. Addressing vulnerable housing requires an integrated approach. Homeowners must be made aware of the vulnerabilities of their homes and given specific actions they can take to reduce those vulnerabilities.

### INSURANCE ALTERNATIVES

- ❖ Consider natural hazard mortgage insurance. While this insurance does not pay for damage, it will pay the mortgage for up to 2 years, freeing up cash to make necessary repairs.
- ❖ Maintain a home equity line of credit to pay for repairs.

Amy Bach of United Policyholders believes that lawmakers should require insurers to offer mitigation discounts and incentives as has been done in Florida, South Carolina and other states where hurricanes are a recurring threat.

### POSSIBLE INSURANCE SOLUTIONS

- ❖ Support the Federal Earthquake Insurance Affordability Act that would allow the CEA to reduce premiums by 30% or deductibles by 50%.
- ❖ Consider an alternate insurance policy structure that covers the first 15% of losses instead of the last 85% of losses. This change would lower the premiums and deductibles while covering the damage most homes will actually experience.
- ❖ Require retrofitting as a condition for insurance coverage.

## RECOVERY PLANNING AND IMPLEMENTATION

### Recovery Management Challenges

Following the 1989 Loma Prieta Earthquake, Charlie Eadie was appointed project manager for the downtown business district recovery. He summarized some challenges he faced in this process.

**Capacity to adapt to changing situations.** Organizations and individuals must be ready to reinvent themselves and adapt to the current situation because a disaster will thrust you into a situation that is beyond what you've ever been able to control or manage in the past.

**Capacity to support multiple, simultaneous recoveries while being able to communicate the big picture.** We tend to think of recovery as a singular thing when there are really many recoveries that take place after a disaster, including: personal, family, business, business district, neighborhood, community, city, and regional. All of these recoveries happen simultaneously and they are bigger than anyone can manage or control. There is a tendency to get caught up in the details, but the recovery manager's job is to facilitate everyone else

being able to do what they need to do to recover. The recovery manager should have a good handle on the big picture and be able to communicate that to individuals who need to make decisions for their own families and businesses.

**The main functions of government in recovery are to • repair public services • provide resources • provide leadership**

**Have a reasonable expectation for what is going to happen in the recovery period. Know that it will be messy.** As a region, we need to have a conversation about reasonable expectation for disaster. It is not going to be a perfect or clean process no matter how much planning we do now. Recovery is about patching things together as best we can and creating an interim city or neighborhood that gets us by until we can put something better in place.

### Housing Recovery Challenges

Catherine Firpo has spent many years working on housing recovery from earthquakes. She summarized what she believes to be the top recovery challenges for housing:

**Existing problems will be exacerbated.** Lack of equity in housing compounded with uninsured damage will lead to huge numbers of vacant, damaged, and blighted properties on a broad scale. It will be difficult for owners to get financing to rebuild and repair. At the same time, banks will be under pressure to not foreclose these properties, leaving local government with no mechanism to control what happens to them.

**The way we handle temporary housing will affect long-term housing recovery.** Temporary housing allows people to stay in their communities, to have faith that their communities will rebuild, and to invest in their communities. It is important to make sure that temporary housing has momentum to move into permanent housing recovery.

**Right now it takes years to put an affordable housing project together with multiple funders.** Compounding the challenge, after a disaster the tax base will be reduced because of the losses sustained. As a result, it will be hard to fund and staff these projects. Affordable housing that is destroyed by an “Act of God” is not required to be built back with rent control in place, increasing the lack of affordable housing.

**Low vacancy rates and limited land within city boundaries require creative solutions to temporary housing.** The normal

temporary housing solution is to provide vouchers for people to rent other units until their building is repaired or they can find permanent housing. This is not feasible given the number of damaged units we expect and the extremely low vacancy rates.

### Recovery Planning Process

The people typically engaged in discussions of hazard mitigation and emergency response are emergency managers, first responders, building officials, and public works staff. When it comes to facilitating long-term recovery however, many of the issues we face will have to do with the planning process. Planning can take years under normal circumstances. During the recovery process, we face the issue of time compression: the desire to rebuild quickly but also rebuild well. Planning departments need to be involved in the disaster planning conversation and be ready to take advantage of opportunities to rebuild better than before while not getting bogged down in decision-making that frustrates people and stalls recovery.

### RECOVERY TIPS FOR PLANNERS

- ❖ Involve the community from the beginning of the planning process.
- ❖ Take the time in post-disaster planning to create a plan which will be so complete and detailed that developers can obtain over-the-counter permits to do the work.
- ❖ Bring together leaders to take the time grapple with what makes a community successful. Residents should thrive in re-starting the community.
- ❖ Before the disaster, set up criteria for conditions which determine what can be redeveloped or repaired.

### Resources and Logistics

After a disaster, contractors will come in from out of state eager to make money in the rebuilding process. Joe Olla of Nibbi Brothers General Contractors is concerned about quality control when we are trying to rebuild quickly on such a large scale using contractors without a California license. California has some unique building requirements for seismic safety that

out-of-state contractors may not be familiar with. While larger developers have hiring laws and a better sense of the skills required for the job, it will be easy for individual homeowners to be taken advantage of by unqualified contractors.

The construction market will face difficult challenges after an earthquake in material and equipment availability and transportation to job sites. Shortage of skilled labor is an issue today that will only be exacerbated in the rebuilding phase. Permitting requirements and regulations that today can take months to navigate may slow the rebuilding process.

## ENCOURAGING STAFF LEADERSHIP AND FINDING THE POLITICAL WILL

City mitigation programs are not legislated nor are they a required part of any city employee's job, which makes the task of developing a mitigation program all the more challenging. The first thing you notice when documenting mitigation best practices from various cities around the region is that each has a champion that leads the effort. But in nearly every case, the champion has experienced a disaster first hand, knows what happens to cities and families when disaster strikes, and is determined to do everything they can to reduce the impact of future disasters in their own homes. Of the *Shaken Awake!* mitigation panelists, all have experienced disaster. For



example, San Leandro's William Schock, Joan MacQuarrie of Berkeley and Laurence Kornfield of San Francisco were all in the San Francisco Building Department during the Loma Prieta earthquake and tasked with inspecting and rebuilding the damaged neighborhoods. Sue Piper of Oakland survived the 1991 Oakland Hills Fire.

Since not everyone has had the misfortune of experiencing a disaster, one way to create champions for seismic safety within other cities may be to develop programs where city staff assists in disasters around the country. This will not only help those cities that are in great need of staff support, but also create more capacity and knowledge within our own region. When our earthquake strikes here, we will definitely need some support from our sister cities across the nation.

### Building a Culture of Seismic Safety in San Francisco

Nearly ten years ago, the **City of San Francisco** developed the Community Action Plan for Seismic Safety (CAPSS) with the goal of building staff, political, and public support for mitigation within the City. The program was spearheaded by then City Building Inspector, Laurence Kornfield. The CAPSS advisory committee, made up of various stakeholders within the City, has met almost monthly for ten years of the project. In December 2010, CAPSS issued a report ([www.sfcapss.org](http://www.sfcapss.org)) that analyzes the impact of several scenario earthquakes on the City and makes recommendations for actions the City can take to reduce the effects. CAPSS recommends a 30-year process for implementing the recommendations with a seven-year plan for soft-story upgrades, which would include incentives and funding.

The question facing CAPSS and the City now is what to do with the report? How should the work get prioritized and how should it be implemented? Recognizing that the project has become more of a policy project than an engineering study now that it has moved to the implementation stage, the City created a position for Kornfield within the City Administrator's office to manage the earthquake hazard mitigation program. Kornfield plans to run the program like a campaign that fits within the City's broader Resilience Initiative ([www.resilientsf.org](http://www.resilientsf.org)).

One of the goals of the Resilience Initiative is to go beyond making sure that homes do not kill people in earthquakes to creating homes that people can continue to live in immediately following the earthquake (shelter in place). This requires a different standard of engineering. Soft-story buildings have the largest impact on the city's ability to shelter in place. The good news is that the retrofit is relatively easy to do. While owners of one or two unit homes are generally willing to retrofit, it is much harder to convince multi-family building owners. One reason is the cost. At \$10,000-15,000 per

unit, retrofits are not cheap. The upcoming retrofit standards, such as ATC 71-1 (<http://tinyurl.com/42dke72>) may help reduce the cost for soft-story upgrades. The City also offers incentives like expedited permits and no fee plan reviews to help make the process easier.

### What Should Regional Agencies Be Doing Now to Encourage Mitigation and Speed Disaster Recovery?

First and foremost, the region needs a governance structure that goes beyond one local government. In the response stage we have the incident command structure that dictates the structure of response, but there isn't any structure for a uniform and coordinated decision-making in long-term recovery.

We need to look beyond our own borders and think in terms of a resilient region. Regional agencies are in the unique position of being able to convene different sectors to plan, coordinate, and share ideas and best practices. Doing this kind of planning pre-disaster allows people who do not normally interact to build relationships and trust with each other, which in turn will help the recovery process go more smoothly. Regional agencies may also have a role in some practical recovery needs such as:

- ❖ **Providing technical support to local governments who will be overwhelmed immediately after the disaster;**
- ❖ **Performing immediate research on the physical, economic, and social impact of the disaster on the region and providing information to local governments for purposes of obtaining federal funds for disaster relief;**
- ❖ **Mediating disputes between jurisdictions and keeping an eye on the big picture and regional recovery;**
- ❖ **Lobbying on behalf of communities and the region for needed legislative and regulatory changes;**
- ❖ **Providing pooled financing for rebuilding, and;**
- ❖ **Providing education to local governments, residents and earthquake professionals.**

ABAG staff announced that it is launching a Regional Resilience Initiative ([quake.abag.ca.gov/resilience](http://quake.abag.ca.gov/resilience)) which will bring together a broad range of stakeholder organizations and constituencies to share information and expertise, and enable coordination and mutual leveraging of the many productive resilience activities currently underway. The emphasis will be all-hazards with a particular focus on recovery from a major

earthquake. The Initiative will focus on reconstituting lifeline and other critical infrastructures, businesses, government services, community institutions, housing and essential services, and facilities that underpin the Bay Area economy and the health, safety, and overall well-being of its citizens.

### View from the Top: Perspective of Regional Leaders

"We know what needs to be done. We know that our housing stock is old and vulnerable. We also know that if we do not act purposefully and expeditiously, when the earthquake comes, some of these communities will never come back and they will drag down the entire region until we are finally able to rebuild", said moderator Henry Gardner.

**Marin County** Supervisor Susan Adams, **Oakland** Mayor Jean Quan and **Berkeley** Mayor Tom Bates discussed their roles in creating policies that will rebuild homes quickly,



get businesses back on their feet, and support vulnerable populations. All of the elected officials spoke passionately about the work they have done in their own communities to improve seismic safety for public and private infrastructure. They recognized the challenges of implementing seismic programs in this economy where residents are worried about jobs, housing prices, and trying to put food on the table. They also know that when residents see a clear benefit, they are willing to take necessary action to improve their situation.

The elected officials had a long list of ideas about what governments and citizens need to do to protect their investments and their families.

**Streamline the retrofitting process.** It should be easy for owners to find resources, apply for grants, and learn how to take the necessary actions to mitigate their homes. Processes

should be uniform across the region to make it simple for contractors to understand the rules and regulations in each of the cities where they do business. The State should develop statewide standards for retrofits to ensure adequate retrofits.

**Financing is the key to the retrofitting problem.** The solar assessment program is a good example of a way to fund seismic retrofits by creating a pool for owners to borrow from to make necessary upgrades. The most effective time to reach owners is at the time of sale and can be offered as a rebate on their transfer tax at no additional cost to the city. Elected officials strongly urged the California Earthquake Authority to release its mitigation funds for retrofitting single-family homes. Low-income populations will require additional assistance such as grants to make retrofitting feasible.

**Link earthquake retrofitting with existing programs.** As a region, we have been thinking a lot about the long-term impacts of climate change and global warming. We need to have a broader program to think about climate change as well as disasters like earthquakes that we know will happen right

now. Both of these hazards fit under the umbrella or regional resilience. Elected officials are looking for ways to expand the multitude of programs focusing on energy retrofits to include seismic retrofits so that the energy investment doesn't go to waste when the earthquake damages the house.

**Mandates may be necessary.** Cities can take the lead and mandate certain requirements to move us in the right direction by requiring evaluation of vulnerable housing types and requiring foreclosed homes to be retrofitted before they are turned back onto the market. If a building is hazardous we normally require that it be fixed or vacated; similarly, we have to mandate that the most vulnerable homes be retrofitted, even if it means the building has to be vacated to do it because it's the right thing to do. "Policymakers need to ask themselves whether they are comfortable knowing that their constituents are living in homes which will kill them in an earthquake and then decide what we are going to do about it," said Mayor Bates, **"It's all about political will and making the hard choices to do the right thing"**.

## SPEAKERS, MODERATORS, AND PANELISTS

Amy Bach :: Executive Director, United Policyholders

Arrietta Chakos :: Chair of Public Policy Committee,  
Earthquake Engineering Research Institute

Catherine Firpo :: Housing Coordinator, City of Emeryville

Charles Eadie :: Principal, Hamilton Swift Land Use &  
Development

Chris Nance :: Communications Director, California  
Earthquake Authority

Danielle Hutchings :: Earthquake and Hazards Program  
Coordinator, Association of Bay Area Governments

Harold Brooks :: CEO, American Red Cross Bay Area

Heidi Sieck :: Program Director, Citywide Post-Disaster  
Resilience and Recovery Initiative, City of San Francisco

Henry Gardner :: Former ABAG Executive Director and  
Managing Director, Loop Capital Markets

Jack Boatwright :: Seismologist, U.S. Geological Survey

Janiele Maffei :: Chief Mitigation Officer, California Earthquake  
Authority

Jean Quan :: Mayor, City of Oakland

Jeanne Perkins :: Principal, Jeanne Perkins Consulting

Jill Broadhurst :: Director, Community Affairs and Advocacy,  
Rental Housing Association of Northern Alameda County

Joan MacQuarrie :: Building Official, City of Berkeley

Joe Olla :: Director of Business Development, Nibbi Brothers  
General Contractors

Kenneth Moy :: Legal Counsel, Association of Bay Area  
Governments

Laurence Kornfield :: Manager of Earthquake Hazard  
Mitigation Program, City of San Francisco

Mark Soltes :: Permit Center Coordinator, City of San Leandro

Mary Lou Zoback :: Seismologist and private consultant

Sarah Karlinsky :: Deputy Director, San Francisco Planning and  
Urban Research Association

Sue Piper :: Manager Mayor's Communications, City of  
Oakland

Susan Adams :: Supervisor, County of Marin

Tom Anderson :: Owner, Anderson-Niswander Construction

Tom Bates :: Mayor, City of Berkeley

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