
Regional Resilience Initiative



Housing Policy Paper

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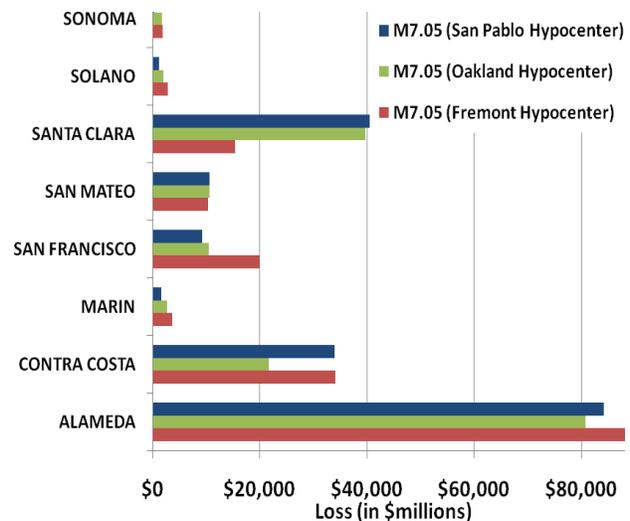
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Background

As one of the most seismically active regions in the country, California has developed strong building codes that will largely prevent loss of life in a major earthquake. These codes were developed over many decades and have been continually improved as earthquakes have demonstrated the need for new techniques and stricter codes. However, these codes do not guarantee that even a new building will be inhabitable after earthquakes and many older buildings built before modern codes have not been upgraded.

In a major earthquake on the Hayward or San Andreas faults, it is estimated that five percent of the Bay Area's housing stock—approximately 150,000 units—will be immediately and permanently damaged.¹ Nearly two-thirds of these losses will be in multi-family apartment buildings. Approximately \$85-90 billion in direct residential building-related economic losses are expected in this scenario.² Compounding the problem, fires that occur after an earthquake can consume many more units, especially if fire suppression systems are not upgraded to survive an earthquake.

Rebuilding and repairing damaged housing after an earthquake in the Bay Area will be particularly challenging since only six to seven percent of the loss from ground shaking will be covered by residential earthquake insurance.³ This is in contrast to disasters in other areas where a greater proportion of losses would be covered by insurance. For example, if the same earthquake were to occur in the Midwest, 60-80 percent of losses would be covered by insurance because earthquake coverage is part



The Bay Area is dramatically underinsured for future earthquakes. Source: 1868 Hayward Earthquake: 140-Year Retrospective, RMS (November 2010)

of a standard insurance policy.⁴ In Hurricane Katrina, 50 percent of losses were covered due to the availability of and requirements for flood insurance under the National Flood Insurance Program.

While the greatest loss of housing in the Bay Area will occur primarily along either the Hayward or San Andreas fault, the impact will be felt region-wide. Following the earthquake, many uninhabitable units may be demolished quickly or abandoned. To accommodate displaced persons, temporary housing in offsite locations may need to be constructed. Displaced residents will seek alternate housing options across the region, impacting commute patterns and housing prices, and small business recovery. Housing is the key to a strong region and will impact the recovery of businesses and the strength of our regional economy.

It is particularly important to consider the needs of low-income residents, who have fewer resources to handle the challenges of a major earthquake. Low-income residents who live in flatland neighborhoods in cities such as Richmond, Oakland, San Leandro, and Hayward and parts of San Francisco will be particularly impacted due to liquefaction, proximity to the fault, and the preponderance of vulnerable housing types in these neighborhoods. Some low-income residents may be permanently displaced out-

¹ *Shaken Awake! Estimates of Uninhabitable Dwelling Units and Peak Shelter Populations in Future Earthquake Affecting the San Francisco Bay Area*, ABAG, (2003); and *ABAG Housing Data*, (2009)

² *1868 Hayward Earthquake: 140-Year Retrospective*, RMS (November 2010). *Modeled loss estimates consider post-event loss amplification. All loss estimates are for property insurance coverage only. All losses above include shake and fire following earthquake. Note: This estimate includes losses for Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties only. Similar losses are expected for a San Andreas fault scenario earthquake.*

³ *Ibid.*

⁴ *Ibid.*

side of the region due to loss of affordable housing options and temporary loss of jobs. In some of these areas, it will be difficult to rebuild housing in-kind and future climate change effects like sea level rise, storm surges, increased flooding, and liquefaction may make the decision to rebuild in certain areas unattractive.

The challenge for policy makers is to address the present need to create and maintain affordable housing while also improving the seismic resilience of existing housing so that quality affordable housing can be maintained for the long-term. Looking to the region's Priority Development Areas (PDAs) as defined in Plan Bay Area (see sidebar), is a good place to start for reconstruction. Before the earthquake these neighborhoods of regional significance can be strengthened and made more resilient to provide quality housing options and preserve regional investments for many years to come. After the earthquake, these neighborhoods can provide a blueprint for planning and reconstruction for the region. Some of the recommendations in this paper are very technical and specific, reflecting the advanced state of knowledge in the region on housing mitigation and recovery needs. A major barrier to implementation of many of these needs is adequate financing and public will.

Goal #1: Facilitate a rapid housing recovery that fulfills regional goals of enhanced quality of life

PDAs provide a good framework for aligning investments to improve the region's disaster resiliency with regional goals for future increased housing and transportation choices, economic prosperity, and environmental enhancement. The qualities that make PDAs and neighborhoods enjoyable places to live can also promote more resilient communities. Using the PDA framework after an earthquake to guide the rebuilding process will help us achieve regional goals and can expedite rebuilding.

Policy makers have already begun to invest in PDAs by

Priority Development Areas

ABAG and MTC have developed, with other regional agencies, local governments, and other stakeholders, *Plan Bay Area*, the region's first Sustainable Communities Strategy (SCS), an integrated long-range transportation and land-use plan for the San Francisco Bay Area. A cornerstone of the SCS are Priority Development Areas (PDAs): locally-nominated and regionally-supported infill development opportunity areas within existing communities.¹ They are generally areas where there is local commitment to develop more housing along with amenities and services to meet the day-to-day needs of residents in a pedestrian-friendly environment served by transit. Over the next 30 years, the 169 PDAs in 72 jurisdictions across the region are expected to accommodate 80 percent of new housing and 66 percent of new jobs on little more than four percent of the region's land.²

1 *San Francisco Bay Area FOCUS Program.* <http://www.bayareavision.org/initiatives/prioritydevelopmentareas.html>

2 *Jobs-Housing Connection Strategy.* http://scs.abag.ca.gov/pdf/JHCS/May_2012_Jobs_Housing_Connection_Strategy_Main_Report.pdf

improving transit and infrastructure and encouraging policies to promote compact, complete communities. Further investment to retrofit existing housing and require stronger building standards for new construction will improve the seismic resilience of these neighborhoods and will ensure that good affordable housing options are maintained even after major earthquakes.

When the earthquake strikes, homeowners with adequate insurance coverage and access to capital will be able to quickly rebuild their homes. Regional leaders can help ensure that earthquake insurance is a sensible investment for every homeowner. Homeowners who lack insurance coverage will struggle to repair and rebuild their homes and may abandon their equity rather than paying their mortgage, delaying recovery of the region.

While permanent housing is being built, temporary housing will be necessary. Policy makers must develop solutions for temporary and interim housing that maintain community synergy and encourage residents to invest in the Bay Area, and that are coordinated with plans for the region's long-term housing recovery.



H-1: Identify areas where mitigation and recovery resources are particularly important

Some areas will rebuild much faster than others and likely require fewer resources to do so due to prevailing market strength and current levels of investment (e.g. San Francisco). Areas with lower household incomes, lower savings rates, and limited access to financing will face longer housing reconstruction times than other areas. It is estimated that a disproportionate number of vulnerable populations live in earthquake vulnerable neighborhoods across the region, particularly in cities along the Hayward fault. Multi-family housing in particular tends to take longer to rebuild and is often not rebuilt as affordable housing.

Incorporating future land use planning and development feasibility into disaster planning can result in more mitigation and recovery resources devoted to places that especially need them. By overlaying information on hazard zones with vulnerable housing type, vulnerable populations, locations of subsidized housing units, and PDAs, policy makers can direct policies and allocate resources to the places that need it most; strengthening housing, reducing individual losses, shortening housing reconstruction timelines, minimizing economic disruption and promoting long-term regional growth and economic goals.



H-2: Explore interim housing solutions that encourage residents to invest in the Bay Area's recovery

If possible, while homes are being repaired, residents should be enabled to remain in their home or neighborhood through shelter-in-place policies.⁵ When residents remain, local businesses are more likely to stay in business, and families are more likely to quickly return to the routine of school and work. Regional plans to provide neighborhood support centers can enable families to remain in place by providing centralized food and water distribution, access to generators and medicine, and other needed services and supplies. Neighborhood support centers facilitate maintenance of existing neighborhood support networks.

Many residents in uninhabitable buildings will seek temporary emergency shelter and then rental or temporary housing until their homes are rebuilt or they find alternate permanent housing. When temporary housing solutions are needed, counties should strive to accommodate displaced residents within their own counties to help maintain access to jobs and schools while preserving community fabric. In addition, the siting of temporary housing should be carefully considered as it has important impacts on the locations and timing of permanent housing solutions and the long-term recovery of neighborhoods.



H-3: Use *Plan Bay Area* as a framework to directing resources for permanent replacement of housing

When housing needs to be reconstructed on a large scale, regional leaders can use *Plan Bay Area* and the SCS framework and the identified areas for growth (PDAs) to guide post-earthquake planning and development. PDAs have plans for building that in some cases are ready to be executed and an earthquake can be an opportunity to implement these plans. This will have the dual benefit of stimulating recovery while achieving our regional vision.

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Safe Enough to Stay, SPUR (2012)

A soft-story residential building is one that has large openings on the first floor, typically for parking or commercial space, with residential units on the upper floors. In some cases, the first floor may also contain residential units. Most were built prior to 1990.

Photo source: www.chandler-properties.com



Regional leaders should also work with other disaster prone areas to reform the Stafford Act to allow Federal Emergency Management Agency (FEMA) to help pay for permanent replacement housing, not just interim housing. Certainly, the region will be looking to state and federal housing finance assistance to construct new replacement units.



H-4: Address the problem of underinsured homes with more realistic hazard insurance availability

To reduce the need for government assistance and stimulate rebuilding, policymakers can ensure that damaged homes are repaired and rebuilt more quickly by ensuring that more homeowners are covered by adequate hazard insurance. Policymakers should work with the California Earthquake Authority (CEA) to reduce both its annual premium and deductibles. The CEA has made some changes to make its products more affordable and is undertaking a research program that may allow for additional significant premium reductions for homes that have been seismically strengthened, providing both incentive for retrofit and benefit to homeowners. Earthquake insurance policies for renters, however, are a good value and their use should be more widely encouraged.

Goal #2: Promote housing mitigation to reduce housing loss and expedite recovery

Multi-family buildings

Seismically vulnerable multi-family buildings, such as soft-story buildings, pose particular challenges for local governments. These buildings are not easy to identify and retrofits are expensive, but the benefits of retrofitting are significant. Rebuilding multi-family housing post-earthquake is generally very slow, taking several years longer than for single-family homes, and affordable units are often rebuilt as market rate units, resulting in the loss of affordable housing options. In some cities, soft-story buildings are clustered together, leading to the potential for widespread loss of housing in concentrated areas. Because of the large number of residents living in multi-family soft-story buildings across the region (an estimated 100,000 dwelling units), regional solutions may be beneficial. Further work is needed region-wide to accurately identify soft-story buildings and make the cost of retrofitting more affordable.⁶

⁶ *Development of Simplified Guidance for Seismic Rehabilitation of Soft-Story Wood-Frame Buildings (ATC 71-1). This soon-to-be-released document will provide guidance for addressing seismic retrofit requirements for soft-story wood-frame buildings in seismically active regions. The project will also develop practical*

Policy makers in cities with particularly large numbers of soft-story buildings such as Oakland, Berkeley and San Francisco have made progress in identifying potentially vulnerable buildings, but have had limited success to date in encouraging owners to retrofit these buildings. This is in part because the size and complexity of the retrofit may trigger requirements for additional upgrades to meet building codes, which can increase the total cost of the project and may exceed the value of the property.

Better awareness of seismic issues by tenants and prospective buyers may help create market-driven incentives for owners to retrofit. Financial assistance programs can make retrofitting more feasible while providing a vehicle for education about seismically vulnerable buildings.

A revolving loan program through a voluntary assessment district, similar to those being developed for solar installations under the PACE program,⁷ has potential to provide financing to as many owners as possible. These loans are paid back in first position on property tax bills. The loan payments stay with each building and not with their originating owners, so when the buildings change hands, loans can be transferred to new owners and spread out over 30-year loan periods. The seismic improvements enhance the value of the building and help secure the existing mortgages. No sources of capital, however, have been identified to initiate such a program.



H-5: Encourage accurate identification of soft-story buildings

model code provisions for seismic retrofit of soft-story wood-frame buildings that can be adopted by cities.

⁷ *Property Assessed Clean Energy (PACE) is a means of financing rooftop solar panel installation and other energy improvements through issuance of bonds to investors and then making loans to consumers which are repaid via an annual assessment on their property tax bill over the assigned term (typically 15 or 20 years). One of the most notable characteristics of PACE programs is that the loan is attached to the property rather than an individual. Recent legislation (AB 184, Swanson) has broadened the use of PACE to seismic retrofits. The residential PACE program is currently on hold nationwide pending a ruling by the Federal Housing Finance Agency that PACE assessments pose unusual and difficult financial risk for lenders, servicers, and mortgage securities investors without community benefits (PACEnow.org).*

Owner notification and evaluation programs such as those taking place in Berkeley, Oakland, San Francisco, and Alameda are part of a broader societal trend recognizing the seismic vulnerabilities of soft-story buildings and placing liability on building owners. This exposure is something that owners will have to take into account when deciding how they will operate their buildings.⁸ Future phases of such programs may include mandatory retrofit requirements. While politically difficult, these programs will likely serve the cities', the building owners', and the residents' best interests in the long run.

While each of these cities has begun the process of identifying soft-story buildings in their city, better tools are needed to refine these assessments, and other cities with significant numbers of soft-story buildings need to begin this process to identify buildings in their cities. ABAG can assist by sharing best practices and lessons learned from other cities already embarking on this process.



H-6: Establish affordable financing mechanisms to facilitate seismic mitigation of multi-family residential properties vulnerable to damage in earthquakes

We recommend that policymakers work together to find creative financing mechanisms to facilitate retrofit of residential properties. One possible avenue to explore is working through ABAG's Finance Authority to utilize the PACE program for seismic retrofits and to lobby the federal government to provide the initiating capital.⁹ In addition to PACE, a suite of policies and incentives can be adopted by cities wishing to encourage seismic retrofit.¹⁰ Other

⁸ *Personal communication, Ken Moy, ABAG legal counsel*

⁹ *AB184 (Swanson) allows PACE to be used for seismic retrofits, but it is not currently being implemented. Cities wishing to implement these programs must also come up with the initial funds to be distributed as loans.*

¹⁰ *Samant, Laura and Tom Tobin. Memo to the Advisory Committee, Community Action Plan for Seismic Safety, "Incentives to Encourage Seismic Retrofits: Options for San Francisco". San Francisco, CA. 5 Sept. 2008. http://www.sfcapss.org/PDFs/Incentives_to_Encourage_Seismic_Retrofits.pdf*



*Single family homes with living space over garages may exhibit soft-story conditions, where the garage lacks the interior walls of the living space above it and may be unable to support the living space above it during an earthquake.
Photo source: quake.abag.ca.gov*

existing programs that can be tapped for seismic retrofits include the California Earthquake Authority (CEA), local Community Development Block Grants (CDBG), transfer tax rebates (see case study on page 8), and the Strong Motion Instrumentation Program fee (SMIP) fund, an assessment on building permits, a portion of which can be retained by each jurisdiction for appropriate earthquake programs.¹¹ In addition, local governments working together with lending institutions, insurance companies, and other government agencies before future earthquakes could design new coordinated lending processes.

Single Family Homes

Older (typically pre-World War II) single-family homes will likely account for nine percent of overall housing losses after each major earthquake.¹² Single-family homes are generally relatively easy and affordable to retrofit. However, owners who embark on retrofit projects often quickly become perplexed by the lack of retrofit standards for some types of homes and the inconsistent array of retrofitting

¹¹ *Public Resources Code Section 2700-2709.1*

¹² *Preventing the Nightmare (update), Association of Bay Area Governments. (2003)*

techniques proposed by contractors. An estimated two-thirds of single-family retrofits are done improperly,¹³ a waste of homeowners' money that provides inadequate seismic benefits and creates a false sense of security. Owners are further discouraged by the lack of incentive programs enjoyed by residents for energy retrofits.

Quality retrofits benefit not only homeowners and their families, but entire communities when they can get back on their feet faster after earthquakes. Local policymakers can work with state and national policymakers to implement the following policies that would encourage more and higher quality home retrofits.



H-7: Reduce personal and community losses by increasing resilient building and retrofit practices

While the California Building Code has adopted, by reference, a standard for retrofit of single-family homes for the retrofitting of homes not requiring an engineer,¹⁴ it only applies to very specific housing types that have crawl spaces with walls less than four feet in height. Adoption of this standard was an important step for residential seismic risk reduction, but there remain broad categories of single-family dwellings that are not covered by a retrofit building code. Clear and comprehensive guidelines for the retrofit of all remaining single-family dwellings are needed. This lack of a standard means that permits will be issued for voluntary seismic retrofits that may not be adequate. Local policy makers should encourage efforts by CEA and FEMA to develop recommendations for future evaluation and retrofit codes and standards.

¹³ *Preventing the Nightmare: Technical Appendix B, Association of Bay Area Governments (1999), and (2006) False Sense of Security, Contra Costa Times (2006).*

¹⁴ *Chapter A3 of the International Existing Building Code.*



Older (usually pre-WWII) houses are often not bolted to their foundations and lack bracing on the wood framed exterior walls enclosing the crawl space (cripple wall). Damage can include the home sliding off its foundation or the collapse of the cripple walls.
Photo source: Danielle Hutchings Mieler



H-8: Improve the quality of non-engineered retrofits by developing a statewide retrofitting license for contractors, or providing contractor training

Similar to a plumbing or electrical license or the Home Improvement Certification category (which was allowed to sunset on January 1, 2004) a retrofitting license or certification would help ensure that contractors performing seismic retrofits are properly trained and licensed. Implementation would require action by the California State License Board to develop new regulations. A new class of license, or a certification within the existing license, would provide a new skilled class of contractors who could advertise their services and who would be better trained. This would greatly benefit owners by increasing the likelihood that work is performed properly and by allowing owners recourse for work not performed properly.

A first step in implementation is to organize best management practices in a structural design bulletin to help inform the industry of the complexity of this

Case Study: Berkeley Transfer Tax Rebate

Berkeley has a model incentive program that could be emulated by other local governments. Berkeley raised the transfer tax from one to 1.5 percent and then offered to refund new homebuyers the 0.5 percent difference if it was used to seismically strengthen their home. Since its implementation, 600-800 homeowners have taken advantage of the program. Costs to the City are very low since the owners themselves are effectively paying for their retrofits through tax refunds.

The City of Oakland successfully implemented a similar program from 2008-2010 during which 360 retrofit permits were issued, compared to only six prior to the program. These programs demonstrate the effectiveness of incentives, that they do not have to cover the full cost, and time of sale is a very effective way to reach homeowners when it is easy to add the cost of the retrofit to the mortgage or alternatively lower asking prices.

type of work and add credibility to the need for a specialty license.

Bay Area local governments may not be able to wait for state action to implement this policy. An interim step might be to establish a regional certification program for pre-disaster retrofit and post-disaster repair that would address the most vulnerable Bay Area building types. This certification should build on previous ABAG efforts to train contractors on proper retrofitting techniques for a small class of single-family home. Bay Area cities and ABAG should develop improved retrofit training for single-family homes and encourage homeowners to hire contractors that have been properly and adequately trained.

Future training should:

- Include testing to ensure comprehension;

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- Require refresher courses every three years coincident with building code updates to disseminate new knowledge and information, and;
 - Provide certification of completion to the retrofit installer who took the training, rather than a company to ensure that the individual on site during construction has actually been trained.



H-9: Increase the number of retrofitted homes by providing financial incentives for homeowners to retrofit

Financial incentives not only make retrofitting more affordable, they can also improve the quality of retrofits by setting a minimum standard that retrofits must achieve in order to receive assistance, and create opportunities to educate communities about the prudence of seismic retrofitting.

Regional agencies could consider including seismic improvements in any funding made available to support implementation of the Sustainable Communities Strategy. Funding seismic upgrades of existing buildings would help ensure the long-term sustainability of PDAs.

We recommend that policy makers also endorse the involvement of the insurance industry in developing owner incentives for retrofitting structures. As required by state law,¹⁵ the California Earthquake Authority (CEA) has set aside approximately \$20 million from annual investment income for residential mitigation efforts. The CEA is developing a statewide mitigation program that may provide financial incentives to consumers that retrofit their houses and provide training to retrofit contractors. ABAG could use the results of Recommended Action H-1 (**Identify areas where mitigation and recovery resources are particularly important**) to identify the most vulnerable residential structures and provide a list of target neighborhoods to CEA for funding consideration. •

15 *California Insurance Code section 10089.37*