
Regional Resilience Initiative



Economy and Business Policy Paper

March 2013



Photo source: quake.abag.ca.gov

Credits

Principal Authors

Danielle Hutchings Mieler

Earthquake and Hazards Program Coordinator

Dana Brechwald

Earthquake and Hazards Specialist

Design and Production

Dana Brechwald

Earthquake and Hazards Specialist

ABAG Executive Staff

Ezra Rapport

Executive Director

Patricia M. Jones

Assistant Executive Director

Kenneth Moy

Legal Council

Miriam Chion

Planning and Research Director

ABAG Executive Board Leadership

Mark Luce

President

Supervisor, City of Napa

Julie Pierce

Vice President

Mayor, City of Clayton

Mark Green

Immediate Past President

Mayor, City of Union City

ABAG Regional Planning Council

Erin Hannigan

Supervisor, County of Solano

John Holtzclaw

Sierra Club

Tim Sbranti

Mayor, City of Dublin

Jeremy Masden

Executive Director, Greenbelt Alliance

Allen Fernandez Smith

Executive Director, Urban Habitat

Nate Miley

Supervisor, County of Alameda

Desley Brooks

Councilmember, City of Oakland

Julie Pierce

Mayor, City of Clayton

Harry Price

Mayor, City of Fairfield

Mark Ross

Vice Mayor, City of Martinez

Kristina Lawson

Councilmember, City of Walnut Creek

Pixie Hayward Schickele

California Teachers Association

Carol Severin

East Bay Regional Parks District Board of Directors

James P. Spering

Supervisor, County of Solano

Egon Terplan

Planning Director, SPUR

Karen Mitchoff

Supervisor, Contra Costa County

ABAG Publication Staff

Kathleen Cha
Senior Communications Officer, Editorial Assistance
Leah Zippert
Communications Officer, Editorial Assistance

Halimah Anderson
Communications Officer, Editorial Assistance

Project Consultants

Arrietta Chakos
Urban Resilience Strategies
Paula Schulz
Natural Hazards Mitigation

A special thanks to all participants in our workshop series, who provided the basis for our Policy Papers.

Thanks also to our interviewees, who provided detailed input essential to the development of these papers:

Doug Ahlers <i>Adjunct Lecturer in Public Policy, Harvard Kennedy School</i>	Chris Poland <i>Chairman and Senior Principal, Degenkolb Engineers</i>
Renee Domingo <i>Director of Emergency Services and Homeland Security, City of Oakland</i>	Laurel Prevetti, <i>Assistant Planning Director, City of San Jose</i>
Rich Eisner <i>Regional Administrator, Director of Earthquake and Tsunami Programs, Governor's Office of Emergency Service (retired)</i>	Bruce Riordan <i>Staff Consultant, Joint Policy Committee</i>
Peter Ohtaki <i>Executive Director, California Resiliency Alliance</i>	Julie Sinai <i>Director, Local Government and Community Relations, University of California, Berkeley</i>
Julie Pierce <i>Mayor, City of Clayton</i>	Tom Tobin <i>President, Earthquake Engineering Research Institute</i>
Sue Piper <i>Communications Director, City of Oakland (retired)</i>	Will Travis <i>Staff Consultant, Joint Policy Committee (retired)</i>

This project was generously funded by the Bay Area Urban Area Security Initiative (UASI)

ASSOCIATION OF BAY AREA GOVERNMENTS
Mailing Address: P.O. Box 2050, Oakland CA 94604-2050
Location: Joseph P. Bort MetroCenter, 101 8th Street, Oakland CA
(P) (510) 464-7900 (F) (510) 464-7979

ABAG Publication # P13001EQK

Background

The impact of an earthquake on the economy has one of the farthest-ranging implications for disaster recovery in the Bay Area. Without a swift and strong economic recovery, the Bay Area will suffer from a protracted recovery with slow repopulation in heavily damaged areas, slow rebuilding of homes and businesses, and loss of revenue from business, tourism, and taxes. Estimates are that a magnitude 7.0 earthquake on the Hayward fault would generate \$90-96 billion in direct commercial building related economic losses across eight of the Bay Area counties.¹ We have seen repeatedly in disasters that areas with the fastest economic recovery are those which already have strong economies and cultivate conditions to help businesses thrive before a disaster. Just as individuals who maintain a healthy lifestyle recover more quickly from illness, a strong economy has the potential to rebound quickly from an earthquake or natural disaster.

The major keys to economic recovery after a disaster are keeping residents employed, creating an environment that motivates big businesses to stay in the region, and keeping small businesses open. Keeping residents in the Bay Area and in their homes and able to meet their daily needs is also a high priority so employers have a work force available to maintain business momentum.

Currently and historically, the Bay Area region enjoys a strong local economy that is one of the most prosperous in the country and is continuing to improve despite a slow national economy. Of the major metropolitan areas within California, the Bay Area has the highest real GDP per capita, outpacing San Diego, Los Angeles, and the United States as a whole.² As a recognized center of innovation

¹ *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.*

² *The following section is largely adapted from The Bay*



University of California, Berkeley and other major research institutions contribute to the knowledge-based regional economy. Photo source: oep.berkeley.edu

and one of the largest concentrations of people and wealth in the United States, the Bay Area economy is critical not only to the entire region, but to the state and federal governments as well, providing tax revenue and cutting edge innovation technology for all sectors of the U.S. economy, including defense.

The Bay Area functions as a single economic unit, meaning that among the counties in the region there is a high degree of interconnectedness between where people work and live. Jobs as well as housing are distributed widely throughout region, and only 53 percent of residents work in the county in which they live. All of the counties and sub-regions are highly dependent on one another for their economic functioning and on the region's transportation network. San Francisco, as the major jobs center, has the largest net inflow of workers, while more suburban Contra Costa County has the largest net outflow.

Area Council Economic Institute Report The Bay Area: A Regional Economic Assessment (October 2012)

The Bay Area economy supports innovative, highly productive technology companies, which in turn support many other job industries. The region has significantly higher levels of concentration than the nation and the state in several key sectors: computer systems design and equipment, semiconductors and other electronic equipment, magnetic and optical media, software, space research and technology, communications equipment, industrial machinery, scientific research, pharmaceuticals and medicine, information services, and beverages. Competitiveness in these areas supports jobs throughout the region and at all levels of the economy. The region is also characterized by a highly productive tourism sector, with higher than national average concentrations of accommodation and food services and the arts, entertainment, and recreation industries.

These industries benefit from a highly skilled and educated labor force, which is present in large numbers in the Bay Area. This concentration of skilled workers in turn attracts more skilled workers and businesses to employ them.

The region also benefits from many research universities, private and federal laboratories, investment capital, and a business environment that encourages innovation and entrepreneurship. The local economy also benefits from the high quality of life in the Bay Area—the top reason new companies tend to locate here is because the founders live here or want to live here, suggesting that many business owners have strong ties to the region. However, the success of the region has also created drawbacks, such as high housing costs and long commutes to jobs.

Overcoming Barriers to Economic Recovery

Despite the strong regional economy, there will still be many issues impacting economic recovery after a disaster. For example, the economy will not just need to maintain its current strength, but will need to be even more profitable after an earthquake than before. After the 1989 Loma Prieta earthquake severely damaged Santa Cruz's downtown area, an economist determined that businesses in

the Pacific Garden Mall needed to do 35 percent more post-disaster business to afford to move back into replacement buildings because of the increased costs of new construction. This is a single example of what will need to be overcome to create a good business environment.

The Bay Area functions as a single economic unit - among the counties in the region there is a high degree of interconnectedness between where people work and live.

Goal #1: Retain Big Businesses

The Bay Area Council's (BAC) Regional Economic Assessment, largely focused on the biggest economic players in the region, has identified impediments to regional economic growth and prosperity. These impediments will likely be exacerbated in a disaster. For example, housing costs are already very high, stemming from lack of supply. This supply will decrease when a major earthquake damages a large portion of the existing housing supply, and the cost of new construction will likely increase costs for replacement housing. If housing costs go up so that workers can no longer afford to live in the Bay Area, businesses will lose their labor force.

The Bay Area regulatory environment, including zoning, permitting and environmental regulations may also inhibit businesses after a disaster, making it too difficult to stay or rebuild. In the Bay Area Council's report, businesses identified a lack of consistency between regulatory agencies' policies at the local, regional and state level and commented that this situation limited their ability to expand within the region. These challenges will likely be highlighted after an earthquake when large amounts of rebuilding happens simultaneously, potentially overwhelming the capacity of regulatory agencies and slowing the process. The California Seismic Safety Commission has identified potential obstacles, regulations, and other impediments that can be resolved to help business quickly return to normal operations

following a catastrophic event in California such as a major earthquake.³ Many commercial buildings may be damaged beyond repair. Services will be needed to facilitate business relocation to available space throughout the region. Policy makers can make use of recommendations from this study to improve business and economic recovery.

Other factors likely to impact economic recovery include the dependency of businesses on our regional infrastructure systems—water, sewer, power, and access to broadband and communication—which are key to business operation and continuity. Ongoing infrastructure disruptions or unreliability will challenge businesses. Public transit, roads and highways are essential for the workforce to travel to work, particularly when more than half of Bay Area residents reside in a different county than where they work.⁴ The recovery of the education sector is also key—K-12 schools not only provide education to children, but provide the daycare that allows parents to return to work. Long schools closures due to structural damage or prolonged shelter use will delay return of employees to work.

Goal #2: Keep Small and Neighborhood Serving Businesses Open

The BAC study focused on the leading industries and business in the Bay Area, but small and locally serving businesses remain an important component of a strong region and are especially vulnerable to closure after a disaster. An estimated 25 percent of small businesses do not re-open following severe disruptions from a major disaster.⁵ Many of these businesses provide the day-to-day necessities for residents such as groceries, shopping, doctors' offices,

pharmacies, and restaurants. Essential services are mandatory for getting residents to remain or return. Until essential goods and services are available, people will stay away.

One reason why small businesses are so likely to fail is that they tend to operate with small profit margins and limited reserve funds, which means that even a short period without cash flow may have a significant impact on business. Small businesses also may not be eligible for Small Business Administration (SBA) loans, which require businesses to demonstrate that loans can be repaid. This is difficult to do with small profit margins, and particularly when your building, supplies and materials (means of production) have been damaged or destroyed. Businesses need to secure funding right away in order to plan to rebuild, but with the lack of availability of SBA loans and the fact that many small businesses cannot take on more debt, many businesses will fail if they can't secure funding. In addition, it is estimated that only about 15 percent and 20 percent of the commercial losses of a major Hayward Fault earthquake will be reimbursed by insurance.⁶

As part of the recovery process from Hurricane Sandy, New York City is offering bridge loans of up to \$25,000 for small business owners needing quick capital to avoid small business closures and help businesses get back on their feet.⁷ The Louisiana Bridge Loan Program after Katrina was a similar program to provide “gap funding” to businesses waiting on other types of funding. Over \$55 million has been loaned to date.⁸ Loans of this type can be facilitated at the regional level in the aftermath of a major disaster.

Other factors that decrease the odds of a small business staying open after a disaster include being a younger or less established business, being in a highly competitive or low-growth industry, having only one location, and leasing

3 March, 2012 California Seismic Safety Commission “Post-Disaster Rapid Economic Recovery Plan Project – Leading Practices and Potential Steps for a Rapid Post-Disaster Economic Recovery,” Report by Deloitte Consulting LLP

4 Bay Area Council Economic Institute Report *The Bay Area: A Regional Economic Assessment* (October 2012)

5 March, 2012 California Seismic Safety Commission “Post-Disaster Rapid Economic Recovery Plan Project – Leading Practices and Potential Steps for a Rapid Post-Disaster Economic Recovery,” Report by Deloitte Consulting LLP

6 RMS, 2008. *1868 Hayward Earthquake: 140 Year Retrospective*

7 http://www.nyc.gov/html/sbs/nycbiz/downloads/pdf/home/Emergency_Loan_FAQ.pdf

8 *The Council of State Governments 2007 Innovations Awards Program* <http://ssl.csg.org/innovations/2007/2007applications/Southapplications2007/07S48LADISASTERRESPONSE.pdf>

Case Study: Santa Cruz Pacific Garden Mall

Local governments can look to Vision Santa Cruz as a successful model that supported local downtown businesses, provided temporary storefronts and rebuilt the downtown in a new way that strengthened local business for the future. After the Loma Prieta earthquake in October 1989, the city, together with downtown businesses, scrambled to set up tents and other temporary structures to enable local businesses to reopen in time for the holiday shopping season. The temporary downtown opened the day after Thanksgiving, just over a month after the earthquake. Holiday events and a farmers' market kept the downtown active as a destination for residents.



Photo source: Charles Eadie

as opposed to owing the business.⁹ Many of these factors often apply to locally-owned, small businesses.

The federal Economic Development Agency (EDA) has various tools available to support local and regional Economic Development Districts (EDDs) in post-disaster long-term economic recovery, such as: support to develop long-term recovery strategies and integrate recovery planning into local Comprehensive Economic Development Strategies (CEDs); resources to hire a regional disaster response coordinator as a full-time EDD staff member; funds to establish revolving loan funds (RLFs); assistance

⁹ Dahlhamer, J., and Tierney, K. (1996). *Winners and Losers: Predicting Business Disaster Recovery Outcomes Following the Northridge Earthquake*. University of Delaware Disaster Research Center.

for public infrastructure improvements; and technical assistance.¹⁰

In California, small businesses make up 99.2 percent of the state's employers and 82 percent of private sector jobs.¹¹ Projecting similar numbers on the Bay Area, the impact of small business loss has the potential for more widespread impacts in job losses, lost tax revenue for local governments and loss of revenue for vendors.

While there is clearly a need to identify and pursue innovative solutions to business disruption following a disaster, there is perhaps a greater need to find practical solutions to limit impacts on small businesses through economically feasible pre-disaster preparedness and mitigation initiatives. Small businesses may recognize they are located in vulnerable buildings, but often do not have the resources to undertake costly retrofits and have difficulty securing financing to do so. Some may opt to purchase insurance to provide coverage for limited damage or business disruption rather than invest in structural mitigation projects. The development of new strategies for integrating hazard mitigation and risk reduction actions into long-term economic development is crucial to maintaining small business in the post-disaster environment.

Goal #3: Minimize Supply Chain Disruption and Keep Goods Moving

Other potential barriers to economic recovery include the disruption of vendors and supply chains to and from the region and the repercussions for national and international markets. Business disruption has upstream and downstream impacts on supply chains that can exacerbate impacts on the economy. For example, disruption of a manufacturing business may limit global supply of a par-

¹⁰ July 2011, NADO Research Foundation, "Resilient Regions – Integrating Economic Development Strategies, Sustainability Principles and Hazard Mitigation Planning"

¹¹ California Seismic Safety Commission, March 2012. *Post-Disaster Rapid Economic Recovery Plan Project – Leading Practices and Potential Steps for a Rapid Post-Disaster Economic Recovery*, Report by Deloitte Consulting

Shipping containers moving goods to and from the Port of Oakland, a major component of goods movement for the region. The Port of Oakland is the second-largest port in the State of California.

Photo source: Monaca Noble, Smithsonian Environmental Research Center



ticular product, impacting the economy far beyond the original area. While the Bay Area's share of the manufacturing industry is not particularly concentrated, what is manufactured here is highly specialized and

focused on sophisticated equipment design and development.¹² Disruption of this specialized design and manufacturing could have global economic impacts or affect long-term growth in the region.

The consequences of impacts to specialized manufacturing can be seen in Japan after the 2011 Tohoku earthquake and tsunami. The shutdown of specialized parts manufacturing plants in Japan led to assembly plant shutdowns in US. Because of their specialized nature, the lack of even small parts can shutter an entire plant if there is no alternative. Often, highly specific parts can't be made just anywhere – Japan in this case had specialized producers with patented production processes. While others could learn to produce a similar product, quality is an issue and certifying quality from another producer can take up to a year. The lack of production of automobiles in the US due to the loss of parts from Japan led to a constrained auto supply worldwide, impacting global prices. This event raised awareness of the economic challenges of recovery beyond the immediate concerns for protecting human life and property but to protecting economic interest, as it continues to impact domestic and multi-national business operations.

¹² March, 2012 California Seismic Safety Commission "Post-Disaster Rapid Economic Recovery Plan Project – Leading Practices and Potential Steps for a Rapid Post-Disaster Economic Recovery," Report by Deloitte Consulting LLP

The 2011 Tohoku earthquake has had long-term economic consequences such as loss of market share, higher unemployment, and loss of businesses entirely.¹³

On the other side of the supply chain, inability to get goods into the damaged area can cause a shortage of goods for daily needs as well as materials and labor for rebuilding. Many businesses today operate with a "just-in-time" model for goods deliveries, stocking only enough to last until the next delivery. The transportation and shipping industries are key in a "just-in-time" era – businesses need fast availability of goods in constrained environments. After a disaster, small or no stockpiles coupled with an inability to deliver new goods can have major implications on response and recovery. For example, many hospitals store limited quantities of medical supplies and rely on frequent regular deliveries of supplies.

Many may also have no requirement for suppliers to develop continuity of operations plans to enable supplies to be delivered after a major disaster, when they are needed most. Similar issues arise around groceries and food supplies - most grocery stores have limited stockroom supply and will quickly run out of food after a disaster if new deliveries cannot be made. Even banks and financial insti-

¹³ (March 30, 2011) Japan earthquake impact hits U.S. auto plants. CNN Money. http://money.cnn.com/2011/03/28/autos/japan_earthquake_autos_outlook/index.htm

tutions often have very little cash supply on hand and may not have enough cash to cover their immediate expenses, much less be able to distribute cash to residents. This may become a serious issue if lack of power or broadband makes cash the only viable currency for purchasing goods. It is unknown how these types of shortages may impact the price of goods, but history shows that a constrained market raises prices for everyday goods.

The construction industry will also likely feel a shortage as building supplies such as wood, steel, cement, and aggregate become more difficult to import at the same time as demand increases due to extensive rebuilding and repair. The shortage of construction materials and skilled labor could increase the cost of rebuilding over pre-disaster prices and render insurance payouts insufficient.

Recommended Actions

The field of economic recovery from disasters is largely unexplored and unknown. As more frequent and larger disasters put more strain on local, regional, national, and worldwide economies, more detailed research and actions will likely emerge. At this stage, our recommendations are largely policy-level and rely on the basic assumption that a strong pre-disaster regional economy will help the economy recover quickly and come back stronger after a disaster. Some additional disaster-specific actions have been identified to support this process.

EB-1: Encourage the development of best practices that support business continuity and facilitate restoration of regional economies

Concrete knowledge on economic recovery is limited, particularly within the context of the Bay Area. We recommend partnering with research bodies such as the Bay Area Council (BAC), the California Seismic Safety Commission (CSSC) and research institutions such as UC Berkeley and Stanford to continue to conduct Bay Area-specific research

and studies on specific actions that local governments or regional groups can take to expedite economic recovery. We recommend implementing findings from the CSSC and conducting a more thorough survey on existing best practices, both specific to the Bay Area and from other disasters within the US. Best practices already identified by CSSC and others include:

- Provide expedited permits and create a system for requesting additional temporary skilled staff through mutual aid agreements with other government agencies to ensure fast processing of permits to help businesses rebuild quickly and minimize costly downtime
- Identify temporary space for retail and commercial businesses to quickly relocate temporarily, helping to minimize disruption and downtime.
- Provide bridge financing to assist small businesses
- Create a “toolkit” for distribution, and include a) employee preparedness at home, b) continuity plan template, c) disaster recovery plan template, d) road-map of what to do based on each part of the disaster cycle, e) “Everything a Business Needs to Know about Government Programs and Planning Before, During, and After an Emergency” pamphlet and guidebook.

We recommend research focused around our first two issues in particular - getting large businesses to stay in the region and keeping small businesses open.

EB-2: Support pre-disaster economic development through existing regional best practices

Several regionally-focused groups have conducted extensive research on how to best maintain and grow the Bay Area’s economy. ABAG has conducted extensive economic research through its Plan Bay Area, Jobs-Housing Connection Strategy, and is currently developing a Regional Prosperity Plan. ABAG is also developing a Regional Policy Background Paper on Economic Development which will include recommended actions for continued economic growth.

The Bay Area Council's Economic Assessment report outlines actions designed to strengthen today's economy, and a strong and nimble economy today will provide a basis for a strong regional economic recovery after an earthquake. We recommend that the region implement the BAC's six recommended areas for attention to ensure that the Bay Area's economy is strong before a disaster. In particular, the BAC's first recommended strategy of identifying a public-private focal point for regional economic strategy could be a strong tool in recovering the Bay Area economy and ensuring that decisions of elected officials benefit businesses and residents alike. Harmonizing regulations across the region has been identified as a potential stumbling block and can also foster a more even economic recovery, ensuring that businesses have the flexibility to recover in a uniform business climate.¹⁴

The research and recommended strategies around economic growth should also be considered through the lens of preparing for disaster recovery. Further study could be utilized to identify and prioritize existing strategies that strengthen the economy in areas that may be particularly susceptible to disruption from a major disaster. These strategies should also help drive recovery plans to ensure that economic recovery aligns with the region's larger economic goals.



EB-3: Implement the recommendations of the Resilience Initiative's Decision-Making, Housing, and Infrastructure Policy Papers

Many of the key factors in economic recovery are closely linked to the issues laid out in the Initiative's issue papers on housing, infrastructure and regional decision-making. Strengthening these areas will bolster our overall economy and ability to recover quickly. These recommended actions also support issues identified in BAC report as necessary for a strong regional economy.

¹⁴ *California Seismic Safety Commission, March 2012. Post-Disaster Rapid Economic Recovery Plan Project – Leading Practices and Potential Steps for a Rapid Post-Disaster Economic Recovery, Report by Deloitte Consulting*

We recommend a particular focus on strengthening housing for recovery, as our housing stock is such an important resource for the strength of the economy, and is both largely uninsured and highly vulnerable to damage. Protecting our housing stock allows residents and workers to stay in the region and maintains housing affordability.

Expedited repair of infrastructure systems also allows businesses to reopen sooner, since they cannot operate without basic services and employees cannot reach their places of work without a working transportation system. In addition key transportation corridors could be identified and made accessible to goods movement companies to improve supply chain continuity.

Implementing recommended actions about regional decision-making will help build political consensus on recovery priorities across the region, contributing to the sense that jurisdictions are working together for the common good of the region. This will instill confidence in businesses to continue to invest in the Bay Area, and instill confidence in residents that they will continue to have jobs and a high-quality place to live. Positive messaging about the pace of recovery will also be needed to bolster business confidence.



EB-4: Explore innovative financial incentives to support disaster resilience initiatives for small business

Pre-disaster funding directed toward hazard mitigation for small business is currently limited to conventional lending practices which generally are either not available or not cost-effective for small business owners. Additionally, earthquake or business interruption insurance can be prohibitively expensive for small businesses operating with a small profit margin. There is a need to engage Chambers of Commerce, Economic Development Departments, lending institutions, the insurance industry and federal agencies, such as the Economic Development Administration, and the Historic Trust

Main Street Program, in a discussion of potential strategies to support pre-disaster hazard mitigation incentives for small businesses. At the local level, Business Improvement Districts, revolving loan programs, or pooled financing should be explored. •