

# FINAL TECHNICAL REPORT

## Earthquake Hazards Information Outreach for Small Businesses – San Francisco Bay Area

External Grant Award Number 01-HQGR-0214

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NEHRP Element IV Key Words – Education, Mitigation, Emergency Preparedness, Recovery and Reconstruction

### Abstract

The Association of Bay Area Governments (ABAG) has developing web-based *Tools for Businesses to Tame Disasters* at <http://quake.abag.ca.gov/business>. Many of these resources for small businesses are multi-hazard in focus, particularly those dealing with speeding business recovery. Others focus on increasing employee and customer safety during earthquakes. Recovery tools focus on strategies to manage business disruption, plan for transportation and utility disruption, and plan for reoccupying buildings. Safety tools include information on bracing and anchoring building contents, natural gas safety, special hazardous materials issues, tort liability, and calculating the benefits and costs of mitigation.

### Research Objectives

The effort has three main objectives:

1. Effectively communicate the risk of earthquake hazards to the small businesses community in the Bay Area using the Internet to enable that information to be neighborhood specific.
2. Provide mitigation and preparedness information appropriate to those businesses in an easily accessible format on the same Internet site, linking mitigation to loss reduction.
3. Motivate those businesses to use that information.

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Research supported by the U.S. Geological Survey (USGS), Department of the Interior, under USGS award number 01-HQGR-0214. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.

## Investigations Undertaken

This project focused on the following tasks:

1. Using the materials from a focus group held with small businesses in the Oakland-Berkeley area in early 2002 to begin to design appropriate materials.
2. Developing and evaluating a number of new ways to access the earthquake hazard information, including both ground shaking and liquefaction risk, based on the geographic location of the business.
3. Rethinking ways to provide information on typical nonstructural damage for the shaking hazard level, as well as basic mitigation measures related to building contents (such as tie-downs for shelving and file cabinets).
4. Weighing the pros and cons of providing information on the types of damage expected for building types typically occupied by small businesses by their shaking hazard level, as well as basic ways to contact engineers, contractors, and building departments to initiate further analysis.
5. Developing basic information on the effects of liquefaction and shaking on transportation and utilities in neighborhoods surrounding businesses, as well as associated preparedness information.
6. Investigating ways to collect personal accounts of preparedness activities in order to use them to help motivate other businesses to act on the information provided.
7. Developing ways to publicize the availability of this information in creative ways.

## Results

***Focus Group and Other Changes in Business Preparedness Issues*** – The small-business focus group discussion in early 2002 led to three key findings that delayed the “release” of the web-based materials. First, the group strongly emphasized that the preparedness message had to include a strong multi-hazard section that dealt with preparedness for *all* hazards. Second, there was also a strong suggestion that any probability information released for use by small businesses and the public as specific as possible. This suggestion pointed to a need to postpone the outreach until USGS finalized the latest round of probability information in April 2003, as well as the need to work with USGS in creating additional probability information for planning horizons of less than 30 years. Third, the businesses were still in shock following the events of September 11, 2001, and felt that it would take some time for small businesses to internalize the implications of terrorism on natural disaster planning. Due to subsequent interviews with businesses who survived the World Trade Center collapses, the preparedness information has a strong multi-hazard section that dealt with preparedness to *all* hazards.

***Accessing Ground Shaking and Liquefaction Hazard Information*** – The way in which the ground shaking and liquefaction hazard maps are accessed has been modified. The new “driver” for these maps asks the question about city and earthquake scenario on the same graphics-based web page, thus simplifying access for the user. Clearer links to “Frequently Asked Questions” and other information are now available. In April 2004, new ways to access the maps using zip code and address also have been added using ARC IMS.

***Nonstructural Damage and Mitigation Information*** – Prior to work on this project, ABAG had posted general ways of bracing and anchoring typical building contents on its web site. As a first step in improving that information, typical “solutions” have been separated so that bracing and anchoring of residential contents is now separate from office contents. The new business pages are being dramatically expanded. A new section related to hazardous materials was also developed.

***Structural Damage and Mitigation Information*** – Two factors caused delays in implementing the section on structural damage. First, the focus group expressed reservations in dealing with an issue where small businesses have so little control. They pointed out that, in the neighborhoods where they did business, approximately 80% of the businesses were in space that they rented, while only 20% of the businesses owned their building. Second, the structural variety of commercial buildings in the Bay Area is quite large and complex. The consensus of those working on this project was that the techniques for dealing with structural damage information should be developed for residential, particularly multifamily residential, prior to use for this outreach effort dealing with small businesses. Following the completion of the quiz for residential structures in October 2003 (Perkins and Peterson, 2003), work was started on an equivalent quiz for more complex retail, office, and industrial buildings. It is based on the earlier quiz, as well as ATC 21 (FEMA 154) (Rojahn and Scawthorne, 2002). This quiz was completed in April 2004. The documentation for this quiz is located at -

<http://www.abag.ca.gov/bayarea/eqmaps/business/quiz/QuizPaperB.pdf>  
(Perkins and Peterson, 2004).

***Infrastructure Damage and Mitigation Information*** – In an earlier effort, ABAG developed a checklist for businesses to help them deal with transportation disruptions following earthquakes with the assistance of several large businesses in the Bay Area, as well as transportation providers. That checklist was modified and expanded to deal with utility disruptions as well as transportation damage.

***Success (and Failure) Information*** – Several studies have been undertaken on the impact of earthquakes on small businesses. ABAG has collected information from a few of the larger ones that highlight tales of success. The web site currently includes six unique business stories.

***Publicity*** – Several ideas for publicizing the results of this project have been developed. In spite of the fact that the resources will be primarily web based, publicity needs to be handled through the traditional media, as well as through city business licenses and organizations serving small businesses. While a press release was issued in April 2004, additional work with cities and others is planned to continue to get the word out on the availability of this resource.

### **Non-Technical Summary**

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building contents, natural gas safety, special hazardous materials issues, tort liability, and calculating the benefits and costs of mitigation.

### **Reports Published**

Perkins, J.B., and Peterson, K.G., 2004. *Earthquake Internet Information Documentation Paper B – Development and Comparison of the ABAG Commercial Structural Quiz Scoring for Earthquake Vulnerability with Other Available Scoring Systems*: Association of Bay Area Governments, Oakland, CA, 18 pages. On the Internet at:  
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