Earthquake Shaking Potential for California
Spring, 2003

This map shows the relative intensity of ground shaking and damage in California from anticipated future earthquakes. Although the greatest hazard is in the areas of highest intensity as shown on the map, no region within the state is immune from potential for earthquake damage. Expected damages in California in the next 10 years exceed $30 billion.

Important messages about earthquakes for Californians to remember:
1. Earthquakes have produced over $55 billion in losses in California since 1971. The next large earthquake may produce even greater losses, especially if it affects a major urban area. California's two largest urban centers lie in the state's highest seismic hazard zones.
2. A large earthquake in or near a major urban center in California will disrupt the economy of the entire state and much of the nation. Effective disaster planning by state and local agencies, and by private business, can dramatically reduce losses and speed recovery.
3. Current building codes substantially reduce the costs of damage from earthquakes, but the codes are intended only to prevent widespread loss of life by keeping the building from collapsing, not to protect the building from damage.
4. If the Northridge or Loma Prieta earthquakes had occurred closer to a major population center, fatalities would have been much higher. The earthquakes in Japan (over 5,000 deaths), Taiwan (over 2,000 deaths), and Turkey (over 20,000 deaths) produced catastrophic death tolls.
5. After a large earthquake, residents and businesses may be isolated from basic police, fire, and emergency support for a period ranging from several hours to a few days. Citizens must be prepared to survive on their own, and to aid others, until outside help arrives.
6. Maps of the shaking intensity after the next major earthquake will be available within minutes on the Internet. The maps will guide emergency crews to the most damaged regions and will help the public identify the areas most seriously affected.

Efforts to reduce the losses from earthquakes have already proven effective. California's enhanced building codes; strengthened highway structures; higher standards for school and university, police, and fire station construction; and well prepared emergency management and response agencies, reduced deaths, injuries and damage in recent earthquakes. Strengthening older buildings, gaining a better understanding of California's earthquake threat, and continued education and preparedness will pay an even greater dividend to Californians in speeding response and recovery after future earthquakes.

Level of Earthquake Hazard

These regions are near major, active faults and will on average experience stronger earthquake shaking more frequently. This intense shaking can damage even strong, modern buildings.

These regions are distant from known, active faults and will experience lower levels of shaking less frequently. In most earthquakes, only weaker, masonry buildings would be damaged. However, very infrequent earthquakes could still cause strong shaking here.

Additional note: This map is based on the California Earthquake Model (CEM) version 3.0 model, published in December 2002, considering ground shaking in the near field only. To input the CEM model, the model was converted to a grid-based format using the GRASS Geographic Information System (GIS) software.

Data from the California Geological Survey, the United States Geological Survey (USGS), and the Pacific Northwest Seismic Network (PNSN). This report, if not properly cited, may be subject to copyright or other restrictions. For additional information, contact the U.S. Geological Survey (USGS).