

# Earthquake Faults

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Thousands of earthquake faults exist in California. Some are known to have ruptured the ground surface during the recent geologic past (defined as the last 11,000 years) and are considered to be “active” under the state’s earthquake fault-zoning law (see below). The well-known San Andreas Fault along California’s coastal region is a good example of an active fault. It has ruptured twice in great earthquakes during historic time (in 1857 near Los Angeles, and in 1906 in northern California), both times over a distance of hundreds of miles along the land surface and generating earthquakes of near magnitude 8.

Many other faults lack compelling evidence of recent activity but are known to have ruptured at the ground surface during an earlier geologic age (the past 600,000 years, for example). Those faults are considered to be of lesser hazard and are sometimes classified as “potentially active”. While such faults may be less likely to rupture, it does not mean they won’t during the life of a home. The 2014 Napa earthquake, for example, which resulted in a half-billion dollars in damage in the affected counties, was caused by movement on a potentially active fault – the West Napa Fault – that ruptured through streets, pipelines and homes in neighborhoods of the City of Napa (see picture above). (Fortunately, the potentially active traces of this fault had been previously mapped by the State Geologist and were included on a map in the Napa County General Plan Safety Element – so, they were disclosed in NHD reports issued before the earthquake by First American and JCP-LGS.)

**Alquist-Priolo Fault Zones:** Surface fault rupture occurs when movement on a fault deep within the earth breaks through the surface causing ground displacement. This ground rupture occurs along fault lines, and is normally limited to a fairly narrow zone along the path of the primary fault, and to a lesser degree

along secondary faults. In 1972 the State of California passed a law to identify active faults and regulate development where they might rupture at the ground surface. Pursuant to this Alquist-Priolo Earthquake Fault Zoning Act the State Geologist has issued a series of regulatory fault maps. Those official maps (see example at right) designate a zone about a quarter-mile wide centered on the active fault trace (called an “Alquist-Priolo zone”). These state-level fault zones affect real estate in two principal ways.

First, they are zones of “required investigation” for a development of four or more units intended for human occupancy (cities and counties regulate local development, however, and may be more restrictive). The state requires the developer to hire a California-licensed Professional Geologist or other appropriately licensed professional to investigate the ground beneath the site to ensure that no structure for human occupancy is built across an active fault trace. Second, in property transfers, with few exceptions, the transferor (typically the seller) must disclose to the prospective transferee (typically the buyer) the fact that any portion of the property is within an Alquist-Priolo zone. This notifies the buyer that regulatory constraints may be imposed on how the new owner may later develop the parcel. The statutory Natural Hazard Disclosure Statement includes a space for making this disclosure. (Note, however, that being in an Alquist-Priolo zone has little bearing on the intensity of ground shaking in an earthquake. Outside this zone shaking can be equally or more intense depending on the type of soil at the site and how it may amplify seismic waves.)

*(Additional sources: U.S. Geological Survey, California Geological Survey)*

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