

Landslide Hazards in California

What to Know for Emergency Managers and First Responders

Landslides are the downhill movement of soil, rock, and other debris. They can be dangerous to people, damage infrastructure, and block roads. For communities at risk, there are ways to protect property and stay safe.

Signs of potential danger

If one or more of the warning signs listed below or on the diagram appear over days or hours, the landslide may be actively moving and should be reported to the appropriate authority. Not all signs need to be present for a landslide to be occurring.

STRUCTURES:

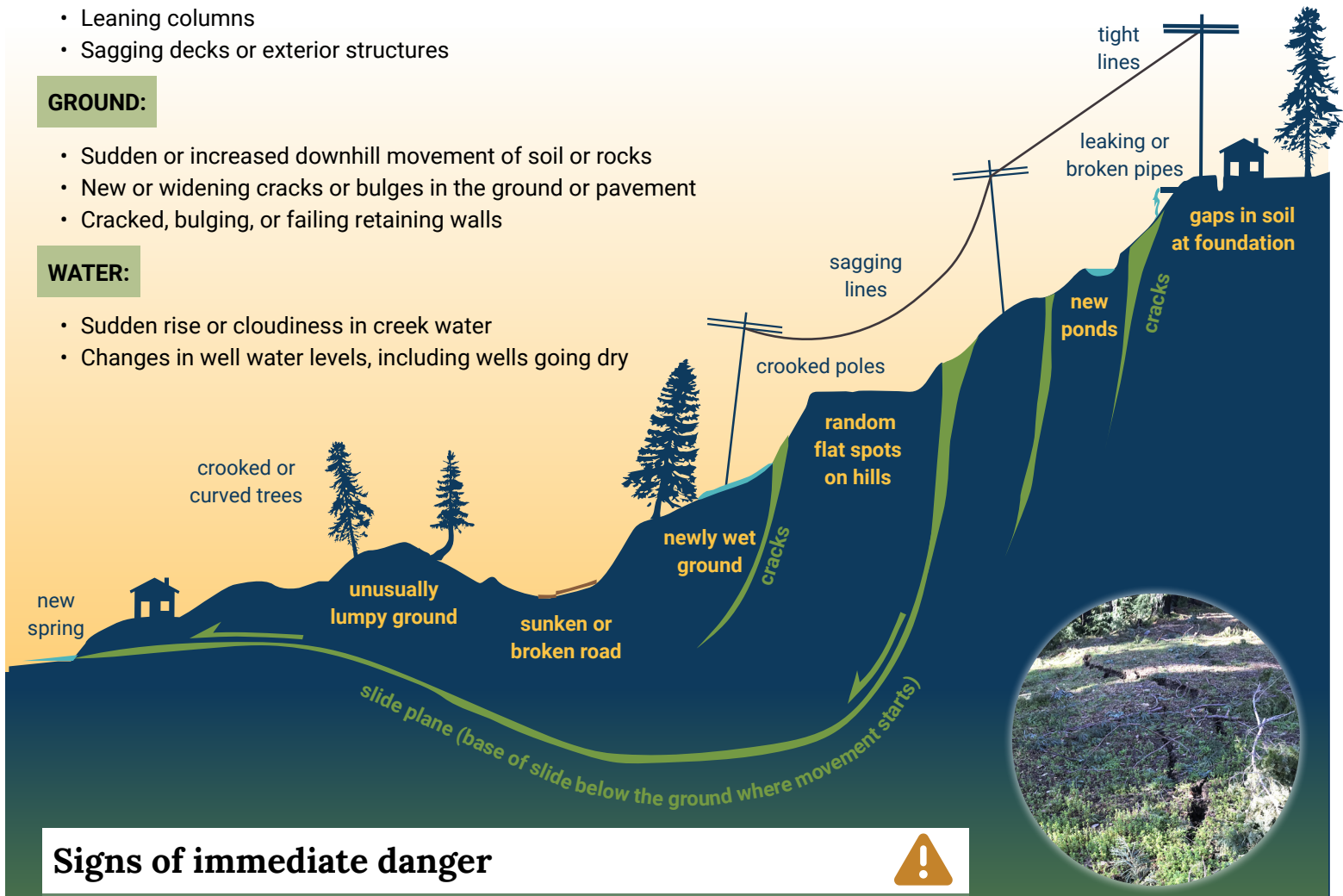
- Cracks in foundations, walls, or ceilings
- Crooked or stuck doors and windows
- Tilted or uneven floors
- Leaning columns
- Sagging decks or exterior structures

GROUND:

- Sudden or increased downhill movement of soil or rocks
- New or widening cracks or bulges in the ground or pavement
- Cracked, bulging, or failing retaining walls

WATER:

- Sudden rise or cloudiness in creek water
- Changes in well water levels, including wells going dry



Signs of immediate danger



- Increasing sounds of cracking wood, knocking boulders, or groaning ground
- Sudden creek level rise or sediment surge, especially after heavy rain
- Rapid ground saturation
- Fast-developing cracks or bulges in ground

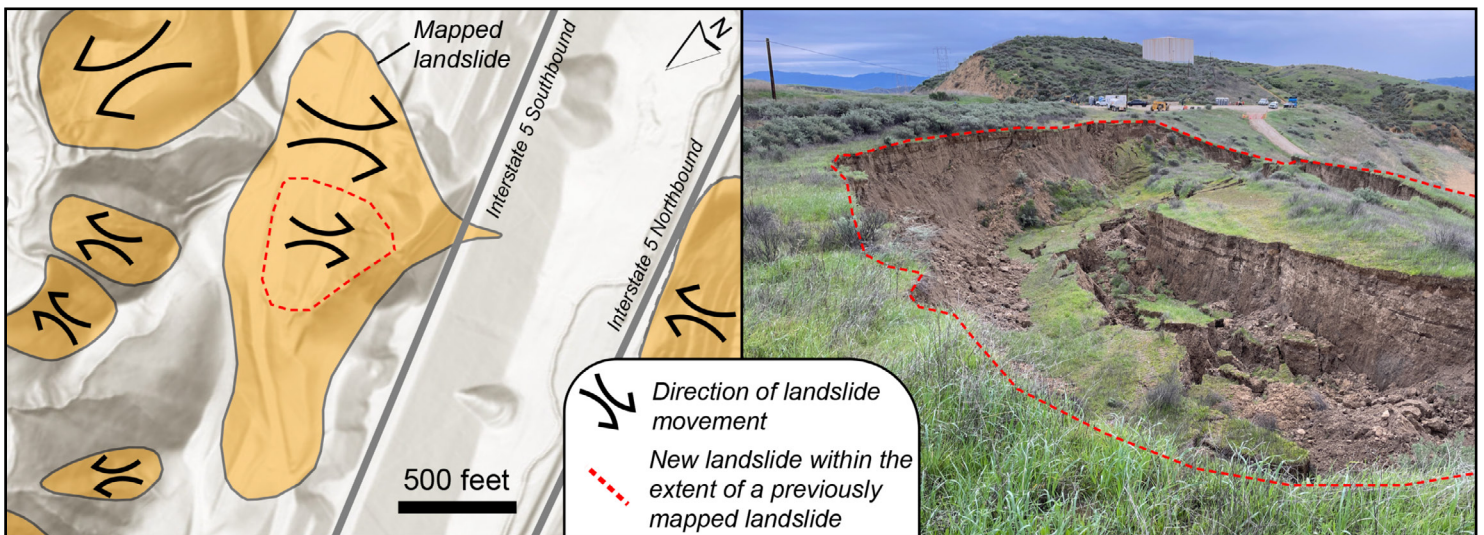
*new cracks may warn
of landslide activity*

What to do if there is a landslide

- Evacuate people near ground deformation if there are one or more signs of immediate danger.
 - ◊ Landslides move rock/soil/debris downslope (runout), and people in the path of runout may also be in danger.
Runout is hard to predict and not shown on hazard maps. Consult a California-licensed Professional Geologist (PG) or Professional Engineer (PE) for more specific guidance.
- Contact City/County Building and Safety Departments. They are primary contacts for structural or slope stability concerns and many have on-call geologists and engineers.
- Report even slow-moving landslides to the appropriate Building and Safety departments, road departments, utilities, or property owners so they can be assessed for safety or engineering concerns.
- When landslides are on private property:
 - ◊ For immediate safety concerns, contact local emergency management and/or 911.
 - ◊ For non-urgent or slow-moving landslide concerns, the property owner will need to consult a licensed geologist or engineer.
 - ◊ For more information on how community members can hire a licensed geologist or engineer:
https://www.bpelsg.ca.gov/pubs/ggconsumer_guide.shtml

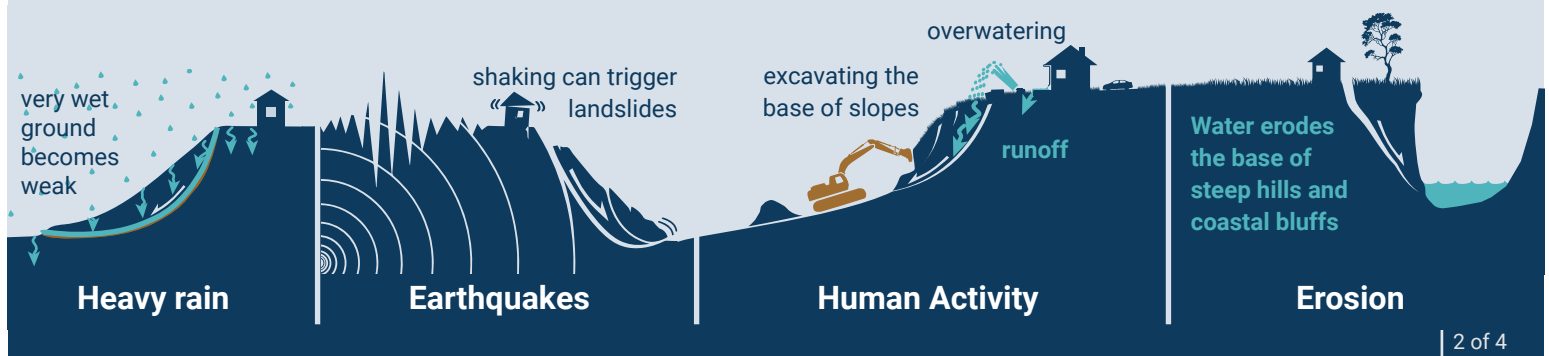
Where do landslides happen?

- Landslides are most common on steep hills when the ground is very wet and can be fast or slow.
- Where landslides have occurred in the past, they are more likely to happen again (reactivation). Explore the California Landslide Inventory and the Deep-Seated Landslide Susceptibility Map Sheet to understand the hazards in your community: <https://maps.conservation.ca.gov/cgs/informationwarehouse/lsi/>



The image on the left is a map with the California Landslides Inventory showing landslides along Interstate 5 near Castaic, CA, with existing landslides in yellow and a reactivated landslide outlined in red. The right image shows the reactivated landslide outlined in red. On December 27, 2025, this slide ruptured a natural gas pipeline above Interstate 5 in an area previously mapped for landslides.

Why do landslides happen?



How to prepare for landslides

- Identify areas and roads in the community that are susceptible using California Geological Survey resources and by working with a geologist.
- Establish evacuation routes and safe locations for landslide-prone areas.
- Work with local partners to develop unified emergency response planning and messaging.
- Encourage emergency planning prior to possible landslide events — landslides may block access to homes and communities, so residents may be unable to leave for days. For details on how to prepare a go bag: <https://www.news.caloes.ca.gov/grab-and-go-bag-3/>
- Monitor weather forecasts and advisories from the National Weather Service before, during, and after long or intense rainfall.
- Encourage community members to sign up for local alerts: <https://calalerts.org/signup.html>

Can landslides be prevented?

- Landslides can be triggered by both natural and human-related causes. While the natural causes of landslides cannot be fully controlled, landslide impacts can be reduced through planning and hazard awareness.
- To avoid or mitigate damage, work with trained geologists and engineers to identify existing landslides and susceptible areas. In places with landslide hazards, like very steep slopes or existing landslides, geologists or engineers can use special methods to protect certain types of infrastructure.



Curved cracks on a steep slope show early movement of a rainfall-triggered landslide. Continued rainfall or movement could threaten the road below.



A home impacted by a rainfall-triggered slope failure. The landslide occurred naturally, and its impacts might be reduced through planning or engineering. Photo credit: Hayward Police Department.

How does rainfall affect landsliding?

- Prolonged or heavy rainfall increases landslide risk. Many landslides happen after the ground has been saturated for weeks or months.
- Local conditions control how slopes respond. Local climate, soil and rock type, vegetation, and slope steepness, affect whether a storm will trigger slope movement.
- Rainfall triggering thresholds for landslides vary across California. Your local National Weather Service offices, the California Geological Survey, local Building and Safety Departments, or a geologist can provide specific guidance.
- Short, intense storms can trigger fast-moving landslides called debris flows. Summer thunderstorms or monsoon-type events in some parts of California can produce debris flows with no warning.
- Burned areas are especially vulnerable. Recently burned slopes can generate debris flows after only brief, high-intensity rainfall. For more information, visit <https://www.conservation.ca.gov/cgs/bwg>.
- Deep, slow-moving landslides may start moving long after the rain has stopped, sometimes weeks or months later. Knowing the warning signs, understanding local landslide risks, and talking with geologists can help identify these hazards early.



Roadway affected by a landslide that can be repaired, though it may require a long closure and additional engineering work.



Some landslides are too large to fully mitigate, such as the one shown here in Northern California.

Can landslides be repaired?

- Potential or active landslides can be repaired depending on size, the extent of damage, the location of existing structures or infrastructure, and the likelihood of future movement.
- Some landslides are too large to fully mitigate.
- Consult with geologists and engineers for stabilization or repair recommendations, such as:
 - ◊ Surface or subsurface drainage improvements
 - ◊ Partial or full excavation of the landslide
 - ◊ Engineered structures such as retaining walls or tiebacks

What about insurance?

- In California, homeowner's insurance policies generally do not cover property damage caused by landslides, which typically fall under "earth movement" exclusions in policy documents.
- Encourage residents to review local maps, the California Landslide Inventory, Deep-seated Landslide Susceptibility Map Sheet, and Reported Landslides Database to understand risk.
- If a homeowner's property is damaged, they may wish to consult an attorney for guidance.

For more information on how to stay safe:

Scan the QR code or click the link to CGS website for more information on landslides:

<https://www.conservation.ca.gov/cgs/landslides>

