

Last Chance Grade Frequently Asked Questions (FAQs)

Project Background

1. What is the Last Chance Grade project?

“Last Chance Grade” (LCG) is a 3-mile segment of US Highway 101 just north of Wilson Creek, between Klamath and Crescent City. Landslides and road failures have been an ongoing problem for decades and substantial funds have been invested in repairs. The road is currently safe to use, but a long term solution is needed to ensure continued safe and reliable transportation on US 101.

Since 1981, Caltrans has invested more than \$67 million to respond to a number of events that have occurred along the roadway. Geotechnical studies indicate continued movement of the roadway, signaling that regular investments will be required to keep the roadway safe and open.

While Caltrans has numerous safety procedures in place, there is no viable alternative route in the event of a complete failure of the roadway due to a landslide. Without a detour available, complete failure would isolate Del Norte County from the County’s smaller communities to the south and the remainder of the North Coast of California. Residents could be cut-off from medical care, schools, and other important services and the economic impacts would be devastating.

2. Can the current road alignment be maintained over the long-term?

The Expert-Based Risk Assessment studied this question. The Risk Assessment was a coordinated effort between Caltrans and the Federal Highway Administration (FHWA) that was completed in June 2018. The Risk Assessment generated a new alternative that would keep the road in its current location while adding structural and drainage improvements on a much larger scale than the repair work that has been completed to date. The Risk Assessment found that this On Alignment alternative, alternative X, would have a high risk, 80%, that some form of road closure would occur within a 50-year time span. Alternatives that propose major realignments also share a medium to high risk of closure within the same period of time. Only the full tunnel alternative, alternative F, was considered to have a low risk of closure at 4%. However, the Risk Assessment team also agreed that the full tunnel alternative has a high risk of cost increases above the current \$1 billion dollar cost estimate.

The No-Build alternatives would keep the status quo and use maintenance and repair programs to keep the existing road open and safe for the long-term. Caltrans is required by environmental laws to keep this No-Build option on the table as we develop the environmental document. This no-build approach may be considered feasible from an engineering and safety perspective, but currently it is considered that the no-build alternative will not be sustainable as further coastal erosion occurs and repair costs continue to accelerate.

3. Will the road be closed during project construction?

For most of the proposed alternatives, the project will be constructed off the roadway and will have minimal impact on traffic flow. There will be short-term closures necessary at locations where the new alignment reconnects with the existing highway. These closures will likely be scheduled during periods of low traffic with anticipated short durations of several hours.

4. Has Caltrans ever closed the road completely during repairs?

No, Caltrans does not have a record of any full roadway closure along Last Chance Grade lasting longer than a day.

Who is Involved?

5. Who are the Last Chance Grade Partners?

Caltrans initiated the Last Chance Grade Partners (the Partners) to create an active, working relationship with the agencies and groups that have management responsibilities for lands and resources that could be directly impacted by any realignment of the route. The Partners include: Caltrans District 1, the National Park Service, California Department of Parks and Recreation, Green Diamond Resource Company, Elk Valley Rancheria, Resighini Rancheria, the Tolowa Dee-ni' Nation, and the Yurok Tribe. Each of the Partners have biological, archaeological, cultural, geological, and other specialists whose expertise is critical to understanding the full nature of the sensitive areas that surround Last Chance Grade.

In addition to participating in monthly or bi-monthly meetings, the Partners expend a substantial amount of effort to collect and analyze information and share results on key issues. The Partners recognize that a substantive level of effort to work collaboratively on identifying solutions will be critical to resolving issues and identifying a viable alternative to improve Last Chance Grade. A memorandum of understanding signed by the Partnership confirms this commitment.

6. Can the City of Crescent City and Del Norte County be included as partners?

Crescent City and Del Norte County are important Last Chance Grade Stakeholders and their support and input is greatly valued. They have expressed to Caltrans and the Del Norte County Local Transportation Commission support for a project at Last Chance Grade, but they have not requested to be Partners to date.

7. What is the Last Chance Grade Stakeholder Group?

Congressman Jared Huffman created and introduced the Last Chance Stakeholder Group process on March 30, 2015. The effort is being facilitated by Joy Keller-Weidman, who has been funded through the Congressman's office via the contributions of the Del Norte County Transportation Commission, the Save the Redwoods League, the Crescent City Chamber of Commerce, and Caltrans. Congressman Huffman's Last Chance Grade Stakeholder Group is made up of representatives from each of the following groups, agencies, and organizations:

- Del Norte County
- Humboldt County
- Curry County
- Del Norte Local Transportation Commission
- Yurok Tribe
- Elk Valley Rancheria
- Tolowa Dee-ni' Nation
- Redwood National and State Parks
- California State Parks
- Caltrans

- California Highway Patrol
- Crescent City
- Humboldt County Association of Governments
- Environmental Protection Information Center (EPIC)
- Friends of Del Norte
- Save the Redwoods League
- Green Diamond Resource Co.
- Crescent City-Del Norte Chamber of Commerce
- Last Chance Grade Advisory Committee
- C. Renner Petroleum
- Rumiano Cheese

Questions about the Last Chance Grade Stakeholder Group can be directed to [Congressman Huffman's office](http://huffman.house.gov/contact) (<http://huffman.house.gov/contact>)

8. What is the function of the Biological Working Group?

Caltrans has convened a Biological Resources Working Group consisting of Partner and agency specialists. This group plays a critical role in ensuring that the proposed strategies being considered by stakeholders are consistent with the regulatory requirements administered by the agencies. This group will continue to meet as needed throughout the life of the project to discuss issues including mitigation and resource classification.

Alternative Plans

9. Why can't Caltrans select an alternative and build a bypass now?

Caltrans is required by federal and state laws, the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), to study alternatives and determine the potential environmental impacts before making a decision on which alternative to choose. The environmental review of the project was estimated to take eight years.

The alternative alignments propose a difficult choice between a short bypass with impacts to old growth redwoods and a longer bypass with greater cost, larger footprint, and its own ecological impacts. We anticipate a diverse range of public viewpoints on which alternative would be best, and the potential of legal challenges depending on which alternative is selected. Part of the current project development process is to make the public aware of this difficult decision which needs to be made with the hope that the public, project Partners, and Caltrans can work together at selecting an alternative that best meets transportation needs while minimizing environmental impacts.

10. Can Caltrans secure funding for the more costly alternatives?

The current list of project alternatives range in cost from \$275 million to \$1.25 billion. The Last Chance Grade Economic Study was prepared to determine if there was economic justification to support moving forward with a project in these cost ranges. The Study concluded that a one-year road closure at Last Chance Grade would cost Del Norte County \$1 billion. This study was later expanded in 2018 to include a regional view, considering impacts to Curry, Del Norte, and Humboldt Counties. The regional study estimated that it would cost the region \$1.5 billion if there was a one-year closure at Last Chance Grade. Cost is an important factor for Caltrans and our

partners will take into account when we select the final alternative at the end of the environmental process. Caltrans and area legislators are actively seeking to identify potential sources and agency partners may be willing to commit resources to the project.

11. Is there a “no action” alternative?

Yes, there is a “No Build” Alternative that is called Maintain Existing Alignment, which is included in the list of alternatives that were developed in the Project Study Report. The Last Chance Grade Feasibility Study also included a summary of this alternative and it estimates the annual maintenance costs, impacts to the traveling public, and the potential environmental resource impacts required to keep the roadway open. State and Federal environmental laws require that we keep this “No Build” alternative on the table as we develop the environmental document.

12. Why do the alternatives only include two lanes?

Caltrans is proposing to construct a two-lane facility to minimize impacts through sensitive environmental resources, such as forest habitats, fisheries, and old growth redwood trees. A four-lane facility would require a much larger footprint and greatly expand the impacts on these sensitive resources, making it even more challenging and costly to mitigate impacts. Caltrans is considering passing lanes for some portions of the roadway. In addition, while the potential for a 4-lane facility was previously studied, a 2-lane facility is the current preferred transportation concept. A 4-lane facility would not qualify for a major funding source as the Federal Highways Administration Emergency Relief program has a “replace-in-kind” requirement.

13. Will bicycles be accommodated?

Caltrans is planning construction of full 8-foot shoulders for the majority of this new alignment. This will greatly improve bicycle access through the area.

Safety and Other Concerns

14. Is traveling Last Chance Grade safe?

Yes. Caltrans actively monitors the roadway conditions to ensure the safety of all users and plans are in place to respond to an event that may occur. The highway has sufficient safety barriers including metal beam guard rail and K-Rail and signage to protect and inform drivers. The roadway has been realigned both horizontally and vertically due to the slippage and roadway settling. Walls have been built on both the west and east side of the roadway in an attempt to maintain the road grade. Caltrans has constructed a Near-Real- Time Monitoring System at Last Chance Grade that aids notifications in the event of a significant drop in the roadway. This system will alert Caltrans as soon as the drop occurs so that the roadway can be closed to the traveling public. (See [PowerPoint presentation](#) the Near-Real Time Monitoring System.)

15. What plans are in place to provide emergency access should there be a significant event on the roadway?

Caltrans has several plans in place and their response will depend on the size of the event. For example, maintenance staff may take action to initiate a road or lane closure. A larger event might require additional actions such as bridging a gap or moving earth to make room for a road. These short term fixes help buy time to develop a more permanent solution.

Caltrans has worked closely with Green Diamond, Tribal Governments, the Del Norte Transportation Commission, and the Del Norte County Board of Supervisors to look at alternative emergency access in the event of a road closure. Unfortunately, the only alternative route available is a 27-mile old logging road that requires driving more than 2.5 hours on steep grades using four-wheel drive. This alternative route is not maintained and not a viable option for the traveling public.

16. Why have steep 1.5:1 slopes been identified for design criteria within this area?

The various alignments / profiles were developed with the roadbed's entire width resting within cut sections (fully embedded) over their majority. This was done to avoid over-steep side-hill fill slopes on the down-hill side of the roadway. The combined result of the steep terrain (varying from about 27% to 80%), the maximum grade limit, and the fully embedded roadway are cut slopes that are often very high, as well as significant 'through- cut' side-hill sections.

In steeper areas and deeper cuts, a more preferable slope of 2:1 (50%) would not intersect ('catch') the existing ground surface until the mountain top is reached, or would result in enormous cuts. If any of the current alternatives proceed to design development, proposed design slopes might vary between 2:1 and 1.5:1 depending on location and the results of future geologic and soils investigation. Retaining walls may also be required in areas now unidentified, to a considerable degree. For purposes of study and comparison, and to maintain 'feasibility' until further data indicates otherwise, uniform cut slopes of 1.5:1 were used throughout.

17. What is the highest elevation of the area – i.e., is snow a concern?

The elevation of the alignments identified will be at similar elevation as the existing roadway. Snow has occurred at Last Chance Grade on occasion and it has not presented a problem for Caltrans Field Maintenance Staff. Caltrans Field Maintenance crews perform Storm Patrol during every storm. As standard practice, these crews clear slide debris, plow snow, and unclog culverts as needed to keep our roadways open during storm events.

18. Can the landslide complex be bridged, stabilized or can viaducts be placed along the existing alignment?

It is not feasible to bridge the active landslide because of its size and scope. The active landslide complex is located between PM 14.4 to PM 15.3 (just under a mile in length). We've developed a new alternative, Alternative X, that would stabilize the existing alignment. The Expert-Based Risk Assessment estimates that there is a low probability, 20%, that Alternative X would remain open during a 50-year time period. This estimate could increase after more geotechnical data is collected.

The massive scale of the landslide complex presents significant challenges to traditional engineered structures such as bridges, viaducts, and earth retaining structures. Caltrans engineering staff explored many landslide mitigation options during the Value Analysis completed in 2002. The analysis determined it was not feasible to build permanent bridges, walls or viaducts capable of stopping or securing the landslide in the vicinity of Last Chance Grade. There is no physical structure capable of handling loads imposed by the landslide uphill from the roadway. A suspension bridge across the slide complex would be over a mile long, which is twice the distance of the new self-anchored suspension span of the Bay Bridge project that cost \$6.5 billion. This option would also likely be infeasible due to the geologic instability in the contiguous area.

19. Why would Caltrans propose a tunnel in an area known for its geological instability?

The tunnel alternative is included for further study because it may provide a route that may minimize environmental impacts. The tunnel alignment would be located outside the limits of the Last Chance Grade Landslide complex. The final feasibility of this alternative will only be determined through extensive geotechnical exploration, monitoring, and analysis. The Devil's Slide project on Route 1 in San Mateo County is an example of a tunnel that was constructed to bypass a large coastal landslide. Several of the options involve tunnels and the results of the geotechnical studies are needed to determine if these alternatives are viable.

20. When will Caltrans have the geotechnical studies concluded?

All the alternative routes go through areas of historic landslides because landslides are common in the area and are difficult to avoid. We don't currently know if a new road in these landslide areas will reawaken the slides or even create another situation like we have today at Last Chance Grade. The purpose of these early geotechnical investigations is to collect information that will allow engineers and geologists to refine or validate the locations of the project alternatives.

Doing geotechnical investigations is a project in and of itself, requiring field reconnaissance, an environmental document, and permits before any investigations can begin. The funding for these preliminary studies was made available in May of 2017 and the first phase of geotechnical drilling began in the summer of 2018 in readily accessible areas with minimal environmental impacts. Later phases of investigations will continue into 2019 and beyond.

21. If the road is bypassed, what is going to happen to the old road?

The selected alternative will determine the length of the old road that will be bypassed and relinquished. During the environmental planning phase a concurrent planning effort will address the needs of the community and environment with respect to the bypassed highway. There are many possible relinquishment options that will be evaluated as part of the planning effort. Some of these options are likely to include: relinquishment of the road to the California Department of Parks and Recreation as a park access road, modification of the road to a coastal trail or bicycle path, construction of a vista point, and/or complete removal with re-contouring and planting of native forest vegetation. There are many options that have been identified as opportunities for the public to enjoy the current slide area's magnificent views of the Pacific Ocean and Del Norte coastline. Caltrans would also consider any ideas for the bypassed roadway that the public has to offer.

22. Is Caltrans aware that the U.S. Postal Service plans to relocate their main area center to Medford, Oregon, making postal delivery more dependent on the road remaining open through this area?

Caltrans is aware that the USPS plans to relocate some operations to Medford, OR. Maintaining this route is a priority for many users, including the USPS.

The Environment

23. How did we determine “old growth”, “mature” and “young” redwood forest habitat types?

A wildlife biologist from one of the Partner agencies used these three categories to provide a rough estimate of the forest habitat types within the area. “Old growth” refers to virgin stands of redwoods likely 500 to 2,000 years old. “Mature” forest stands are generally second growth forests approximately 50 to 150 years old. “Young” stands are third and possibly fourth growth stands generally less than 50 years old. There will be some stands that do not fit within these rough classifications, and these age classes and related acreage estimates will be refined during the environmental studies as the project moves forward.

24. Can we reduce the project footprint and related impacts by slowing the speed of the road to 40-50 mph?

In general, slower moving traffic allows for smaller curves and provides more flexibility to conform the roadway to the terrain and minimize the size of the cut and fill work. However, one of the biggest challenges at Last Chance Grade is that the alignment needs to gain an 800' to 1,000' in elevation in a relatively short distance in an area surrounded by natural barriers. Hillsides in this area have natural slopes varying from 27% to 80%. To maintain a steady maximum grade of 6% to 7%, the alignment must take a ‘side hill’ course until achieving a high point. Switch-backs cannot be used to reverse direction on a mid-grade ascent, no matter the radius, given the road width, grade requirements, and the steep terrain. Therefore, slower speeds (smaller radius curves) are difficult to construct and don’t provide significant reduction in the project’s footprint.

25. What are the watershed impacts associated with the alternatives?

Potential watershed impacts associated with the proposed project will begin to be evaluated for each alternative during the NEPA/CEQA review process and continue throughout the design, permitting, and construction phases. The proposed alternatives are located within two separate watersheds within the Smith River Hydrologic Unit. The Wilson and Nickel Creek hydrologic areas (i.e., sub-watersheds) are located within the Point St. George-Frontal Pacific Ocean watershed, and the Mill Creek area is located within the Smith River-Frontal Ocean watershed. Both of these watersheds discharge accumulated surface water to the Redwood National and State Parks which has been designated by the California State Water Resources Control Board (SWRCB) as an Area of Special Biological Significance (ASBS).

Potential watershed impacts associated with alternatives F, A1, and A2 would be limited to the Wilson Creek sub-watershed area located within the Point St. George-Frontal Pacific Ocean watershed. The other alternative alignments would have the potential to impact water quality within both the Point St. George-Frontal Pacific Ocean and Smith River- Frontal Ocean watersheds. During the NEPA/CEQA review phase of the project an initial water quality assessment report (WQAR) will be prepared by Caltrans environmental engineers. This WQAR will discuss the regulatory framework of the project, provide data on surface and groundwater resources within the project area, identify potential impacts/benefits associated with the proposed project, and recommend specific avoidance and/or minimization measures for potentially adverse impacts to water quality.

Several aspects of the proposed bypass alternative alignments will need to be fully evaluated for

potential watershed impacts. Design features that are of specific concern to water quality include, but are not limited to, surface water runoff from impervious surfaces and roadway drainage outfalls and their proximity to sensitive receiving water bodies (e.g., ASBS, 303(d) listed water bodies, etc.). These types of potential impacts are evaluated under the regulatory framework established by Section 402(p) of the Federal Clean Water Act and California Water Code Section 13376 which establish Waste Discharge Requirements (WDRs) for point source discharges from the Caltrans right-of-way (i.e., existing and new facilities and roadways). Performance standards for these non-stormwater and stormwater discharges are included in Caltrans NPDES Permit No. CAS000003 adopted by the State Water Resources Control Board (July, 2012).

Potential watershed impacts associated with construction of the proposed project alternatives will also need to be evaluated. Construction activities that disturb more than one acre of soil are regulated under the Construction General Permit No. CAS000002.

The construction scenario of each alternative will need to balance short-term and long-term impacts to sensitive waterways that could potentially affect (1) Endangered Species Act listed species and (2) other beneficial uses such as recreational and municipal use. The project alternative ultimately selected would avoid and minimize potential impacts to waterways to the maximum extent practicable by utilizing the best available data and technology in consultation with applicable Federal and State resource agencies to promote the conservation of all beneficial uses associated with water quality.

Geotechnical Risk Assessment

26. Does the Geotechnical Risk Assessment evaluate safety?

No, it doesn't have to. Any structure Caltrans opens to the public is and will be safe. Every option seen on the included graphic will meet design standards and seismic standards if built. We know these standards result in a safe facility.

27. Is there a best option?

Not yet. While the Geotechnical Risk Assessment does shed light on what's least likely to close in a 50-year period, we have other factors to consider for each alternative such as how likely it is to be funded, what it will cost to construct and maintain, what are the environmental resources there, what are the cultural resources there, and what are the values of our partners and stakeholders.

28. How are you defining the impact of closure? I know there's variable risk, but what's the timeline—a day, a year?

The Expert Based Risk Assessment defines three conditions, any one of which would bring the highway to the closure threshold: (1) costs that are impractically high to continue maintaining it; (2) full closures could last more than a few weeks; or (3) structures could be distressed and not safe for traffic.

29. When will we select a long-term solution for Last Chance Grade?

This is years down the road after we've circulated the environmental document, fully understand the impacts and mitigation needs of each alternative, and have received comments from the community.

30. Why will it take so long to complete this project?

Projects of this scale and complexity are typically completed in decades and not in years. Caltrans is working to complete the process as efficiently as possible while still honoring our commitments to our partners and stakeholders and while meeting all environmental law requirements. The 2016 Project Study Report developed a schedule that represented what might occur if the most costly and challenging alternative is selected. This resulted in an estimated highway opening date of 2039. This estimate also assumed that all funding would be provided without any gaps in time. In other words, we assumed the project would not have to stop or slow progress because of lack of funding. This 2039 completion date can be sped up if several things happen together:

- (1) All funding is provided in time, including the remaining funds we need to complete the environmental process.
- (2) All project partners and stakeholders continue to work together to achieve support on the direction of the project.
- (3) The list of alternatives is narrowed down before multi-year environmental studies begin.

The time needed to construct the project will depend on the final alternative that is selected. We estimate it will take 6.5 years to construct the full tunnel alternative and a minimum of 3 years to construct any of the other alternatives.

Caltrans and its partners will decide which alternatives to fully study in the environmental phase after performing a Value Analysis in the fall of 2018.

31. Why do we have to go through the environmental process? What makes it so difficult?

Caltrans must follow federal and state environmental laws and regulations on all our projects and activities. Last Chance Grade is no exception. In fact, the environmental process for Last Chance Grade is uniquely complex, challenging, and time-consuming. LCG is uniquely difficult because of the high potential of impacts and because of the sensitivity of the resources that would be impacted. The project is located within the Coastal Zone, a UNESCO World Heritage Site, and a National and State Park. Several sensitive species may be impacted, including coho salmon and marbled murrelet. Several project alternatives would impact old growth redwood trees.

It's critical to the success of the project that Caltrans take the right steps and works together with partner agencies and stakeholders throughout the process. Caltrans will be consulting with at least 13 different agencies that are responsible for environmental resources and four tribal governments. Caltrans will also continue to seek support from the multiple stakeholder groups and the public.

32. If there are three different alternatives to study instead of nine, will that bring the cost down a bit?

Yes, narrowing down the list of alternatives will bring down the cost and impacts of environmental studies. Caltrans would like to accomplish this, if possible. It's important that we move forward with reasonable alternatives that (1) meet the purpose and need of the project and (2) are supported by our stakeholders and partners.