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 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 1997, Caltrans has invested more than $100 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 re-engineer the road along an alignment generally similar to the current highway, 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 Alternative X would have a high risk 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.

The No-Build alternative 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 the No-Build option. The no-build approach may be considered feasible from an engineering and safety perspective, but currently it is considered that the No-Build alternative may not be sustainable as further coastal erosion occurs and repair costs continue to accelerate.

3. Will the road be closed during project construction?

Short-term closures would be necessary and would likely be scheduled during periods of low traffic.

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

Yes, a small number of landslide events have resulted in a full closure of the road for short periods of time. Caltrans does not have a record of any full roadway closure along Last Chance Grade lasting longer than a few days.

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 regular 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 staff from the National Center for Environmental Conflict Resolution, whose participation 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:

- C. Renner Petroleum
- California Highway Patrol
- California State Parks
- Caltrans
- Crescent City
- Crescent City-Del Norte Chamber of Commerce
- Curry County
- Del Norte County
- Del Norte Local Transportation Commission
- Elk Valley Rancheria
- Environmental Protection Information Center (EPIC)
- Friends of Del Norte
- Green Diamond Resource Co.
- Humboldt County

- Humboldt County Association of Governments
- Last Chance Grade Advisory Committee
- Redwood National and State Parks
- Resighini Rancheria
- Rumiano Cheese
- Save the Redwoods League
- Tolowa Dee-ni' Nation
- Yurok Tribe

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

8. What is the function of the Biological Resources 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.

9. What is the function of the Cultural Resources Working Group?

Caltrans has convened a Cultural Resources Working Group consisting of representatives from five area Tribes and the Partners' cultural resources specialists to ensure that impacts to these resources and possible mitigation are considered and included in the consideration of alternatives. Since Tribal partners may not always be available or able to participate in these meetings, Caltrans will continue to supplement its communications with the Tribes through meetings with Tribal Councils and other communications. The five area Tribes participating in the group are as follows:

- Elk Valley Rancheria
- Resighini Rancheria
- Tolowa Dee-ni' Nation
- Tolowa Nation
- Yurok Tribe

10. Are Native American Tribes involved in the process?

Tribal representatives have been actively involved in the process since 2015 and sit on all stakeholder working groups, including the Cultural Resources Working Group. The Cultural Resources Working group includes members of five Tribes with ancestral territory in the project area. Caltrans and the Cultural Resources Working Group members are developing a programmatic agreement regarding how studies will proceed on those ancestral lands, the first such agreement on Caltrans' part with Tribes as co-signatories.

Alternative Plans

11. 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 proposed a difficult choice between a short bypass with some impacts to old growth redwoods and a longer bypass with greater cost, larger footprint, and greater ecological impacts. There are a diverse range of public viewpoints on which alternative would be best, and the potential of legal challenges depending on which alternative is selected. Caltrans will continue to work with the public and project partners to select an alternative that best meets transportation needs while minimizing environmental impacts. At present, the alternatives proposing a longer bypass have been eliminated from further study through the Alternatives Analysis process completed in April 2021.

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

The current list of project alternatives range in cost from $500 million to $1.3 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 result in the following costs for the region if there was a one-year closure at Last Chance Grade:

- $236M in travel costs
- $41M in foregone trips
- 3,800 jobs lost
- $456M in reduced business output

Cost is an important factor that will be taken into consideration when determining the selected alternative. Caltrans and area legislators are actively seeking to identify potential funding sources.

13. How have the alternatives for further study been selected?

Between Fall 2020 and Spring 2021, Caltrans conducted an alternatives analysis to determine which of the seven build alternatives should be studied further. An alternatives analysis process was developed with input from the four stakeholder working groups. The analysis was based on criteria and performance measures related to the project's major objectives, which include providing a long-term safe and reliable roadway, reducing maintenance costs, and protecting the economy and natural and cultural resources. Caltrans hosted a series of workshops with the four stakeholder groups to solicit and refine stakeholder input on the methodology and criteria. The analysis resulted in Alternatives X (end-to-end re-engineering) and F (tunnel bypass) being selected for further study. They were the best performers using the agreed-upon criteria and performance metrics. Due to their smaller project footprint, Caltrans will save $10 million and can potentially reduce the project schedule by one year. Alternatives A1, A2, G1, G2, and L were found to perform less well. All have substantially higher environmental impacts; G1, G2, and L have an assessment of "medium" geotechnical risk, and both Alternatives A and G would have a much longer duration of construction. As a result, they were recommended for removal from further study at this time. See the Alternatives Analysis Workshop summaries for more information.

14. What is the length and configuration of Alternative F (Tunnel Bypass)?

The tunnel would be approximately two miles in length. It would be designed based on solutions that have proven effective in similar areas, such as the Tom Lantos Tunnels at Devil's Slide on Highway 1, south of Pacifica in San Mateo County, California. The current preliminary design consists of two twin tunnels of the same diameter, one in each direction. The directions could be switched if necessary in the event of an emergency. Each tunnel would be one lane with wide enough shoulders to allow for bicyclists / pedestrians and two directions of vehicle travel, if necessary. The project team is also considering providing additional bicycle and pedestrian access in addition to the tunnel.

15. **How does Alternative X differ from making emergency repairs to the current alignment?**

Alternative X is notably distinct from the current practice of continuing to repair the existing alignment. It is an intentionally engineered end-to-end alternative that mitigates the landslide hazard. It would add a much wider range of purpose-built engineering elements to what has been deployed for emergency repairs, approaching the entire slide holistically to shift from reactive to proactive mode. Alternative X may include an end-to-end underground dewatering system. At certain locations along its limits, it would retreat inland from the current alignment and be buffered by walls both uphill and downhill. It would likely include multiple retaining structures including tiered walls, soldier pile-lagging / ground anchors, and steel-reinforced concrete walls.

Alternative X is being studied further because it is currently technically feasible, with lower environmental impacts and costs relative to Alternatives A1, A2, G1, G2, and L. Caltrans has a fiduciary responsibility to study this alternative in more detail. Further study of Alternative X does not mean it will be built, only that it must be studied further to confirm feasibility.

16. 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 Caltrans to keep the "No Build" alternative.

17. What happens if both Alternatives F and X prove to be unfeasible?

There is a very small probability that both these alternatives would prove to be unfeasible. If that were to happen, Caltrans would reconsider other alternatives or develop new ones.

18. Why do the alternatives only include two lanes?

In alignment with the long-held plan for this section of US 101, Caltrans is proposing to maintain a two-lane facility to minimize impacts through sensitive environmental resources, such as wetlands and old growth redwood forest. 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. 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.

19. Will bicycles be accommodated?

Caltrans is planning to include bicycle access with full 8-foot shoulders for the majority of the alignment. If the Alternative F is selected, the tunnel would have shoulders wide enough to accommodate pedestrians and bicyclists. The project team is also considering providing additional bicycle and pedestrian access in addition to the tunnel.

Safety and Other Concerns

20. Is traveling Last Chance Grade safe?

Yes. Caltrans actively monitors the roadway conditions to ensure the safety of all users and that plans are in place to be able to respond to an event that may occur. The highway has sufficient safety barriers and signage to protect and inform drivers. Caltrans has installed a Near-Real-Time Monitoring System that aids notifications in the event of a significant drop in the roadway. The notification allows Caltrans to take immediate actions to ensure public safety. (See PowerPoint presentation on the Near-Real Time Monitoring System.)

21. 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 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 and may not be passable in winter. This alternative route is not maintained and not a viable option for the traveling public.

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

The elevation of the alignments identified would be at similar elevation as the existing roadway. Snow has occurred at Last Chance Grade on occasion, and it has not appeared to present a problem for Caltrans Field Maintenance Staff or the traveling public. 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.

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

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. 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.

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

There are numerous examples throughout the world of tunnels being successfully constructed in seismically active areas. The tunnel alternative, Alternative F, is included for further study because it provides a route that minimizes environmental impacts, and because it avoids the 1-mile-long broken formation landslide. The final feasibility of this alternative will be determined through extensive geotechnical exploration, monitoring, and analysis.

25. When will Caltrans have the geotechnical studies concluded?

Doing geotechnical investigations is a project in and of itself, requiring field reconnaissance, an environmental document, and possibly 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, with later phases of investigations continuing through January 2021. The next phase of preliminary geotechnical field investigations (Phase 5 of the program) is expected to be conducted in September/October of 2021. At the conclusion of the environmental phase, there would be more detailed geotechnical investigations focused on the selected alternative to support the design and construction phases.

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

During the environmental planning phase, a concurrent 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 may 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. Caltrans would also consider any ideas for the bypassed roadway that the public has to offer.

The Environment

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

There is no clear definition for old growth forest. For the purposes of the Last Chance Grade Permanent Restoration Project, “Old growth” has been referred to as 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, and “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.

28. What efforts are being made to reduce the impacts to old growth redwoods?

The alternatives analysis strongly considered impacts to old growth redwoods and the two alternatives moving forward have smaller footprints and reduced impacts. Caltrans continues to refine the alternatives to avoid and minimize impacts to these resources.

29. 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 tighter 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 800 to 1,000 feet 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 the high point. Switchbacks cannot be used to reverse direction on a mid-grade ascent, no matter the curve 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.

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

Potential watershed impacts associated with Alternative F would be limited to the Wilson Creek sub-watershed area located within the Point St. George-Frontal Pacific Ocean watershed. There are no anticipated watershed impacts associated with Alternative X. During the NEPA/CEQA review phase of the project an initial water quality assessment report (WQAR) will be prepared. The 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.

31. How is Caltrans considering sea level rise and extreme weather events for this project?

Caltrans considers the impacts of climate change and sea level rise (SLR) in the planning and design of projects. For Last Chance Grade, coastal erosion at the toe of the slope may increase the risk associated with Alternative X, and this will be factored into ongoing study and assessment. The dewatering / drainage systems that are an element of Alternative X would be designed with consideration of more severe weather events. As currently proposed, Alternative F would likely have minimal risk associated with SLR.

Geotechnical Risk Assessment

32. Does the Geotechnical Risk Assessment evaluate safety?

The Risk Assessment does not evaluate safety. As a result of standard measures and strict adherence to design standards, any structure or roadway Caltrans opens to the public is and will be safe.

33. Is there a best option?

Not yet. While the Geotechnical Risk Assessment does shed light on long-term geotechnical risk, there are other factors to consider for each alternative such as what it will cost to construct and maintain, potential effects to environmental and cultural resources, and the values of our partners and stakeholders.

34. 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.

Selection of Long-Term Solution

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

The alternative will be selected based on the analysis provided in the Environmental Impact Report / Environmental Impact Statement (EIR/EIS). The draft EIR/EIS will be circulated for public review, and comments will be used to help Caltrans and the Partners understand potential public concerns. Comments will be responded to in the Final EIR/EIS along with the identification of the selected alternative. Based on the current schedule, the Final EIR/EIS is scheduled for completion in 2025.

36. 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. The 2039 completion date may be shortened by at least a year, given that through the Alternatives Analysis process the alternatives that required costly, longer term environmental studies were removed from further study due to their impacts and poor performance on key project factors.

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 (Alternative F) and a minimum of 3 years to construct Alternative X.

37. 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. Last Chance Grade 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 resources may be affected, including wetlands, marbled murrelet, and old growth redwood trees.

It's critical to the success of the project that Caltrans takes 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 five tribal governments. Caltrans will also continue to seek support from the multiple stakeholder groups and the public.

38. Can anything be done to accelerate the process?

Caltrans has been working closely with the stakeholder working groups, which include members with permitting and regulatory responsibilities, to reduce delays and keep the project moving forward. The Alternatives Assessment process helped reduce the number of alternatives to be studied, which by virtue of the smaller footprint of both alternatives, has reduced the number of acres to be studied, therefore reducing the time for impact analysis by approximately a year. Caltrans is also considering a number of methods for shortening the process, such as beginning the final design prep work during the two-year environmental study period, and bringing a contractor in early to accelerate the construction.

39. Has eliminating the number of alternatives to study helped reduce costs?

Yes, narrowing down the list of alternatives has reduced the cost of environmental studies by $10 million.