



BACKGROUND/ OVERVIEW



BUREAU OF
RECLAMATION



U.S. Department of Transportation
Federal Highway
Administration

PIT RIVER BRIDGE OVER SHASTA LAKE

Background: The Pit River Bridge is the only interstate highway bridge owned by the federal government in the entire United States. The 80-year old bridge carries Interstate 5, the Union Pacific Railroad and Amtrak, over Shasta Lake north of Redding, California. The federal government wishes to relinquish ownership of the bridge beyond the year 2040. The United States Bureau of Reclamation (USBR) and Federal Highway Administration (FHWA), along with the California Department of Transportation (Caltrans) are taking the lead on replacing or rehabilitating the highway portion of the bridge before the joint agreement to use and maintain the bridge expires in 2040. Funding options are being pursued to complete needed studies.

Need: Deficiencies in operations, safety, maintenance, and functional use.

The bridge owner, the Federal Government, wishes to relinquish ownership of the bridge prior to the expiration of the joint use "Maintenance and Operation Agreement" with the Union Pacific Rail Road in 2040.

Purpose: Develop a reliable long-term crossing of Shasta Lake that addresses future operations, safety, maintenance, and structural needs.

Long term (beyond 2040), the Interstate freeway lake crossing is not owned by the federal government.

OPTION 1
Rehabilitate/Upgrade existing bridge



OPTION 2
New highway only suspension bridge on new alignment



Improvements under consideration: Two construction options are under consideration:

1. Rehabilitate and upgrade the existing bridge and approach roadways, and
 2. Replace the highway portion of the existing bridge with a new highway only bridge on a new alignment. In both cases, the railroad will remain on the existing Pit River Bridge.
- For comparison, the main span of the highway only suspension bridge would be between 80%-90% as long as the main span of the Golden Gate Bridge (depending on the alignment selected).

PIT RIVER BRIDGE PLANNING PROCESS



STEP 1 – Planning and Engagement

- State planning funds of \$250k since 2014 + 2020 federal grant of \$500k used to complete various planning level technical studies
- Many more planning level technical studies are still needed
- Top 7 key stakeholders have seen presentations on the bridge
- Internally vetted scope of improvements has been set for a PSR-PDS programming document – ready to engage w/ our key stakeholders
- 2021 efforts include engaging w/ top 7 key stakeholders - Caltrans leadership, FHWA, USBR, UPRR, USFS, the Tribes, and political leadership
- Funding need is \$1-\$2 mil +/- for 1-2 years to complete technical studies plus complete the PSR-PDS planning study w/ full engagement
- Two construction options include: 1) rehab/upgrade the existing bridge and approach roadways, and 2) new highway only bridge on new alignment.
- PSR-PDS will set scope, schedule, range of capital cost and support costs

STEP 2 – Environmental

- Anticipated environmental determination is NEPA EIS-ROD / CEQA EIR-NOD
- Funding need is \$30-\$50 mil +/- for 5-6 years to refine the scope of work w/ bridge technical studies (including drilling) plus environmental studies
- Includes drilling, technical, and environmental studies needed to convert the existing bridge to railroad only with a minimum of 50-year design life
- Constructability to rehab/upgrade the existing
- Numerous environmental studies and inter-agency coordination is needed
- Robust public circulation and stakeholder/public engagement
- Final scope of work, schedule, refined range of capital and support cost

STEP 3 – Design and Right of Way

- Funding need for design is approximately \$100-\$150 mil for 3-4 years to obtain final plans, specifications, and construction estimate (PS&E) for the bridge, roadway, contractor staging areas, and so on
- Funding need for right of way and utilities is \$3-\$10 for 3-4 years to obtain right of way certification and to relocate utilities
- High voltage 60 kV and 115 kV transmission lines may need to be relocated

STEP 4 – Construction

- Total project costs ~\$2 – \$4 BIL (2021 dollars, construction + support)
- Construction will take 5-7 years and will likely include a local steel fabrication plant w/ rail access to build and store bridge deck segments

The Pit River Bridge -- Funding Catch - 22

Identifying funding sources for planning and environmental studies for Pit River Bridge has been challenging since the Interstate bridge is federally owned making normal transportation funding mechanisms unavailable. The planning team has identified an estimated funding need of \$30-50 million to complete the planning and environmental steps (Steps 1 and 2, including drilling) over the next 5-7 years. Once NEPA has been completed (end of Step 2), the team will be in a much better position to seek design and construction funding from existing DOT grant programs such as Better Utilizing Investments to Leverage Development (BUILD) or Nationally Significant Federal Lands and Tribal Projects (NSFLTP) since one of the main application requirements is to have NEPA completed. The team has not yet identified a way to fund the \$30-50 million needed to complete Steps 1 and 2.

Recent Internal Studies

·**2014** – Financial impact of loss of service of the bridge

·**2016** – Value Analysis type study

- Team of experts considered over a dozen ideas to cross the lake

·**2016/2018** – Technical Memos including:

- 70 ft practical height limit for cofferdam construction for bridge piers
- Max segmental bridge spans (concrete)
- 800 ft - 850 ft maximum spans
- Preliminary analysis shows existing bridge piers can support the proposed widening/rehab without requiring modifications at the pier footings at the bottom of the lake
- Key finding since modifying the base of bridge piers in 350 ft deep water is not practical
- Preliminary recommendations on suspension bridge including – main span length range based on cofferdam requirements (see above), tower/pylon type, bridge deck type, bridge deck width, footing type, and so on

·**2018** – Structures Advance Planning Study (APS) Rehab/upgrade/retrofit existing bridge

- Set preliminary scope and constructability to rehab/upgrade the existing bridge and approach roadway

·**2020** – Prioritized List of Needed Investigations and Studies

- Funded by \$500,000 grant from Central Federal Lands division of FHWA
- Complete a Caltrans Advance Planning Study (APS) for a highway only suspension bridge
- Includes a constructability review and cost estimate – completion expected Feb 2022
- Drilling of boring holes on the lake shores near the proposed north and south tower locations
 - Preliminary Geotech info used to address high risk foundation at the bridge towers
- Update the 2018 APS to rehab and upgrade the existing bridge – cost estimate update
- Existing highway bridge deck analysis
 - Highway deck / truss connection analysis – keep highway on the existing bridge option
 - Remove the existing highway deck from the bridge – new suspension bridge option

·**2020** – Begin Project Initiation Document planning level study

- Funded by \$250,000 state planning funds
- Set internally vetted scope of improvements ready to take to outside stakeholders and partners
- Framework for what is needed to continue planning, engagement and so on

FOR MORE INFORMATION

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