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Klamath River Dam Removal and Restoration

The Klamath River Basin (**Figure 1**)—a 12,000 square mile area on the California-Oregon border—is a focal point for discussions on water allocation and species protection. These issues have generated conflict among farmers, Indian tribes, fishermen, water project and wildlife refuge managers, environmental groups, hydropower facility operators, and state and local governments.

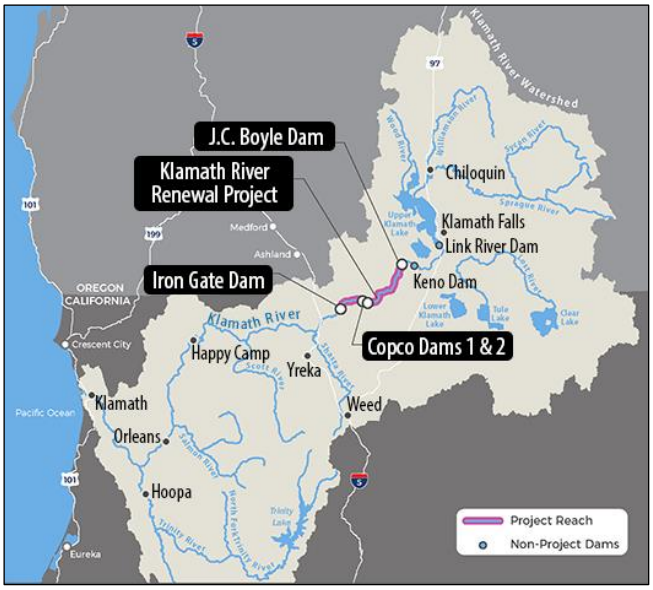
Background

Multiple people and species rely on Klamath Basin waters. Irrigated agriculture in the Upper Klamath Basin is supported in part with water from the federal Bureau of Reclamation's (Reclamation's) Klamath Project and in part with *off-project* supplies. Further, six national wildlife refuges rely on basin waters to sustain migratory bird habitat and several Native American tribes historically depended on lower and upper basin fish species.

Mitigating the effects of water management, habitat alteration, and other factors on listed species under the Endangered Species Act (ESA; 16 U.S.C. §§1531 et seq.) is a perennial issue in the basin. Two species of upper basin fish are currently listed as endangered under the ESA—the Lost River sucker and the shortnose sucker. In the lower basin, the coho salmon is listed as threatened. Conflicts in the basin first came to a head in 2001, when, as a result of previous biological opinions, Reclamation severely curtailed water deliveries to the Klamath Project to provide more water for endangered fish. Subsequent issues, including a major fish kill of Chinook salmon on the Lower Klamath River in 2002, resulted in federally led settlement talks in the 2000s.

The basin contains seven dams on the Klamath River and its tributaries, built between 1918 and 1962. Six of these dams were owned by PacifiCorp, a regulated utility. These dams are known collectively as the Klamath Hydroelectric Project (KHP). Historically, all but one of the dams have produced hydroelectric power for the basin, including low-cost power for Klamath Project irrigators. The original Federal Energy Regulatory Commission (FERC) license to operate the KHP expired in 2006. In 2004, PacifiCorp applied for relicensing of the project, and, in 2007, FERC staff issued a final environmental impact statement for the application. FERC analyzed various alternatives for the application, ultimately recommending a new license with mandatory prescriptions to create fish ladders that was projected to cost hundreds of millions of dollars to implement and to result in net operating losses for the project. At this time, PacifiCorp has entered into basin settlement negotiations with stakeholders and continued to operate the project under temporary annual licenses.

Figure 1. Klamath River Basin and Proposed Dam Removal Project Reach



Source: Klamath River Renewal Corporation, 2018.

Note: The figure identifies four dams proposed for removal.

Klamath Settlement Agreements

In 2010, the Secretary of the Interior, governors of Oregon and California, PacifiCorp, and 44 other parties announced two interrelated settlement agreements intended to resolve long-standing issues in the basin: the Klamath Basin Restoration Agreement (KBRA) and the Klamath Hydroelectric Settlement Agreement (KHSA). The KBRA proposed actions to restore Klamath fisheries and assurances for water deliveries to wildlife refuges and project irrigators, among other things. The KHSA laid out a process for removal of the four *Lower Klamath Project* dams (**Figure 1**). After a secretarial determination on dam removal, the dams would be transferred to the Department of the Interior (DOI), which would oversee decommissioning. The dam removal project would be one of the largest and most complex ever undertaken in the United States. A third agreement involving off-project irrigators in the Upper Klamath Basin was finalized in 2014.

The Klamath settlement agreements were contingent on passage of federal legislation authorizing numerous new federal activities and expenditures in the basin. Legislation approving the agreements was introduced and received hearings in the 113th and 114th Congress but was not enacted. Despite this, some work under the KBRA and KHSA occurred under existing authorities: studies by DOI to inform the KHSA secretarial determination on dam removal were completed (although a formal determination

was not made, due to lack of authority), and some actions under the KBRA have been implemented under existing authorities. After widespread acknowledgement that Congress appeared unlikely to enact the agreements, removal of the Klamath River dams moved to a separate track that no longer requires congressional enactment, as discussed below.

FERC Transfer and Removal of Lower Klamath River Dams

In 2016, the parties amended the KHSA to no longer require the transfer of dams to DOI, thus avoiding the need for congressional authorization. The amended KHSA lays out a process for PacifiCorp to transfer the dams slated for removal to a new nonprofit entity, the Klamath River Renewal Corporation (KRRC). Under the KHSA, KRRC is to be funded by PacifiCorp surcharges in Oregon ($184 million) and California ($16 million), as well as bond funding from the State of California ($250 million). KRRC is led by a 15-member board appointed by the governors of California and Oregon, the Karuk and Yurok tribes, and conservation and fishing groups.

In 2016, PacifiCorp and KRRC applied for FERC approval to transfer the license for the Lower Klamath Project to KRRC and to surrender and decommission the Lower Klamath Project. KRRC's timelines originally anticipated FERC approval in 2019 or 2020, with dam removal beginning in 2022. On July 16, 2020, FERC issued an order conditionally approving a partial transfer of the license for the Lower Klamath Project to KRRC but required that PacifiCorp remain a co-licensee. On November 17, 2020, KRRC and PacifiCorp filed an amended application for surrender of license and removal of project works. They stated that they were not accepting co-licensee status, as approved by the commission's July 2020 order, and would instead file a new application to transfer the Lower Klamath Project from PacifiCorp to KRRC, the State of Oregon, and the State of California as co-licensees. The new transfer application was filed on January 13, 2021, and approved by FERC on June 17, 2021.

The amended surrender application remains pending before FERC. In it, KRRC proposed to decommission and remove most project facilities and to implement management plans that detail the specific methods that would be used to draw down the reservoirs, remove the dams, and restore lands occupied by the dams and reservoirs, among other things. Based on its review of the management plans, FERC is to decide whether to approve the licensees' application to surrender the license for and decommission the Lower Klamath Project and, if so, what conditions should be included in any surrender order issued. On February 25, 2022, FERC issued its draft environmental impact statement of the application, as required under the National Environmental Policy Act (42 U.S.C. §§4321 et seq.).

Dam Removal Considerations

KHSA parties and other interests support the removal of the Klamath dams due to the potential benefits for basin fisheries, habitat, and water quality. In its dam removal studies, DOI projected that removal would open more than 420 miles of historic salmon spawning habitat and would improve water quality. Further, DOI noted that removal is expected to lower mortality at the generators, eliminate reservoirs that produce temperature and dissolved-oxygen problems for salmonids, and avoid the need to implement other costly mitigation measures. Some scientists question these points and suggest that conservation benefits associated with dam removal are uncertain. Removal of the Klamath dams also has been opposed by some, in particular some local groups and officials in Oregon and California. Opponents argue against the loss of hydropower, recreational, and flood control benefits associated with the dams and worry about flooding, pollution, and other hazards related to removal.

In 2016, then-Secretary of the Interior Sally Jewell voiced DOI's formal support for the 2016 FERC applications to transfer and remove the KHP dams, in part based on federal studies of dam removal dating to the 2010 KHSA. These studies analyzed dam removal alternatives and impacts and informed dam removal plans by the KRRC. The most recent dam removal plan before FERC was laid out in a revised *Definite Plan Report* in KRRC's 2020 amended surrender application. Under the plan, the KHP reservoirs would be drawn down over the course of 2-3 months, with the four facilities removed simultaneously over the 20 months thereafter. Restoration would occur for at least the next five years. The timeline and approach in the report are intended to minimize high suspended sediment loads with the potential to negatively affect aquatic resources.

Costs are another concern associated with dam removal. As of early 2020, total dam removal project costs (including project reserves) were estimated at $445 million, although some argue these figures are out of date. However, prior analyses have suggested the cost of upgrading and maintaining the dams for fish passage (most recently estimated at $515 million in 2021 dollars, plus $77 million annually for operations and maintenance costs) would exceed the removal costs.

Significance of Klamath Dam Removal

Removal of the Klamath Dams would be a historic undertaking and has received widespread attention due to the project's magnitude and complexity. Never before have so many large dams been removed from a single river at one time in the United States. Many are interested in the project as a proof-of-concept for other major dam removals. Some have expressed hope that the model—in which a private dam owner transfers dams to states and/or nonprofits for removal in exchange for liability protections—might be used for similar projects.

Congressional interest in dam removal relates to what role, if any, the federal government should have in studying and executing specific projects (and any associated restoration), FERC's role in approving the removal of certain nonfederally owned dams, and what, if any, federal incentives or authorities should be available for the removal (or maintenance) of aging dams.

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