

Project Name	2024 CFNSC Evaluation Recommendations
Date Proposal Summited	January 10, 2024
Date of Requested Decision	February 6, 2024
Requested By	Matt Bleich
Date of Decision¹	February 6, 2024

FTC Decision and Justification

The FTC supports the proposed decision and the proposed efforts will be executed to inform management decision actions for collection efficiency. FTC members in attendance: WDFW, NOAA, and Tacoma Power. Prior approval by Trout Unlimited

Proposed Decision or Consideration

As part of the 2024 evaluation year at the Cowlitz Falls North Shore Collector (CFNSC), Tacoma proposes implementing four actions intended to inform management decisions and/or test hypotheses regarding salmon and steelhead collection efficiency:

1. Develop an alternative study design for fish capture efficiency performance monitoring that considers increasing the frequency of mark-release events and extending the performance monitoring periodicity.
2. Develop a hydraulic temperature model in the Cowlitz Falls Dam forebay during the late summer Chinook Salmon migration to inform adaptive management actions.
3. Perform retrospective analysis of acoustic studies to determine spatial and temporal patterns as fish first approach Cowlitz Falls Dam.
4. To evaluate management practices, develop a study design to evaluate a suite of Upper and Lower Cowlitz River release locations for Coho Salmon parr that are collected at the Cowlitz Falls Fish Facility. Simultaneously develop a recommendation for interim management actions based on available information.

¹ Decision will become final if committee members who were not present at this meeting do not oppose this proposed decision within 7 days.

Background

As part of the Cowlitz Hydroelectric Project Federal Energy Regulatory Commission operating license requirements, Tacoma Power is engaged in restoration efforts of anadromous salmonid populations in the Upper Cowlitz River basin. These efforts include ensuring the effective passage of juvenile salmonids during their migration downstream from the Upper Cowlitz and Cispus rivers, through collection in the Cowlitz Falls Fish Facility (CFFF), and transport around Tacoma hydroelectric facilities, where they are subsequently returned to the Cowlitz River.

The CFNSC was added to the existing fish collection system at Cowlitz Falls Dam in 2017 and has been subject to annual performance evaluations since commissioning. Annual evaluations of the fish collection system include estimates of fish collection efficiency (FCE), defined as the percentage of marked fish released at the head of Lake Scanewa that are subsequently collected alive at the Cowlitz Falls Fish Facility. Fish passage survival (FPS) is the percentage of smolts entering the upstream end of Scanewa reservoir, and adjusted for natural mortality, that are collected at Cowlitz Falls Dam and Riffe Lake and Mossyrock Dam, that are transported downstream to the stress relief ponds, and subsequently leave the stress relief ponds at the Barrier Dam as healthy migrants. FPS has a performance requirement of 95%, with a minimum of 75%, after the best available technology has been deployed. Since the completion of Cowlitz Falls Dam in the late 1990's, FPS performance goals have yet to be met for Coho Salmon, steelhead, or Chinook Salmon, although estimates have improved significantly with the commissioning of the CFNSC.

A key component of FPS is the FCE estimate. The Technical Work Group (TWG) has discussed additional methods to estimate weekly FCE, including considerations for weighting weekly recapture estimates by the total number of outmigrants collected at the CFFF and the effects of any changes as they relate to recovery efforts at a population level. Washington Department of Fish and Wildlife has offered to develop an alternative study design for fish capture efficiency performance monitoring that considers increasing the frequency of mark-release events and extending the performance monitoring periodicity. For example, one option for a study design may be to release two release groups per week with up to 50 individuals per species in each release. In tagging periods with fewer than 50, all fish would be released prior to the end of the week. These releases would cover as much of the operating season as possible. When completed, the study design will be evaluated by the TWG and assessed for feasibility of inclusion in the 2024 collection year.

Historically, the annual fish collection operations at Cowlitz Falls Dam spanned from April 15 through August 31. Subyearling spring Chinook salmon outmigration typically peaked in July and subsided as the water temperature increased in mid-to-late August. However, based on the migration timing observed at the CFNSC during extended operations in 2019 through 2023, a later component of the subyearling outmigration occurs when the water

begins to cool in September and into early fall. Additionally, yearling Chinook Salmon smolts have been collected prior to April 15. Therefore, in 2024 the CFNSC will be operated mid-March through September, followed by 3-day continuously operated weekly blocks through the end of October, pending the expected maintenance drawdown of Lake Scanewa by Lewis County PUD in September 2024.

The CFNSC tailrace discharge structure allows water to be discharged directly into the tailrace, while maintaining fish collection activities. Consistent with previous years, during spring over-capacity spill events at Cowlitz Falls Dam, the CFNSC will be configured to operate at 750 cfs, providing an opportunity to reduce the overall amount of spill through Cowlitz Falls Dam.

Development of a temperature model in the Cowlitz Falls Dam forebay during the mid-to-late summer period may inform where fish are most likely to congregate (or avoid) as water temperatures increase. Model development may consider available temperature data combined with past computational fluid dynamic (CFD) modeling assessments developed during facility design. In addition, a retrospective analysis of past acoustic studies may elucidate the spatial and temporal patterns as acoustically tagged fish approach the dam. Specifically, data may be extracted on migration time from release at the Day Use Park to first arrival at the Cowlitz Falls Dam; the proportion of fish arriving at the spillbays, spillway flumes, or CFNSC entrances; and the fate of these fish based on initial arrival location.

Coho Salmon parr collection has increased since the commissioning of the CFNSC in 2017. On average, approximately 20,000 parr are collected each year (range = 8,335 – 58,743). These fish have historically been transported upstream above Cowlitz Falls Dam; however, little is known of the ultimate success of this management practice or whether survival to smolt and the resulting smolt-to-adult ratio (SAR) would be increased by allowing parr to be passed downstream below the Cowlitz River dams. To evaluate best management practices, a study design using PIT tags will be developed to evaluate a suite of release locations for Coho Salmon parr that are collected at the CFFF. When completed, the TWG will implement in 2024 if possible, or recommend for implementation to the FTC in 2025.

Coordination Need

There will be continued information sharing of pending study designs with TWG and FTC that may result in recommendations to the FTC prior to implementation.

Summary of Potential Impacts

Spring Chinook Salmon, Coho Salmon, and steelhead smolt abundance is expected to be sufficient for FCE evaluation. Annual performance evaluations involving tagging and releasing of smolts upstream of Cowlitz Falls Dam are not expected to be impacted by failure to reach minimum sample sizes for statistically valid results.