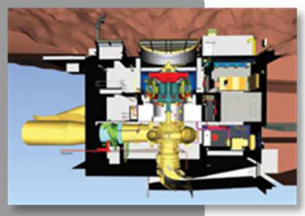
LOWER BAKER UNIT 4 POWERHOUSE PROJECT



Project Summary

Design-build delivery of the 30-MW Lower Baker Unit 4 Powerhouse was spawned by a need to improve flow releases for better movement of migratory salmon, but successful implementation of the newly completed addition is not a fish story in the sense of exaggeration. The Lower Baker Unit 4 redevelopment is in fact successful from safety, schedule, quality and cost perspectives.

The Baker River facilities, on the Baker River near Concrete in northwest Washington, collectively comprised the largest hydropower asset owned by Puget Sound Energy (PSE) even at the original 170 MW of capacity prior to construction of Unit 4. The facility has two dams, each with its own powerhouse. The 285-foot-high Lower Baker Dam, which creates Lake Shannon, was completed in 1925 and had a power generating capacity of about 80 MW prior to the construction of Unit 4. The 312-foot-high Upper Baker Dam, which creates Baker Lake, was completed in 1959 and has a power generating capacity of about 90 MW. The dams' reservoirs are fed by runoff from the flanks of Mount Baker and Mount Shuksan.

Equipment and Systems Overview

- Medium Voltage Switchgear
- Low Voltage Switchgear,
- Generator Transformer
- Excitation,
- 30MW PH

Offeror Role

Subcontractor

Owner Information

Puget Sound Energy
10885 NE 4TH ST
Bellevue, WA. 98004
425.462.3932

Contract Amount & Type

$2,214,516—*design build*
($3,703,946 final)

Customer Information

PCL CONSTRUCTION,
15405 SE 37th ST. #200
Bellevue, WA 98006
Zeb keck, Development Manager
SCHNITZER WEST, LLC
818 Stewart Street, Suite700,
Seattle, WA 98101

Project Start and Finish Dates

??? - 7/12/2013

Project Location

Lower Baker Dam
Concrete, WA

Burke Electric Scope

As a subcontractor, conduits and cabling for controls, excitation and controls installation, generator transformer, station power and protection, switchgear, low voltage cabling & conduits, fire detection system, DC batteries, and charging system, grounding system, generator work, generator connection, generator buss work, electrical fixtures and trim, interface with Owner provided controls, conduits and raceways for the owner provided communications and security systems, assistance with commissioning of the turbine generator.

Problems Encountered and Solutions Executed

Several challenges were faced during the construction of this facility, however the project team worked diligently to:

- complete the project ahead of the schedule;
- Maintain operation of the existing Unit 3 powerhouse throughout construction;
- Ensure project site safety despite the adjacent steep rock hillside with historic concerns about slope stability and potential rockfalls;
- Develop a new 12-foot-diameter underground pressure tunnel from the existing 26-foot-diameter concrete-lined pressure tunnel for Unit 3 to the new Unit 4 powerhouse. This required a new underground bifurcation connection, which eliminated the need to penetrate the existing Lower Baker Dam for a new intake structure. The bifurcation was installed prior to construction of the new Unit 4 tunnel and in less than 30 days during an annual maintenance outage for Unit 3; and
- Build the powerhouse with a small site footprint, which demanded tight space allocation for construction equipment and installation.

Burke Electric Project Personnel

Aaron Carpenter, General Foreman
Mark Undseth, Project Manager
Dominic Burke, COO

BURKE ELECTRIC

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