

# Packwood Lake

*Remote public power hydroelectric project ready for another 50 years*

By Brad Peck

**T**he Packwood Lake Hydroelectric Project has been generating clean, environmentally friendly power for southwest Washington for nearly 50 years. Now, with the original federal license to build and operate the plant set to expire in 2010, Energy Northwest has submitted an application to the Federal Energy Regulatory Commission to renew that license for another half century.

The powerhouse for the 27.5-megawatt hydroelectric project sits just outside the town of Packwood, named for 19th century explorer William Packwood, on the Cowlitz River in eastern Lewis County.

The lake that provides the water power to generate the electricity is about five miles away, near the crest of the Cascade Mountains. The remote, alpine lake – surrounded by peaks of 5,000 feet or higher – is more

than 1,800 feet above the town. Geologists believe the lake was formed more than a millennium ago when a large mass of soil and rock slid off what is now Snyder Mountain, creating a natural dam on present day Lake Creek.

A diversion dam on Lake Creek, 424 feet downstream of the outlet from Packwood Lake, feeds water to the powerhouse through a system of concrete pipes and tunnels. The 1,800-foot drop creates tremendous pressure – 780 pounds per square inch – by the time the water reaches the powerhouse turbine. After passing through the turbine, the water is discharged into the Cowlitz River by way of a

tailrace canal more than a mile in length.

Completed in 1964 at a cost of \$12.5 million, the Packwood Hydroelectric Project was the first power project built by the Washington Public Power Supply System, a consortium of public power utilities that later became Energy Northwest. In 2007, the Packwood project produced power at a

cost of 1.31 cents per kilowatt hour, significantly less than other hydroelectric projects in the region and far less than wind, solar or other renewable sources of energy.

Although all the power is currently purchased by the Benton and Franklin County Public Utility Districts, project owners include 10 other PUDs. Benton, Clallam, Clark,

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Ferry, Franklin, Kittitas, Klickitat, Lewis, Mason No. 3, Skamania, Snohomish, and Wahkiakum each own varying shares of the power output and are responsible for an equivalent share of the costs to operate and maintain the project.

The 450-acre Packwood Lake has been an important local resource for hundreds of years. Originally used by Native Americans, by the 1900s settlers were both fishing for the lake's rainbow trout and increasingly using it for outdoor recreation.

In 1907, the Valley Development Co., a subsidiary of Portland Light and Power Company (now Portland General Electric) began surveys for a potential hydroelectric plant at Lake Packwood, with the goal of selling electricity to the city of Tacoma. According to a local history of Packwood, the plans called for a 100-foot dam that would have backed up the 1½-mile-long lake another five miles and to build flumes to carry water to a generating station in Packwood.

Valley Development installed a temporary power plant on nearby Snyder Creek in 1910 to provide electricity to its work camps and, potentially, for a tramway to carry equipment and construction materials to the site. The plans were eventually abandoned, but the temporary power plant operated for 10 years before it was dismantled and taken back to Portland.

By 1917, the U.S. Forest Service had established a public campground at Packwood Lake and assumed ownership of the Valley Development Co. holdings. The Forest Service later built a two-story cedar lodge and several small cabins at the lake for vacationers. Although the lodge and most of the cabins were torn down after a fire in the mid-1970s, the rowboat concession operated continuously until 1991. The popular Packwood Lake Trail, now maintained by the U.S. Forest Service, was built in 1910 by the Valley Development Co.

Since the lake lies within the Gifford Pinchot National Forest and abuts the Goat Rocks Wilderness Area, the Forest Service will continue to play a significant role in the ultimate use of the resource. The existing license, which Energy Northwest is seeking to renew, requires that the lake be main-

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*Diversion dam on Lake Creek channels water from Packwood Lake to powerhouse 1,800 feet below the lake.*

tained at approximately its natural elevation – 2,857 feet above mean sea level – during the recreation season, May 1 through Sept. 15. The rest of the year, Energy Northwest must maintain the lake – which averages more than 70 feet deep, with places as deep as 120 feet – within eight feet of its summer level.

Relicensing the project has been a costly and time-consuming effort despite Packwood's nearly half-century record of environmentally friendly power generation, according to project manager Dan Ross.


"We began work on the relicense application in 2004," Ross said. "It's taken a great deal of effort from our team, the agencies and stakeholders but we are pleased with the result."

He said the four-year effort, which culminated with the final application being submitted in February, cost about \$3.75 million. But, Ross said, the effort yielded some benefits in addition to the pursuit of a new license, including an assessment of future upgrades at the hydro project.

"The process required us to review virtually every aspect of our facility and our operations," Ross said. "It was enlightening

to step back from day-to-day operations and conduct a thorough overall assessment." He added that overall the facility, from the diversion dam to the powerhouse and tailrace, is in good shape and should "serve us well for years to come."

According to Ross, one of the challenges has been to ensure the project continues to comply with changing fisheries regulations and continues to respect tribal interests in the region. One recent change was the installation of fish screens to keep migrating fish from getting into the plant's outflow canal.

If all goes well, Energy Northwest could receive a new license to operate the Packwood Hydroelectric Project in February 2010, after multiple reviews and comment periods. And with a new license, Ross said, the venerable project will be set to generate clean, reliable, and affordable power for another 50 years. 

*Brad Peck is Executive Project Manager for Energy Northwest.*

## Visitors welcome

The public is welcome to visit the Packwood powerhouse between the hours of 8 a.m. and 4 p.m., Monday through Thursday. For information, contact Randy Crawford, Packwood Project Lead, at (360) 494-5000.