



Fact Sheet

JULY 2018

Bonneville Dam Transmission Tower Insulator and Hardware Replacement Project

What's going on?

Bonneville Power Administration transmission line crews will be replacing aging insulators and hardware on the first two towers of the Bonneville-Hood River No. 1 115-kilovolt line. Those towers are located between the Army Corps of Engineers' Bonneville Lock and Dam First Powerhouse and the Acton Substation adjacent to the dam.

Purpose of the project

This line was BPA's first transmission line and has been in service since the 1940s. It brought power to the Northern Wasco PUD and the Wasco rural electric cooperative. Portions of the existing line are in poor condition because of normal deterioration and aging. Due to these conditions, line failures during the harsh environment of winters in the Columbia Gorge have become more common in recent years. This has led to power outages and emergency repairs.

Part of a larger rebuild

This work is a precursor to a multi-year, 23-mile rebuild of the Bonneville-Hood River No. 1 115-kilovolt line. The project will replace a mixture of wood-pole and steel lattice H-frame transmission structures and associated hardware, conductor (transmission line) and ground wires, on a transmission corridor that runs east from Bonneville Lock and Dam to Hood River, Oregon. The project will also improve access road and trails to the corridor, enabling line crews to more quickly and safely respond to outages or maintenance needs.

What is the helicopter doing?

BPA is operating a Bell Helicopter Model 407 that will fly 40–50 short trips during each day of work. The



The Dalles line crew performs routine maintenance on a line replacing hardware

helicopter carries the tools and the working platforms needed by the line crews in the high voltage towers. Each of the platforms, called baker boards, is 20-feet long, 24-inches wide and weighs 300 pounds. The insulator strings being installed are 9-feet long and weigh 560 pounds. Insulators are made of non-conducting porcelain material and used to give mechanical and electrical support to electrical conductors and shield them from ground or other conductors. An insulator inhibits the flow of electrical current from the conductor to the earth or to another conductor.

What are the line crews doing?

The line crews are removing old insulators on the conductor (transmission line) and installing new insulator strings that will last another 60 years. Here are the 10 key parts of their work:



1. Line crews climb the towers.
2. Ground the line. The line crews will ensure the line is out of service and electrically safe to work on by testing the conductor with specialized tools. Then the crews will attach grounding cables to the conductor to put the conductor and the workers at the same electric potential.
3. Position the baker board. This 2-foot-wide, 20-foot-long ladder-like platform will be hung from the conductor, itself, and provide footing for the line crews performing work.
4. Rig the conductor or “break tension.” The line crews will install hoists and rigging to allow the line crews to manually jack the hoist and transfer roughly 8,000 pounds from the conductor into the rigging. This will enable the line crews to access the insulators.
5. Out with the old. Line workers will remove the old insulator strings using the helicopter to transfer the 1942 vintage insulators to a staging area away from the tower.
6. In with the new. The helicopter will return with the new insulators.
7. Installing the insulators. Line crews will connect the insulators to the conductor and tower.
8. Unrigging the conductor. The line crews will use the hoists to manually jack and transfer the 8,000 pounds of weight off the rigging and back on to the conductor.
9. Clean up. Line crews will work with the helicopters to remove materials and equipment from the towers.
10. Line crews will climb down the towers.

How is this work related to the Eagle Creek Fire?

Many of the same linemen you see in the towers above responded to the Eagle Creek Fire in the fall of 2017. The line crews worked to replace burnt pole structures as well as energize and de-energize lines as needed to enable firefighters to accomplish their work around our high voltage lines and the natural fire breaks that our transmission corridors can form.

Following the damage caused by the fire, BPA began reinforcing its access roads to portions of the Bonneville-Hood River No. 1 115-kilovolt transmission line to help harden them against potential landslides. That effort will benefit line crews as they work on the line rebuild. Additionally, to help facilitate access to portions of the line in steep terrain, BPA crews helped rebuild portions of the first two miles of the Eagle Creek Trail.

Why do people say this line was built “Where Mules Couldn’t Go?”

This transmission line was built along the rim of the Columbia Gorge by traversing some of the roughest terrain in the region. Special towers were designed with no single piece weighing more than 70 pounds. They were carried in by mules wherever possible, and by men where mules could not go. “We had several places where you couldn’t get a mule carrying several of the 70 pound pieces,” said Gene White, who led the survey operation and construction of the transmission line, “and 70 pounds was the limit a man could carry or that you could handle by getting a long hand-line across and pulling it across.”

The work done by Gene White’s survey crews on the steep walls of the Columbia Gorge, in the Wind River country and the Cascade Mountains, earned them the nickname “side hill gougers,” for, according to Associated Press at the time, “those legendary beasts were equipped with two short legs and two long legs for mountainous travel.”

—Excerpted from “BPA and the Struggle for Power at Cost” by Gene Tollefson

Because of this transmission line, hydropower flows here

The 23-mile long Bonneville-Hood River No. 1 115-kilovolt line represented BPA’s first delivery method of hydropower from Bonneville Dam. It began a legacy of more than eight decades of delivering clean, carbon-free energy from 31 federal hydroelectric facilities throughout the Northwest. Hydropower is both our legacy and an enduring driver of the region’s economic prosperity and environmental sustainability. Learn more about hydropower and its myriad benefits at www.bpa.gov/hydroflowshere.