



Portland General Electric

2006

Background

Portland General Electric's decommissioned Trojan Nuclear plant occupies a 634-acre site in Columbia County, about five miles south of Rainier, Oregon and 42 miles north of Portland. The plant began commercial operation in May 1976 and had a net generating capacity of 1,130 megawatts. The plant was permanently closed for economic reasons in January 1993 after PGE, customer groups and state regulators concluded that closing the plant and acquiring alternative resources was a more cost-effective option. PGE began several decommissioning projects in 1995 and received NRC approval of its overall decommissioning plan for the \$429 million project in April 1996.

Decommissioning status

The Trojan plant is the first large-scale commercial nuclear plant to be decommissioned in the United States. In May 2005, the Nuclear Regulatory Commission (NRC) approved the termination of Trojan's Part 50 license, which is the federal stamp of approval signifying that the site may be safely used for other purposes. During the next three years, Portland General Electric will continue site restoration by demolishing major structures at the plant.

The Independent Spent Fuel Storage Installation (ISFSI) continues to house the spent fuel generated during the plant's operation. The fuel is safely encased on-site in 34 concrete casks, awaiting eventual shipment to a permanent federal nuclear repository site. Demolition will not impact the ISFSI.

The demolition projects are designed to minimize environmental and community impact. Demolition is being conducted in three phases.

Cooling tower demolition

On May 21, 2006 the 41,000-ton cooling tower at the Trojan Plant was imploded by explosives, falling 499 feet to the ground in 10 seconds. Crews from Controlled Demolition, Inc. (CDI) detonated almost 2,800 pounds of dynamite just after 7 a.m., causing the tower to buckle, lean to the side and collapse upon itself. The reinforcing steel has been removed and recycled, and the concrete has been crushed into small pieces and remains on site.

The implosion went exactly as planned – safely, on time and on budget – thanks to the professionalism and expertise of CDI and the cooperation of PGE's many agency partners in Oregon and Washington. PGE and CDI worked closely with several government agencies responsible for closing roads, portions of the Columbia River and the airspace above the tower for the event. Debris from the implosion was contained almost entirely within the tower's footprint.

Power block demolition

Work is underway on demolishing the power block, which includes the turbine, control, auxiliary and fuel buildings. These buildings are primarily made of concrete and steel. The main structures are being brought down using conventional demolition techniques. This stage of the Trojan demolition is on budget and on schedule to be completed by the end of 2007.

Containment building demolition

The containment building once held the nuclear reactor vessel, which has been removed and buried at the Hanford nuclear repository for low-level nuclear materials. Demolition of the containment building will take place in 2008. The contractor and method of demolition will be decided in early 2007.

Major equipment removal

In 1995, PGE removed four steam generators and the pressurizer vessel and transported them to a low-level waste disposal facility near Richland, Washington. In 1999, PGE transported the Trojan reactor vessel and its internal components to the disposal facility. The 1,020-ton package was safely transported by a specially made barge pushed by two tugboats 270 miles up the Columbia River. Upon arrival at the Port of Benton, near Richland, it was transported 30 miles to the low-level waste disposal facility.

The independent spent fuel storage installation

The Independent Spent Fuel Storage Installation (ISFSI) — commonly called dry cask storage —houses the spent fuel generated during the plant's operation. It was completed in September 2003. The ISFSI, an above-ground air-cooled storage system that contains no moving parts, includes 34 concrete casks that sit on a 170-foot by 105-foot concrete pad located on the Trojan site. Until the federal waste repository is built and the canisters can be moved, the storage facility will be monitored by PGE, the NRC and the Oregon Department of Energy to ensure safe storage. Due to delays in the completion of the federal facility, PGE does not expect its first shipment of fuel to occur before 2013, with the final shipment projected in 2023. Under this timeline, decommissioning would be completed in 2024.

General radiological decommissioning

General radiological decommissioning began in 1996 and involved preparing the Trojan site buildings and other areas for the Final Site Survey, a process required for approval by the NRC for termination of the license for the plant.

Following completion of the major projects and the general decommissioning activities, a final radiation survey was conducted. The Final Site Survey involved surveying approximately two million square feet of surface area and collecting and analyzing samples from 14,000 measurement points.

With the radiological measurement, analysis and data recording complete, PGE submitted its Final Site Survey report to the NRC for approval in December 2004, documenting that the Trojan site met all regulatory criteria for unrestricted use and requesting termination of the Part 50 operating license.

License termination

In April 2005, Oregon's Energy Facility Siting Council found that the radiological decommissioning of Trojan was complete and the site met all criteria for unrestricted release.

The NRC completed its evaluation and concluded that the dismantlement and decontamination activities were performed in accordance with the approved License Termination Plan and that the facility and site met the criteria for decommissioning in accordance with the applicable regulations. The NRC terminated the Trojan Part 50 license effective May 23, 2005.

The ISFSI has a separate license and will continue to operate as an independent fuel storage facility.

Future of the Trojan site

There are no current plans to use the 634-acre site for other purposes, but future possibilities could include a new power plant or other commercial development or public use. PGE is committed to working with the community on economic development opportunities that could create jobs and generate property tax dollars for Columbia County.

Trojan security

PGE is committed to meeting the highest standards of safety and environmental stewardship. PGE employs a crew of engineers and specialists who monitor the safety of the fuel and its storage area 24 hours a day. This monitoring will continue until the fuel is shipped to a federal nuclear repository site.

PGE power sources today

PGE uses a diverse mix of power resources that include wind, hydroelectric, coal and natural gas generating facilities and long-term purchased power contracts. PGE currently is building a new, highly efficient natural gas-powered plant at Port Westward near Clatskanie, about 15 miles north of the Trojan site. When it opens in spring 2007, it will be the most efficient power plant of its type in the Pacific Northwest. The plant will have a 400-megawatt generating capacity, or enough electricity to power about 300,000 homes.

**Trojan decommissioning
time line**

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| January 1993 | PGE closed Trojan, removed all fuel from the reactor and placed it in the spent fuel pool. |
| May 1993 | The NRC approved a possession-only license, authorizing PGE to possess but not operate the plant. |
| November 1995 | The plant's four steam generators and its pressurizer (large component removal project) were removed from the site and transported by barge to the low-level waste disposal facility near Richland. |
| April 1996 | Decommissioning plan approved. |
| August 1999 | The plant's reactor vessel and internal components (RVAIR Project) were safely removed and transported by barge to the low-level waste disposal facility. |
| September 2000 | The RVAIR Project won the Project Management Institute's International Project of the Year award. |
| February 2001 | License Termination Plan approved. |
| December 2002 | Transfer of spent fuel to ISFSI storage pad begins. |
| September 2003 | Transfer of fuel to ISFSI was successfully completed. |
| October 2004 | Request submitted to state regulators to amend Oregon Administrative Rules and permit release of the site for unrestricted use. |
| December 2004 | Final Site Survey completed and request submitted to NRC for License Termination. |
| April 2005 | Oregon Energy Facility Siting Council determined the site meets all criteria for unrestricted use. |
| May 2005 | NRC approved License Termination and site released for unrestricted use. |
| 2006 – 2008 | Demolition of the cooling tower and other selected non-radioactive structures. |