NEW YORK

West Valley Demonstration Project

Background

The West Valley Site (formally known as the Western New York Nuclear Service Center) is located approximately 25 miles south of Buffalo, New York (Figure 14). Pursuant to the federal West Valley Demonstration Project Act of 1980, the U.S. Department of Energy (DOE) is conducting a high-level waste (HLW) solidification and decommissioning demonstration project in cooperation with the New York State Energy Research and Development Authority (NYSERDA). DOE has operational responsibility for approximately 167 acres of the larger 3,330-acre Western New York Nuclear Service Center, all of which NYSERDA owns.[94]

FIGURE 14: Aerial view of the West Valley Site. Photo courtesy of U.S. Department of Energy.

From 1966 to 1972, Nuclear Fuel Services, Inc., a private company, reprocessed 640 metric tons of spent nuclear fuel to recover uranium and plutonium under agreements with the state of New York and a license issued by the U.S. Atomic Energy Commission (AEC). Approximately 600,000 gallons of HLW liquid and sludge resulted from reprocessing,[95] making West Valley one of only four sites in the DOE Office of Environmental Management cleanup complex with HLW — the other sites are the Idaho National Laboratory, Hanford and Savannah River — and the only site where DOE receives a state contribution for HLW vitrification and storage. All told, 60 percent of the spent fuel reprocessed at West Valley came from the N-Reactor at Hanford; the majority of the plutonium and all the uranium recovered at West Valley were transferred back to AEC.[96]

The Nuclear Waste Policy Act requires the federal government to bear the disposal costs of HLW resulting from atomic energy defense activities. Similarly, the only DOE disposal facility in the country open for disposal of transuranic (TRU) waste, the Waste Isolation Pilot Plant (WIPP) in New Mexico, accepts only defense waste. However, DOE considers West Valley a "commercial facility," despite the historical record indicating that a significant portion of the radioactive material coming to West Valley and most of the recovered material leaving West Valley was used for atomic energy defense activities, as defined under the Nuclear Waste Policy Act of 1982.[97] DOE's commercial designation for West Valley leaves the West Valley TRU waste without a viable disposal path. It may also strand the solidified HLW at West Valley as a result of DOE's insistence that the state pay an HLW disposal fee that could reach the billions of dollars.

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[94] U.S. Environmental Protection Agency. (2017, September 14). Hazardous waste cleanup: Western New York Nuclear Service Center in West Valley, New York. Retrieved from https://www.epa.gov/hwcorrectiveactionsites/hazardous-waste-cleanup-western-new-york-nuclear-service-center-west-valley.

[95] U.S. Government Accountability Office. (1980, July 28). *Nuclear issues at Western New York Nuclear Service Center*. Retrieved from https://www.gao.gov/products/112946.

[96] U.S. Department of Energy. (n.d.). 9. Plutonium acquisitions. Retrieved from https://www.osti.gov/opennet/forms?formurl=document/pu50yrs/pu50yc.html.

[97] U.S. Department of Energy, Office of Civilian Radioactive Waste Management. (2004, March). *Nuclear Waste Policy Act as amended*. Retrieved from https://www.energy.gov/sites/prod/files/edg/media/nwpa_2004.pdf.

Under the West Valley Demonstration Project Act of 1980, DOE is responsible for five activities:[98]

- Solidify the high-level radioactive waste.
- Develop containers suitable for permanent disposal of the solidified HLW.
- Decontaminate and decommission the HLW tanks, facilities used in the solidification, and material and hardware used in connection with the project in accordance with such requirements as the U.S. Nuclear Regulatory Commission may prescribe.
- Dispose of low-level waste (LLW) and TRU waste.
- Transport the solidified HLW to a federal repository for permanent disposal.

In 2002, after completing solidification of the HLW through vitrification, the West Valley Demonstration Project shifted its focus to decontamination and decommissioning efforts. DOE and NYSERDA jointly issued an Environmental Impact Statement (EIS) in 2010 and are conducting the decommissioning work in phases.[99] Phase 1, which will be completed by 2030, involves removal of the main plant process building, vitrification facility, contaminated lagoons, the source area of a strontium-90 groundwater plume and several ancillary facilities. To remove the main plant process building, the vitrified HLW that was stored inside that building was relocated to a new, on-site HLW dry-cask storage facility in 2016. The HLW vitrification facility was demolished in 2017-18; demolition of the main plant process building is expected to begin in 2020.

The Phase 2 decommissioning decision will be made through a supplemental EIS in the 2022-23 timeframe; it will identify the decommissioning approach for the HLW tanks, the nonsource area of the groundwater plume and two radioactive waste disposal facilities.[100]

Aside from the HLW issue and pursuant to intergovernmental agreements reached over the years, NYSERDA pays a cost share of 10 percent to 50 percent for cleanup costs.[101]

Major Accomplishments[102, 103]

DOE has worked with New York to achieve the following outcomes:

- Completion of the solidification of 600,000 gallons of HLW through vitrification.
- Transfer of the 278 canisters of HLW glass from the main plant process building to a new, on-site, interim dry-cask storage pad.
- Deactivation and demolition of the HLW vitrification facility.
- Removal of 6.5 miles of piping and 50 tons of process vessels from the site facilities, and shipment of more than 1.8 million cubic feet of low-level radioactive waste to off-site disposal facilities.
- Installation of an interim remedial measure to address the North Plateau Sr-90 groundwater plume.
- Stabilization of the Nuclear Regulatory Commission-licensed disposal area to limit water infiltration into the disposal holes and trenches.
- Effective and collaborative relationships with stakeholders, including local governments and the Seneca Nation of Indians.

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[98] U.S. Nuclear Regulatory Commission. (2018, November 2). West Valley Demonstration Project. Retrieved from https://www.nrc.gov/info-finder/decommissioning/complex/wv.html.
[99] U.S. Nuclear Regulatory Commission. (2018, November 2). West Valley Demonstration Project. Retrieved from https://www.nrc.gov/info-finder/decommissioning/complex/wv.html.
[100] U.S. Department of Energy, Office of NEPA Policy and Compliance. (n.d.). EIS-0226-S1: Decommissioning and/or long-term stewardship at the West Valley Demonstration Project and Western New York Nuclear Service Center. Retrieved from https://www.energy.gov/nepa/eis-0226-s1-decommissioning-andor-long-term-stewardship-west-valley-demonstration-project-and.
[101] New York State Energy Research and Development Authority. (2019). West Valley Demonstration Project. Retrieved from https://www.nyserda.ny.gov/Researchers-and-Policymakers/West-Valley/West-Valley-Demonstration-Project.
[102] New York State Energy Research and Development Authority. (2019). West Valley Demonstration Project. Retrieved from https://www.nyserda.ny.gov/Researchers-and-Policymakers/West-Valley/West-Valley-Demonstration-Project.
[103] U.S. Nuclear Regulatory Commission. (2018, November 2). West Valley Demonstration Project. Retrieved from https://www.nrc.gov/info-finder/decommissioning/complex/wv.html.

Site-Specific Issues

DOE's commercial designation for West Valley leaves the site's TRU waste without a viable disposal path and may also strand the solidified HLW at West Valley as a result of DOE's insistence that the state pay an HLW disposal fee that could reach into billions of dollars.[104] Historical site information documents the nuclear fuel complex activities that meet the definition of "atomic energy defense activities" under the Nuclear Waste Policy Act of 1982. NYSERDA is working with stakeholders and elected officials to formally establish the defense nature of the West Valley waste.

Relationship to Other Sites in the Complex

The West Valley Demonstration Project's relationships with other DOE EM sites are critical to completing the requirements of the West Valley Demonstration Project Act. These relationships include WIPP for the disposal of TRU waste and the Nevada National Security Site for the disposal of that site's LLW. In addition, ultimate disposal of the HLW stored on-site depends on decisions by DOE EM and the federal government about the establishment of an HLW repository for permanent geologic disposal.

[104] House Committee on Energy & Commerce. (2018, May 18). *Tonko remarks at nuclear waste legislative hearing* [Press release]. Retrieved from https://energycommerce.house.gov/newsroom/press-releases/tonko-remarks-at-nuclear-waste-legislative-hearing.