U.S. DEPARTMENT OF ENERGY | Richland Operations Office

HANFORD SITE ASSETS AND ATTRIBUTES

The Hanford Site provides the opportunity for long-term sustainable energy and industry development. The area boasts a specialized workforce that is highly educated and well-established; is rich in resources including land, infrastructure, low-cost energy, and available workforce; more scientists and engineers per capita than any other area in the Pacific Northwest; and is an optimum location for the development of sustainable energy solutions.

Land

The Hanford Site is one of the largest remaining land mega-sites available in the United States.

- The 586-square-mile Hanford Site includes 39,000 acres designated for industrial use (9,000 acres for R&D).
- The Comprehensive Land-Use Plan Environmental Impact Statement allows for a planning process for land-use and facility-use decisions including industrial, agricultural, R&D, recreation, conservation (mining and grazing), and preservation.

Site Infrastructure

The Hanford Site has the following infrastructure and support services:

- A maintained road system including 377 miles of paved roads and 122 miles of unpaved roads that is safe, compliant, and reliable for personnel and movement of materials and products.
- Electrical transmission and distribution services that not only service the Hanford Site, but other businesses and communities beyond the Site boundary with 200,000 megawatt hours of electricity per year.
- Water utilities available to support industrial development
- Information Technology support includes 7 WiMAX microwave links, 369 miles of WiMAX coverage, support to 10,000 desktop computers, and 12,000 phone lines.
- The Hanford Site has 592,000 ft^2 of warehouse storage and 122 buildings throughout the Hanford Site, with approximately 3.4 million gross square feet.
- Offsite, an extensive network of highways, rail lines, navigable river routes and electric power grid serve the area for transportation of raw materials and finished products, able to support major industrial development in the region.

Natural Resources

Access to natural resources includes the following:

- Access to water from the Columbia River, with local water rights reserved for industrial development.
- The Hanford Site is well studied and understood environmentally, ecologically, culturally and geologically, including the potential for clean energy production.
- The Mid-Columbia region has an abundance of agricultural waste biomass (7.5M tons of wheat straw), sufficient to manufacture >300M gallons of liquid fuel annually, or ~1,000 megawatts of electricity continuously.
- Solar resources adequate to support commercial power plant development.

Workforce

Specialized workforce skills include nuclear and non-nuclear construction, facility management and operations, nuclear safety, and environmental remediation of hazardous and radioactive wastes.

- The Hanford workforce is made up of approximately 10,000 people, with skills ranging across the spectrum of environmental remediation, construction, and operations. Safety is a particularly strong suit, with an unprecedented record of safe operations in a very challenging environment.
- The Tri-Cities region, encompassing the Hanford Site and its environs, possesses a high concentration of educated and experienced, world-class nuclear and renewable energy researchers, both at the Pacific Northwest National Laboratory (PNNL) and in local industry.
- Established training programs are available at the Volpentest HAMMER Training and Education Center using blended-learning, hands-on activities, lessons-learned, and cutting edge technology.
- Cutting edge regional science and technology research including PNNL teamed with WSU-Tri-Cities Bioproducts, Sciences, and Engineering Laboratory (BSEL), a world-class research center to focus on bioproducts and bioenergy.
- Pacific Northwest SmartGrid Demonstration Project – Battelle and the Department of Energy's National Energy Technology Laboratory have a cooperative agreement in place with BPA, 11 utilities and 5 technology companies.
- State of the art security protection, both with respect to physical security and a highly trained and equipped protective force.

History of Energy Development

The Tri-Cities area has a long history of being at the forefront of energy development and technology. The area already has a diverse power portfolio that includes hydro, wind, solar, nuclear, and coal energies.

- Forty percent of Washington State's power is produced within a 100-mile radius of the Tri-Cities (7 hydropower facilities, 1 coal power facility, 7 natural gas facilities, 6 wind power hubs, and 1 nuclear reactor).
- Nuclear fuel locally manufactured by AREVA Inc. Richland, supplies 5 percent of the electricity consumed in the Unities States.
- Extensive regional energy infrastructure, including BPA, Energy Northwest (operator of the Columbia Generating Station nuclear power plant), railroad services, river barges, and multiple public utilities.

Supportive Host Community and Resources

The Tri-Cities has developed supportive resources that are important to asset revitalization initiatives.

- Long established affiliations with local university and community colleges for technical, scientific, and information technology training; with extensive local utility and workforce training facilities.
- Targeted business development efforts on large federal programs to significantly diversify the area's funding base and build infrastructure.
- Regional education includes WSU Tri-Cities and the Columbia Basin Community College; both which provide educational partnering with the Hanford Site.

The region has supportive host communities that are familiar with the Hanford Site's capabilities and technologies. The Tri-Cities have established a community of industry and government entities that are working together to realize the vision of an advanced clean energy industry in the region, organized as the Mid-Columbia Energy Initiative (MCEI) led by TRIDEC. The Tri-Cities Research District (TCRD) is a center of technology invention and advancement in the Pacific Northwest. Designated by Washington's Governor as an Innovation Partnership Zone, the TCRD is recognized as a driving force fueling the region's economic growth, and features several unique facilities.

- The Applied Process Engineering Laboratory (APEL) is a 90,000 square foot high technology business incubator.
- WSU's new Bioproducts, Sciences, and Engineering Laboratory, (BSEL) is a collaborator with PNNL, and is devoted to the scientific R&D and process engineering for bio-based product manufacturing, particularly of high-value byproducts from bio-based energy production processes.

SUSTAINABILITY ACHIEVEMENTS AND PROJECTS

Recent achievements include the following:

- "Green in Three" Information Technology (IT) initiative reduced energy consumption from aged IT facilities and equipment through consolidation and centralization projects:
  - Resulted in 50% reduction in energy use at primary data center
  - Reduced grey water output by ~227 L/hr
  - Reduced maintenance costs by $40,000 annually
- Converged voice and data traffic onto a single network – Voice over Internet Protocol Project (VOIP)
  - Eliminated several entire buildings of antiquated telephone switching gear
  - Reduced energy consumption by ~900,000 kWh/yr from 2009 baseline
- Removed 6,330 lbs of lead acid batteries, recycling ~4,410 lbs
- Proactive fuel and fleet maintenance
  - Replaced unleaded fuel with alternative fuels such as E85 and E10, resulting in a decrease of over 1,850 MT of CO2 equivalents
  - Acquisition of 149 light and medium duty alternative fuel and 36 hybrid vehicles
  - Installed two electric vehicle charging stations and the site's first electric vehicle
- Completed comprehensive feasibility study to baseline GHG emissions from employee commuting; commuter travel contributes over 83% to Hanford Site Scope III GHG emissions and generated over 34,000 metric tons of CO2 equivalent
- Completed a comprehensive Mid-Columbia Clean Energy Feasibility Assessment to provide a base of information for DOE and local authorities to promote commercial development of renewable energies. (See www.hanford.gov, under the Official Documents tab, for the complete report and an accompanying presentation.)

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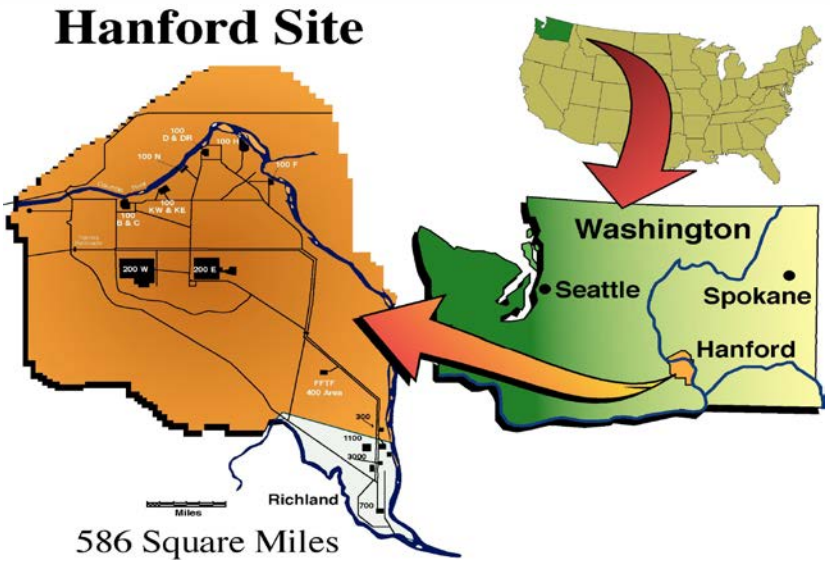

The Hanford Site is located in the southeastern portion of Washington State.