

Introduction to PSE and electric energy

4/8/2021

Puget Sound Energy: Washington's largest and oldest local energy utility

For nearly 150 years, Puget Sound Energy (PSE) has been the local energy provider for neighborhoods and communities across Washington—serving one-third of all of the electric and natural gas energy in our state. As the state's largest utility, we are proud to keep the lights on and the heat running for more than 1.5 million customers.

PSE meets the energy needs of its customers, in part, through incremental and cost-effective energy efficiency strategies, procurement of sustainable energy resources, and far-sighted investment in the infrastructure that delivers energy to customers.

PSE is headquartered in Bellevue, Wash. and has 3,100 employees working in the 10 counties we serve.

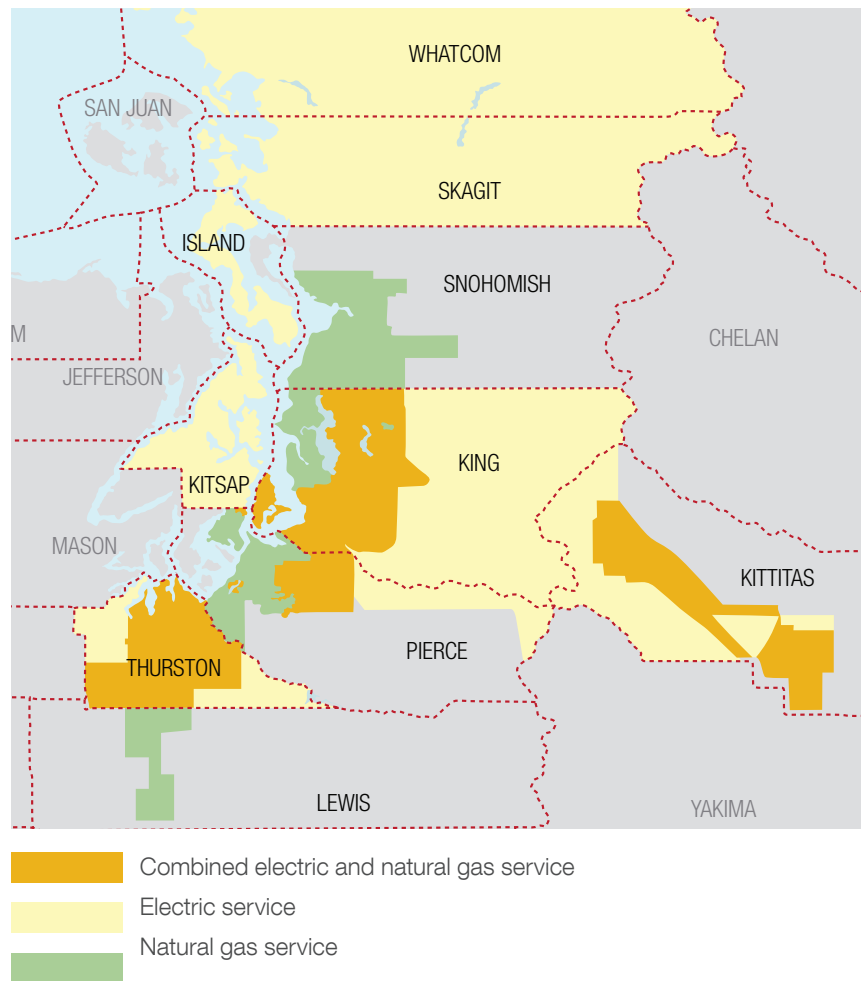
Clean energy leadership

PSE has set an aspirational goal to be a Beyond Net Zero Carbon company by 2045, meaning PSE will reduce its own carbon emissions to net zero and go beyond by helping other sectors reduce their own carbon emissions across the state of Washington.

Our mission and commitment to clean energy today focuses on deep decarbonization, reducing greenhouse gas emissions and delivering on the objectives of Washington's Clean Energy Transformation Act. PSE will be coal free by 2025 and our electric system will be carbon neutral by 2030.

A regulated utility

PSE is an investor-owned utility. PSE's rates and business practices are carefully monitored, reviewed, and approved by the Washington Utilities and Transportation Commission (UTC). The UTC is the state agency that regulates private, investor-owned utilities to ensure safe, reliable and fairly-priced energy and services.



Where your electricity comes from today

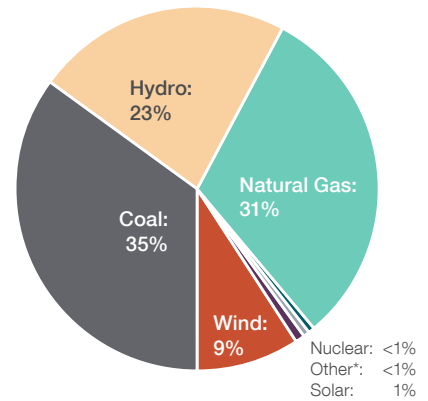
PSE uses a diverse mix of resources to generate reliable electricity for its customers. PSE must meet the electricity needs of all customers for every hour of the year; these needs change minute to minute, hour to hour as customers go about their daily routines and season change. The chart and graph below detail PSE's fuel mix for electricity delivered to customers in 2019.

While more than a third of electricity comes from clean hydroelectric dams and wind facilities, we know our customers want cleaner sources of energy. PSE will be coal free by 2025 and will transition to a carbon-neutral electric supply by 2030, with a 100% non-emitting electric supply by 2045.

PSE was an early leader in offering clean energy options. We've invested billions in renewable energy, including three wind farms in Washington, and we're the third-largest utility producer of wind power in the United States.

2019 electricity fuel mix

Coal	35%
Hydroelectric	23%
Natural Gas	31%
Nuclear	<1%
Other*	<1%
Solar	1%
Wind	9%
Total	100%



* Biomass, non-biogenic, and petroleum.

Source: Published by the Washington Department of Commerce, October 2020, with data reported by PSE in August 2020.

Electric resources for a clean electricity future

Energy efficiency: Energy efficiency means conserving energy while staying comfortable by using tools and appliances. PSE provides a variety of tailored services and incentives to help our residential and business customers save energy and money. Our energy-efficiency programs have helped PSE customers conserve more than 7 billion kilowatt-hours of electricity, which is the equivalent to the electricity used by nearly 838,000 homes in a year.

Our conservation programs include:

- Rebates for affordable energy-efficient products such as heating equipment and lighting.
- Engineering consultation for commercial and industrial projects.
- Tailored grants for retrofits and upgrades in energy-intensive buildings.
- Income-based program provides free “weatherization” upgrades for single family homes, manufactured homes or eligible apartment buildings to help keep them warm and cozy.

Demand response (DR): Tools that give PSE and customers flexible ways to decrease demand on the grid during times of peak use. DR involves modifying the way customers use energy – particularly when they use it. For instance, businesses might work with PSE to voluntarily adjust their operations during a specified range of time. Residential customers might automate their usage with smart thermostats or water heaters. While there are often financial incentives to participate in DR pilots and programs, it's also a way for both PSE and customers to increase efficiency and reduce their carbon footprints.

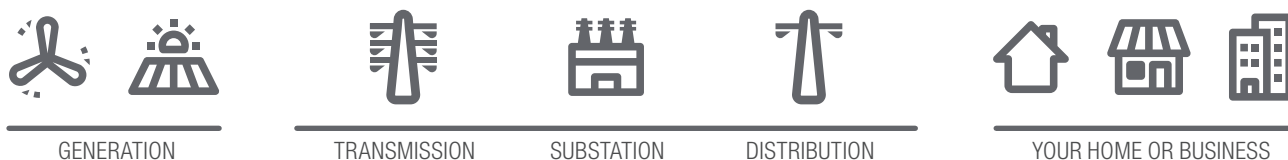
Distributed energy resources (DER): DERs are small scale generators and other assets, like rooftop solar panels, batteries, and electric vehicle chargers, which are located on the distribution system (below the substation level). These tools can help balance energy demand and supply, and /or supplement sources of energy generated and transmitted from larger, more traditional utility resources like hydroelectric dams that are farther away.

Market purchases: PSE purchases electricity from the energy market to meet our customers' needs cost effectively. We purchase electricity from a variety of other utilities, independent power producers and energy marketers across the western United States and Canada. We purchase power on the market when the costs are lower than our own production costs, which saves our customers money, or when customer demand may exceed our generation capabilities.

Battery storage: Batteries have the potential to solve energy challenges we all care about. They can provide temporary back-up power when you experience an outage, store energy from solar panels, help businesses manage their usage, and much more. Their ability to provide storage for renewables, like wind and solar, can also support our customers' and PSE's desire for cleaner energy.

But when it comes to battery storage installations, it's not one-size-fits-all. We're testing and installing batteries in a number of local places to evaluate how this exciting and rapidly-evolving technology can provide safe, reliable, and affordable options for homes, businesses, and communities.

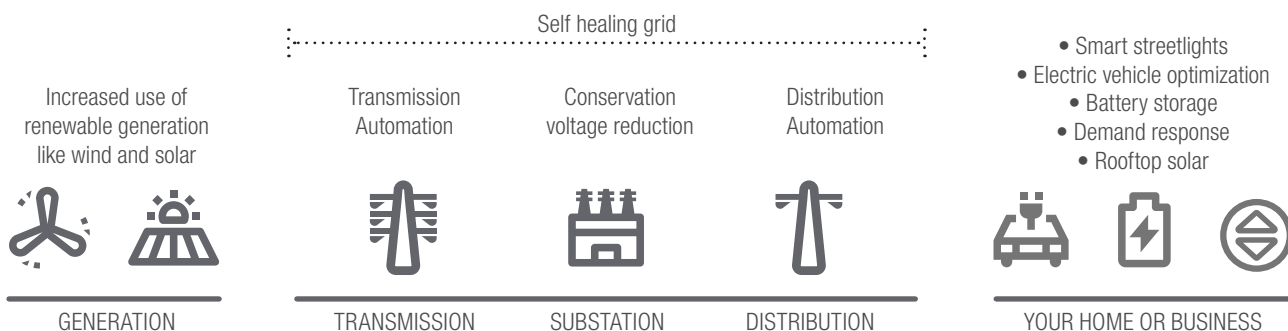
How power gets to you



1. Your electric system starts at a **generation** source – hydroelectric dams, wind facilities and solar energy systems generate electricity, for example.
2. At the heart of the electric system are the **transmission lines**, which carry high-voltage electricity long distances from the generation source to local communities.
3. At the local level, **substations** step down the voltage to distribute electricity throughout a community.
4. **Distribution lines** carry electricity from the substation to your neighborhood.
5. **Transformers** step voltage down further to a level appropriate to use for things like the lights in homes. Transformers are the green boxes in some residences' front yards or the barrel-like canisters on utility poles.
6. **Service lines** are overhead or underground lines that are the final connection between the distribution lines and the meter at your home or business.

Electric grid modernization

PSE is transforming our electric grid for a better energy future through our plans for clean energy and grid modernization.



Automation helps us detect and address outages more quickly, decreasing the overall time customers are without power.

Conservation voltage reduction (CVR) optimizes voltage so we can operate more efficiently and better response to periods of high demand.

Battery storage can provide temporary back-up power during a power outage, store energy from solar panels, help businesses manage their energy usage, and more. PSE is testing and installing batteries to evaluate how this rapidly-evolving technology can provide safe, reliable, and affordable options for customers.

Demand response gives PSE and customers flexible ways to decrease demand on the grid during periods of peak use by working with customers to adjust energy demand to match supply.

Washington's Clean Energy Transformation Act: A Primer

Washington's Clean Energy Transformation Act (CETA) passed the Washington Legislature in 2019 and was signed into law by Gov. Inslee on May 7, 2019. This legislation addresses numerous parts of Washington's electricity supply. The major components are:

Electricity Supply: CETA requires all electric utilities to transition to 100 percent clean electricity by 2045, with the following milestones:

- Coal-free by 2025
- Carbon neutral by 2030
- Carbon free by 2045

CETA also requires that in this transition, energy and non-energy benefits are equitably distributed to all customers, including vulnerable populations and highly impacted communities.

Utility Planning: CETA requires all utilities to develop and file forward-looking plans (e.g., Clean Energy Implementation Plans) every four years to identify their next steps and targets in achieving CETA's energy targets, while ensuring that benefits are equitably distributed. This process requires extensive public participation.

Energy Assistance: CETA requires all utilities and Department of Commerce to systematically assess energy burden (energy costs) on households across Washington and take actions to ensure that Washingtonian's can access bill assistance if needed.

Tax extensions: CETA extends some sales tax credits on renewable energy equipment.

Administrative provisions: CETA also includes some clarification of regulatory structure for utilities to allow rates to be aligned with clean energy plans, an update of the state energy strategy document, and a study of regional transmission needs.

State agencies, including the Department of Commerce, Utilities and Transportation Commission, Department of Health, and Department of Ecology have been and will be making rules on how to implement CETA.

Energy planning process overview

One of PSE's highest priorities is to ensure you have safe, dependable and affordable electricity today and into the future. PSE plans years in advance to ensure we have the supply and infrastructure necessary to deliver electricity. This planning process includes input from customers, regulators and stakeholders.

Broadly, our energy planning process includes:

- **Integrated Resource Plan (IRP)** - The IRP is a planning exercise that evaluates how a range of potential future outcomes could affect PSE's ability to meet our customers' electric and natural gas supply needs. The analysis considers policies, costs, economic conditions and the physical energy system, and proposes the starting point for making decisions about what resources may be procured in the future.

The preferred electric portfolio is the result of IRP analyses that evaluate a range of potential future resource portfolios to identify the lowest reasonable cost, least risk portfolios that meet customer needs, policy requirements and support the equitable transition to a clean energy future, while maintaining affordability and reliability for customers.

The IRP does not make resource or program implementation decisions. The IRP is a 20+ year view of what appears to be cost effective based on the best information we have today about the future.

Clean Energy Action Plan (CEAP) - identifies the lowest-reasonable cost energy resource plan that PSE will pursue over the next 10 years to meet customer energy needs, as well as risk and equity.

The electric IRP/CEAP analysis is repeated every four years and updated every two years, and includes a public participation process.

- **Clean Energy Implementation Plan (CEIP)** - a roadmap that identifies our clean energy targets, actions, programs and investments over a 4-year period. The CEIP builds upon the resource portfolio in the IRP and CEAP to develop the roadmap to identify how we'll feasibly implement clean electricity over the next four years and ensure equitable distribution of benefits and reduce burdens.

The 2021 CEIP will be PSE's first CEIP, and PSE is convening an Equity Advisory Group and implementing a public participation process for the CEIP.

- **Biennial Conservation Plan (BCP)** - a two-year plan that lays out PSE's cost-effective conservation savings targets, program details and budgets and associated tariffs in accordance with Washington's Energy Independence Act. PSE works with the Conservation Resources Advisory Group (CRAG) to develop the BCP, and it is approved by the Utilities and Transportation Commission (UTC).
- **Delivery System Planning** - a process that is the engineering function of evaluating how PSE's energy delivery system (e.g., power lines, substations, etc) must operate in order to meet customer needs and identifying solutions to predicted deficiencies under various conditions to ensure reliable delivery of energy into the future.