1 Executive Summary

The Integrated Resource Plan (IRP) is best understood as a planning exercise that evaluates a range of potential future outcomes, considering customer needs, policies, costs, economic conditions and the physical energy system. It's the starting point for making decisions about what resources PSE may procure in the future.

1 Executive Summary

Contents

1. OVERVIEW

The Integrated Resource Plan (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.

Plan Highlights

The 2021 PSE electric and natural gas IRPs have been developed during a time of extraordinary change as policy makers, the utility industry and the public confront the challenge of climate change and the necessity to transition to a clean energy future.

PSE is committed to reaching the goals of the Clean Energy Transformation Act (CETA) and achieving carbon neutrality by 2030 and carbon free electric energy supply by 2045, and the electric resource plan presented here reflects these changes and goals. It includes:

- significant investments in renewable resources
- accelerated acquisition of energy conservation
- increased use of demand response
- integration of distributed energy resources like residential solar and battery energy storage
- reduced reliance on short-term market purchases in response to the changing western energy market
- inclusion of alternative fuels to operate new generating plants

The preferred portfolio reduces direct carbon emissions from PSE's electric supply by over 70 percent by 2029 and achieves carbon neutrality by 2030 through clean investments that enable a significant decrease in the generation from fossil fuel-based resources, and through alternative compliance options that may include additional renewable resources, energy efficiency, unbundled renewable energy credits or other energy transformation projects.

Legislation enacted in 2019 requires total natural gas costs to include the social cost of greenhouse gasses and related upstream carbon emissions. As a result of this policy change, the natural gas resource plan focuses on significant, aggressive acquisition of conservation due to the increase in total natural gas costs. Since the natural gas IRP analysis was completed prior to the conclusion of the 2021 Washington state legislative session, it does not include new

legislation that may, if enacted, substantially change the use of natural gas in certain sectors. The requirements of any new legislation will be included in the 2023 natural gas IRP.

It is important to recognize that the IRP does not make resource or program implementation decisions. The IRP is a long-term view of what appears to be cost effective based on the best information we have today about the future. The electric IRP analysis is repeated every four years and updated every two years. The IRP's forecasts and resource additions will change as technology advances, clean fuel options increase, resource costs decline, the wholesale energy market evolves and new policies are established. The IRP includes the Clean Energy Action Plan (CEAP). The Clean Energy Implementation Plan (CEIP) starts where the IRP/CEAP ends and develops specific four-year targets for solutions proposed in the IRP/CEAP, taking into account the equitable distribution of customer benefits and the feasibility of implementation.

Public Participation

Public and stakeholder engagement is an essential part of developing an IRP, and the engagement generated valuable feedback and suggestions from organizations and individuals that helped inform the IRP analysis. Despite the challenges posed by the pandemic, this IRP has been developed with an increased level of public participation:

- 13 public webinars were hosted, recoded and documented, between May 2020 and April 2021.
- 32 email communications were distributed to an IRP audience of over 1,400 members.
- On average, 68 participants joined the webinars and 212 unique individuals participated at least once in the process.
- The re-designed IRP website generated over 14,500 visits.
- 303 stakeholder feedback forms, with 683 stakeholder comments, were received and responded to by PSE.
- 43 scenarios and portfolio sensitivities, developed in partnership with the IRP stakeholders, were analyzed and are documented in Chapters 8 and 9.

All webinar registration information, agendas, presentation materials, technical data files, webinar recordings, chat logs and transcripts, stakeholder feedback forms, and documentation of how stakeholder feedback influenced the IRP are available online at pse.com/irp and in Appendix A.

Public involvement will continue to increase as PSE applies lessons learned from the IRP to development of the CEIP, expands public participation in the delivery system planning process and establishes an Equity Advisory Group to advise PSE as it works to ensure that all PSE customers benefit from the transition to clean energy.

Beyond Net Zero by 2045

In January 2021, PSE pledged to become a **Beyond Net Zero Carbon** energy company by 2045. The goals are aspirational, but the commitment to statewide carbon reduction is steadfast. We pledge to:

- Reduce emissions from PSE electric and natural gas operations and electric supply to net zero by 2030.
- Reach net zero carbon emissions for natural gas sales by 2045 for customer use in homes and businesses, with an interim target of a 30 percent reduction by 2030.
- Go beyond PSE's own emissions to reduce carbon emissions in other sectors by partnering with customers and industry to identify programs and products that will enable a decarbonized region.

We do not have all of the answers yet, but with the right combination of legislative, regulatory, commercial and technological enablers, we think this degree of emission reduction is possible. PSE will leverage its decades of experience with renewable energy projects, conservation and innovation, but we will also need support and cooperation from our partners, stakeholders, developers and the community to achieve success.

Knowing the complexity of the issues involved and the need to meet many different interests, PSE is convening an external advisory committee with representation from a diverse set of community members, partners, technical experts and others.

2. CHANGES IN THE WHOLESALE ELECTRIC MARKET

While the western energy market has had surplus capacity for more than a decade, PSE's 1,500 MW of firm transmission to the Mid-Columbia market hub has served as a cost-effective means of meeting demand by accessing energy supply from the regional power market. However, the supply/demand fundamentals of the wholesale electric market have changed significantly in recent years in two important ways: Region-wide, the wholesale electric market is experiencing tightening supply and increasing volatility.

TIGHTENING SUPPLY. As customers, corporations and state legislatures across the Western Interconnect prefer or require power from clean energy sources, the market's resource mix has changed. Since 2016, nearly 15,000 MW of clean energy resources, namely intermittent wind and solar, and 500 MW of batteries have been added to the Western Interconnect, while at the same time, 12,000 MW of traditional, dispatchable coal and natural gas resources have been retired or mothballed. With less dispatchable generation capacity within the Western Interconnect, market supply/demand fundamentals have tightened.

INCREASING VOLATILITY. In response to tighter supply/demand conditions, volatility has also increased. While wholesale electricity prices remain low, on average, in the Pacific Northwest, the region is starting to experience energy price spikes when there is limited supply. Notable events include the summer of 2018, when high regional temperatures coincided with forced outages at Colstrip, and March 2019, when regional cold temperatures coincided with reduced Westcoast pipeline and Jackson Prairie storage availability. Most recently, in August 2020, a west-wide heat wave caused many entities in the region to take a range of actions from energy alerts to rolling blackouts.

As a result of tightening supply and increasing volatility, regional power suppliers are changing how they plan with regard to resource adequacy. Addressing resource adequacy issues on a regional basis, rather than utility by utility, could be an important step toward improving reliability in the region. Numerous regional entities, including PSE, are collaborating on development of a regional resource adequacy program. Should PSE determine the program meets the needs of PSE customers, it will be incorporated into future resource planning activities.

1 Executive Summary

In the past, PSE's firm transmission capacity from the Mid-Columbia market hub has been assumed to provide PSE with access to reliable market purchases under WSPP, Schedule C[1] contracts through which physical energy can be sourced in the short-term bilateral power markets. Historically, PSE has effectively assumed this 1,500 MW of transmission capacity as equivalent to generation capacity available to meet demand. For this IRP, PSE conducted a market risk assessment to evaluate the ongoing availability of these short-term power contracts. The assessment resulted in a recommendation to limit the amount of WSPP, Schedule C contracts for the real-time, day-ahead and term market purchases within the three-year purview of PSE's Energy Supply Merchant. This recommendation will transition the historical 1,500 MW limit to a 500 MW limit by the year 2027. To replace those short-term contracts, PSE will seek firm resource adequacy qualifying capacity contracts, compliant with CETA, that meet PSE's resource adequacy requirements and align with a potential regional resource adequacy program. The peak capacity resource need and the preferred portfolio in this IRP reflect the addition of firm resource adequacy qualifying capacity contracts, while reducing the amount of short-term market purchases.

PSE's recommended approach allows PSE to survey the market for available resource adequacy qualifying agreements, and it allows for the development of the regional resource adequacy program requirements, which will help inform PSE's future needs. PSE commits to ongoing review and evaluation of resource adequacy needs as the region addresses capacity deficits, and we expect to continue to address this high-priority issue in the 2023 IRP progress report. Ongoing technology advancements, the outcome of the All-source Request for Proposal (RFP), and regional resource adequacy program developments are expected to inform the IRP progress report.

1/ https://www.wspp.org/pages/Agreement.aspx

3. ELECTRIC RESOURCE PLAN

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. PSE's commitments to these objectives are embodied in the preferred portfolio.

The preferred portfolio should be interpreted as a forecast of resource additions that look like they will be cost effective in the future, given what we know about resource and technology trends today. PSE does not make resource decisions in the context of the IRP; actual resource decisions are based on real costs and feasibility discovered through the resource acquisition process and the Clean Energy Implementation Plan.

Electric Resource Need

Meeting our customers' needs reliably is the cornerstone of PSE's energy supply portfolio. For resource planning purposes, the physical electricity needs of our customers are simplified and expressed as three resource needs:

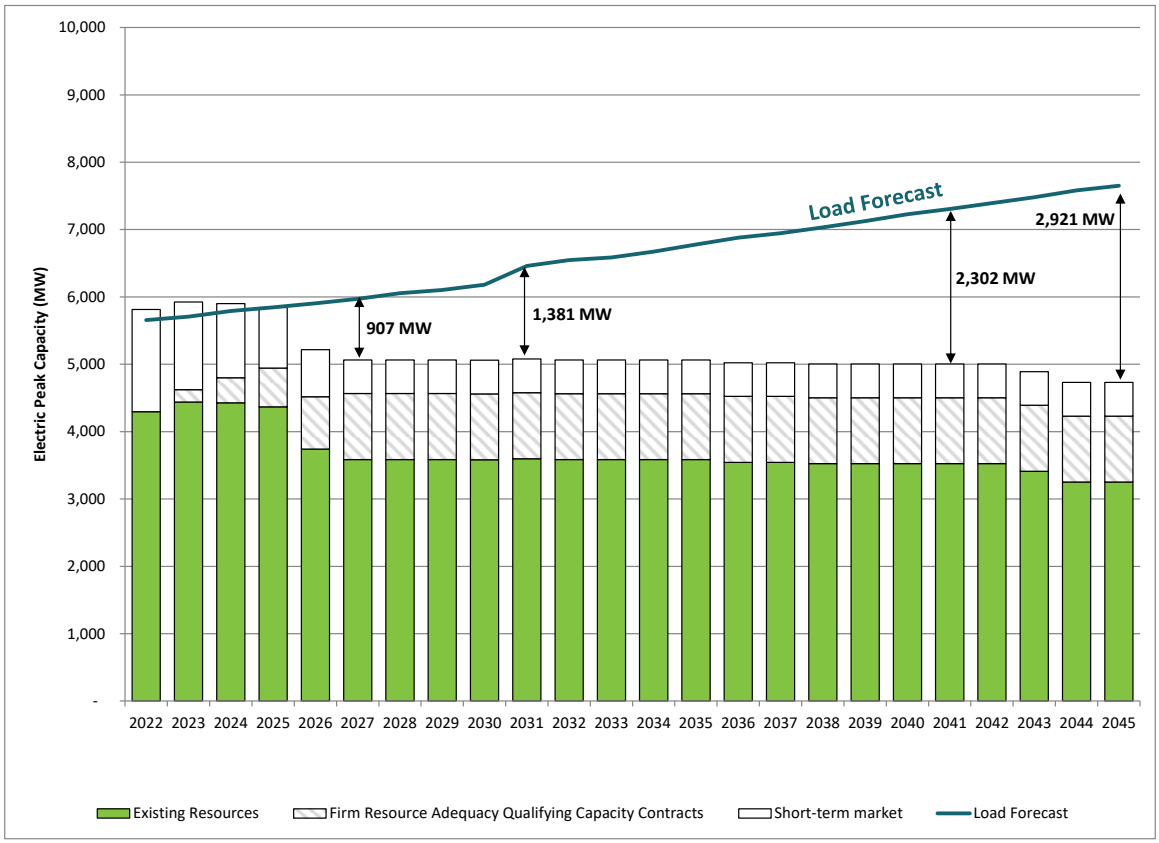
1. **Peak hour capacity reliability**: PSE must have the capability to meet customers' electricity needs reliably during peak demand hours;
2. **Hourly energy**: PSE must have enough energy available in every hour of the year to meet customers' electricity needs; and
3. **Renewable energy**: PSE must have enough renewable and non-emitting (clean) resources to meet the legal requirements of the Energy Independence Act and the Clean Energy Transformation Act.

Peak Hour Capacity Need

Peak hour capacity need is determined through a resource adequacy analysis that evaluates existing PSE resources compared to the projected peak need over the planning horizon. Due to the retirement of exiting coal resources, PSE may begin to experience a peak capacity shortfall starting in 2026. Before any conservation, the peak capacity need plus the planning margin required to maintain reliability is 907 MW by 2027. The 907 MW is the difference between the load forecast (the demand forecast plus the required planning margin) and the total peak capacity credit of existing resources. Figure 1-1 shows peak capacity need through 2045. After reducing

short-term market purchases as discussed in the previous section, the peak capacity need increases to 1,853 MW by the year 2027.

Figure 1-1: Electric Peak Hour Capacity Need

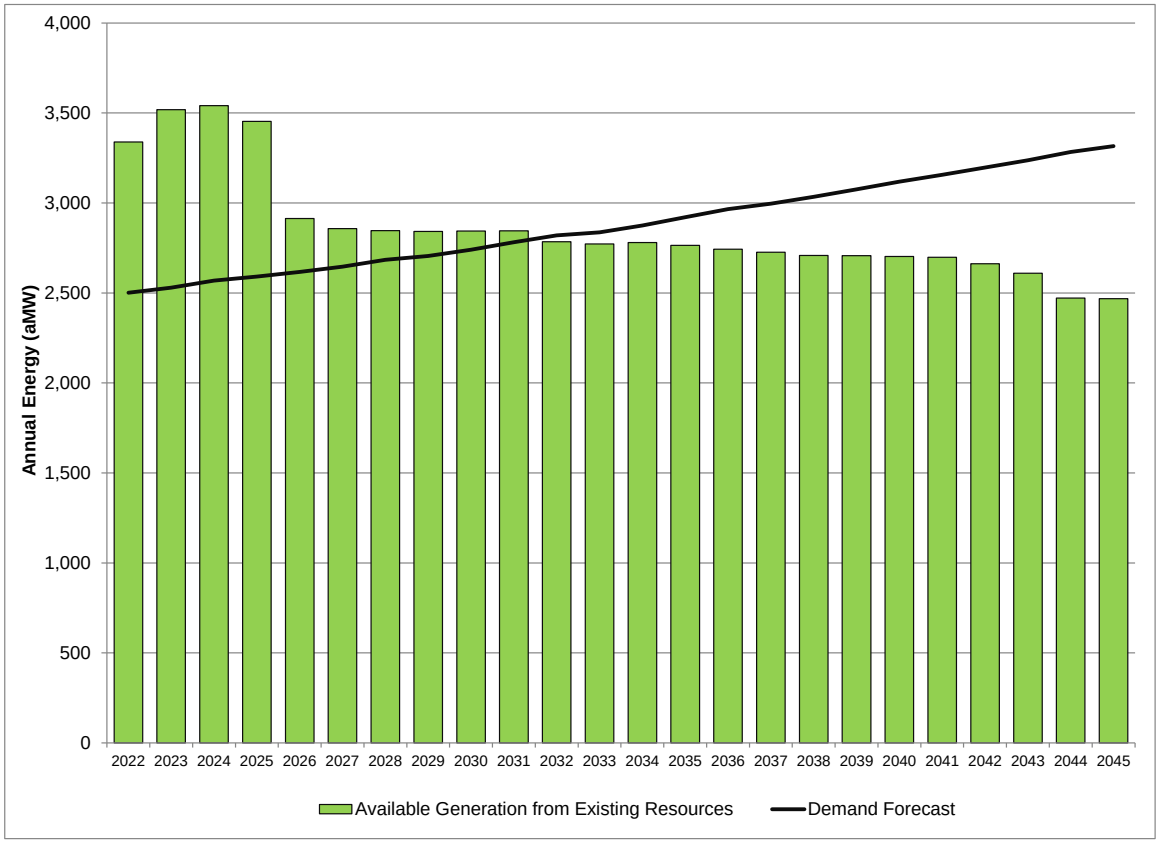


Energy Need

Customer energy needs must also be met in every hour of the year. PSE IRP models require portfolios to supply the amount of energy needed to meet physical loads, and also examine how to do this most economically through existing resources, new resources and purchasing and selling electricity on the energy market. PSE's existing portfolio of supply-side and demand-side resources could generate more energy than needed to meet load on an hourly basis through to 2031; however, it is often more cost-effective to purchase energy from the market than dispatch our existing resources.

Figure 1-2 illustrates the company's energy position across the planning horizon, based on the availability of energy resources. This chart does not represent the dispatch of resources or how they will be used to meet PSE's loads, it simply looks at how much energy all the available resources that PSE owns or contracts can potentially generate. For example, PSE's thermal resources are dispatched based on economics, but this chart shows how much energy they could produce if they were run for the entire year. This chart shows that without any additional demand-side or supply-side resources, PSE could generate enough energy on an annual basis through 2031.

Figure 1-2: Annual Energy Position with Energy from All Existing Resources

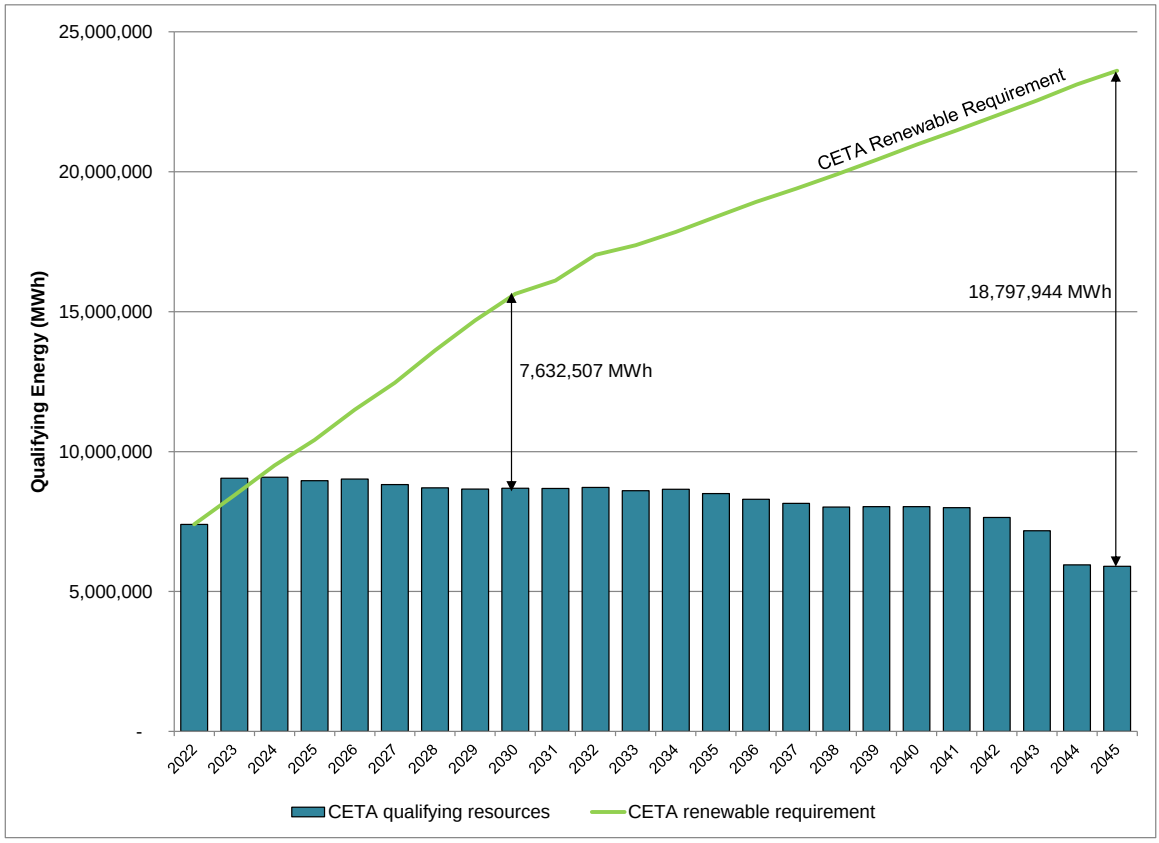


Renewable Energy Need

In addition to reliably meeting the physical needs of our customers, Washington State's Clean Energy Transformation Act (CETA) requires that at least 80 percent of electric sales (delivered load) in Washington state be met by non-emitting or renewable resources by 2030 and 100 percent by 2045.

Figure 1-3 illustrates PSE's renewable energy need. For the long-term IRP analysis, a linear ramp to achieve the Clean Energy Transformation Standards in 2030 and 2045 is assumed; however, actual resource acquisitions and the CEIP likely will produce a less linear pathway than shown here. Before any conservation, the renewable energy need is over 7.6 million MWh in 2030. The renewable need is the difference between the green line and the teal bars.

Figure 1-3: Renewable Energy Need



Electric Preferred Portfolio

The IRP preferred portfolio provides a 24-year resource outlook. As explained above, it is not an action plan; rather, it is a forecast of resource additions developed by the modeling that appears most cost effective over the 24-year period given the resource and market trends observed today, while meeting the needs described above and considering customer benefits. Updates will be made every two years and a new long-term IRP analysis will be completed every four years.

The electric preferred portfolio complies with the Clean Energy Transformation Act and is consistent with PSE's beyond net zero carbon goals.

- **ACCELERATED ACQUISITION OF ENERGY CONSERVATION**. The portfolio includes aggressive, accelerated investment in helping customers use energy more efficiently.
- **INCREASED DEMAND RESPONSE**. Compared to previous plans, increased acquisition of demand response appears as a cost-effective resource earlier in the planning horizon. From the 16 demand response programs evaluated in this IRP, 14 were found to be cost effective over the 24-year timeframe.
- **INTEGRATION OF DISTRIBUTED ENERGY RESOURCES**. Distributed energy resources, such as battery energy storage and rooftop and ground-mounted solar, play an important role in mitigating transmission constraints. These resources may also provide non-wire solutions to meeting specific long-term needs identified on the transmission and distribution systems.
- **SIGNIFICANT INVESTMENTS IN RENEWABLE RESOURCES**. Meeting the Clean Energy Transformation Standards will require large amounts of utility-scale renewable resources located both inside and outside of Washington state. This IRP evaluated several wind and solar locations, along with hybrid combinations such as solar plus battery storage, and wind plus battery storage. Montana wind power is expected to be more cost effective than wind and solar from the Pacific Northwest because it makes a higher contribution to peak capacity needs.
- **ADDITIONAL NEED FOR FLEXIBLE CAPACITY**. A large capacity deficit is created when 750 MW of coal is removed from PSE's portfolio in 2026. Renewable resources, distributed energy resources and demand response will contribute to meeting peak hour capacity need, but simple-cycle combustion turbines operated on biodiesel (a CETA complaint fuel) was found to be the most cost-effective way of maintaining system reliability. Given the limited run-time expected of these turbines, it is estimated that existing Washington state biodiesel production could meet the annual fuel supply needs.
- **FIRM RESOURCE ADEQUACY QUALIFYING CAPACITY CONTRACTS.** To reduce exposure to the increasingly supply challenged and volatile wholesale energy market, this

IRP recommends that up to 1,000 MW of PSE's Mid-C transmission should be filled with firm resource adequacy qualifying capacity contracts that meet PSE's reliability requirements for resource adequacy.

Figure 1-4 summarizes the forecast for additions to the electric resource portfolio in terms of peak hour capacity over the next 24 years. The preferred portfolio is a diverse mix of demand- and supply-side resources that meet the projected capacity, energy and renewable resource needs described above and considers customer benefits. Incremental resource additions are shown across three time horizons along with the total resource additions for the 24-year planning horizon.

Figure 1-4: Electric Preferred Portfolio,
Incremental Nameplate Capacity of Resource Additions

Resource Type	Incremental Resource Additions			Total
	2022-2025	2026-2031	2032-2045	
Distributed Energy Resources				
Demand-side Resources[1]	256 MW	440 MW	1,061 MW	1,757 MW
Battery Energy Storage	25 MW	175 MW	250 MW	450 MW
Solar	80 MW	180 MW	420 MW	680 MW
Demand Response	29 MW	167 MW	21 MW	217 MW
DSP Non-wire Alternatives[2]	22 MW	28 MW	68 MW	118 MW
Total Distributed Energy Resources	412 MW	990 MW	1,820 MW	3,222 MW
Renewable Resources				
Wind	400 MW	1100 MW	1750 MW	3,250 MW
Solar	-	398 MW	300 MW	698 MW
Biomass	-	-	105 MW	105 MW
Renewable + Storage Hybrid	-	-	375 MW	375 MW
Total Renewable Resources	400 MW	1,498 MW	2,530 MW	4,428 MW
Peaking Capacity with Biodiesel	-	255 MW	711 MW	966 MW
Firm Resource Adequacy Qualifying Capacity Contracts	574 MW	405 MW	-	979 MW

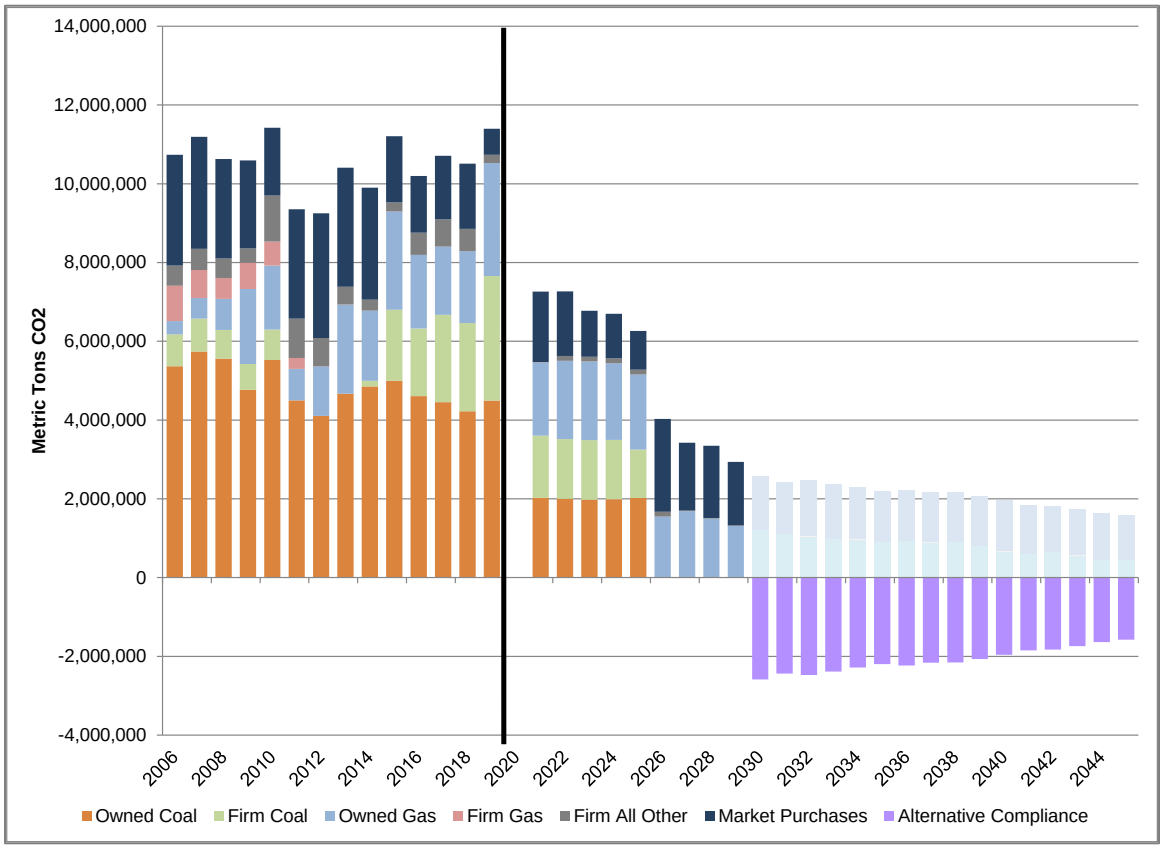
NOTES
1. Demand-side resources include energy efficiency, codes and standards, distribution efficiency and customer solar PV.
2. DSP Non-wire Alternatives are resources such as energy storage systems and solar generation that provide specific benefit on the transmission and distribution systems and simultaneously support resource needs.

PSE will work to optimize use of its existing regional transmission portfolio to meet our growing need for renewable resources in the near term, but in the long term, the Pacific Northwest transmission system may need significant expansion, optimization and possible upgrades to keep pace with the growing demand for clean energy. Investments in the delivery system are also needed to deliver energy to PSE's customers from the edge of PSE's territory and support the integration of distributed energy resources and demand response within the delivery grid.

Greenhouse Gas Emissions

PSE's resource plan achieves significant greenhouse gas emission reductions. By 2030, PSE will drastically decrease direct greenhouse gas emissions when Colstrip Units 3 and 4 retire and the coal-transition contract with TransAlta ends, along with a significantly lower economic dispatch of existing fossil-fuel resources. A substantial drop in emissions also occurred at the end of 2019 when Colstrip Units 1 and 2 retired. In 2030, PSE will achieve a carbon neutral electric portfolio through compliance mechanisms which are not yet determined but may include additional renewable resources, energy efficiency, unbundled renewable energy credits or other energy transformation projects. Figure 1-5 shows the reduction in emissions through to the end of the planning horizon.

Figure 1-5: Reduction in PSE Greenhouse Gas Emissions



Electric Short-term Action Plan

1. Acquire Energy Efficiency

Develop two-year targets and implement reliable programs that put PSE on a path to achieve an additional 53.4 aMW of energy efficiency by the end of 2023 through program savings.

Under the Energy Independence Act (EIA), Utilities must pursue all conservation that is cost-effective, reliable and feasible. They need to identify the conservation potential over a 10-year period and set two-year targets. This 10-year cost-effective savings of 266 aMW divided by 5 is called the pro-rata share, so PSE's draft 2021 EIA target for the 2022-2023 biennium is the 10-year pro-rata share, which is 53.4 aMW. If we were to look at just the 2-year savings from the cost-effective energy efficiency instead of the 10-year pro-rata share, the 2-year energy efficiency saving is only 41.7 aMW.

2. Equity Advisory Group

Convene and engage an Equity Advisory Group to provide guidance from a diversity of voices in the development of PSE's short-term and long-term strategies, initiatives and programs to ensure the equitable distribution of benefits and reduction of burdens to highly impacted communities and vulnerable populations in the transition to clean energy.

3. Mitigate Risk of Short-term Energy Market

Update internal policies for market transaction limits for PSE's Energy Supply Merchant and begin to secure firm resource adequacy qualifying capacity contracts to reduce the risk associated with short-term bilateral energy market purchases.

4. Supply-side Resources: Issue an All-source RFP

Determine and execute the appropriate resource acquisition strategy to meet the 2021 IRP resource needs with CETA-complaint resources. Ensure that all resources are evaluated across a consistent set of criteria and that appropriate enabling technologies sufficiently address the requirements necessary to support both distributed energy and utility-scale renewable resources.

5. Demand-side Resources: Develop and Issue a Demand Response and Distributed Energy Resources RFP

File a targeted RFP with the Washington Utilities and Transportation Commission no later than November 15, 2021 for both distributed energy resources and demand response resources.

Additional specific actions for the next four years will be developed and communicated in the CEIP. The electric action plan is discussed in further detail in Chapter 2, Clean Energy Action Plan.

4. ELECTRIC RESOURCE PLAN NEXT STEPS

The IRP determines the capacity, renewable and energy resource needs which set the supply-side targets for detailed planning in the Clean Energy Implementation Plan and the resource acquisition process. The CEIP will prescribe four-year targets for resources by adding near-term detail concerning resource assumptions, modeling, sensitivities and costs to PSE's 24-year IRP outlook and Clean Energy Action Plan. These costs may be derived from projects submitted through the RFP process or through other program plans, though this may be challenging in 2021 due to the compressed timeframe of the first CEIP cycle.

The formal Request for Proposal (RFP) resource acquisition processes for demand-side and supply-side resources are just one source of information for making acquisition decisions. Market opportunities outside the RFP should also be considered when making prudent resource acquisition decisions.

CETA adds a new dynamic to resource planning in the form of evaluating and determining equitable distribution of benefits for all customers, specifically in identifying highly impacted communities and vulnerable populations. In developing the CEIP, PSE will also consider the equitable distribution of benefits to customers for the proposed projects and programs, including the equitable distribution of non-energy impacts. The IRP/CEAP includes an assessment of current conditions based on economic, health, environmental, energy security and resiliency, and other metrics, and the CEIP will use the criteria from this assessment in determining the programs and projects to implement over the next four years. The CEIP takes into consideration the mix of resources from the IRP, and applies the layer of customer benefits.

5. NATURAL GAS RESOURCE PLAN

PSE develops a separate integrated resource plan to address the needs of more than 840,000 retail natural gas sales customers. This plan is developed in accordance with the Washington Administrative Code (WAC) 480-90-238, the IRP rule for natural gas utilities. The natural gas sales analysis is described in detail in Chapter 9 and supported by several Appendices.

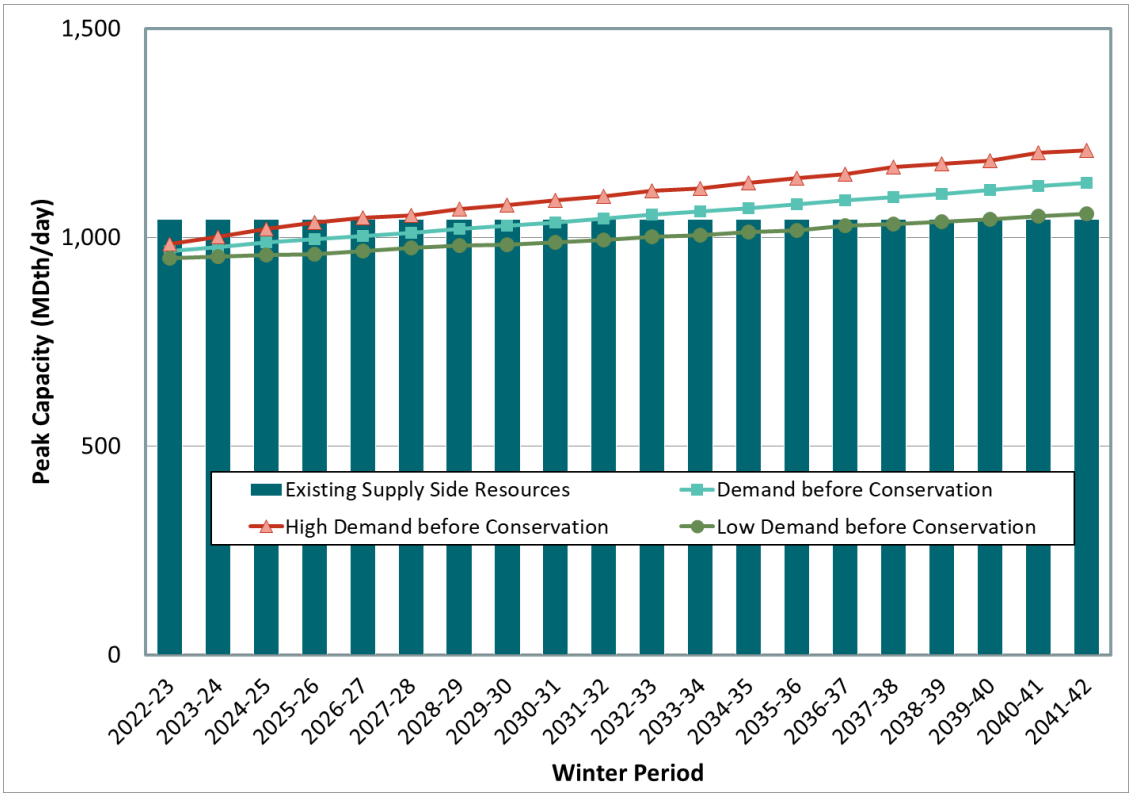
Since most of the natural gas analysis was completed prior to the 2021 Washington State legislative session, it does not include new legislation that may substantially reduce the use of natural gas in certain sectors, if enacted. While the resource plan accounts for uncertainty in demand, costs, regulations and policies, it does not account for a transformative change that could have a drastic impact on the use of natural gas. Any new legislation enacted in the 2021 legislative session that pertains to the natural gas sector will be included in the 2023 natural gas IRP.

PSE already integrates some renewable natural gas (RNG) into the delivery system to decrease carbon emissions, and PSE will continue to look for innovative ways to harvest more RNG. PSE has also begun to evaluate opportunities to partner in testing and learning how hydrogen can be blended into the natural gas system to reduce carbon emissions. This will prepare PSE to leverage the technology as supply increases, cost decreases and the technology matures.

Natural Gas Sales Resource Need

Natural gas sales resource need is driven by design peak day demand. Natural gas service must be reliable every day and the design peak demand drives the need to ensure that PSE plans for meeting firm supply on a 13-degree day. Figure 1-7 illustrates the load-resource balance for the gas sales portfolio. The lines above the bars represent three different demand scenarios analyzed in this IRP, and the bars represent firm natural gas supply. The chart demonstrates PSE has a small resource need beginning in the winter of 2031-2032, where the bars are below the Mid Demand line. Demand is shown prior to conservation since the cost-effective amount of conservation is an optimized result from the natural gas analysis.

Figure 1-7: Natural Gas Sales Design Peak Day Resource Need



Natural Gas Sales Resource Additions Forecast

The natural gas resource plan is a forecast of resource additions that look like they will be cost effective in the future given what we know about resource and market trends today. It calls for increased and continued investment in conservation to meet all future peak day capacity needs. Figure 1-8 summarizes the conservation that PSE forecasts to be cost effective in the future in terms of peak day capacity and MDth per day.

Figure 1-8: Natural Gas Resource Plan Forecast

	Cumulative Reduction to Demand (MDth/day)		
	2025-2026	2030-2031	2041-2042
Conservation	21	53	107

Conservation

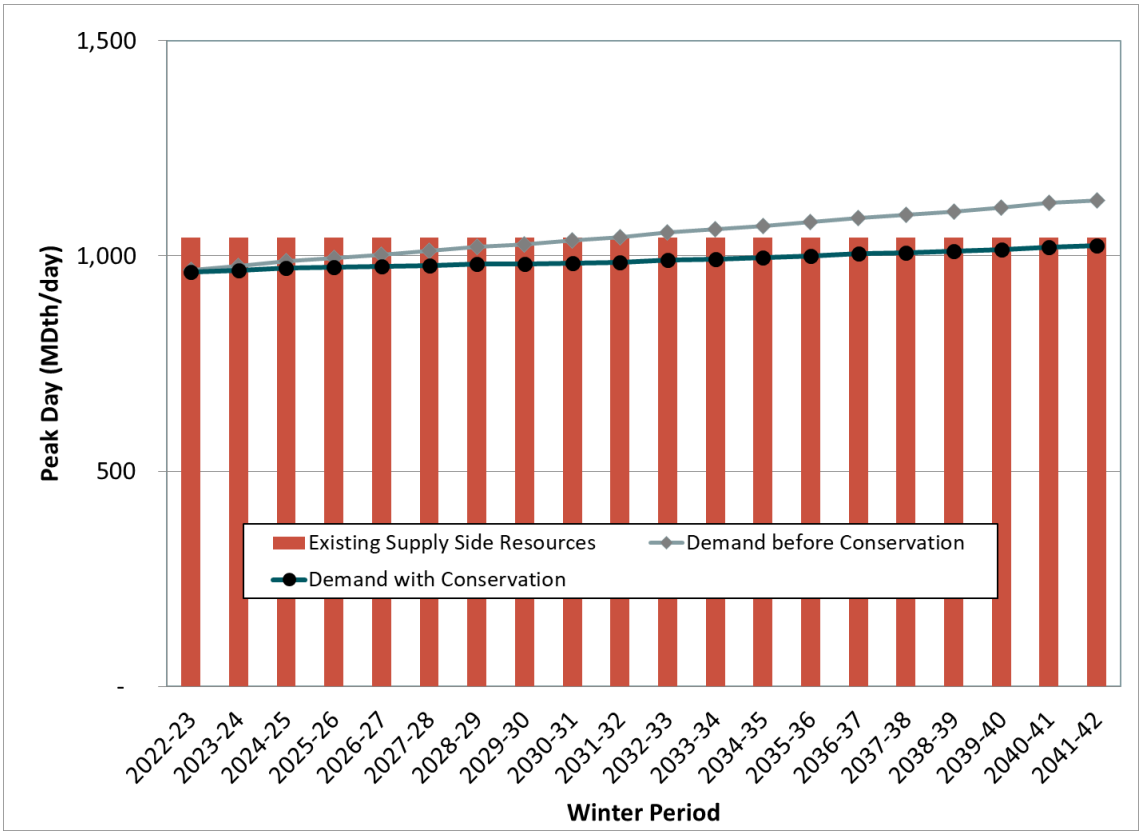
The social cost of greenhouse gases (SCGHG) has a big impact on the amount of cost-effective conservation. In 2019, the state of Washington passed new legislation that requires the inclusion of SCGHG and related upstream carbon emissions in determining cost-effective conservation. When the costs of SCGHG and upstream emissions added to natural gas prices, the resulting total cost is more three times the cost of the natural gas itself. As a result, the cost-effective amount of conservation almost doubles compared to recent energy efficiency savings and current targets, as shown in Figure 1-9.

Figure 1-9: Short-term Comparison of Natural Gas Energy Efficiency

Natural Gas Energy Efficiency	Energy Efficiency over 2-year program (MDth)
2018-2019 Actual Achievement	699
2020-2021 Target	795
2022-2023 Economic Potential in 2021 IRP	1,192

The important role that cost-effective, reliable conservation plays in moderating the need to add supply-side natural gas resources in the future can be seen in the black demand line in Figure 1-10. The bars represent the firm natural gas supply and the two lines above the bars represent natural gas demand with and without conservation.

Figure 1-10: Natural Gas Sales Resource Plan



Natural Gas Sales Short-term Action Plan

1. Acquire Energy Efficiency

Develop two-year targets and implement programs to acquire conservation, using the IRP as a starting point for goal-setting. This includes 12 MDth per day of capacity by 2024 through program savings and savings from codes and standards.

2. Renewable Natural Gas

Meet customer interest in carbon reduction programs through program development and implementation. Evaluate and develop strategies and pursue cost-effective opportunities for renewable natural gas (RNG) acquisition to support voluntary customer RNG programs and future carbon reduction.

3. Emission Reduction Strategy and Planning

Explore potential and voluntary carbon reduction opportunities, and develop and evaluate associated strategies for implementation. Bring the electric and natural gas modeling processes into closer alignment to improve the evaluation of future fuel use for power and the gas-to-electric end-use conversions. Explore the potential for the blending of clean fuels (hydrogen) with existing pipeline infrastructure and customer end use applications. Investigate a range of appliances that may assist with both reducing carbon and helping to ensure natural gas and electric system reliability on peak load days.