

Chapter 2. Accessing support for energy transition

Portland General Electric's (PGE's) resource and decarbonization planning is occurring against the backdrop of a global transformation from fossil fuels to non-emitting energy resources and storage in the power sector. Technological advancement and public policy are key drivers of this energy transition, with implications for the cost and pace of increased penetration of non-emitting energy resources in the energy supply mix and the rapid onset of electrification and energy storage. To manage costs and enhance reliability for customers during this highly dynamic period of evolution in the energy sector, PGE is actively seeking federal and state incentives and other opportunities. We are also working with organizations across the energy sector to access the latest research and coordinating with state agencies, community-based organizations, utilities, businesses and other actors in Oregon to deliver federal support for Oregon's energy transition. This chapter describes those efforts and the implications for PGE's resource and decarbonization planning.

Chapter highlights

- Federal and state policies are helping to drive rapid decarbonization in ways that impact PGE's resource planning.
- Federal legislation such as the Inflation Reduction Act (IRA) and Infrastructure Investment and Jobs Act (IIJA) that expanded and extended tax credits will facilitate PGE's acquisition of new resources and help manage customer rate impacts.
- We are working across the energy sector to stay abreast of rapid technological and market changes so that customers benefit from the rapid changes occurring across the energy ecosystem.

2.1 Federal support for energy transition

The 117th Congress delivered a comprehensive federal policy response to climate change and an investment package to support broad clean energy, climate and infrastructure investments. This includes enacting programs and funding that would support renewable energy development, clean transportation, energy efficiency, the resiliency of power infrastructure and clean energy research. The passage of the IRA and the IIJA has significant potential impacts on PGE's resource and decarbonization planning with potential benefits for customers.

In **Section 8.1.6, Treatment of tax credits**, we discuss how our Integrated Resource Plan (IRP) analysis incorporates incentives from the IRA and IIJA. At the time of writing this Clean Energy Plan (CEP) and IRP, not every potential channel or program for accessing this transition package is known; billions of dollars in funding from the IRA and IIJA are still making their way to state and local governments, and funding opportunities are still being announced. As these dollars can potentially reduce the costs of the energy transition for customers and render the communities we serve more equitable and resilient, PGE will actively pursue these and other state or local opportunities, often in collaboration with other organizations. PGE has already been successful winning federal Connected Communities funding for our Smart Grid Test Bed.

The implications of new funding opportunities and incentives for our resource and decarbonization strategies are potentially significant and likely include the following:

- Lower costs and accelerated buildout of renewables and stand-alone energy storage due to production and investment tax credits.
- Additional deployment of energy efficiency and demand response.
- Expansion of micro-grid and other resiliency investments.
- Accelerated electrification because of consumer incentives for electric vehicles, heat pumps and building retrofits.
- Faster development of emerging non-emitting, dispatchable technologies that could bring them into planning horizons earlier than currently anticipated.

2.1.1 Inflation Reduction Act

With the passage of the Federal IRA of 2022, Congress enacted extensions, expansions, modifications of clean energy tax provisions and provided funding and incentives to support

decarbonization, energy efficiency and electrification.¹⁸ This significant legislation has substantial implications for PGE, customers and climate and clean energy policy implementation.

Clean energy tax credits most directly affect PGE's decarbonization and resource strategy. Traditional Investment Credits and Production Tax Credits (ITCs and PTCs) for specific resources, such as wind and solar, were extended to apply to projects that begin construction from January 1, 2022 (retroactively) to December 31, 2024. A new credit for standalone energy storage began on January 1, 2023. On January 1, 2025, the credits transition to technology-neutral tax credits tied to emission reductions provided by the qualifying resource as determined by future Treasury Department guidance. Credit availability would phase out when the later of these two conditions is met: 1) when the US power sector emits 75 percent less carbon than 2022 levels or 2) December 31, 2032.

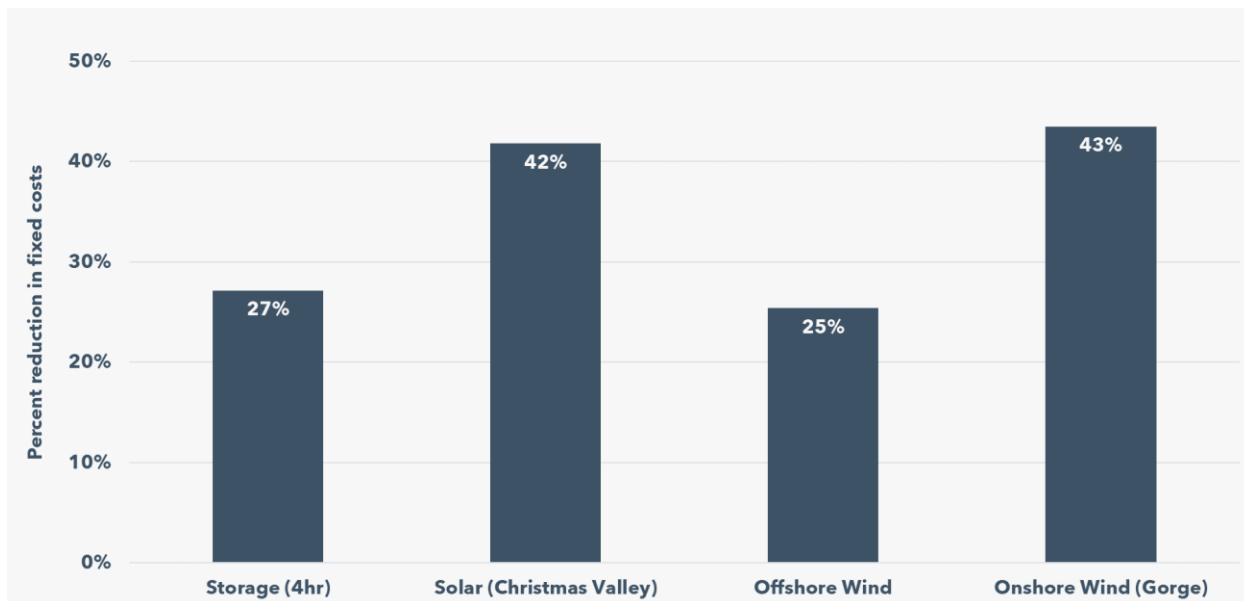
The ITCs and PTCs available for clean energy projects have been restored to full rates, eliminating previously planned phase-outs.¹⁹ However, eligibility for the full credit applies only if prevailing wage and apprenticeship requirements are met. Specifically, facilities must pay prevailing wages during construction and the first 10 years of operation. Using apprentices as a percentage of labor hours increases over time (10-15 percent of total labor). Exceptions to the apprenticeship requirement are possible for good faith efforts to hire apprentices. Additional adders are provided for meeting other criteria. These include a 10 percent increased credit for meeting domestic content requirements, a 10 percent increased credit for projects placed on or near a coal plant, referred to as Energy Community, that was retired after December 31, 2009; a 10 percent increased energy credit for solar and wind facilities with a net output of less than 5 megawatts (MW) placed in service in low-income communities or on tribal land; and a 20 percent increased credit for property that is part of a qualifying low-income residential building project or low-income economic benefit project. The 50 percent credit rate reduction for qualified hydroelectric production for property placed in service after December 31, 2022, is also eliminated.

The ITC and PTCs, after being restored to the full rates and taking advantage of the additional adders, can significantly reduce the costs of generating renewable energy. The estimated cost reductions for select sources of generation are seen in **Figure 14**. The IRP modeling assumes incremental resources are eligible for the 100 percent level of applicable tax credits.

¹⁸ Inflation Reduction Act of 2022, Pub. L. 117-169, Aug. 16, 2022, 136 Stat.1818.

¹⁹ Modeling in this IRP assumes all requirements met by incremental resources to maximize tax potential. For additional information on the requirements associated with tax credits, please see the Inflation Reduction Act of 2022, available at: <https://www.congress.gov/bill/117th-congress/house-bill/5376>

Figure 14. Estimated cost reduction from IRA for select generation sources



The IRA attempted to resolve an important clean energy tax disadvantage that impacts resource costs for utility customers. The ITC is subject to tax normalization rules, which require public utilities to recognize the benefits from the ITC over the life of the resource, while non-utilities can recognize the benefits of the ITC in year one. The IRA provides alternatives to the ITC by providing a solar PTC and an opt-out from normalization rules for the new standalone storage ITC. However, the IRA was written, whether intentionally or not, so that the clean energy tax credit adders are not applied equally to the ITCs and PTCs. For example, the ITC, with one adder, goes from 30 percent to 40 percent of capital costs, which is a 33 percent increase in the credits value, while the PTC rate for generation only increases by 10 percent. This disproportionate increase will make the ITC with adders more valuable than a similar PTC with adders. Therefore, the normalization issue will likely persist only for solar projects, given its lower annual output compared to wind. PGE will continue exploring different options to work around the normalization issue, such as a wholly owned regulated affiliate, to promote greater competition in future resource solicitations to deliver the least cost resources for customers.

Overall, the clean energy provisions of this new legislation are expected to affect PGE's acquisition of new resources by helping keep customer rates lower through expanded and extended credits. Additionally, the IRA creates the concept of credit transferability. This allows for the sale of PTCs and ITCs generated by either new or existing facilities after December 31, 2022. PGE currently has a surplus of tax credits, resulting in a carryforward balance included in the rate base. However, with transferability, PGE will be able to monetize the value of the credits much more efficiently and eliminate the carryforward balance more quickly. This ultimately leads to lower costs for customers.

Other provisions in the law will support the expansion of transmission, help advance permitting, provide grants to support projects and support energy efficiency and transportation electrification. For example, the Building A Better Grid Initiative (BABGI)²⁰ incentivizes the development of new and upgraded transmission infrastructure. Key BABGI elements include:

- \$2.5 billion Transmission Facilitation Program intended to support the development of nationally significant transmission lines, increase inter-regional connectivity and create access to renewables.
- \$2.3 billion in Grid Innovation grants to states, territories and tribes to strengthen and modernize the country's grid. (PGE is working with the Confederated Tribes of Warm Springs in an effort to develop a qualifying project).
- \$10.5 billion Grid Resilience and Innovation Partnership Program, which includes funding for projects that improve the grid's resilience, enhance grid flexibility and support the development of transmission and distribution (T&D) infrastructure.
- \$760 million dollar Transmission Siting and Economic Development Grants program.

Also included are clean vehicle provisions, energy efficient credits and residential clean energy credits.

The IRA eliminates the previous 200,000-vehicle manufacturer cap on the clean vehicle tax credit, which means Tesla, GM and Toyota EVs will be eligible again. The Electric Vehicle (EV) credit will now be available for both new (credit up to \$7,500) and used (credit is the lesser of \$4,000 or 30 percent of sales price) vehicles. The credit does require vehicles to undergo final assembly in North America, which has limited the vehicles that currently qualify for credits. In addition, credits after December 31, 2023, and December 31, 2024, are increasingly tied to where minerals and batteries, respectively, are sourced, favoring materials from free trade partners. The electric vehicle (EV) and alternative fuel charging

²⁰ More information on the 'Building a better grid' initiative, available at: <https://www.energy.gov/gdo/building-better-grid-initiative>

credits are extended through 2032. Despite new limitations to some provisions, it is expected that these tax credits, along with others supporting transportation electrification, such as US Environmental Protection Agency (EPA) grants and commercial and manufacturing credits, will drive additional adoption of EVs and support transportation electrification. PGE's long-term load forecast will increase as a result. In this IRP, we consider a broad range of load growth scenarios to account for the potential impacts of factors that may accelerate electrification. This is further described in **Section 4.2, Need Futures**. Furthermore, PGE has also assessed how energy and capacity needs would change if the load grew faster than the high case. This is further described in **Section 6.10.2, Accelerated load growth sensitivity**.

The Residential Energy Efficient Home Improvement credit is restored through 2032 and promotes energy efficiency investments in homes. Residential clean energy credits of 30 percent are extended in full through 2032, with a phase-out through 2034. Residential customers will be able to apply this credit to solar installations and standalone energy storage systems.

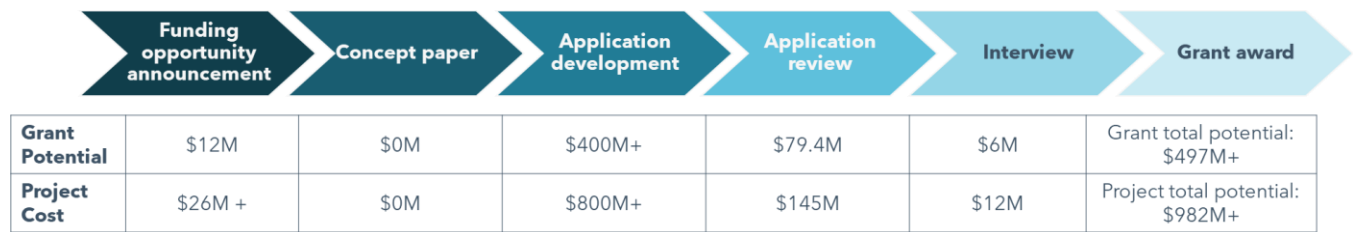
One additional goal of the IRA is to strengthen domestic manufacturing. This aim is reflected in the varying domestic content requirements for credits, as previously noted, for example, in the clean energy and clean vehicle tax credits. The domestic supply chain ecosystem will take time to develop, and the expectation is that there will continue to be supply chain issues in the short-term planning horizon.

2.1.2 Infrastructure Investment and Jobs Act

The IIJA was signed into law on November 15, 2021. The IIJA directs \$1.2 trillion of spending to infrastructure, defined very broadly. This includes traditional infrastructure funding focused on roads and bridges, public transit systems, passenger rail, ports and airports, as well as investments in the electric grid, broadband infrastructure, water systems, cybersecurity, transportation electrification and climate resilience. It will spur a historic investment in energy. Most notably among its many programs, the bill funds \$23 billion to enhance the resiliency of the power infrastructure and investment in renewable energy, \$21.5 billion to develop clean energy demonstrations and research hubs, \$9 billion to enhance manufacturing facilities and projects, and \$5 billion to boost energy efficiency and clean energy creation. It also has over \$18 billion in support of EV charging deployment, clean transit and school buses, and other transportation electrification funding.

PGE is pursuing - and plans to pursue - grant opportunities for infrastructure projects that can benefit customers and lower customer rate impacts. Currently, PGE is currently following the grant submission process for over \$500M of potential award, on just over \$900M of total project cost. The overall status of grants that PGE is pursuing through IIJA is shown in **Figure 15**, which is current as of March 2023:

Figure 15. IJA grant submission and funding progress



The funding opportunities sought by PGE align with the need for decarbonized energy supply, reliable service and more flexible processes and systems to meet customer needs. PGE’s funding opportunities seek to meet those objectives as follows:

Grid resiliency improvement projects: These projects will accelerate the modernization of our T&D grid with the implementation of a variety of technologies. These technologies include distribution automation and early fault detection, along with hardening techniques such as undergrounding of high voltage lines and the installation of covered conductors where appropriate within PGE’s High Fire Risk Zones (HFRZs).²¹ We will also seek funding to upgrade existing lines to allow for the import of additional carbon-free generation to meet PGE’s clean energy targets.

Middle mile fiber: The focus area will prioritize broadband communications and grid resiliency by providing broadband services to underserved communities along existing transmission paths. Fiber optic communications cables also will provide increased resiliency and communication options for PGE and customers.

Grid services demonstration: This demonstration will highlight the ways in which technologies at an existing PGE renewable energy facility can provide different types of active and reactive power controls to transform a renewable resource from a simple intermittent energy source to a resource capable of providing a wide range of grid services.

Hydropower initiatives: Hydropower facility grants will allow for upgrades and improvements that target resiliency, dam safety and environmental projects at multiple facilities that meet the requirements of the funding opportunity announcement. PGE continues to invest in hydropower as a carbon-free source of dispatchable capacity.

²¹ HFRZs are areas within PGE’s service territory where vegetation, terrain, meteorological patterns and wildland-urban interface considerations increase the risks associated with wildfire. PGE implements specific inspection and maintenance, vegetation management and operational actions within these HFRZs during and in preparation for PGE’s declared Fire Season for improved ignition prevention and safety.

Table 4. Active PGE project applications

Grant Vehicle	Focus area	Projects	Grant Funding
IIJA Grid Resilience and Innovation Partnerships (GRIP)	Topic area 1 / Grid resilience	1	\$100M
	Topic area 2 /Grid flexibility	2	\$50+M
	Topic area 3 / Transmission innovative partnerships	1	\$250M
National Telecommunication and Information Administration (NTIA)/IIJA	Middle Mile	1	\$29M
IIJA	Grid services demonstration	1	\$6M
IIJA	HydroWIRES technical assistance	1	TBD
IIJA	Hydropower incentives	4	\$13M

2.2 State support for energy transition

Federal funding for the clean energy transition will be made available through different programs and channels, including those available to state agencies, utilities, businesses, community-based organizations, Tribes and local governments. PGE is committed to working with entities across Oregon to help deliver federal funding for the energy transition. While not all the previously-referenced federal funding for transition will flow through state agencies, the Oregon Department of Energy (ODOE) and Oregon Department of Transportation (ODOT) will be important conduits for customers to access these new opportunities.

With the new federal funding available, DOE has received and is seeking additional funding for the State Energy Program to support energy efficiency, resilience and sustainable transportation.²² In addition, DOE is seeking funding for grid resilience, building codes and electrification, and energy efficiency programs, including an energy efficiency revolving loan fund. DOE is also supporting the energy transition under the direction of House Bill (HB) 2021. DOE was required to convene stakeholders to conduct a Small-Scale Renewable Energy Projects study.²³ HB 2021 also created a \$50 million fund to provide grants for planning and developing community renewable energy and energy resiliency projects. While the grant program is not open to investor-owned utilities like PGE, it is available for Tribes and local governments in our service territory.

ODOT will receive \$52 million in federal funds through the IJJA's National Electric Vehicle Formula Program over five years.²⁴ That program provides funding to states to build electric vehicle (EV) charging infrastructure and facilitate EV charging data collection, access and reliability. ODOT plans to work with a broad range of stakeholders and partners, including PGE, to apply funding toward building out passenger vehicle corridors, future-proofing corridors for future heavy-duty freight charging, and filling public EV charging gaps for medium- and heavy-duty vehicles, BIPOC and rural communities. Combined with other state policies helping to accelerate vehicle electrification, this additional funding can help accelerate the growth of new flexible loads in our service territory.

2.3 Technology and market research

Decarbonizing reliably and affordably for customers means staying abreast of the latest clean energy technology and market research across the globe. The energy landscape is rapidly evolving. To deploy customer dollars prudently in proven technologies, PGE works with other organizations to gain access to cutting edge data and information and to pool research dollars and best practices. For example, we are actively working with the Energy Power Research Institute (EPRI) on issues ranging from climate adaptation, wildfire protection, safety and transmission planning to new non-emitting technologies of the future, like carbon capture and storage, hydrogen and others. We participate in consortiums with utilities and energy companies that invest in early-stage new technologies to mitigate risks while learning first-hand how those technologies are evolving. Our CEO, Maria Pope, serves on the Secretary of Energy Advisory Board, and as part of the smart grid working group, PGE has

²² Information about the State Energy Program is available at: <https://www.energy.gov/scep/about-state-energy-program>

²³ Information about the Small-Scale Renewable Energy Projects Study is available at: <https://www.oregon.gov/energy/Data-and-Reports/Pages/SSREP-Study.aspx>

²⁴ Information about the National Electric Vehicle Formula Program is available at: <https://www.transportation.gov/bipartisan-infrastructure-law/regulations/2022-12704>

prepared whitepapers for the ODOE on the virtual power plant (VPP) and transmission planning for distributed energy resources (DERs).

These relationships and others help us deliver the benefits of rapid technological change across the global energy ecosystem to customers in Oregon. They have helped us to lower our operating costs, minimize disruptions and transform how we integrate wind, solar and battery technologies. For example, our Wheatridge facility was the first of its scale to combine all three technologies to better utilize existing significant and scarce transmission resources and to serve customers with non-emitting power. As we look to the future and lowering emissions to meet our targets, these relationships and access to federal and state support for energy transition will help us manage costs for customers and provide exceptional products and services.