Oregon Energy Strategy Q&A

This document addresses questions about the Oregon Energy Strategy, and we will update this document from time to time. We also encourage written comments to be submitted to the Oregon Energy Strategy Comment Portal or email energy.strategy@energy.oregon.gov with questions.

Contents:

Q: What is the Oregon Energy Strategy?

A: The Oregon Legislature, through HB 3630, directed ODOE to develop the Oregon Energy Strategy. HB 3630 directs the energy strategy to identify pathways to meeting our state's energy policy objectives. The report will be developed in consultation with relevant agencies, federally recognized Tribes, and stakeholders. It will further build on state laws, policies, and targets regarding energy and greenhouse gas emissions; existing energy and integrated resource plans; and energy-related studies and data analysis.

The development of the Oregon Energy Strategy is a two-and-a-half-year project, beginning in July 2023, with a final written report to the Governor and Legislature due by November 1, 2025.

The development of the strategy begins with a modeling exercise that solves to meet Oregon's anchor climate and clean energy goals: Executive Order 20-04 (80 percent economy-wide reduction in greenhouse gas emissions by 2050); HB 2021 (100 percent clean electricity for the state's largest investor-owned electric utilities and Electricity Service Suppliers), and the Climate Protection Program (90 percent reduction in greenhouse gas emissions from fuels by 2050).

Q: Who is performing this work?

A: The Oregon Department of Energy is developing the Oregon Energy Strategy in consultation with relevant agencies, federally recognized Tribes, and stakeholders. ODOE has contracted the Clean Energy Transition Institute to perform the technical modeling. Their team includes Evolved Energy Research, Moment Energy Insights, and Rockcress Consulting. ODOE has also contracted Kearns & West to facilitate public engagement.

Q: How will the Oregon Energy Strategy be developed?

A: The Oregon Energy Strategy will be built through a two-phase process that begins with a data collection and modeling phase that is used to provide information for a policy analysis and recommendations development phase. The first phase is a collaborative process to gather data and define scenarios for modeling inputs with experts, including those with technical and lived experience and expertise. The results of the data collection and modeling phase will provide information for the second phase, which will focus on development of policy analysis and recommendations.

The second phase will use the information learned through the modeling to understand trade-offs of different energy choices as the basis for developing energy policy recommendations. Both phases are designed with an iterative stakeholder engagement process that ensures an inclusive and informed strategy. To keep stakeholders and the public informed of progress and opportunities for engagement, ODOE will be updating this webpage regularly with relevant information.

ODOE has presented on the process timeline, as seen in slide 30 of this presentation. The first phase of the Oregon Energy Strategy is focused on technical analysis and modeling. The results of the modeling will then help inform policy discussions in the second phase.

Q: How can I participate in this process?

A: There are many opportunities to share input and contribute throughout the development of the Oregon Energy Strategy. To keep stakeholders and the public informed of progress and opportunities for engagement, ODOE will be updating the project webpage regularly with relevant information found here: https://www.oregon.gov/energy/Data-and-Reports/Pages/Energy-Strategy.aspx.

All Advisory Group and Working Group meetings will be open to the public to attend. ODOE will also host several open opportunities for Oregonians to learn the latest about the Energy Strategy and provide feedback. Find the full schedule of all public Oregon Energy Strategy meetings here.

We encourage written comments to be submitted to the Oregon Energy Strategy Comment Portal. Additionally, you can sign up to receive email updates and find public meeting information and materials at this webpage.

Q: What is the Advisory Group?

A: The Oregon Energy Strategy Advisory Group plays a key role in contributing to the first phase of the Oregon Energy Strategy. Members share insights, offer recommendations, and provide advice to the project team as they work to produce the strategy. All Advisory Group meetings will be open to the public to attend, and the membership list is available here.

Q: What are the Working Groups? Who is on them?

A: In addition to the Advisory Group, eight focus-area Working Groups were created to help inform the development of the first phase of the Oregon Energy Strategy:

1. Buildings
2. Direct Use Fuels and Industry
3. Electricity Generation Technologies
4. Energy Efficiency and Load Flexibility
5. Environmental Justice and Equity
6. Land Use and Natural Resources
7. Transmission and Distribution
8. Transportation

The Working Groups are ODOE's resource for technical and community expertise. The Working Group membership list is available here.

Q: What modeling software is being used? PLEXOS? Aurora?

A: Evolved Energy Research uses its proprietary modeling software: 1-EnergyPATHWAYS to calculate energy demand in the economy, and 2-the Regional Investment and Operations platform (RIO) to optimize the supply side.

Q: Is the model publicly available?

A: All data that goes into the model will be public and published. The models themselves are proprietary and are Evolved Energy Research's intellectual property, but in comparison to open-source models, EER's models include more detail.

Q: Does the model calculate cumulative greenhouse gas emissions differences between scenarios?

A: Yes. The model will hit greenhouse gas emissions targets in all scenarios. Depending on strategies taken in scenarios, the model will show different ways of complying with those targets. For example, if you were to reduce emissions less in transportation, you would need to do more in other places in the economy to achieve the economy-wide target, and this will show up in the emissions results.

Q: Given that most of the models look at least-cost scenario, will there be an opportunity to explore a best value scenario that looks at other benefits such as benefits for climate, workers, ratepayers, and economic development? Would that require additional resources and legislation?

A: All the modeled scenarios will solve for the least cost path to achieving climate and energy objectives and reliability. There are two ways that the analysis will consider other benefits. First, each of the five alternative scenarios will provide insights into the differences in overall costs compared to the Reference Scenario. Second, ODOE and CETI will conduct complementary analysis to further tease out what the differences between scenarios mean in terms of jobs, household energy costs, and some other areas like air quality and public health. These analyses will inform policy discussions in phase two of the project.

Q: Can you provide more detail about level of detail in demand sectors? What are the energy sector demands for buildings, transportation fleet – classes of vehicles, etc.?

A: For transportation, the model includes the thirteen source use types for highway vehicles from EPA's Motor Vehicle Emission Simulator (MOVES4). We can apply different assumptions for each source use type, in addition to the cost of vehicle charging infrastructure.

For buildings, the energy demand is also broken out by service types, including heating, cooling, water heating, clothes washing and drying, cooking, etc. The model includes a variety of technologies that could be installed to meet that energy demand. These technologies would be compliant with current efficiency standards, and we include the option to install high-efficiency versions beyond mandated standards.

Q: What is the level of detail the modeling can get into on regional markets? For example, can it evaluate what happens if Bonneville Power Administration joins the California Independent System Operator (CAISO) or the Southwest Power Pool day-ahead market?

A: The model is intended to examine Oregon at the statewide level, with consideration of Oregon's interdependence within the region and regional markets for fuels, technologies, and electricity. The model optimizes physical flows across the region without accounting for balancing area seams or other non-physical constraints. ODOE does not want to get ahead of existing work happening with different electricity providers, regulators, and market participants.

Q: If you aren't making assumptions about electricity market design, how do you model the competition of energy resources from other western states with net zero electricity goals?

A: In the model, other states' economies compete for resources to meet demand and are also constrained by the clean energy policies they have in place. The model invests in and dispatches the best economic resources for the system on an hourly basis. Both Oregon and other states have opportunities to import from other states.

Q: Will the modeling include scenarios like substantial build outs of local public & mass transportation in addition to 1-1 replacement of gas-powered individual vehicles with EVs?

A: The logic in the model assumes a certain percentage of vehicle sales in the future are electric vehicles, relying on existing policy such as Advanced Clean Cars II and Advanced Clean Trucks. Thus, as gas-powered vehicles reach the end of their useful life, the model assumes an increasing percentage are replaced with electric vehicles each year. Building out local public and mass transportation is not included in the model, but we can represent the estimated impact of doing so. For example, we could model a scenario with reduced vehicle miles traveled (VMT) that could be the result of increased public transportation options, zoning policies, etc. However, the model wouldn't capture what it would cost to invest in that mass transit (or other measures).

Q: Another example for modeling: will it consider scenarios around penetration of low carbon fuels like renewable diesel. Or only consider electric or hydrogen levers?

A: Yes, the model includes clean fuels and could produce different scenarios for different fuel availability assumptions. The model represents a supply chain for each of the fuel types (jet fuel, diesel, etc.). Demand for a particular fuel type can be met with a blend of fossil fuel plus clean fuels, including those derived from biomass, hydrogen, etc.

Q: How does the model account for the commercial and economic maturity (or lack of maturity/availability) of various clean energy technologies?

A: The modeling is mostly limited to technology that is commercially viable and has price forecasts. It uses technology price forecasts from public studies, in particular estimates from the National Renewable Energy Laboratory (NREL). It does not include pilot projects or lab projects since we do not know if those will be feasible at scale. This is a conservative approach because by the 2040s and beyond, there will likely be technology options available that are not currently viable.

Q: How does the model address infrastructure needs?

A: The model is based on physical infrastructure build and the cost and operations of that build. For example, the model includes infrastructure costs for every step of the hydrogen supply chain, including storage facilities, midstream infrastructure for conversion (methanation, Haber-Bosch, Fischer-Tropsch, etc.), and delivery of hydrogen or hydrogen-derived fuels. Codes and standards impacting the infrastructure in each of these steps are not explicit in the model but instead incorporated into the cost assumptions used in the model from public sources.

Q: Does the model consider demand-side resources? Will it suggest how demand-side resources could be best utilized to support community-level and household-level needs?

A: The modeling includes demand-side participation at a technology level, representing the opportunity to shift loads in heating, cooling, and charging applications. How much flexible load exists is an input assumption into the model. The model calculates distribution system avoided costs based on an average value but would not get to the level to assess where on the distribution system the state might have the greatest value for demand-side options. Details regarding how utilities or third parties would manage demand-side resources would not be explicit in the model, but would rather be something for discussion in the policy phase of the project.

Q: How does the model account for environmental justice concerns regarding land use?

A: We will be modeling Oregon as two zones – East and West. The potential available land that the model can draw from is developed from land-use layers and considerations about land that resources are located on. This potential has been screened for environmental and environmental justice concerns, so in that respect some environmental justice concerns are incorporated directly into the model. The model will not show where resources are located (by county or specific site). Modeling results will include the capacity of each resource in eastern and western Oregon. This information coupled with the types of land exclusions included in the modeling assumption will provide a basis for discussion on land use considerations.

The model will also include layers for coastal ocean space. Both land use and coastal layers will be based on the methodologies applied in the Nature Conservancy's Power of Place West study, and ODOE is collecting feedback on these layers through its consultation process.

Q: Does the model take carbon intensity of biofuels into account? And/or can the carbon intensity of biofuels be adjusted for different scenarios?

A: The model incorporates the carbon intensity of biofuels based on Oregon Department of Environmental Quality Climate Protection Program's indirect land use change (ILUC) emissions values. We can adjust the carbon intensity of biofuels by scenario if desired and represent them by fuel, whether they change over time, and what the particular carbon accounting rules are.

Q: Does the model include different types of solar?

A: Yes, it includes distributed/rooftop solar and utility-scale solar.

Q: Will the model calculate a rough estimate of in-state generation vs. imports from out of state?

A: Yes.

Q: Does the model include projections around data centers, crypto, AI usage?

A: Currently the proposed draft scenario includes a forecast from the Northwest Power and Conservation Council for data center adoption. There is a high degree of uncertainty in the model concerning data center and crypto operations because their resource demands are difficult to characterize, and the data center market is very mobile and can switch quickly from one place to another.

Q: Will Oregon floating offshore wind in 2035 be included, in comparison to solar and onshore wind?

A: Offshore wind is a potential resource available to meet regional/state energy demands and has a long-lead time. Similar to other resources, like solar, offshore wind is included in the modeling such that it is available for selection if it is cost-effective, relative to other resource options, to meet energy demands.

Q: Are natural detriments like wildfires included?

A: Wildfires are included in siting constraints in the underlying dataset on renewables and transmission. Wildfires in terms of resilience are not included directly in the model, but have already been raised as a point of concern to discuss in the Oregon Energy Strategy policy discussions ODOE will be hosting in early 2025.

Q: Is this the only time that ODOE will produce an Oregon Energy Strategy?

A: The Oregon Energy Strategy will be updated over time. We are not modeling to find solutions or clear answers, we are modeling to inform our thinking. We know that information will change over time, and we can come up with recommendations for further studies that the current exercise does not allow for. There may be additional complementary studies.

Q: Is hydrogen included as an electricity generation resource in the reference scenario? Where can I find more information about data and assumptions in the reference scenario?

A: ODOE is proposing that hydrogen be included as a potential electricity generation resource in the reference scenario. For more on the data and assumptions for the reference scenario that ODOE solicited comments on, see the online document Draft Reference Scenario Key Data and Assumptions.

Q: Is ODOE proposing to use any data from the Northwest Power & Conservation Council's 2021 Plan?

A: ODOE is not proposing to use any specific data from the 2021 Plan. The Oregon Energy Strategy Draft Reference Scenario Key Data and Assumptions includes two Northwest Power & Conservation Council data sets, including their March 2024 rooftop solar projections that staff presented at the March 2024 Council meeting, and their Pacific Northwest Power Supply Adequacy Assessment for 2029 base case, with load differentiated across modeling zones.

Q: Was there discussion about other potential co-benefits of distributed resources? Resilience benefits, local community benefits, etc.

A: Co-benefits of distributed resources have been a topic for discussion in several working group and other meetings. ODOE and CETI will be conducting complementary analysis to understand non-energy costs and benefits of different scenarios, including on jobs, household energy costs, and some other areas like air quality and public health. These may provide insights on the co-benefits of distributed resources. We anticipate that the Oregon Energy Strategy Phase 2 stakeholder policy discussions will include discussions on many types of co-benefits.

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