



The Oregon Department of Energy is developing the Oregon Energy Strategy, which will identify pathways to achieve the state’s energy objectives. The strategy will evaluate benefits and challenges of different pathways, present policy recommendations, and reflect input from Oregonians who informed the strategy.

Using input from Tribes, the Energy Strategy’s Advisory and Working Groups, staff-to-staff conversations with state agencies and participation in an Inter-Agency Steering Group, and comments from the public, ODOE and its technical contractors have developed scenarios that represent different energy pathways the state could take to achieve its energy policy objectives by 2050. The model compares energy pathways from a Reference Scenario to six Alternative Scenarios. For more information on how the model works and the key assumptions for the Reference and Alternative Scenarios, see the [Energy Strategy Modeling Assumptions and Sources](#) document.

Building on the results of the energy pathways modeling, the technical analysis will evaluate effects of different pathways on energy sector employment. Using an input-output model, the jobs analysis will estimate how investments from the modeled energy pathways may affect net energy sector employment. This document outlines the methodology for the jobs analysis at a high level. A full technical approach will be included in the final Oregon Energy Strategy report.

## Summary of Input-Output Models

Input-output (I/O) modeling is used to generate employment estimates based on different investments or changes in a given economy over time. The research team will use two different I/O models:

1. **IMPLAN**, short for “impact analysis for planning”
2. **JEDI**, National Renewable Energy Laboratory’s Jobs and Economic Development Impact model

I/O modeling outputs are broken down into direct, indirect, and induced impacts:

- **Direct effects** show the change in the economy associated with the initial economic activity.
- **Indirect effects** include all the backward linkages or the supply chain responses resulting from the initial direct economic activity.
- **Induced effects** refer to the effects of increased household spending and are the result of direct and indirect workers spending their wages within the local economy.

## Sector Framework

The technical analysis will estimate employment across Oregon’s Electricity, Fuels, Buildings, and Transportation sectors. Employment outputs do not extend to parts of the economy that are not connected to the four primary sectors. The **Electricity, Fuels, Buildings, and Transportation** sectors are further broken down into the following 26 sub-sectors:

Electricity	Fuels	Buildings	Transportation
Distributed Solar	Hydrogen	Commercial HVAC	Vehicle Manufacturing
Utility Solar	Biofuels	Commercial Other	Wholesale Trade Parts
Land-based Wind	Natural Gas	Residential HVAC	Vehicle Maintenance
Hydropower	Natural Gas Distribution	Residential Shell	Charging Stations
Distribution	Other Fossil Fuels	Residential Other	Conventional Fueling Stations
Transmission			
Storage			
Natural Gas Generation			
Other Fossil Generation			
Nuclear			
Other Renewable Generation			

## Initial Employment Output Methodology

The Initial Employment Outputs (IEOs) estimate the quantity of jobs by value chain in the baseline year (2023) and in 2025, 2030, 2035, 2040, 2045, and 2050. The value chain details the industry area in which direct and indirect jobs are employed, which include **Construction, Manufacturing, Professional Services, Other Supply Chain, and Induced** employment. IEOs are provided for each sub-sector and scenario. IEOs for the Reference Scenario will be broken down by region—with outputs presented for **Oregon state, Western Oregon, and Eastern Oregon**—while IEOs for each of the six alternative scenarios will be presented only at the state level. The IEO methodology follows five steps:

1. Initially, the research team **determines the unit inputs** for the model. Unit inputs typically come from the forecasts developed by Evolved Energy Research (EER) data and take the form of device stocks and sales, MW of electric capacity, and fuel demand over time.
2. Next, the research team **determines the total investments** associated with the unit inputs described in Step 1 above. Investment inputs come from the forecasts developed by EER data where provided, and additional investments are developed based on secondary sources where needed.
3. Next, the research team **allocates the investment data into the relevant industry categories** based on the activities associated with the investments by using technical cost data from secondary sources.
4. Next, the research team **applies IMPLAN/JEDI industry employment multipliers** based on the allocation described in Step 3 to calculate employment outputs.
5. Finally, **employment outputs are reported** by industry category (Construction, Professional Services, Manufacturing, Other Supply Chain, and Induced). The 2023 baseline employment is derived from the [2024 United States Energy and Employment Report](#) (USEER).

## Secondary Employment Output Methodology

The Secondary Employment Outputs (SEO) translate the direct and indirect employment estimates generated by the IEOs into occupational outputs, illustrating how jobs would change by occupation and wage distribution across the region. SEOs are presented for the baseline year (2023) and 2035 by detailed occupations and wage tiers and will only be run for the Reference Scenario. This SEO work will:

1. Complete a crosswalk of IMPLAN industry categories to North American Industry Classification System (NAICS) codes for each of the sub-sectors by four of the value chain categories as defined in the IEOs – Construction, Manufacturing, Professional Services, and Other Supply Chain – omitting induced employment.
2. Run direct and indirect employment from IEOs through proprietary staffing patterns (NAICS to SOC) for each of the value chain categories within each sub-sector for 2023 and 2035 to estimate employment by detailed occupations.
3. Using finalized occupational employment within sub-sector and value chain categories, wages are grouped into three tiers: Tier 1, or above a sustaining wage; Tier 2, or at a sustaining wage; and Tier 3, or below a sustaining wage, defined by the MIT Living Wage Calculator.