Oregon Department of **ENERGY**

Oregon State Energy Strategy
Project Update

Senate Committee on Energy & Environment

Edith Bayer, Energy Strategy Team Lead

Jessica Reichers, Technology & Policy Manager

April 21, 2025

50 YEARS of SERVICE OREGON DEPARTMENT OF ENERGY

OREGON DEPARTMENT OF ENERGY

Leading Oregon to a safe, equitable, clean, and sustainable energy future.

Our Mission

The Oregon Department of Energy helps Oregonians make informed decisions and maintain a resilient and affordable energy system. We advance solutions to shape an equitable clean energy transition, protect the environment and public health, and responsibly balance energy needs and impacts for current and future generations.

What We Do

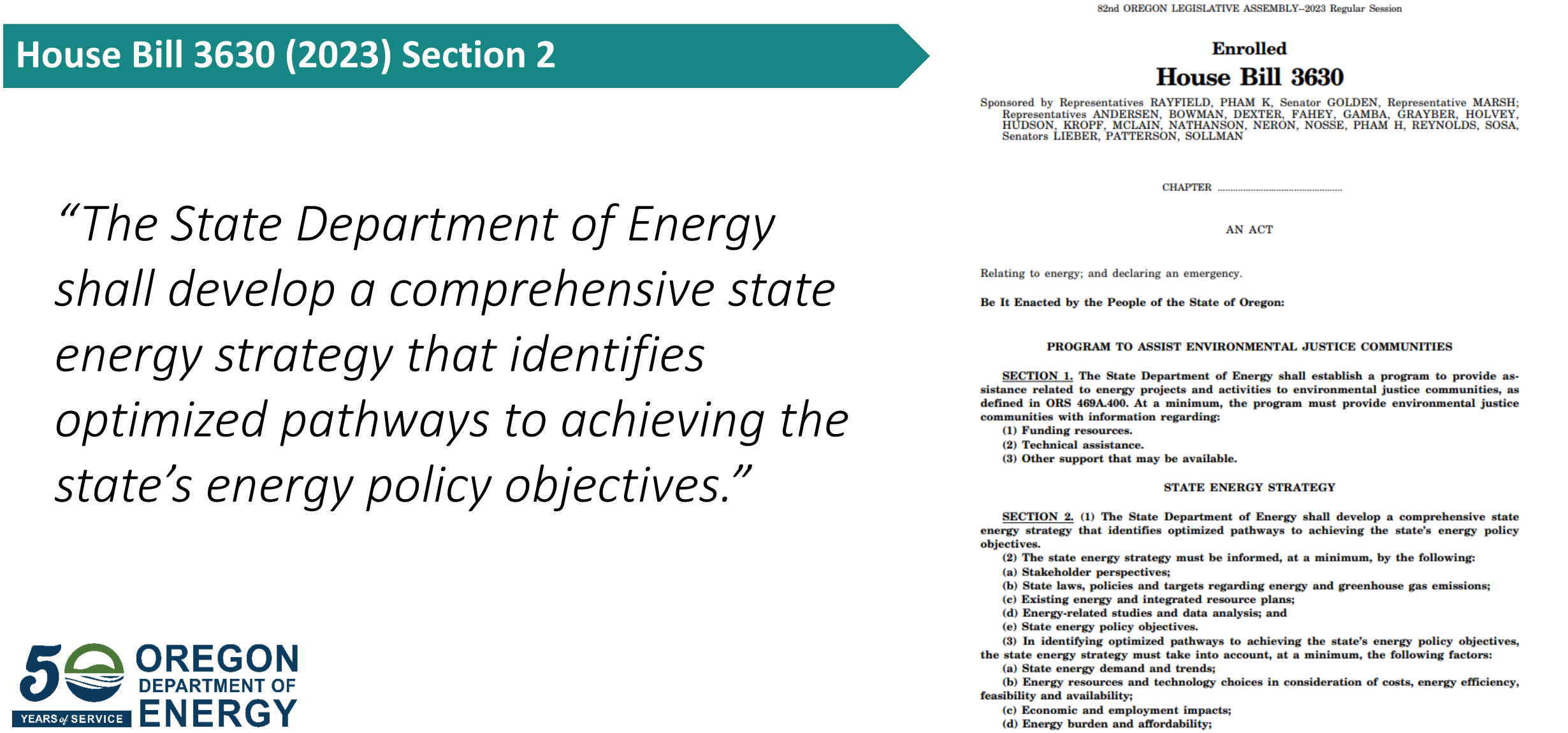
On behalf of Oregonians across the state, the Oregon Department of Energy achieves its mission by providing:

- A Central Repository of Energy Data, Information, and Analysis
- A Venue for Problem-Solving Oregon's Energy Challenges
- Energy Education and Technical Assistance
- Regulation and Oversight
- Energy Programs and Activities

OREGON STATE ENERGY STRATEGY

House Bill 3630 (2023) Section 2

"The State Department of Energy shall develop a comprehensive state energy strategy that identifies optimized pathways to achieving the state's energy policy objectives."



82nd OREGON LEGISLATIVE ASSEMBLY--2023 Regular Session

Enrolled

House Bill 3630

Sponsored by Representatives RAYFIELD, PHAM K, Senator GOLDEN, Representative MARSH; Representatives ANDERSEN, BOWMAN, DEXTER, FAHEY, GAMBA, GRAYBER, HOLVEY, HUDSON, KROPF, MCLAIN, NATHANSON, NERON, NOSSE, PHAM H, REYNOLDS, SOSA, Senators LIEBER, PATTERSON, SOLLMAN

CHAPTER .....

AN ACT

Relating to energy; and declaring an emergency.

Be It Enacted by the People of the State of Oregon:

PROGRAM TO ASSIST ENVIRONMENTAL JUSTICE COMMUNITIES

SECTION 1. The State Department of Energy shall establish a program to provide assistance related to energy projects and activities to environmental justice communities, as defined in ORS 469A.400. At a minimum, the program must provide environmental justice communities with information regarding:

(1) Funding resources.

(2) Technical assistance.

(3) Other support that may be available.

STATE ENERGY STRATEGY

SECTION 2. (1) The State Department of Energy shall develop a comprehensive state energy strategy that identifies optimized pathways to achieving the state's energy policy objectives.

(2) The state energy strategy must be informed, at a minimum, by the following:

(a) Stakeholder perspectives;

(b) State laws, policies and targets regarding energy and greenhouse gas emissions;

(c) Existing energy and integrated resource plans;

(d) Energy-related studies and data analysis; and

(e) State energy policy objectives.

(3) In identifying optimized pathways to achieving the state's energy policy objectives, the state energy strategy must take into account, at a minimum, the following factors:

(a) State energy demand and trends;

(b) Energy resources and technology choices in consideration of costs, energy efficiency, feasibility and availability;

(c) Economic and employment impacts;

(d) Energy burden and affordability;

50 YEARS of SERVICE OREGON DEPARTMENT OF ENERGY

SCOPE OF THE ENERGY STRATEGY

Must be informed by:

- Stakeholder perspectives
- State laws, policies, targets re: energy and GHG emissions
- Existing energy plans and IRPs
- Energy-related studies and data analysis
- State energy policy objectives

Take into account (at a minimum):

- State energy demand and trends
- Energy resources and tech choices, considering costs, EE, feasibility & availability
- Existing & potential incentives to support EE
- Energy generation, transmission, distribution infrastructure
- Emerging tech & investment opportunities
- Environmental justice
- Community benefits
- Land use considerations
- Energy burden & affordability
- Economic and employment impacts
- Energy security and impacts of broader markets
- Energy resilience
- Community Energy resilience

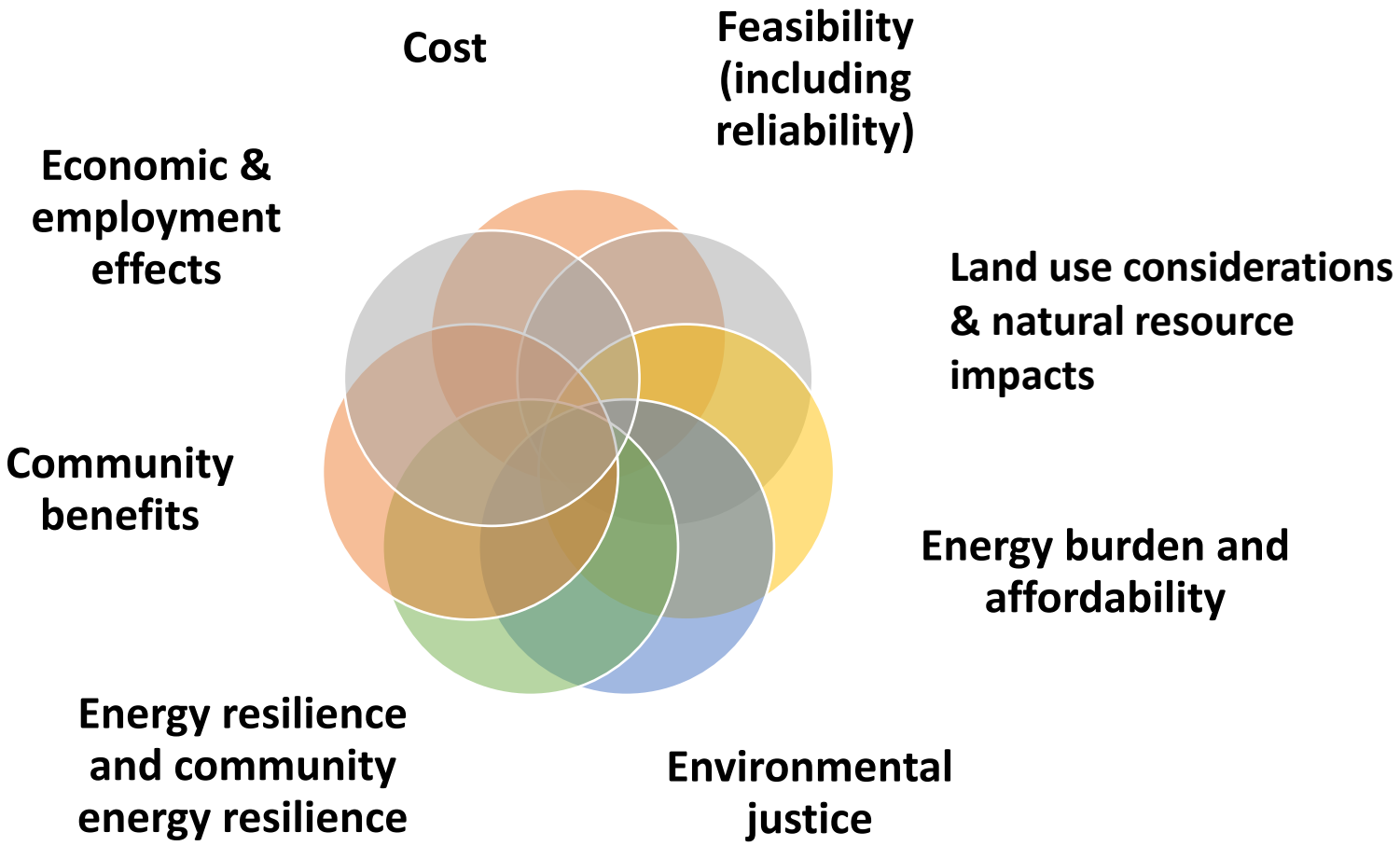
Engagement:

- State agencies, Tribes, stakeholders w/ diverse range of:
- Interests, perspectives, expertise, education
- Socioeconomic backgrounds
- Communities
- Geographic areas of the state

Reflects the best available info, data analyses, and time horizons necessary to achieving the state's energy policy objectives

Periodically update the Energy Strategy to reflect current information, data analysis, and state energy policy objectives

KEY CONSIDERATIONS



OREGON DEPARTMENT OF ENERGY
50 YEARS of SERVICE

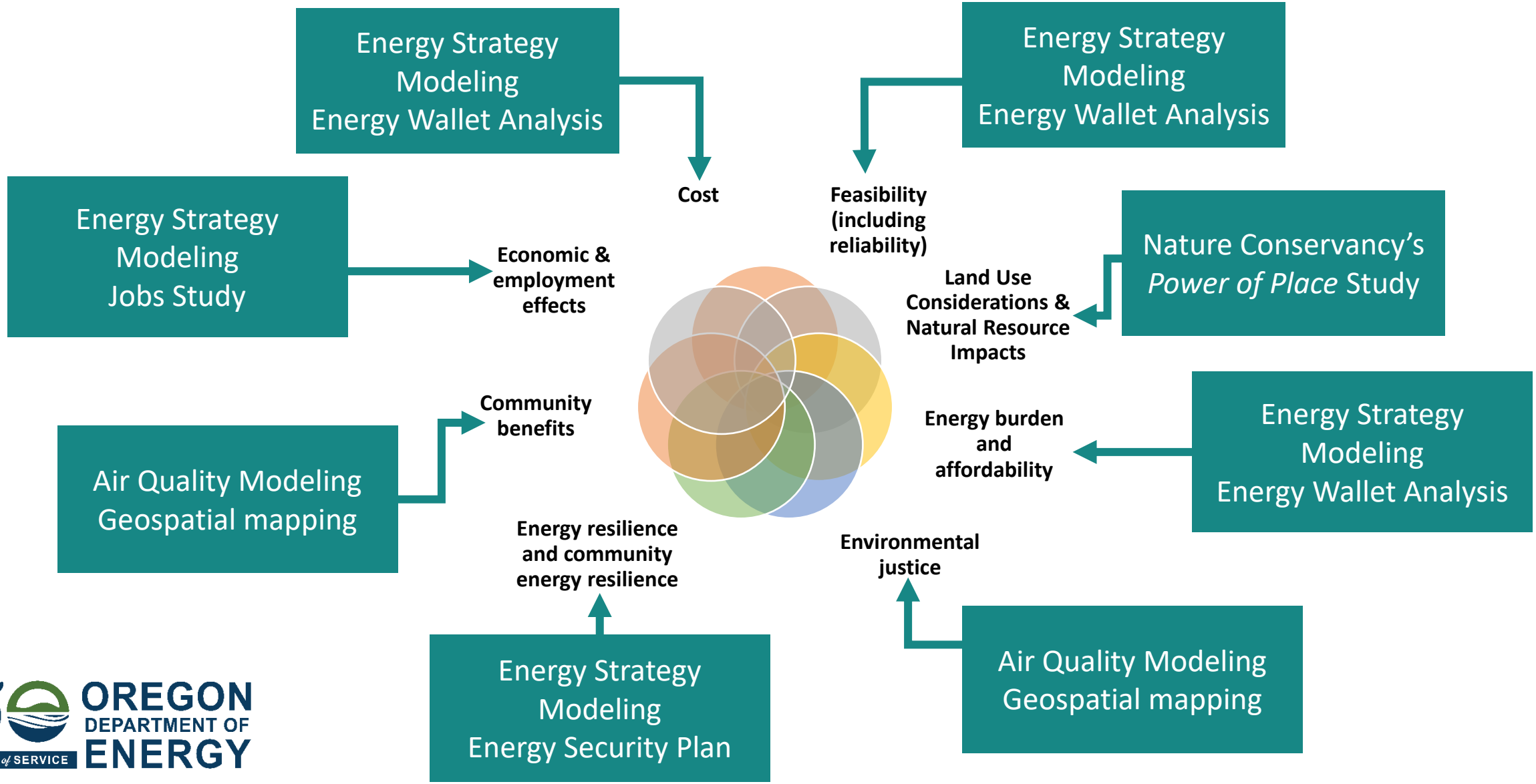
PERSPECTIVES

Tribal Consultation	• Government-to-Government, ensuring Tribal perspectives inform Energy Strategy • Members of the 9 Federally Recognized Indian Tribes in Oregon • Ongoing
Advisory Group	• Advise ODOE throughout the process and help inform decisions • Representatives of diverse perspectives and lived experiences across OR • Meets 1x a month
Working Groups	• Focused on informing policy recommendations • Subject matter experts able to engage in identification of gaps and needs • Meet over ~ 3 months in early 2025
Interagency Steering Group	• State Agency Coordination • ODOE, DLCD, ODOT, PUC, DEQ, Business OR, Governor's office; other agencies • Meets 1x a month
Listening and Information Sessions	• Public forums, where anyone can and is encouraged to join • Collecting broad views from across the state

DATA AND EXPERTISE

Environmental Justice and Equity	• Role in providing EJ and equity perspectives in the other working groups • Evaluate analysis and develop recommendations related to EJ and equity
Building Efficiency, Electrification, and Distributed Energy Resources	• Residential and commercial • Customer-side of the meter
Developing Clean Electricity Generation and Transmission	• Electricity generation and storage in front of the meter • Transmission • Development needs and barriers/competing priorities
Low-carbon fuels	• Best application of low carbon fuels used in buildings, industry, and transportation • Identification of barriers and potential solutions to production and distribution of fuels
Transportation electrification	• Light-, medium- and heavy-duty zero emission vehicles (battery electric and hydrogen fuel cell) • Charging and fueling infrastructure • Grid integration • Vehicle miles traveled reduction

ANALYSIS

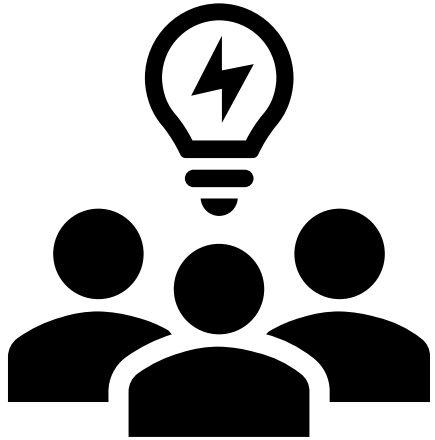


50 YEARS of SERVICE OREGON DEPARTMENT OF ENERGY

TECHNICAL EXPERTISE

Clean Energy Transition Institute

EVOLVED ENERGY RESEARCH



Developing the Energy Strategy Economic Model

MODELING THE ENERGY SYSTEM

- Economywide model comprising electricity, transportation fuels, and direct use fuels sectors.
- Creates a least-cost portfolio of energy resources to achieve objectives and goals.
- Generates scenarios (pathways) based on different assumptions
- Produces insights into the interactions between sectors and tradeoffs of different pathways.

50 YEARS of SERVICE OREGON DEPARTMENT OF ENERGY

USING THE ENERGY STRATEGY MODEL

DOES

- Create an understanding of tradeoffs between different pathways to inform recommendations to meet Oregon's energy policy objectives.
- Integrate detailed electricity sector modeling and fuels supply for an economywide perspective.
- Take into account grid reliability needs.
- Provide a foundation for complementary analysis: effect on household budgets, air quality and health, jobs, and priority areas relating to equity and environmental justice.

DOES NOT

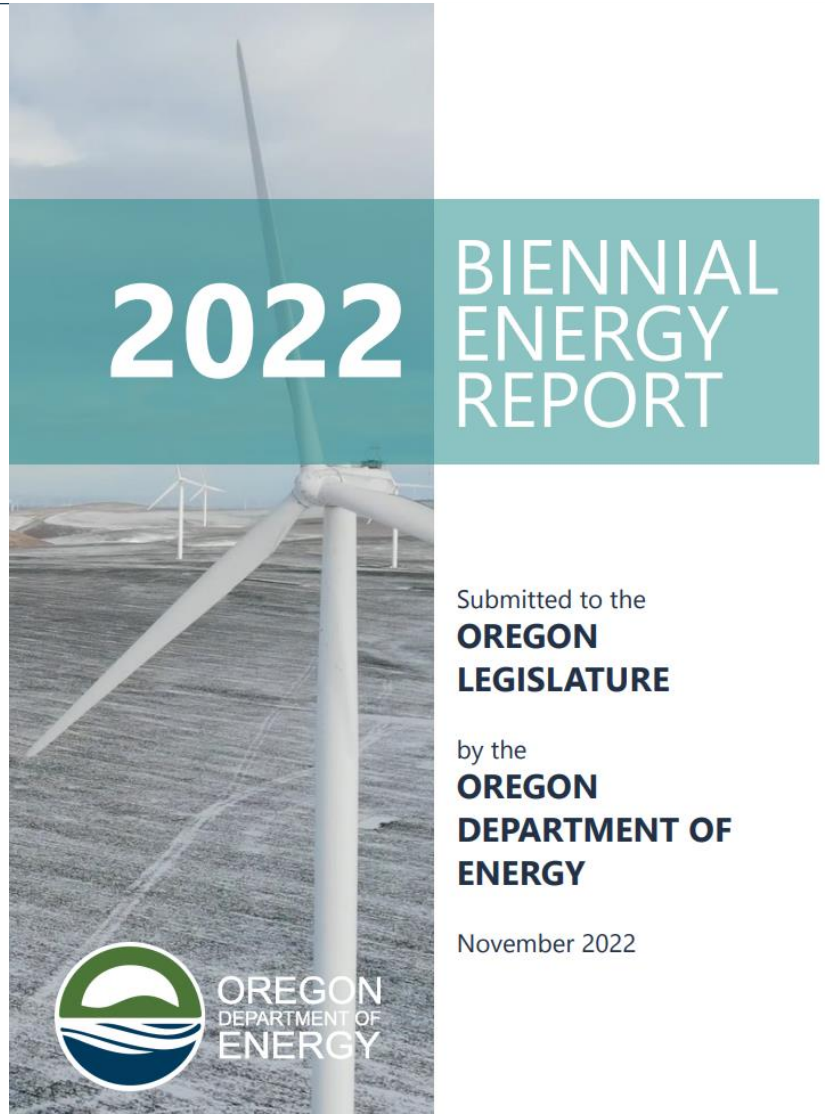
- Forecast the future; it informs near-term decision-making in the face of uncertainty about meeting our energy policy objectives.
- Serve the same purpose as utility modeling.
- Serve as a transmission planning model or rate design exercise.
- Focus on any single utility service territory.
- Provide location-specific outputs for resources or transmission lines.

BUILDING THE ENERGY STRATEGY MODEL

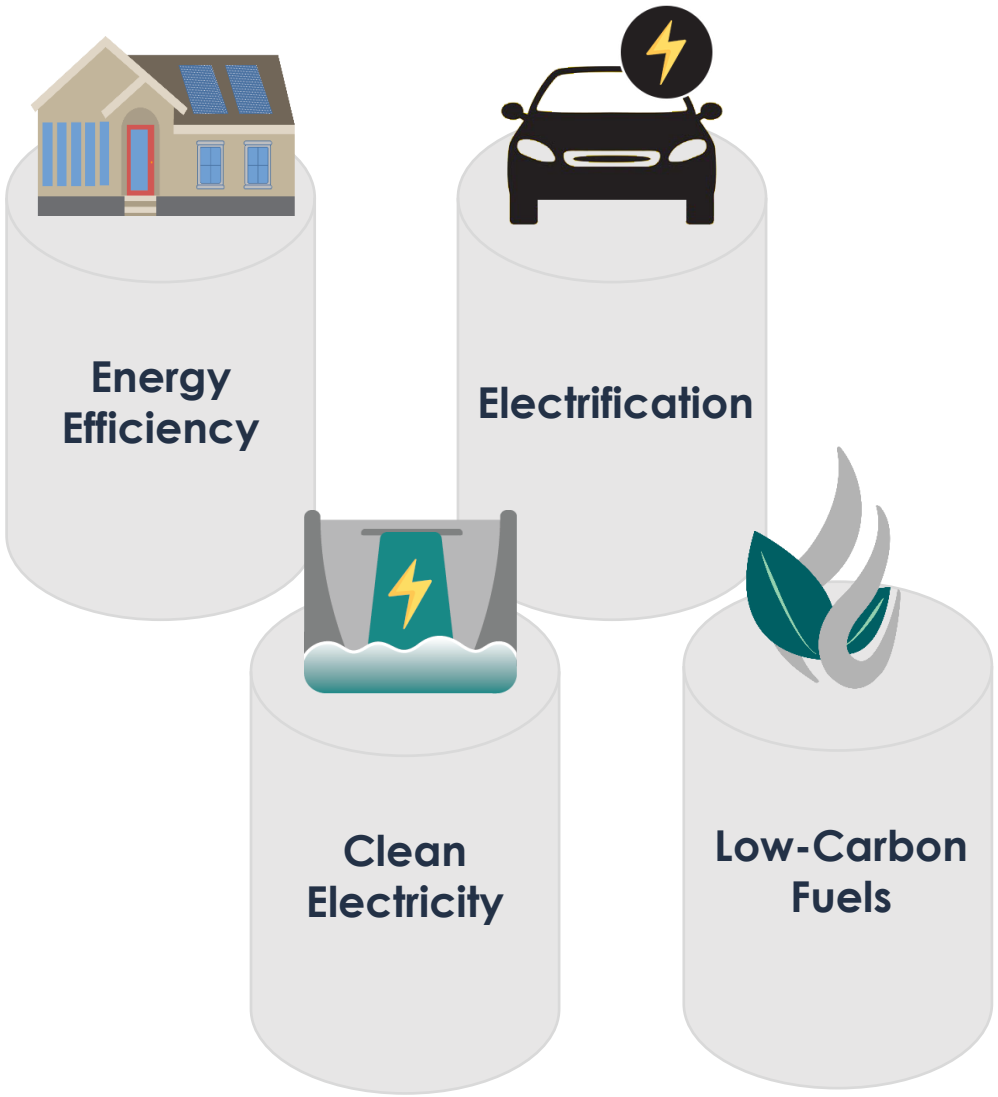
Literature review of technical studies

Summary of the Range of Scope of the Studies Reviewed in the BER

Geographic Areas	**Regional:** Pacific Northwest, United States **States:** Oregon, Washington, Montana, California **Service Areas:** NW Natural, Portland General Electric, Eugene Water & Electric Board, Seattle City Light, SoCalGas, Los Angeles Department of Water and Power
Areas of Focus	**Sectors:** Electrification effects on electric system, evaluation of effects on gas infrastructure, heating loads **Broader:** Electricity system, economy-wide
Policy Targets	**Targets:** Carbon neutrality, net-zero emissions, 100% clean electricity, 100% electrification of buildings and transportation, economy-wide decarbonization, 80 to 100% reduction in greenhouse gas emissions from 1990 levels
Dates	**Dates:** Load growth through 2024, achieving GHG targets by 2045-2050, carbon neutrality by 2045-2050, 100% clean electricity by 2035



TESTING THE FOUR KEY PILLARS



Hypothesis

The least cost pathway to achieve Oregon's energy goals is to maximize energy efficiency, achieve the state's clean electricity targets, and supplement the hardest-to-electrify end uses with low-carbon fuels.

THE MODELING IS A TOOL

Modeling results are directional and help us make informed choices

- Each scenario provides insights, but does not forecast the future
- Serves as a foundation for energy policy discussions
- Highlights relative pros and cons of different pathways
- Informs near-term decisions
- Political, technological, and economic uncertainties must also be considered

OREGON DEPARTMENT OF ENERGY
50 YEARS of SERVICE

Model Key Findings

BUILDING ELECTRIFICATION, EFFICIENCY, AND DISTRIBUTED ENERGY RESOURCES: KEY TAKEAWAYS FROM MODELING

Four Key Takeaways

- **Energy efficiency:** Encouraging high amounts of energy efficiency reduces overall energy demand, reducing overall generation needs and future energy system costs.
- **Building electrification:** Electric end uses like heat pumps are much more energy efficient (and, paired with clean generation, produce fewer emissions), reducing overall energy system demand and costs.
- **Distributed Energy Resources**: Increasing rooftop solar and distributed storage can alleviate some of the land use footprint of utility-scale resources, though at a higher cost.
- **Demand response:** Encouraging demand response technologies and programs lowers peak load demand, reducing the amount of new electricity capacity and transmission needed, which lowers ratepayer costs.

OREGON DEPARTMENT OF ENERGY
50 YEARS of SERVICE

TRANSPORTATION: KEY TAKEAWAYS FROM MODELING

Four Key Takeaways

- **Vehicle electrification**: Transportation electrification reduces systemwide energy demand and the cost of decarbonization; and the pace matters.
- **Grid integration**: Transportation electrification will significantly increase electricity demand, but EVs can provide a net benefit to the grid if managed flexibly.
- **VMT Reduction**: Reducing vehicle miles traveled has a large impact on overall energy demand and the costs for maintaining and upgrading the electric grid.
- **Low-carbon fuels**: Low-carbon fuels play a strategic role in decarbonizing transportation across all scenarios, and that role increases as the pace of transportation electrification slows.

DEVELOPING CLEAN ELECTRICITY GENERATION AND TRANSMISSION: KEY TAKEAWAYS FROM MODELING

Four Key Takeaways

- **Load Growth**: The model shows significant near-term load growth, even if data center and chip fabrication load growth is smaller than expected.
- **Electricity Generation**: While imports from out-of-state resources contribute to a least-cost energy supply portfolio, in every scenario the model builds more in-state generating capacity.
- **Transmission**: Oregon does not currently have sufficient physical transmission capacity to meet the modeled electricity flows.
- **Electricity Policy**: Decarbonizing Oregon's electricity may require more policy actions.

LOW-CARBON FUELS: KEY TAKEAWAYS FROM MODELING

Four Key Takeaways

- **Low-Carbon Fuels:** All scenarios find the need for low-carbon fuels to support hardest-to-electrify end uses, and these are an increasing proportion of Oregon's energy supply especially beginning in 2040.
- **Grid Dispatchable Capacity:** More capacity from low-carbon fuel gas plants is needed to support the growing electric grid.
- **Electrification:** Use of low-carbon fuels is more expensive than electrification in many applications, especially as electric technologies mature, so the model selects low-carbon fuels to be used where electrification is not cost-effective.
- **Declining Fuel Demand:** Overall fuel demand declines, but fuel remains a significant component of Oregon's Energy System in all scenarios modeled.

50 YEARS of SERVICE OREGON DEPARTMENT OF ENERGY

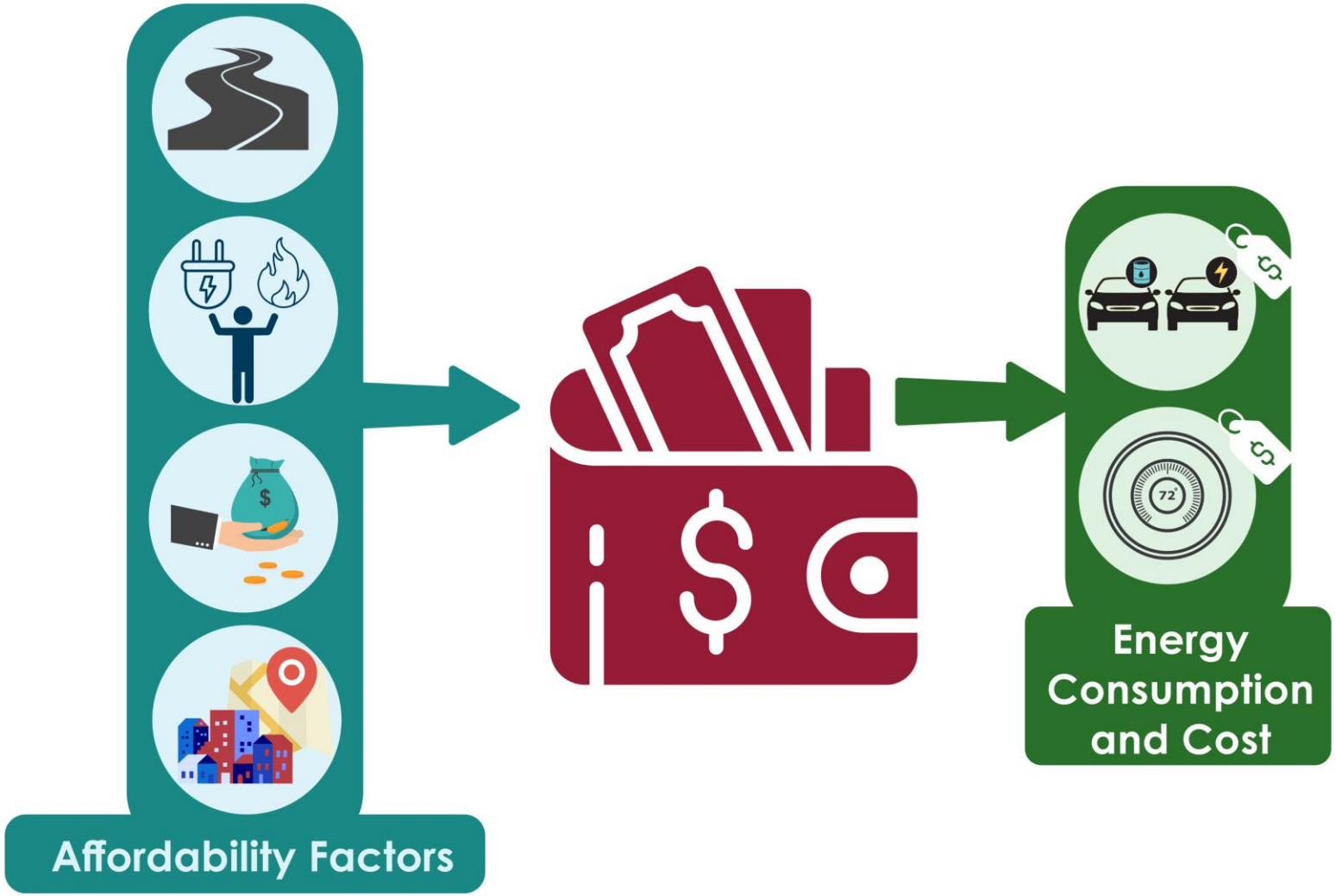
ENVIRONMENTAL JUSTICE AND EQUITY WORKING GROUP BARRIER IDENTIFICATION

Four Key Takeaways

- There should be more set asides for Tribes, there is a lack of infrastructure in environmental justice communities, **incentive programs** often run out of limited funds before people in environmental justice communities can access programs.
- High upfront costs make it **unaffordable** for many low-income communities to access programs and their incentives, ratepayer incentives may be regressive, there is a lack of analysis to understand the burdens on low-income communities.
- There is a presence of misinformation that needs to be addressed, lack of **community education** and resources regarding certain technologies, lack of understanding of incentives and benefits, lack of resources in multiple languages (and accessible language).
- Lack of culturally specific workforce training (training in general), limited **workforce opportunities**, gaps in workforce geographically.

Additional Analyses

ENERGY WALLET

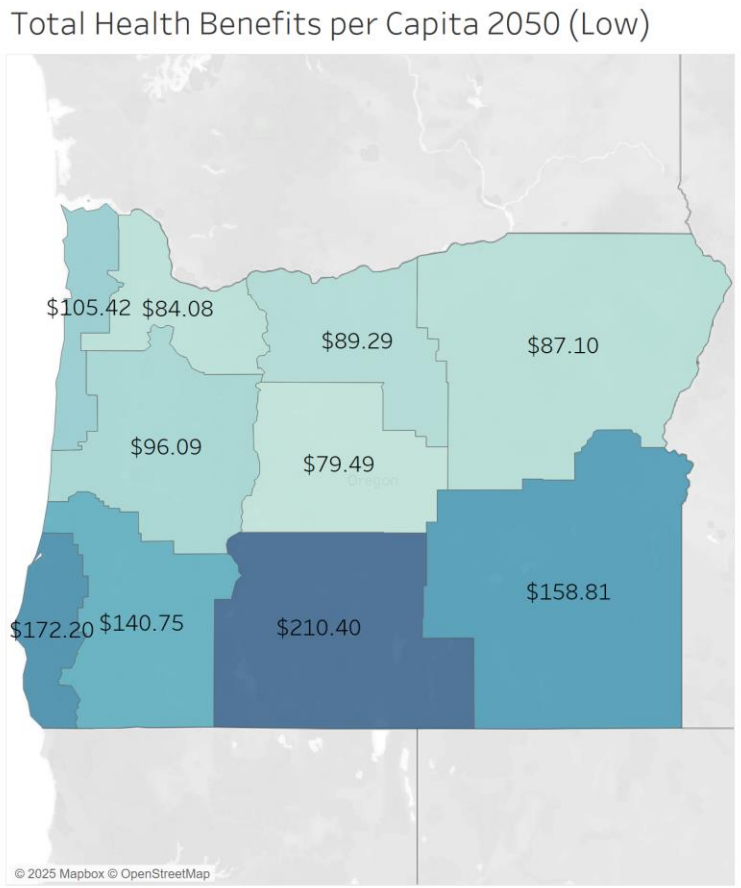


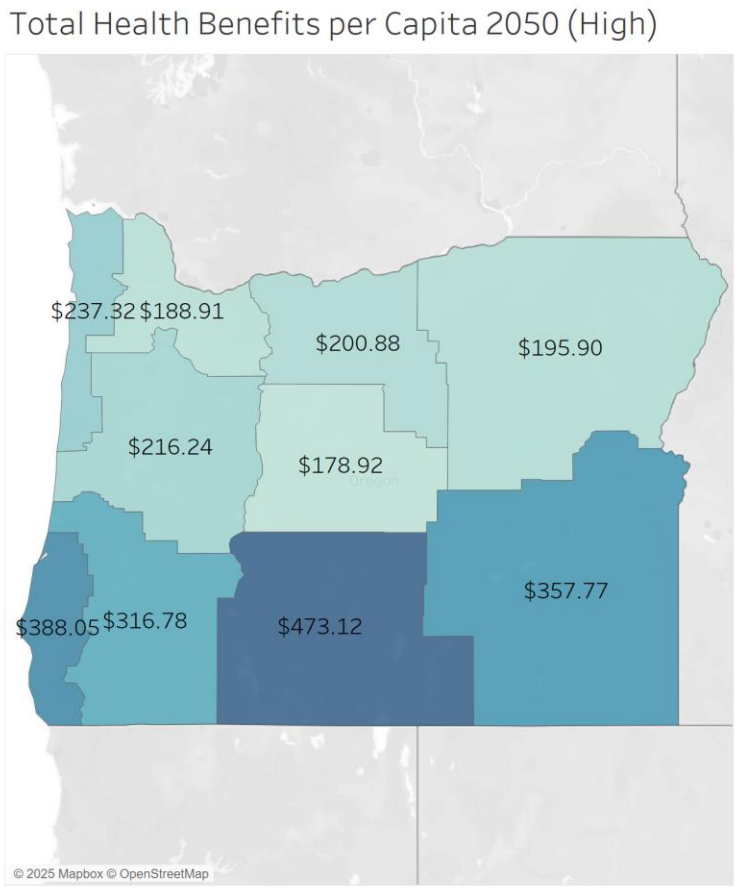
OREGON DEPARTMENT OF ENERGY
50 YEARS of SERVICE

AIR QUALITY MODELING

Health Benefits per Capita by Region in 2050: Reference Scenario

- Per capita benefits greater in the southern regions of the state
- Benefits relative to health impacts of particulate matter exposure in 2023
- ~99% of the benefits come from reduced mortality





50 YEARS of SERVICE OREGON DEPARTMENT OF ENERGY

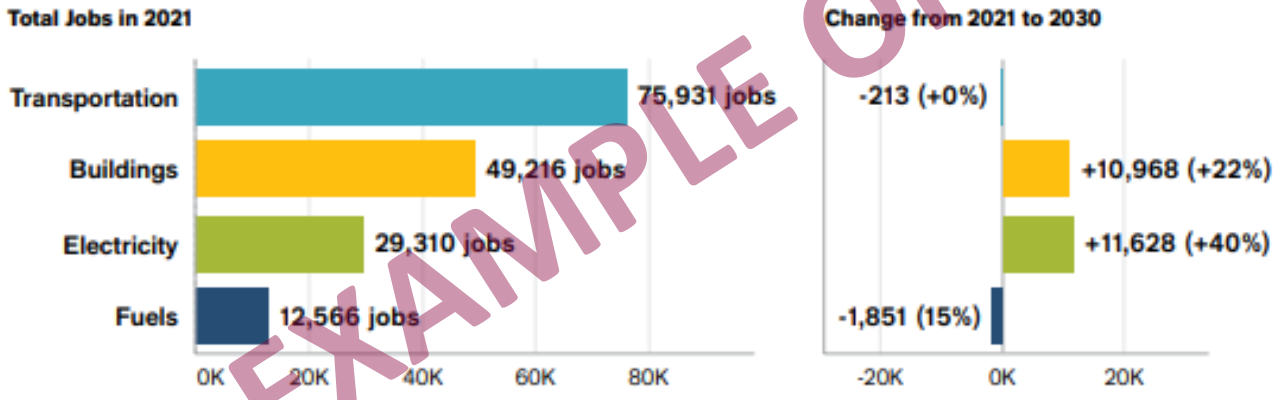
JOBS ANALYSIS

- Will analyze the employment effects for each scenario modeled.
- Estimates number of jobs associated with specific energy sectors in Oregon for all scenarios.
- Additional estimations of the changes in occupational needs over time for the Reference Scenario.
- Expected by end of July 2025.

[bw] RESEARCH PARTNERSHIP

Figure 1. Energy Employment by Sector in Oregon, 2021–2030

Includes Direct, Indirect, and Induced jobs



Source: BW Research Partnership, *CETI Net-Zero Northwest Workforce Analysis Regional and State Technical Reports*, March 2024.

50 YEARS of SERVICE OREGON DEPARTMENT OF ENERGY

Next Steps

DEVELOPING THE ENERGY STRATEGY

INPUTS

Analysis

- Energy Strategy Modeling
- Energy Wallet
- Air Quality Modeling
- Geospatial Maps
- Jobs Study

Expertise

- Interagency Steering Group
- Tribes
- Advisory Group
- Working Groups
- Public Comments
- You!

OUTCOMES

State-wide Strategy

Pathways to Achieving Energy Policy Objectives

Policy Recommendations

QUESTIONS FOR COMMITTEE MEMBERS

- What energy-related opportunities are your communities interested in exploring, and are there barriers to those opportunities?
- What energy decisions do you think will need to be addressed in the next five years?
- Are there clean energy-related technologies, systems, or policies that you would like to better understand to inform future policy conversations?

OREGON DEPARTMENT OF ENERGY
50 YEARS of SERVICE

OREGON DEPARTMENT OF ENERGY
50 YEARS of SERVICE

Questions?

Follow the work of the Oregon Energy Strategy
www.oregon.gov/energy/Data-and-Reports/Pages/Energy-Strategy.aspx

Edith Bayer, Energy Strategy Team Lead
edith.bayer@energy.oregon.gov

Jessica Reichers, Technology & Policy Manager
jessica.reichers@energy.oregon.gov