Oregon Department of **ENERGY**

Oregon Energy Strategy
Environmental Justice and Equity Working Group

Lauren Rosenstein
October 9, 2024

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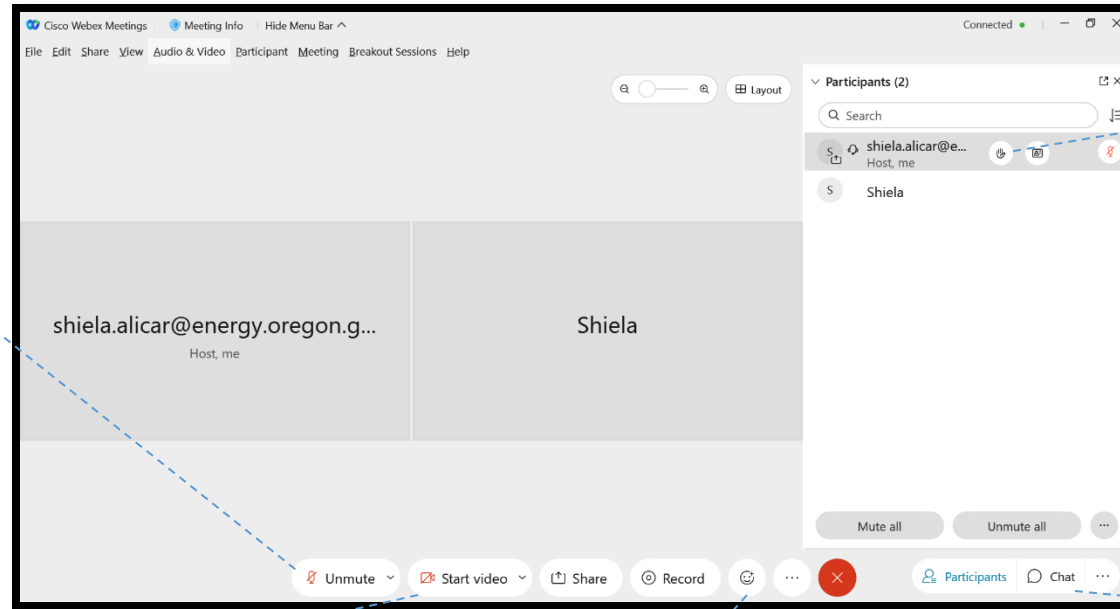ENERGY

USING WEBEX

Audio Options
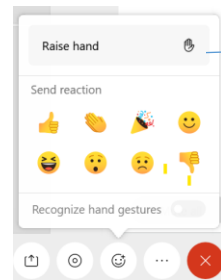
Mute ⌄ *Microphone On*

Unmute ⌄ *Microphone Off*

Video Options

Stop video ⌄ *Webcam On*

Start video ⌄ *Webcam Off*

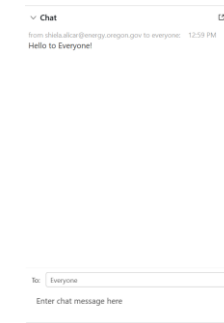**Second Raise Hand Option**

You can also click on the hand next to your name in the Participant list to raise your hand.

Click on Lower hand when you are done.

You can chat to Everyone in the meeting.

Chat

Reactions

Click to Raise your hand.

Click on Lower hand when you are done.

You can send a private message to the Host or Presenter (or all Panelists when there is a Panel).
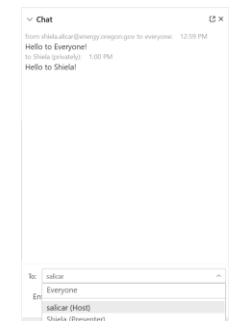
GROUP AGREEMENTS

- Listen carefully; seek to learn and understand each other's perspective.

- Encourage respectful, candid, and constructive conversation.

- Keep an open mind.

- Ask questions to clarify and understand why.

- Be open, transparent, inclusive, and accountable.

- Respect differing opinions.

- Seek to resolve differences and find common ground.

- Be conscious of speaking time; step back to allow space for others to contribute.

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INTRODUCTIONS

In the chat, please share your:

- Name
- Affiliation
- Your pronouns, if you are comfortable sharing them
- How are you welcoming in autumn?

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AGENDA

9:00 – 9:05	Welcome and Introductions	Lauren Rosenstein, ODOE
9:05 – 10:25	Presentation and discussion/Q & A for each analysis • Energy Wallet • Health Impacts • Geospatial Mapping	Jeremy Hargreaves, Evolved Energy Research Ruby Moore-Bloom, Clean Energy Transition Institute Angela Long, Rockcress Consulting Mariah Caballero, Doctoral Candidate, Community Research and Action
10:25 – 10:30	Wrap up	Lauren Rosenstein, ODOE

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OVERVIEW AND TIMELINE: EJ/EQUITY ANALYSIS

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OVERVIEW OF EJ/EQUITY ANALYSIS

Feedback: Reference Scenario Assumptions and priority scenarios ("What if" questions) to model

Feedback: Highest priority indicators to include

Energy Modeling
Model calculates energy needed to power Oregon's economy, and least-cost way to provide that energy under clean electricity + emissions goals

Geospatial Mapping
Explore community-level energy inequities and relationship to socioeconomic disparities

ENERGY MODELING RESULTS

Feedback: Defining customer groups

Feedback: Geographic granularity

Energy Wallet
Energy spending & energy burden for different customer types, impact of timing of investing in electrification

Air Quality Modeling
Model calculates how changes in air quality affect health outcomes and economic benefits

During policy conversations, maps may help *interpret* Energy Modeling results, Energy Wallet analysis, and Air Quality modeling

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TIMELINE

9/16
Reference Scenario Modeling

10/31
Straw proposal of additional analyses sent to WG for written feedback

12/20
CETI & ODOE incorporate feedback into final approach, share with WG

February – May (2025)
Policy conversations & recommendations development

10/9
WG meeting focused on energy wallet; health impacts; geospatial mapping

11/22
WG written feedback due on straw proposal

1/2 – 1/31 (2025)
Energy wallet, health impacts, geospatial mapping

CETI/ODOE team deliverable

Working Group (WG) involvement

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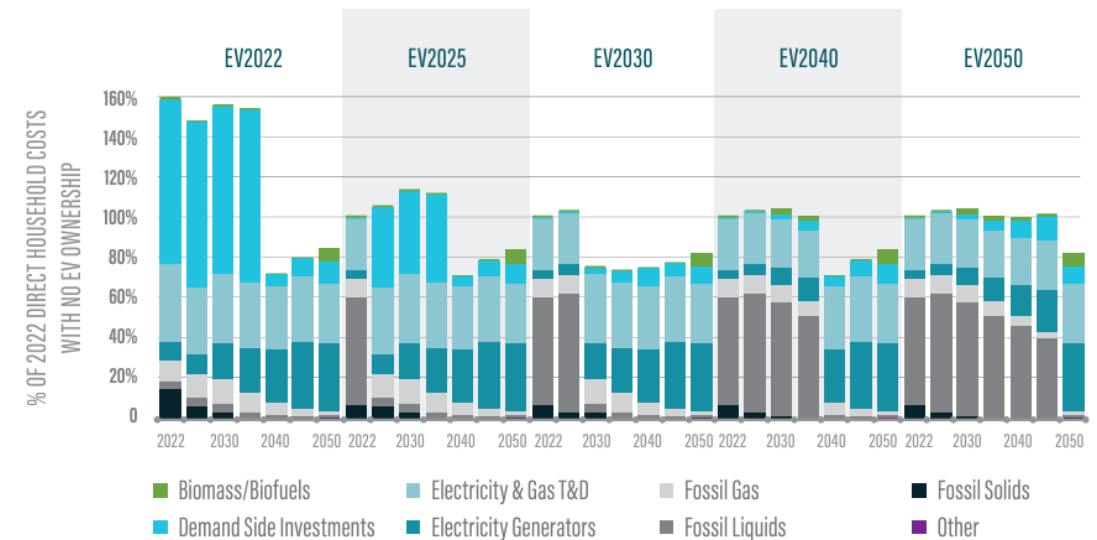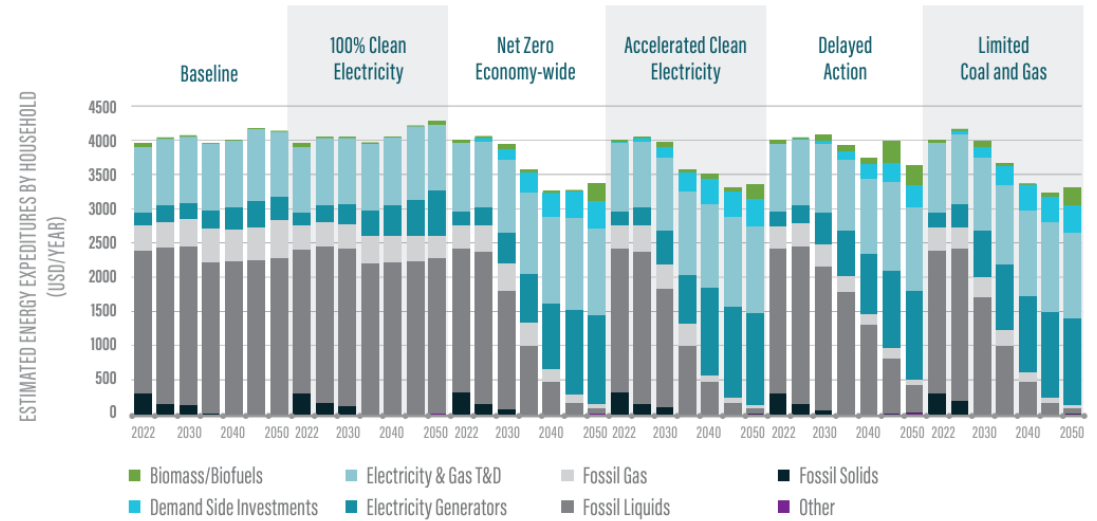# ENERGY WALLET

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ENERGY WALLET

- Electrification causes electricity bills to increase, but at the same time bills for other fuels (e.g., gasoline at the pump) decrease

- The Energy Wallet analysis explores questions such as:
  - How is total energy spending for different customer types impacted?
  - What is the impact on customers investing in electrification earlier or later?
  - How is energy burden impacted?

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- Estimate energy expenditures ("energy wallet") by household between now and 2050 across scenarios (top right)

- Examine temporal impact of clean energy technology adoption (electric vehicle) on customer costs for a single scenario (bottom right)

- Use gross household income for customer types to determine energy burden and how it changes over time

- Scale for up to five different customer types
 - Definition to be developed with input

ENERGY WALLET CUSTOMER GROUPS

#	Customer Group	Description	2022 Average Annual Energy Usage for all Fuels (kBtu)
1	Average Homeowner	The average of all owner occupied single-family detached homes in Oregon.	99,940
2	Rural Home	The average of single-family detached home located in a rural region in Oregon.	97,188
3	Coastal Home	The average of single-family detached home located in a coastal region in Oregon.	69,166
4	High Priority Area Homes	The average of single-family detached home located within ODOE's high priority area counties.	99,329
5	Severe Energy Burden	The average of single-family detached home with an income less than $15,000 a year in Oregon.	26,337
6	Weatherization	The average single-family detached home built prior to 1990 with poor insulation in Oregon.	103,227
7	Manufactured Homes	The average manufactured home, assumes cost of energy is 70% higher than the average cost in Oregon.	63,370
8	Average Renter	The average reported renter occupied single-family detached home in Oregon.	80,150
9	Low-Income Renter (Multifamily)	The average reported low-income renter occupied multifamily home in Oregon, includes all multifamily building types.	25,202

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ENERGY WALLET ANALYSIS

- Annual Energy $
  - Annual Energy Costs = 2022 RBSA for average building size x US EIA Energy Cost per SQFT
- Vehicle Miles Traveled (VMT)
  - 2022 DEQ Vehicle Miles Traveled (VMT) per county
- VMT $
  - VMT Costs = VMT x US Bureau of Transportations per-mile cost
- Energy Burden
  - Energy Burden = Annual Energy $ / Annual Usage

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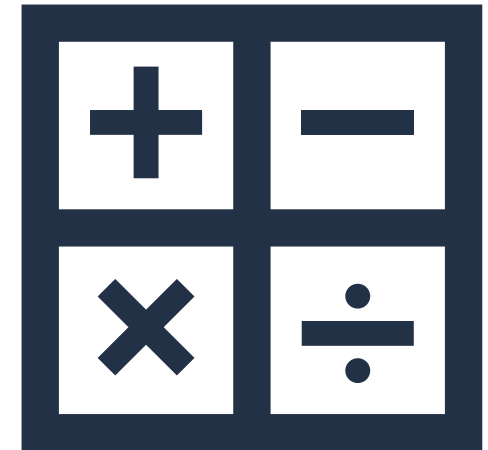
VOTE ON MENTI

Vote for up to five customer groups you'd like to see included in the Energy Wallet analysis.

Join at menti.com by using code 6815 4347

1.) Average Homeowner

2.) Rural Home

3.) Coastal Home

4.) High Priority Areas (ODOE)

5.) Severe Energy Burden

6.) Weatherization
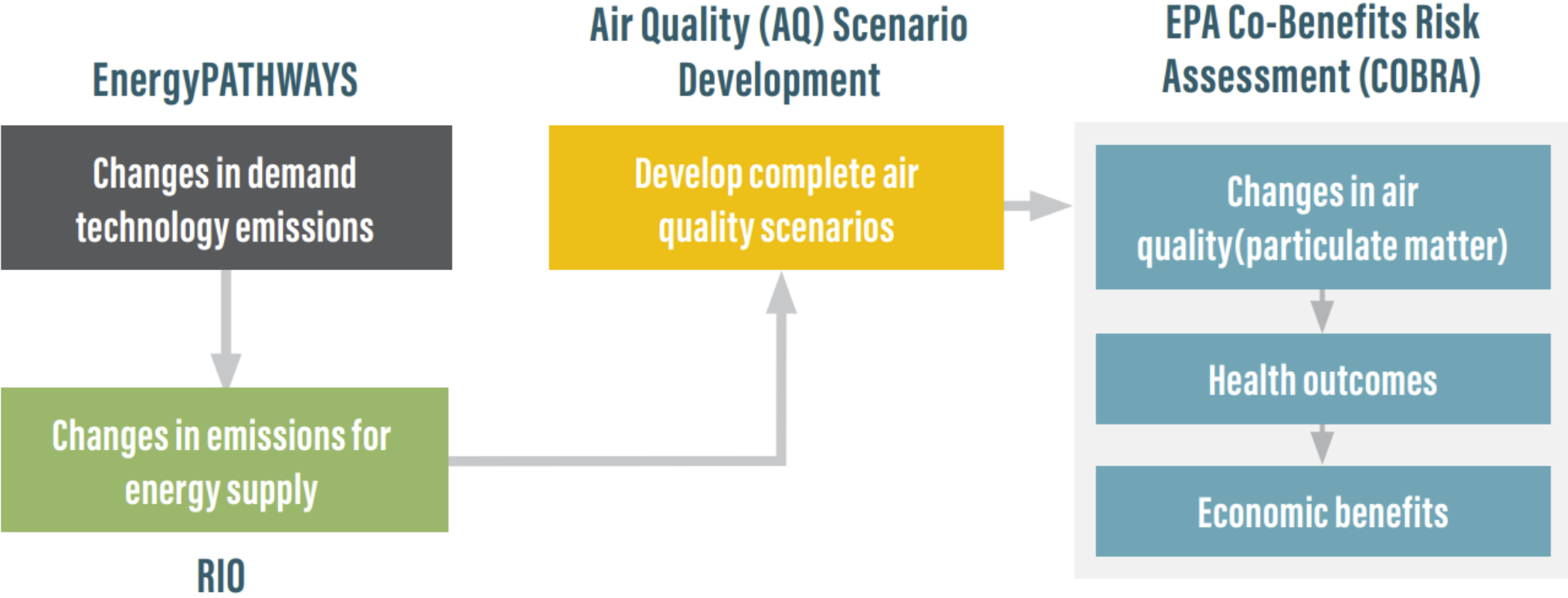
7.) Manufactured Homes

8.) Average Renter

9.) Low-Income Renter (Multifamily)

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AIR QUALITY MODELING

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AIR QUALITY MODELING

EnergyPATHWAYS

Changes in demand technology emissions

Changes in emissions for energy supply

RIO

Air Quality (AQ) Scenario Development

Develop complete air quality scenarios

EPA Co-Benefits Risk Assessment (COBRA)

Changes in air quality (particulate matter)

Health outcomes

Economic benefits

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AIR QUALITY MODELING (CONT.)

Results from COBRA modeling include:

- Fewer mortalities ("avoided deaths")
- Fewer lost workdays
- Fewer hospital admissions
- Economic benefits

*Results broken out by region in Oregon (Shown on next slide)*

Range of Avoided Deaths Attributed to Annual Pollutant Reductions by State (per million people)
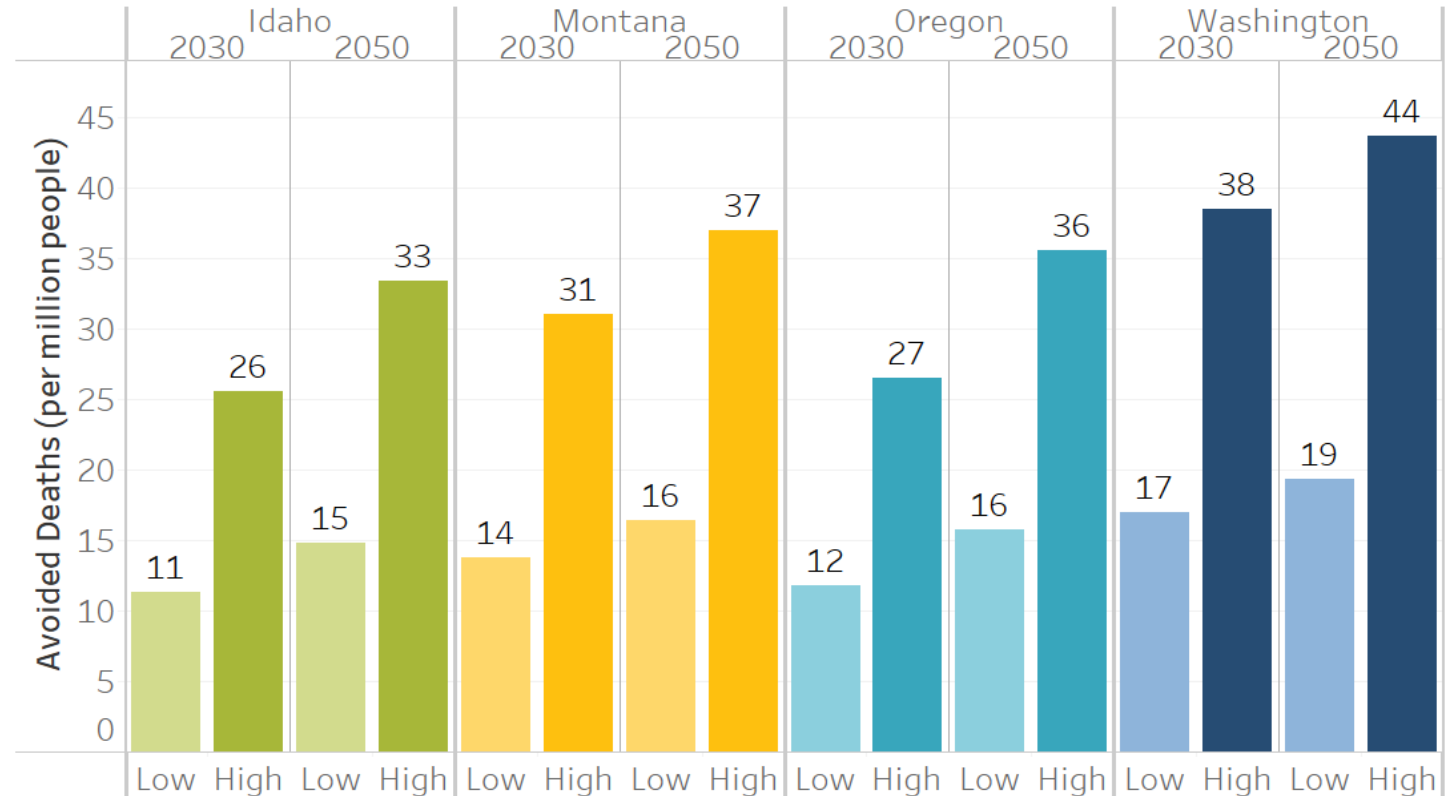
Source: Evolved Energy Research. *Net-Zero Northwest Energy Pathways Analysis Technical Report,* June 2023, p. 201. (Note: All labels on the bars are rounded. Low and high estimates reflect the range of findings in the epidemiological studies of health outcomes used in the modeling.)

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COUNTY CLUSTERS FOR AIR QUALITY MODELING

Proposed County Clusters for Air Quality Modeling
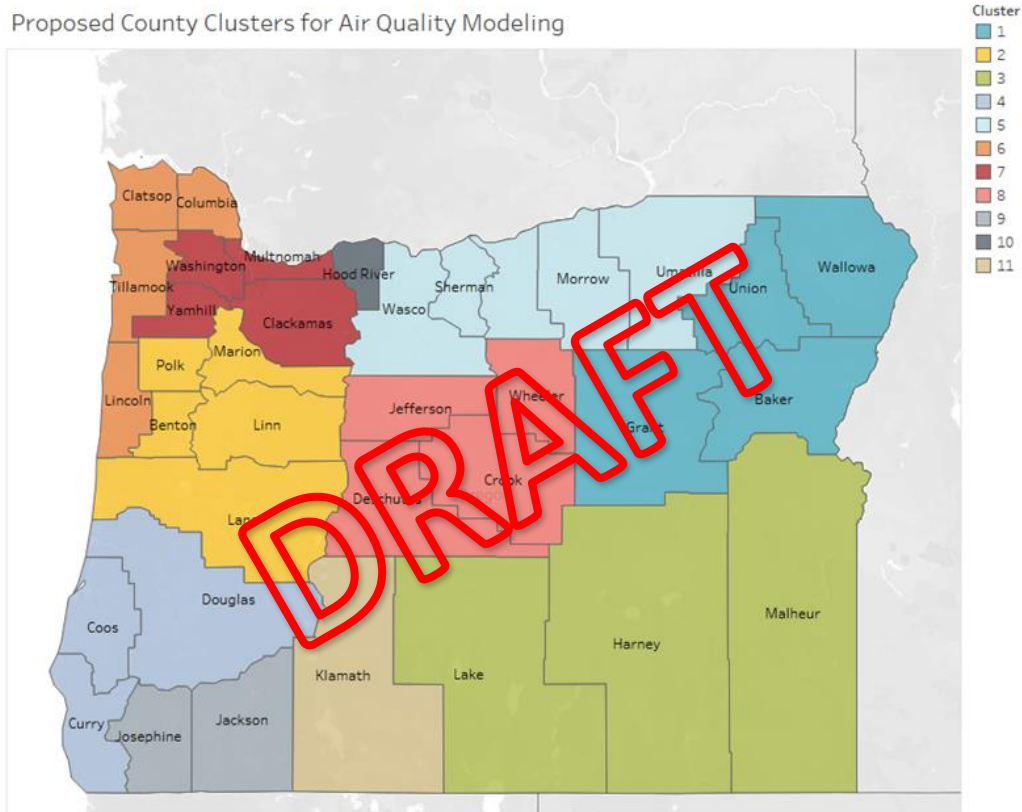
Open to feedback – do these clusters make sense?

Oregon county clusters developed by weighting six variables:

1. Average temperature in January

2. Average temperature in August

3. Average number of vehicles

   - Average annual daily traffic at major roads within 500 meters, divided by distance in meters

4. Fine particulate matter

   - Average number of fine inhalable particles (PM2.5), given double weighting

5. Average of percent of community members living at or below federal poverty level

6. Average percent of adults with asthma

   - Answered "yes" to both questions: "Have you ever been told by a health professional that you have asthma?" and "Do you still have asthma?"

AIR QUALITY MODELING Q&A

Any clarifying questions, concerns, or feedback on this approach?

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GEOSPATIAL MAPPING

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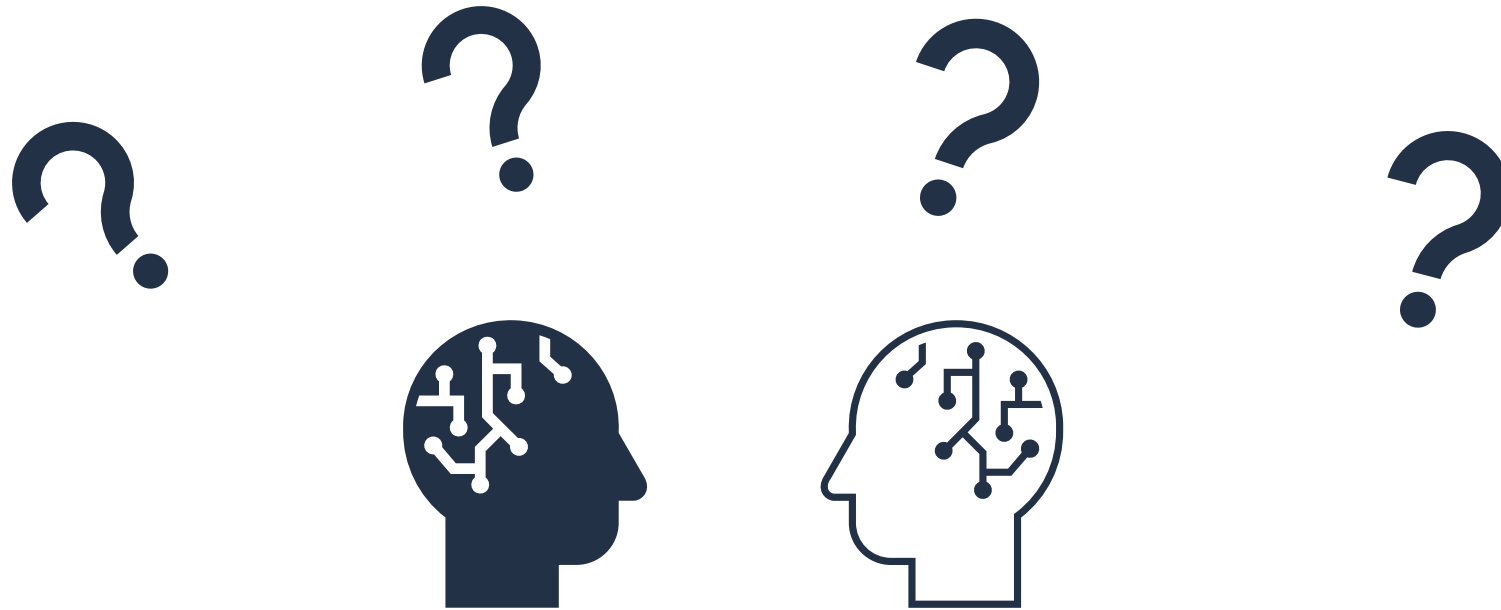
GEOSPATIAL MAPPING

Current drafted approach identifies **47** justice-related variables for all **992 Census Tracts** in OR, from **2018 to 2022**.

USEPA, USDOT, US Census Bureau, US DOE, and US CDC

Uses a replicable approach with open-source data, with code that can be posted to GitHub

Can be updated with time using new datasets.

Can develop **OR-specific** indicators at the community-level

Identify communities with most pressing needs in the state for potential policy implementation.

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GEOSPATIAL MAPPING: EXAMPLE MAP

Example Static Map:
*Relationship map showing fine particulate matter (PM 2.5) and adult asthma prevalence (%).*

Data Source(s): Climate and Economic Justice Screening Tool (CEJST), Centers for Disease Control (CDC) PLACES Data

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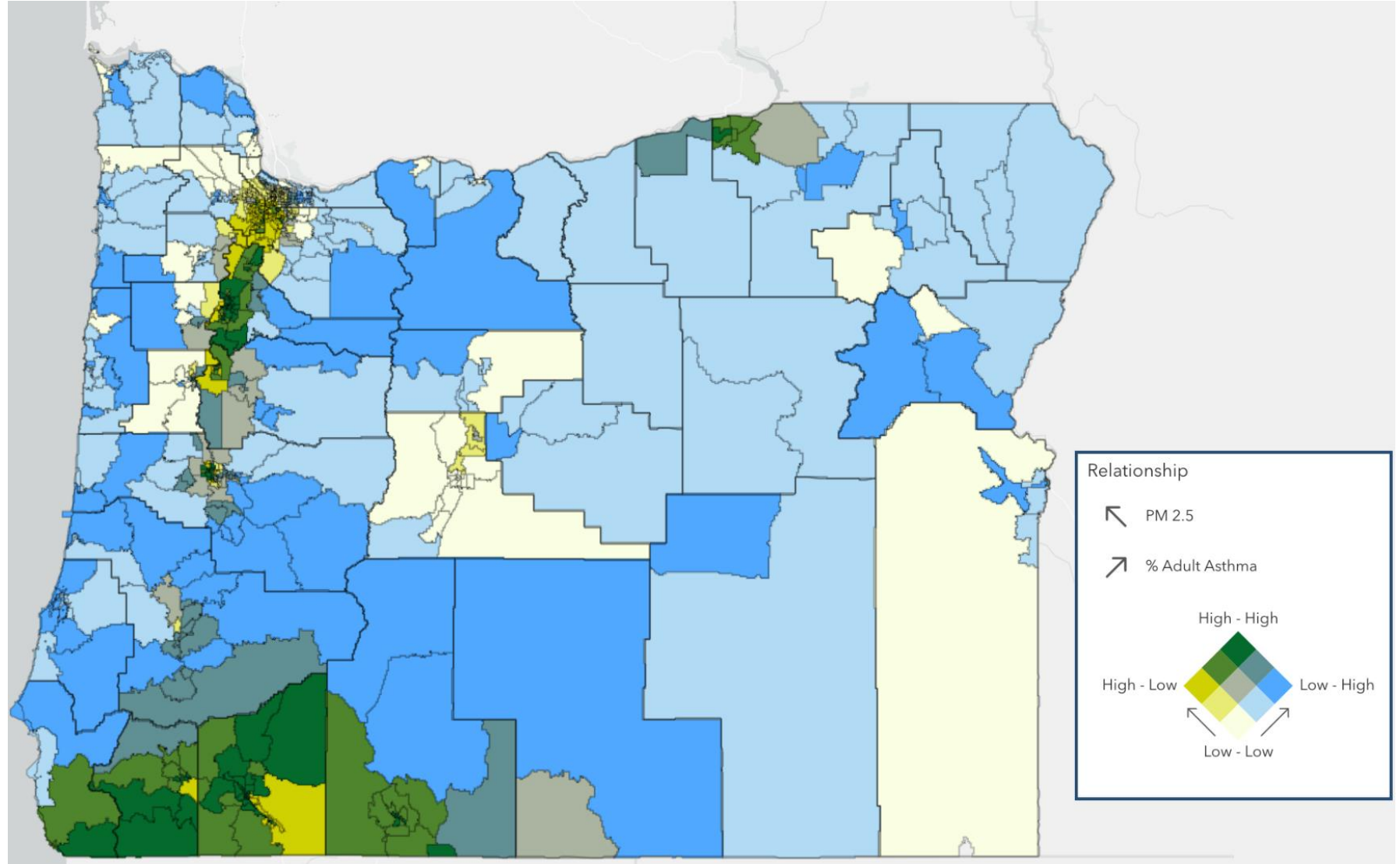
GEOSPATIAL MAPPING: EXAMPLE MAP

Example Static Map: *Relationship map showing energy burden and the percent of mobile homes. In this case, there are 161 census tracts in the 75th percentile for both energy burden (i.e., more than 5% energy burden) and percentage of households living in mobile homes (i.e., greater than 12.7% of families living in mobile homes). These tracts represent communities that could be prioritized for equitable home and energy investments.*

Data Source(s): US DOE LEAD Tool, ACS 5-year estimates, 2018 - 2022
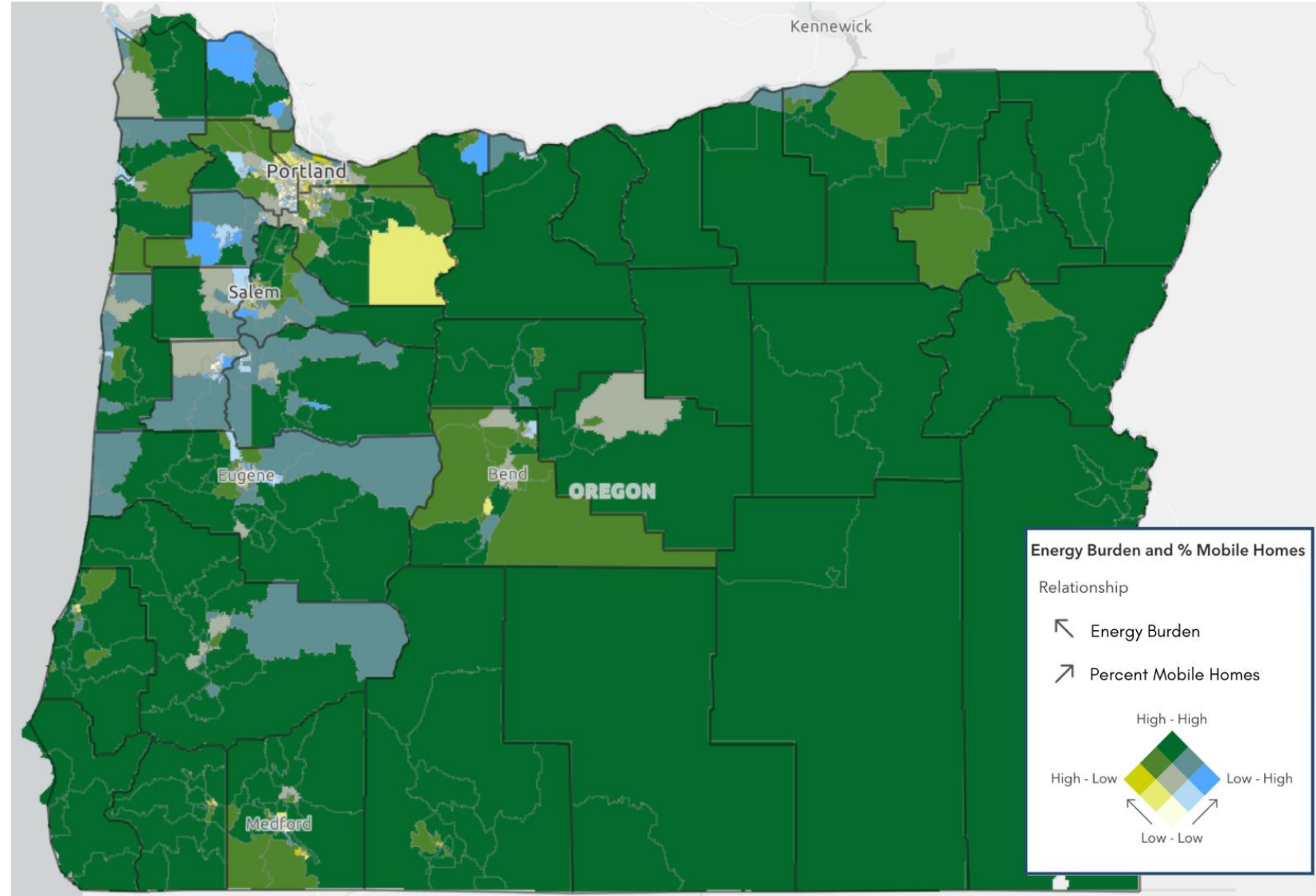
GEOSPATIAL MAPPING: EXAMPLE MAP

Example Static Map: *Relationship map showing the percentage of households prioritized for IRA incentive households (0-80% AMI) and percentage of homeowners. In this case, there are 20 census tracts in the 75th percentile for both homeownership (i.e., more than 79% of households in the community own their home) and homes prioritized for IRA incentives (i.e., more than 81% of households in a community meet the AMI income eligibility requirements for the greatest IRA incentives). These tracts represent communities that could be prioritized for IRA incentives.*

Data Source(s): US DOE LEAD Tool, ACS 5-year estimates, 2018 - 2022

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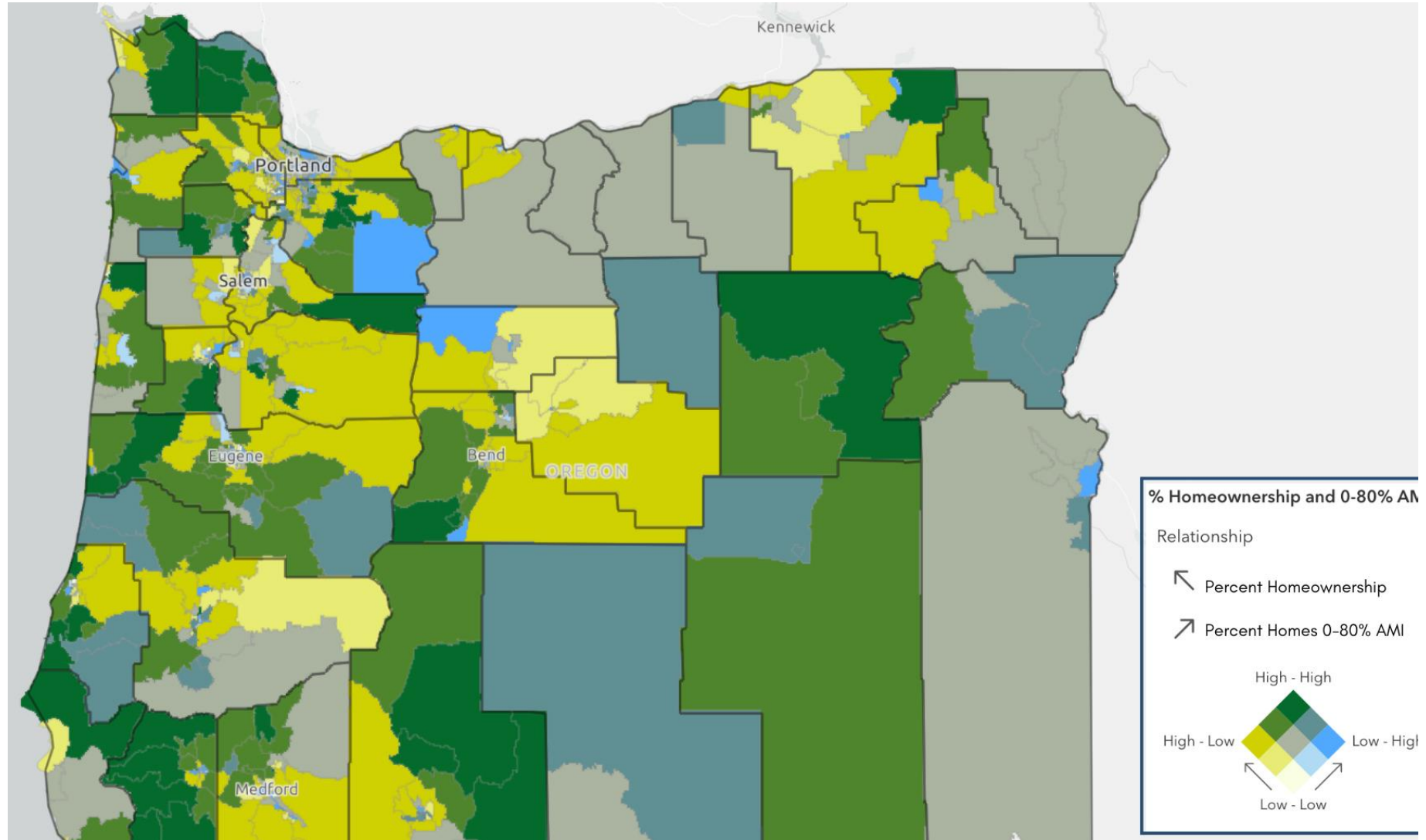
GEOSPATIAL MAPPING INDICATORS

Potential indicators* to be included in geospatial mapping analysis:

Customer and System Resiliency

- % of individuals with a non-institutionalized disability
- % of homes dependent on bottle, tank or propane gas, fuel oil or kerosene, coal or coke, or wood
- % Homes built before 1980

Economic

- % of households at or below 150% of the Federal Poverty Line
- % of individuals without a HS diploma
- % of individuals employed in agriculture, forestry, fishing, hunting, and mining

Environmental

- Tribal, Rural, Remote, and Coastal Communities
- Transportation insecurity
- Projected wildfire risk
- Projected flood risk
- PM 2.5 in the air

Energy Equity

- Average Energy Burden
- Justice40 eligibility (i.e., "DAC" as categorized by CEJST tool)
- % of homes prioritized for IRA incentives (0–80 % AMI)
- Race and Ethnicity
- % of mobile homes

Health and Wellbeing

- % of individuals ages 65+
- % of individuals 17 or younger
- % of individuals without health insurance
- % of individuals with Asthma
- Self-rated Health

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VOTE ON MENTI

From the list shown, which indicators/relationships are highest priority to map?

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Customer and System Resiliency	Economic	Environmental	Energy Equity	Health and Wellbeing
• % of individuals with a non-institutionalized disability • % of homes dependent on bottle, tank or propane gas, fuel oil or kerosene, coal or coke, or wood • % Homes built before 1980	• % of households at or below 150% of the Federal Poverty Line • % of individuals without a HS diploma • % of individuals employed in agriculture, forestry, fishing, hunting, and mining	• Tribal, Rural, Remote, and Coastal Communities • Transportation insecurity • Projected wildfire risk • Projected flood risk • PM 2.5 in the air	• Average Energy Burden • Justice40 eligibility (i.e., "DAC" as categorized by CEJST tool) • % of homes prioritized for IRA incentives (0–80 % AMI) • Race and Ethnicity • % of mobile homes	• % of individuals ages 65+ • % of individuals 17 or younger • % of individuals without health insurance • % of individuals with Asthma • Self-rated Health

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WRAP UP

NEXT STEPS

- Based on feedback received today, CETI/ODOE will draft a written straw proposal for these additional analyses by 10/31

- Working Group members will have until 11/22 to respond with written feedback

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Thank you

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