Oregon Energy Strategy
Final Plenary Policy Working Group Meeting
May 21, 2025, 9:00-12:00

Post-Meeting Notes

Meeting Summary

Edith Bayer (ODOE) and ODOE Policy Working Group leads presented a summation of the PWG breakout meetings, including a review of the environmental justice and equity discussions, key modeling findings for each topic area, barriers identified to the directions indicated by the modeling, and high-level policies being considered to address those barriers. ODOE also shared six strategies to be used to organize these policies, including a new strategy designated to organize recommendations for energy resilience. ODOE thanked PWG members for their participation and invaluable input throughout Phase 2 policy discussions and asked that members look forward to a publication of draft recommendations later in the summer for written comment.

In-Meeting Notes

Participants

PWG Members		
Mark Healy	Shannon Souza	Tom Pardee, Avista
John Seng, Spark Northwest	Alec Shebiel, Umatilla Electric	Antonio Machado, WSPA
Jess, Rogue Climate	Maddy Salzman, Earth Advantage	Joshua Basofin, Climate Solutions
Silvia Tanner, Multnomah County	Hannah Dondy-Kaplan BPA	Justin DeMello, City of Hillsboro
Zachary Mulholland, Beyond Toxics	Cassandra Jackson, Port of Portland	Jason Altamirano, TITAN Freight Systems
Kaleb Lay, ORA	Carra Sahler, GEI	Tonia Moro
Anahí Segovia Rodriguez, Verde	Billy Curtiss, EWEB	Lauren Link, TNC
David Heslam, Earth Advantage	Jamie Johnson, GEI	Ingrid Fish, City of Portland
John Maddalena SEI	Devin McGreal, CNGC	Diane Brandt, RNW
Sidney Villanueva, Blue Skies Law	Kyle Whatley, TriMet	Jana Jarvis, OTA
Sarah Buchwalter, PGE	Nick Cheke, CEP	Pam Neild, City of Portland, BPS
Ryan Perry, Tillamook PUD	Andrea Kreiner, OACD	Patrick Sterns, PearlX
Jennifer Joly, OMEU	Rebecca Smith, RHA	Peter Cogswell
Pat DeLaquil, MCAT, DecisionWare	Logan Telles, City of Eugene	Jeff Hammarlund
Jenn Bies, Port of Portland	Adam Shick, Energy Trust	Cory-Ann Wind, CFAA

Bryan Adams, CoEnergy Propane	Alyn Spector, CNGC	Juan J Serpa Muñoz, EWEB
Bob Kaplan, City of Ashland	Tim Miller, Oregon Business for Climate	Bret Stevens, Daimler
Zach Baker, NWEC	Brittany Park, NW Natural	Ranfis, BlueGreen Alliance
Patty Satkiewicz, PacifiCorp	Tim Lynch, Multnomah County	Ivy Quach, QB Fabrication
Mary Moerlins, NW Natural	Dave Van't Hof	Jennifer Hill-Hart, CUB
Jason Heuser, EWEB	Tucker Billman, ORECA	Nancy Bennett, PGE
Hansen, Jared, Idaho Power	Claire Prihoda, Climate Solutions	Bob Jenks, CUB
Amber Faist, NWNC	Sam Wade, RNG Coalition	Jacob Goodspeed, PGE
Aide Gutierrez, EUVALCREE	Michael Brutocao, Avista	Patrick Sterns, OSSIA

Oregon Agencies
Lauren Rosenstein, ODOE
Hugh Arceneaux, ODOE
Edith Bayer, ODOE
Mary Kopriva, ODOE
Joni Sliger, ODOE
Rob Del Mar, ODOE
Hannah Satein, ODOE
Jessica Reichers, ODOE
Joshua Price, ODOE
Michael Freels, ODOE
Jillian DiMedio, ODOE
Maxwell Woods, ODOE
Jason Sierman, ODOE
Alan Zelenka, ODOE
Stefenie Griggs, ODOT
Crystal Grinnell, OWRD
Jeff Burright, DLCD
Laura Tabor, OPUC
Brett Sherry, OHA
Alyssa Bonini, DLCD
Brian Hurley, ODOT
Mark Heizer, DCBS
Rachel Sakata, DEQ
JP Batmale, PUC
Anne Gire, DCBS

Introduction

- Edith Bayer (ODOE) kicked off the call. Edith reviewed ODOE's mission statement and reviewed WebEx functionality. Edith stated that, because we have many meeting participants today, the main mode of communication will be the chat window, and asked that members post questions or comments through the WebEx chat.

- Edith thanked PWG members for their participation thus far and reflected on the length and quality of effort contributed to the Energy Strategy process. Edith explained that the purpose of the current meeting is to share input made in the breakout meeting sections and ask clarifying questions. Edith added that PWG members will have opportunity to comment in draft recommendations in late June. Edith reviewed the meeting agenda and objectives:
    - Update on process for developing energy strategy recommendations
    - Summarize discussions from across Policy Working Groups
    - Present draft high-level policy recommendations across working group topics
    - Answer clarifying questions
- Edith reviewed the PWG group agreements, highlighting ODOE's request that PWG members listen, keep an open mind, and strive to find common ground in the Energy Strategy.
- Edith provided an update of the PWG process, including the Phase 1 modeling efforts, Phase 2 policy discussions to inform recommendation drafting, a release of draft recommendations for comment, and then drafting the Report itself for a November 1 delivery. Edith reviewed the PWG topic areas and the sequence of objectives used to organize PWG meetings.
- Edith reviewed an example of this process, a key modeling finding that indicated a role for low-carbon fuels in Oregon's energy transition, and how the PWG used key considerations to address how to move Oregon forward on the basis of the modeling's finding.
- Edith reviewed the Energy Strategy framework of strategies, recommendations, and actions; Edith explained that the strategies provide direction to the state, high-level recommendations provide an additional layer of guidance and specificity that then frame-up near-term policy actions. Edith explained that, today, we would be focused on high-level recommendations, as ODOE is currently reviewing and responding to written and meeting 4 input on policy actions. Edith provided additional detail of the strategy level of organization; these strategies are directional, draw from modeling finding, are organized around pillars of the energy system, and account for the interaction of these pillars. Edith then reviewed the draft strategies and how environmental justice is intended to be incorporated in each strategy.
- Edith reviewed the role of high-level policy recommendations; these are intended to provide focus for guiding policy development, but are not themselves directly actionable. They are intended to be steady over time and not to define pace or scale.
- Edith reviewed the role of policy actions as the actionable steps in the near term to pursue strategies and recommendations.
- Edith reviewed an example strategy, associated policy recommendations, and policy actions with 5-10 year outlooks.
- Edith provided a diagram of the input ODOE is taking into account to draft Energy Strategy recommendations and include those in the Final Report. Edith explained that the draft policy recommendations will include some context from the Final Report to help inform public comment.

Environmental Justice and Equity

- Lauren Rosenstein (ODOE) reviewed the role of the environmental justice and equity policy working group in reviewing the policy actions and recommendations of other PWGs and in preparing an umbrella framework to incorporate environmental justice and equity perspectives

throughout the Energy Strategy. Lauren explained that this framework is inspired by Washington and University of Michigan initiatives.

- Lauren explained that the goal of this framework is to avoid perpetuating inequities, such as energy burden, resilience resource, and health impact disparities, in Oregon's energy system and to instead foster more equitable actions and outcomes. Equitable outcomes in this context refers both to access to new technologies and to impacts of the energy transition on access to and cost of essential goods and services like food and shelter. Lauren stated that addressing environmental justice and equity elements would ensure greater participation in Oregon energy programs and in mitigating costs to other Oregon systems.
- Lauren shared draft PWG issues and strategies based on organization used to support PWG discussions. Lauren explained that she and Mary Kopriva (ODOE) have coordinated with other PWG leads and relied on PWG member input to draft and continue to edit these issues and proposed strategies. Lauren reviewed the current proposed strategies.
- Ranfis, BlueGreen Alliance; curious where and how workforce issues and apprenticeship will be reflected in the Strategy? Says there were discussions of upscaling workforce training and apprenticeship programs.
    - Lauren: ODOE presented these issues and strategies to the PWG earlier and is continuing to make revisions based on member input. ODOE welcomes additional comment on topics that should be added to draft materials based on prior PWG work.

Building Efficiency and Electrification

- Rob Del Mar (ODOE) thanked PWG members for their participation and the breadth of feedback received in the meeting process. Rob reviewed the scope of the Building Efficiency and Electrification PWG, relevant findings from the technical analysis, and some barriers and potential policy actions surfaced by the PWG relevant to building efficiency and distributed energy resources.
- *from Bob Kaplan to everyone: Low or no interest loans are good, but often more important is lengthening the term of the loan (e.g. to 10 years) to minimize monthly loan payments.*
    - *from Jessica Reichers to everyone: Bob, follow-up message from Lauren. She indicates your comment about lengthening loan terms is being reflected in the updated draft.*
- *from Carra Sahler to everyone: Is there an easy place for me to look to remind myself what is captured in "energy efficiency"? Are we just talking about weatherization? Are we also talking about swapping resistance heating for heat pumps? Gas furnaces with a higher efficiency gas furnace? All of the above? Thank you!*
    - *from Jessica Reichers to everyone: Hi, Carra - "all of the above," and keeping in mind that this overlaps with electrification that is the other focus of this working group.*
- *from David Heslam to everyone: On the slide that shows the reduction in energy use per household, what is the unit of energy being utilized? Is it site energy or source energy? This is a key point that relates to Carra's question and one that has caused confusion in past policy debates if people had different understanding of the unit of measure.*
    - *from Edith Bayer ODOE to everyone: David - that slide reflects per capita energy use as a % of 2024 energy use, so represents demand-side savings from all measures, including weatherization and a switch to more efficient technologies. Does that answer your question?*

    - *from David Heslam to everyone: Edith, thanks for the answer, but it does not. When analyzing savings that involved multiple fuels a decision needs to be made about whether the savings is calculated as site energy (what's measured at the meters) or at the source level (the inflows shown on a Sankey Diagram). Source energy is more complicated, especially when forecasted over decades because the underlying nature of the electrical generation systems will change and the efficiency of conversion from source to site energy will change as a result. I'll repeat, this is a key consideration and it will be very difficult to move policies forward unless there is common understanding of this unit of measure. To make the issue clear, if site energy is used, then electrification will show up as reduced energy consumption. I am not weighing in on either side of the decision to use site or source, but the sooner this is known the sooner interested parties can argue which unit of measure is more appropriate.*
    - *from Edith Bayer ODOE to everyone: David - I will check with our modeler, but I believe that it's site energy that is reflected in that slide. The model itself accounted for what the changes in end-use demand means system-wide (accounting for losses along the way). That happened when the demand-side model results were plugged into the supply-side model. But I don't believe that we reflected demand-side results in primary energy terms.*
- *from Bob Kaplan to everyone: Another barrier is readiness to replace a gas furnace or water heater with an efficient heat pump. If it's too much hassle to install a heat pump when a furnace or gas water heater fails, the customer won't do it. So in addition to raising awareness before the equipment dies, we need to help folks install a 220v circuit or upgrade their panel before their furnace fails*
    - *from Ingrid Fish City of Portland to everyone: Great point Bob.*
    - *from David Heslam to everyone: Manufacturers now offer 120V heat pump water heaters to help address this issue. The need for 220V at the HVAC is a separate concern, however since 2021 a great number of homes have added AC. That work already took care of that electrical upgrade need. To be sure, this is still an issue for many households.*
- *from Carra Sahler to everyone: Another barrier - structures that do not direct ratepayer dollars to the most efficient appliances (that also reduce carbon emissions) regardless of original fuel source. Another barrier - building codes that allow builders to install less efficient appliances*
    - *from Jess, Rogue Climate: Adding to Carra's comment - existing incentives do not allow residents to maximize their discounts/incentives for DHPs unless they already have electric systems (barriers to fuel switching)*
- *from Ingrid Fish City of Portland to everyone: Are the utilities supportive of distributed energy resources?*
    - *from Jessica Reichers to everyone: Hi, Ingrid. I don't know that we have taken a poll of all the utilities, but PGE has indicated in their most recent Integrated Resource Plan that they anticipate meeting about 25% of their load with distirbuted energy resources by 2030 or 2035. If someone from PGE is available to provide the correct date, please feel free to pop that into the chat.*

Transportation Electrification:

- Jillian DiMedio (ODOE) echoed Rob's gratitude for PWG members' participation throughout an intensive engagement process. Jillian reviewed the scope of the Transportation Electrification

PWG, the group's process for organizing discussions, and high-level, non-exhaustive summaries of themes and input heard in the PWG discussion process. Jillian reviewed relevant findings from the technical analysis, barriers, potential strategies, policies, and actions surfaced by the PWG for the topics of vehicle electrification, grid integration, and vehicle-miles-traveled reduction.

- *from Tim Lynch to everyone: Apologies if this was covered previously, but what are the modeling assumptions around federal support for strategies/measures? residential tax credits etc.*
    - *from Edith Bayer ODOE to everyone: Tim: The modeling did include federal support under the IRA and IIJA. Changes in federal policy are rapidly evolving, and we are tracking and considering those as we work on developing draft recommendations.*
    - *from Tim Lynch to everyone: Thanks Edith. And that wasn't meant as an indictment of your excellent work here, just a really complex time...*
- *from Ingrid Fish City of Portland to everyone: Another barrier is that there are no cost or time saving benefits (which can be addressed with a transportation pricing system) associated with transitioning to EVs.*
- *from Jeff Hammarlund to everyone: What assumptions are you using for Any assumptions on electric buses, including school buses? Also, assumptions on the role school buses can play as a V2G resource? I have noted that Oakland public schools are testing this*
    - *from Jessica Reichers to everyone:*
    - *Follow up to Jeff's question about School Bus electrification assumptions: The modeling assumed 100% battery electric school bus sales by 2036.*
    - *Additional follow-up to Jeff, we did not include electric school buses for Vehicle-to-Grid capabilities due to limitations in the model. But, we do know that there is interest in these as a grid resource. Certainly the use of school buses would be included in the draft recommendation she showed: "Establish streamlined processes for distribution system upgrades and infrastructure interconnection, while prioritizing the integration of EVs as flexible loads, to minimize delays, mitigate the impacts of growing EV adoption, and improve overall grid efficiency."*
- *from Carra Sahler to everyone: Barrier- Article IX, section 3a of the Oregon Constitution and the restrictions it places on raising and using highway funds to support equitable transportation electrification*
- *from Rebecca Smith for RHA to everyone: I am confused about the approach to transportation Jillian just presented. The initial slides mention ZEVs, including FCEVs, and there are a few mentions of fueling infrastructure, but the recommendations are all focused on EVs except for VMT reduction. So where do FCEVs show up in transportation policy actions?*
    - *from Jillian DiMedio, ODOE, she/her to everyone: Hi Rebecca, we didn't present on policy actions today, but you will see in our draft actions at least one action specific to hydrogen fueling and in others, language that is inclusive of FCEVs and not just focused on BEVs. anytime we use the term "ZEV" we are referring to both BEVs and FCEVs*
    - *from Mark Healy to everyone: I agree with Rebecca Smith about FCEVs. In order to be more realistic in transportation planning, hybrid vehicle use should be at least be mentioned. I would think the cost barrier to own an EV and charger might make hybrids more attractive to lower income groups. Also, rural areas do not have EV charging*

infrastructure. I know it is not efficient to include hybrids in the EV transition but it is practical to consider it.

- *from Carra Sahler to everyone: RE TE -- strategy--Prioritize investments to get the most bang for the buck--electrifying rural fleets could achieve greater emission reductions per vehicle than focusing solely on urban areas*
    - *from Tim Miller to everyone: Agreed, Carra - high impact of TE for rural drivers. This is in the 'superuser' strategies/policies we've floated a few times. Some clear policy oppt'ies here.*
- *from Tim Miller to everyone: Does the 'No ACT' scenario mean no electric trucks are adopted at all, or just a much slower, market-driven rate of adoption?*
    - *from Jillian DiMedio, ODOE, she/her to everyone: Tim - no ACT simply removed the near term (out to 2035) MHD zero emission vehicle sales targets established by the Advanced Clean Trucks rule. MHD vehicles are still assumed to get to 100% ZEV sales by 2050, so it really focuses on the value of early electrification*
    - *from Tim Miller to everyone: Thanks -- but is there still SOME adoption of MHD ZEVs before 2035 without ACT? (i.e. the modest natural adoption that is happening now?)*

Developing Clean Electricity Generation and Transmission:

- Joni Sliger (ODOE) echoed thanks for PWG members' invaluable contributions throughout the Phase 2 policy discussion process. Joni reviewed the scope of the Development Clean Electricity Generation and Transmission PWG, and relevant findings from the technical analysis as well as barriers identified by the PWG relevant to resource development, enhancing resilience, and regional coordination. Joni presented a couple of high-level policy recommendations ODOE is using while reviewing PWG input and developing more specific policy actions.
- *Jennifer Joly, OMEU to everyone: What about the importance of hydropower?*
    - Joni: the modeling reflected a continuing vital role for hydropower in Oregon's energy system. ODOE is currently reflecting on hydropower comments received following the last PWG meeting.

Low-Carbon Fuels and Resilience

- Michael Freels (ODOE) echoed thanks for PWG members' contributions throughout the Phase 2 policy discussion process and recognized the considerable effort involved. Michael reviewed the scope of the Low-Carbon Fuels PWG, relevant findings from the technical analysis and barriers identified by the PWG associated with low-carbon fuel development, electrification, and managing declining liquid fuel demands. Michael presented a couple of high-level policy recommendations to advance the use of low-carbon fuels to support the hardest-to-electrify end uses PWG input and developing more specific policy actions.
- Michael also presented the new, sixth strategy – resilience. Michael explained that ODOE received significant feedback on the importance of resource adequacy and system and community resilience from several PWGs and the Advisory Group, and decided that, because of its cross-cutting nature, to treat resilience as an independent strategy. Michael explained that the modeling was limited in its ability to address resilience in detail, though the modeling did include a constraint to maintain overall system reliability. Based on that constraint, the model did identify a need for firm, dispatchable resource capacity (with low overall utilization rates) to support the growing electrical grid and the modeling finding that constraining clean gas plant

availability would necessitate further clean energy and transmission buildout. Michael reviewed barriers to developing low-carbon fuels and dispatchable resources to support the electrical grid and three high-level policies to address these barriers.

- Jessica shared a question from chat as to how the modeling defined and modeled "clean" gas.
    - Jess, Rogue Climate: Asked how the modeling addressed differing carbon intensities and feedstock demands associated with different low-carbon fuels. For example, if green hydrogen was a part of the mix, does that account for the needed renewable electricity generation to then create that green hydrogen?
    - Michael confirmed that energy and supply inputs for low-carbon fuels were included in the modeling. Jillian further explained that
- *from Pat DeLaquil to everyone: On Slide 69, is the geothermal primary a version of enhanced geothermal or near-surface low-temp geothermal?*
- *from Jess, Rogue Climate she/they to everyone: Did this low-carbon fuel group discuss specific low-carbon fuels, and how did considerations about different fuel options change your recommendations and / or the modeling? does the group recommend any particular type of low-carbon fuel for Oregon's most-likely applications?*
    - *from Jessica Reichers to everyone: Hi, Jess. Certainly different fuels were discussed, and a takeaway from that discussion was that enabling more fuel availability was important, but there was not a resounding focus on what low-carbon fuels are the focus for Oregon's future energy needs.*
- *from Jana Jarvis to everyone: Can someone explain to me how electrification is more cost effective than low-carbon fuels? Does this analysis consider the operational efficiencies due to range and payload?*
    - *from Jillian DiMedio, ODOE, she/her to everyone: Hi Jana, all scenarios in our Energy Strategy modeling met existing policy out to 2050, including the target to reduce economy-wide GHG emissions by 80% by 2050. This means if we do not electrify, we must still replace most conventional vehicle fuels with low carbon alternatives, to meet those GHG emissions reduction targets. Any scenario that slows the pace of electrification will turn to low carbon fuels instead. As the modeling demonstrates, this is a more expensive alternative to electrification. To answer your second question, no, we did not increase the number of heavy duty vehicles to account for a potential need for more vehicles to meet the same payload requirements. But we did do a price sensitivity and found that even with vehicle costs 10% higher, electrification is still more cost-effective than utilizing low carbon fuels for on road transportation.*
    - Jana: did the modeling include lower efficiencies of electric vehicles compared to internal combustion vehicles?
    - Jillian: electric vehicles are actually more efficient than internal combustion engine vehicles. If Jana is referring to differences in payload capacity between ICE and EV trucks, the model did not directly account for that factor but did model a ten-percent price sensitivity to find that EV trucks remained cost-efficient compared to ICE trucks even if their cost increased by ten percent over current cost projections. ODOE is working to share full data tables and materials from the modeling.
- *from Ingrid Fish City of Portland to everyone: Agree that there needs to be some MHD EV adoption before 2035, even if ACT is delayed.*

    - *from Rebecca Smith for RHA to everyone: Also agree with comments re MHD adoption needs to be reflected before 2035 even without ACT*
- *from Rebecca Smith for RHA to everyone: If you think of resilience as one end of a continuum and reliability as the other end, where does ODOE draw the line between the two?*
- *from Jess, Rogue Climate she/they to everyone: Apologies if this has already been answered - what was the definition of "clean gas" being used for this scenario?*
    - *from John Seng to everyone: Was wondering the same thing as Jess :)*
    - *from Edith Bayer ODOE to everyone: Jess and John: Main sources of clean gas in the model are RNG, biogas, and hydrogen.*
- *from Antonio Machado to everyone: The overregulation of liquid fuel in Oregon and fuel producers in states outside of Oregon currently poses a significant threat to Oregon's future decarbonization efforts. Current stringent regulations are discouraging refining activity along the West Coast, making fuel production increasingly challenging. Two refineries in the west coast have already signaled plans to cease operations, further reducing the availability of locally refined fuels.*
  This situation has direct implications for Oregon, a state without in-state refining capacity and one that relies heavily on imported liquid fuels to initiate and support decarbonization. Liquid fuels play a critical role in ensuring energy reliability, particularly as the state seeks to electrify multiple sectors. As electrification expands, the demand on the grid will increase, making reliable liquid fuel sources essential for backup and grid stability.
- *from Jillian DiMedio, ODOE, she/her to everyone: Jana, apologies, let me clarify. the modeling assumptions looked at the costs of zero emission vehicles (including that they are already more expensive than conventional counterparts), and then also tested a sensitivity making those costs 10% more expensive*
- *from Jessica Reichers to everyone: Tim, Mark, Rebecca, and Ingrid CORRECTION to my comment above, which was missing a "not." It should read: "the model did NOT preclude natural adoption of electric trucks, but tested the number of electric trucks expected to be adopted based on the influence of the ACT."*
- *from Tim Miller to everyone: Ah! That NOT was very important. thx*
- *from Jana Jarvis to everyone: Interesting that the transportation modeling excluded marine and air applications but threw freight in the same calculations as passenger vehicles. Reduced VMT, for example, should not be a goal for freight - that would indicate less demand which usually indicates a recession. Increased VMT is an indication of a growing economy. This analysis should separate passenger vehicles from freight vehicles.*
- *from Jess, Rogue Climate she/they to everyone: much appreciation Jessica!*
- *from Ingrid Fish City of Portland to everyone: Thanks for the clarification Jessica*

Next Steps

- Edith Bayer (ODOE) thanked PWG members again for their participation and reviewed an upcoming timeline with publication of draft policy actions for written comment. Edith thanked PWG members again and adjourned the meeting.

Meeting Chat

Jessica Reichers	Hi, Everyone! I am Jessica Reichers, the Technology & Policy Manager at the Oregon Department of Energy. I will be monitoring the chat for questions during our presentation.
Jeff Hammarlund	Jeff Hammarlund, joining a bit late (just returning from our adventure in Turkey ans Spain but excited to get reengaged)
Jessica Reichers	Welcome, Jeff!
Rebecca Smith for RHA	So are the policy actions meant to be the "tactics" portion of a strategic plan?
Rebecca Smith for RHA	. . . tactics with measurable outcomes?
Jessica Reichers	Hi, Rebecca - the policy actions are intended to be (1) specific, (2) actionable, and (3) measurable. So, if that aligns with "tactics," then yes.
Rebecca Smith for RHA	Yes, thank you!
Bob Kaplan	Low or no interest loans are good, but often more important is lengthening the term of the loan (e.g. to 10 years) to minimize monthly loan payments.
Jessica Reichers	Thanks, Bob. We appreciate the comment.
Jessica Reichers	Bob, follow-up message from Lauren. She indicates your comment about lengthening loan terms is being reflected in the updated draft.
Carra Sahler	Is there an easy place for me to look to remind myself what is captured in "energy efficiency"? Are we just talking about weatherization? Are we also talking about swapping resistance heating for heat pumps? Gas furnaces with a higher efficiency gas furnace? All of the above? Thank you!
Jessica Reichers	Hi, Carra - "all of the above," and keeping in mind that this overlaps with electrification that is the other focus of this working group.
David Heslam	On the slide that shows the reduction in energy use per household, what is the unit of energy being utilized? Is it site energy or source energy? This is a key point that relates to Carra's question and one that has caused confusion in past policy debates if people had different understanding of the unit of measure.
Bob Kaplan	Another barrier is readiness to replace a gas furnace or water heater with an efficient heat pump. If it's too much hassle to install a heat pump when a furnace or gas water heater fails, the customer won't do it. So in addition to raising awareness before the equipment dies, we need to help folks install a 220v circuit or upgrade their panel before their furnace fails.
Jessica Reichers	Hi, David (and Carra) confirming a response for you. Will respond ASAP.
Ingrid Fish City of Portland	Great point Bob.
Jessica Reichers	Thanks for the comment, Bob. I have captured this for out team.
Carra Sahler	Another barrier - structures that do not direct ratepayer dollars to the most efficient appliances (that also reduce carbon emissions) regardless of original fuel source
Jessica Reichers	Thanks, Carra. I have captured that comment for our team.
Carra Sahler	Another barrier - building codes that allow builders to install less efficient appliances

Edith Bayer ODOE	David - that slide reflects per capita energy use as a % of 2024 energy use, so represents demand-side savings from all measures, including weatherization and a switch to more efficient technologies. Does that answer your question?
Jess, Rogue Climate she/they	Adding to Carra's comment - existing incentives do not allow residents to maximize their discounts/incentives for DHPs unless they already have electric systems (barriers to fuel switching)
Ingrid Fish City of Portland	Are the utilities supportive of distributed energy resources?
David Heslam	Manufacturers now offer 120V heat pump water heaters to help address this issue. The need for 220V at the HVAC is a separate concern, however since 2021 a great number of homes have added AC. That work already took care of that electrical upgrade need. To be sure, this is still an issue for many households.
Jessica Reichers	Hi, Ingrid. I don't know that we have taken a poll of all the utilities, but PGE has indicated in their most recent Integrated Resource Plan that they anticipate meeting about 25% of their load with distirbuted energy resources by 2030 or 2035. If someone from PGE is available to provide the correct date, please feel free to pop that into the chat.
Ingrid Fish City of Portland	Thank you Jessica
Tim Lynch	Apologies if this was covered previously, but what are the modeling assumptions around federal support for strategies/measures? residential tax credits etc.
Edith Bayer ODOE	Tim: The modeling did include federal support under the IRA and IIJA. Changes in federal policy are rapidly evolving, and we are tracking and considering those as we work on developing draft recommendations.
Tim Lynch	Thanks Edith. And that wasn't meant as an indictment of your excellent work here, just a really complex time...
David Heslam	Edith, thanks for the answer, but it does not. When analyzing savings that involved multiple fuels a decsion needs to be made about whether the savings is calculated as site energy (what's measured at the meters) or at the source level (the inflows shown on a Sankey Diagram). Source energy is more complicated, especially when forecasted over decades because the underlying nature of the electrical generation systems will chnage and the efficiency of conversion from source to site energy will change as a result. I'll repeat, this is a key consideration and it will be very difficult to move policies forward unless there is common understanding of this unit of measure. To make the issue clear, if site energy is used, then electrification will show up as reduced energy consumption. I am not weighing in on either side of the decision to use site or source, but the sooner this is known the sooner interested parties can argue which unit of measure is more appropriate.
Jess, Rogue Climate she/they	Did the VE group explore strategies to reduce mining impacts and increase lithium recycling in the vehicle electrification transition?
Edith Bayer ODOE	David - I will check with our modeler, but I believe that it's site energy that is reflected in that slide. The model itself accounted for what the changes in end-use demand means system-wide (accounting for losses along the way).

	That happened when the demand-side model results were plugged into the supply-side model. But I don't believe that we reflected demand-side results in primary energy terms.
Ingrid Fish City of Portland	Another barrier is that there are no cost or time saving benefits (which can be addressed with a transportation pricing system) associated with transitioning to EVs.
Jeff Hammarlund	What assumptions are you using for Any assumptions on electric buses, including school buses ?
Jessica Reichers	Hi, Jess. I am not sure if it was mentioned, but it wasn't a big focus of the group. Although it is a big issue, the focus of the working groups was on policies that the state could focus on, and this is largely something that would be addressed at the federal level.
Jessica Reichers	Thanks for the comment, Ingrid. WE have captured it for the team.
Jeff Hammarlund	also, assumptions on thje role scool buses can play as a V2G resource? I have nited that Oakland public schools are testing this
Jessica Reichers	Hi, Jeff. I am checking on what the exact assumption s on electric school buses were, but I do know they were a consideration in the modeling.
Carra Sahler	Barrier- Article IX, section 3a of the Oregon Constitution and the restrictions it places on raising and using highway funds to support equitable transportation electrification
Jessica Reichers	Thanks for the additional comment about the Oakland School District.
Jessica Reichers	Thanks, for the comment, Carra. We definitely have that in our list of barriers in the transprotation electrification space.
Jessica Reichers	Follow up to Jeff's question about School Bus electrification assumptions: The modeling assumed 100% battery electric school bus sales by 2036.
Rebecca Smith for RHA	I am confused about the approach to transportation Jillian just presented. The initial slides mention ZEVs, including FCEVs, and there are a few mentions of fueling infrastructure, but the recommendations are all focused on EVs except for VMT reduction. So where do FCEVs show up in transportation policy actions?
Jessica Reichers	Additional follow-up to Jeff, we did not include electric school buses for Vehicle-to-Grid capabilities due to limitations in the model. But, we do know that there is interest in these as a grid resource. Certainly the use of school buses would be included in the draft recommendation she showed: "Establish streamlined processes for distribution system upgrades and infrastructure interconnection, while prioritizing the integration of EVs as flexible loads, to minimize delays, mitigate the impacts of growing EV adoption, and improve overall grid efficiency."
Jillian DiMedio, ODOE, she/her	Hi Rebecca, we didn't present on policy actions today, but you will see in our draft actions at least one action specific to hydrogen fueling and in others, language that is inclusive of FCEVs and not just focused on BEVs. anytime we use the term "ZEV" we are referring to both BEVs and FCEVs
Carra Sahler	RE TE -- strategy--Prioritize investments to get the most bang for the buck--electrifying rural fleets could achieve greater emission reductions per vehicle than focusing solely on urban areas
Jennifer Joly, OMEU	What about the importance of hydropower?

Tim Miller	Agreed, Carra - high impact of TE for rural drivers. This is in the 'superuser' strategies/policies we've floated a few times. Some clear policy oppt'ies here.
Jessica Reichers	Thanks, Carra and Tim for the comments. We have captured them.
Pat DeLaquil	Is the geothermal primary a version of enhanced geothermal or near-surface low-temp geothermal?
Pat DeLaquil	On slide 69
Jess, Rogue Climate she/they	Did this low-carbon fuel group discuss specific low-carbon fuels, and how did considerations about different fuel options change your recommendations and / or the modeling? does the group recommend any particular type of low-carbon fuel for Oregon's most-likely applications?
Edith Bayer ODOE	Pat: this is enhanced geothermal.
Pat DeLaquil	thanks
Tim Miller	Does the 'No ACT' scenario mean no electric trucks are adopted at all, or just a much slower, market-driven rate of adoption?
Jana Jarvis	Can someone exolain to me how electrification iis more codt effective than low-carbon fuels? Does thid analysis consider the operatioal efficiencies due to range and payload?
Jillian DiMedio, ODOE, she/her	Tim - no ACT simply removed the near term (out to 2035) MHD zero emission vehicle sales targets established by the Advanced Clean Trucks rule. MHD vehicles are still assumed to get to 100% ZEV sales by 2050, so it really focuses on the value of early electrification
Jessica Reichers	Hi, Jess. Certainly different fuels were discussed, and a takeaway from that discussion was that enabling more fuel availability was important, but there was not a resounding focus on what low-carbon fuels are the focus for Oregon's future energy needs.
Tim Miller	Thanks -- but is there still SOME adoption of MHD ZEVs before 2035 without ACT? (i.e. the modest natural adoption that is happening now?)
Mark Healy	I agree with Rebecca Smith about FCEVs. In order to be more realistic in transportation planning, hybrid vehicle use should be at least be mentioned . I would think the cost barrier to own an EV and charger might make hybrids more attractive to lower income groups. Also rural areas do not have EV charging infrastructure. I know it is not efficient to include hybrids in the EV transition but it is practical to consider it.
Jeff Hammarlund	Please define ACT
Ingrid Fish City of Portland	Advanced Clean Trucks
Jessica Reichers	Sorry, Jeff. ACT is Advnaced Clean Trucks.
Jeff Hammarlund	Thanks
Ingrid Fish City of Portland	Agree that there needs to be some MHD EV adoption before 2035, even if ACT is delayed.
Rebecca Smith for RHA	Also agree with comments re MHD adoption needs to be reflected before 2035 even without ACT
Jillian DiMedio, ODOE, she/her	Hi Jana, all scenarios in our Energy Strategy modeling met existing policy out to 2050, including the target to reduce economy-wide GHG emissions by 80%

	by 2050. This means if we do not electrify, we must still replace most conventional vehicle fuels with low carbon alternatives, to meet those GHG emissions reduction targets. Any scenario that slows the pace of electrification will turn to low carbon fuels instead. As the modeling demonstrates, this is a more expensive alternative to electrification. To answer your second question, no, we did not increase the number of heavy duty vehicles to account for a potential need for more vehicles to meet the same payload requirements. but we did do a price sensitivity and found that even with vehicle costs 10% higher, electrification is still more cost-effective than utilizing low carbon fuels for on road transportation
Jessica Reichers	Tim, Mark, Rebecca, Ingrid - the model did preclude natural adoption of electric trucks, but bossted the number of electric trucks expected to be adopted based on the influence of the ACT>
Jess, Rogue Climate she/they	Apologies if this has already been answered - what was the definition of "clean gas" being used for this scenario?
Jana Jarvis	Thank you for that explanation. Your calculatiojns do not consider that EV's are 200-300% more expensive - not 10%. And they are sigificantly less efficient due to the frequency of recharging and the time involved as well as the fact that they are heavier and do not carry as much product so that you will need 4 trucks for every 3 in the HD sector. In the MD space, there are numerous applications where EV's do not meet the requirements of the application - auxillary power requirements as an example. I think your calcualtions have excluded some key parameters to a comprehensive discussion of this issue.
John Seng	Was wondering the same thing as Jess :)
Rebecca Smith for RHA	If you think of resilience as one end of a continuum and reliability as the other end, where does ODOE draw the line between the two?
Edith Bayer ODOE	Jess and John: Main sources of clean gas in the model are RNG, biogas, and hydrogen.
Antonio Machado	The overregulation of liquid fuel in Oregon and fuel producers in states outside of Oregon currently poses a significant threat to Oregon’s future decarbonization efforts. Current stringent regulations are discouraging refining activity along the West Coast, making fuel production increasingly challenging. Two refineries in the west coast have already signaled plans to cease operations, further reducing the availability of locally refined fuels. This situation has direct implications for Oregon, a state without in-state refining capacity and one that relies heavily on imported liquid fuels to initiate and support decarbonization. Liquid fuels play a critical role in ensuring energy reliability, particularly as the state seeks to electrify multiple sectors. As electrification expands, the demand on the grid will increase, making reliable liquid fuel sources essential for backup and grid stability.
Jillian DiMedio, ODOE, she/her	Jana, apologies, let me clarify. the modeling assumptions looked at the costs of zero emission vehicles (including that they are already more expensive than conventional counterparts), and then also tested a sensitivity making those costs 10% more expensive

Jessica Reichers	Tim, Mark, Rebecca, and Ingrid CORRECTION to my comment above, which was missing a "not." It should read: "the model did NOT preclude natural adoption of electric trucks, but bossted the number of electric trucks expected to be adopted based on the influence of the ACT."
Tim Miller	Ah! That NOT was very important. thx
Jana Jarvis	Interesting that the transportation modeling excluded marine and air applications but threw freight in the same calculations as passenger vehiles. Reduced VMT, for example, should not be a goal for freight - that would indicate less demand which usually indicates a recession. Increased VMT is an indication of a growing economy. This analysis should separate passenger vehicles from freight vehicles.
Jess, Rogue Climate she/they	much appreciation Jessica!
Ingrid Fish City of Portland	Thanks for the clarification Jessica
Jessica Reichers	@Rebecca Smith: Can you clarify what your specifically asking about in the chat: "If you think of resilience as one end of a continuum and reliability as the other end, where does ODOE draw the line between the two?" Do you mean in the model, or in how we define those things?
Jessica Reichers	@Antonio. Thanks, for your comment about liquid fuel regulation. We have captured it for our notes.
Jess, Rogue Climate she/they	Thank you so much!