# Oregon Energy Strategy
# Transportation Electrification Policy Working Group
# Meeting 2

**March 4, 2025, 9:30-12:30**

## Post-Meeting Notes

### Meeting Summary

*Jillian DiMedio (ODOE) presented on four key findings of the energy pathways modeling to inform the policy discussions of the Transportation Electrification Policy Working Group (PWG). These findings pertain to vehicle electrification generally, grid integration, vehicle miles traveled reductions, and low carbon fuels. Jillian and Jessica Reichers (ODOE) facilitated digital whiteboard exercises for PWG members to brainstorm barriers and issues related to the key findings and pathways presented by the modeling. ODOE is reviewing the discussions and brainstormed materials from the PWG to prepare for Meeting 3 of the PWG, which will focus on discussing existing Oregon policies related to the issues and barriers brainstormed in this Meeting 2.*

## In-Meeting Notes

### Participants

| ODOE | Other Participants | PWG Members |
|---|---|---|
| Alan Zelenka | Brian Hurley, ODOT | Brett Morgan, Climate Solutions |
| Edith Bayer | Christine Holland, PNNL | Christine Holland, PNNL |
| Evan Elias | Cody Meyer, DLCD | Ingrid Fish, City of Portland |
| Hugh Arceneaux | Stefenie Griggs, ODOT | Jamie Johnson, Green Energy Inst. at LC Law Sch |
| Jessica Reichers | | Jana Jarvis, Oregon Trucking Association |
| Jillian DiMedio | | Jason Altamirano, TITAN Freight Systems |
| Joshua Price | | Juan J Serpa Muñoz, EWEB |
| Michael Freels | | Kate Hawley, Pacific Power |
| Rob Del Mar | | Kyle Whatley, TriMet |
| Ruchi Sadhir | | Lewis Lem, City of Portland |
| | | Michael Graham, Clean Cities |
| | | Nancy Bennet, PGE |
| | | Rebecca Smith, RHA |
| | | Robert Wallace, WyEast |
| | | Stu Green, Forth |
| | | Tonio Moro |
| | | Charlie Tracy, OTEC |

### Introduction

- Jillian DiMedio (ODOE) opened the meeting and introduced ODOE members supporting the call. Jillain explained that PWG members can reach out to Joshua Price if they have technical issues.

- Jillian went over ODOE's mission and how it informs ODOE's approach to the Energy Strategy.
- Jillian explained WebEx functionality and invited non-participant attendees to submit comments through the public portal. https://odoe.powerappsportals.us/en-US/energy-strategy/
- Jillian reviewed the scope of the TE PWG and how it fits in with the other PWGs engaging in discussions through Phase 2. Jillian also described other forums providing input into the Energy Strategy.
- Jillian reviewed the role of the PWG to engage with the modeling results and policies to meet Oregon energy goals; however, their role is not to determine a "best" pathway or revisit the modeling inputs.
- Jillian reviewed the meeting objectives today as identifying barriers relevant to the topics identified and modeled pathways; Jillian also presented on the upcoming meeting agenda. Jillian explained that most meeting time would be devoted to discussion rather than presentation.
- Jillian reviewed the PWG roster and role of other agencies' staff.
- Jillian invited PWG members to introduce themselves in chat.
- Jillian explained the proposed upcoming meeting goals as focused on barriers, then reviewing current policies, identifying policy gaps, and then, finally, looking to strategies and policy solutions.
- Jessica Reichers reviewed group agreements for the PWG. Jessica also provided meeting guidance, explaining that the collective expertise and experience of the PWG will be invaluable to informing Energy Strategy key considerations, including cost, feasibility, land use and natural resource considerations, energy burden and affordability, environmental justice, energy and community energy resilience, community benefits, and economic and employment effects.

### Key transportation findings:[1]

- Jillian explained that these modeling findings should provide context for forthcoming policy discussions and provided the link to ODOE's transportation electrification key findings memo. https://www.oregon.gov/energy/Data-and-Reports/Documents/OES-Transportation-Electrification-Key-Findings.pdf
- Key Finding 1: TE reduces system-wide energy demand and cost; pace matters

  Jillian explains that slowing TE would increase system-wide energy demands and would lead to additional ICE vehicles entering the fleet with 15-20 year turnover periods.

  - Jillian presented on LDV EV market shares in Oregon and showed that Oregon's 2024 market average of 15.2% outpaces the national average of 10.1%. Jillian explained that ODOE would continue to monitor EV sales trends.
  - Jillian also presented on registration data of MHD vehicles in Oregon, showing increasing registrations; Jillian stated that, overall, this data is less robust than LDV data
  - Jillian presented on Atlas public policy's EV hub showing Tesla Cybertruck and Rivian truck accounting for Class 2b sales
  - Public charging infrastructure: Level 2

[1] For the full presentation and key findings, refer to 2025-03-04-OES-PGW-TE-Meeting-Presentation.pdf

        - Jillian presented data showing increasing cumulative Public Level 2 charging sources, based on ODOE TEINA study, which called for 25x infrastructure buildout by 2035 to support LDV EV sales
    - Public charging infrastructure: DCFC
        - Jillian presented on DCFC infrastructure, and TEINA calling for about 26,000 DCFC infrastructure sites to support LDV EV sales
    - Public MHD Charing in Oregon:
        - Jillian stated that Electric Island, a partner project between Daimler and PGE, is currently the only MHD charging site in Oregon and added that other projects have been awarded grants from DEQ's Oregon Zero Emission Fueling Infrastructure Grant (OZEF) and ODOT's Charging and Fueling Infrastructure program (CFI)

    - *Brett Morgan, Comment: I fundamentally disagree with that citation on only one charger: I count around 100 CCS chargers that charge faster than 100KWh, many at 350KWh*
    - *Jason Altamirano - TITAN Freight Systems to everyone: 10:05 AM: There is only one charging location that is designed for Medium and Heavy duty vehicles. Walmart parking lot chargers are not designed for big trucks.*
    - *from Brett Morgan He/Him to everyone: 10:07 AM: I understand that Jason but I am tracking statewide at least 95 chargers with CCS1 ports that charge faster than 150Kwh, many of these at gas stations. I understand that not all chargers from a spatial point of view may not work with the largest trucks, but looking on plugshare, there appear to be a lot that are "depot" and pull through style.*
    - *from Jillian DiMedio, ODOE to everyone: 10:10 AM: Hi Brett - yes, good point. Many MHD vehicles, particularly medium duty vehicles, are able to use charging stations designed primarily for light duty vehicles. My statement was that there is just one public station specifically designed for MHD vehicles right now, and really more heavy duty vehicles, from both an ingress/egress and power level standpoint. But thank you for your point.*
    - *from Michael Graham, Clean Cities to everyone: 10:15 AM: Most MD/HD vehicles cannot receive more than 150-180KW charge, so even if they could charge at these higher-powered stations, they would be parked and charging (in a LD-designed space/lot) for 4+ hours.*

## White Board and Miro

- Jillian provided a few notes and instructions on how best to use Miro, especially on how to navigate the screen and draft stickynotes. Jillian asked PWG members to navigate to Miro.
- Jessica walked the PWG through navigating Miro and offered to transcribe PWG's notes from the chat window to screen, as need be. Jessica asked that members be clear and concise in their drafting.

## Whiteboard Exercise 1: Barriers to Vehicle Electrification

- Jessica facilitated a discussion of Miro boards.
- Tariffs from Jamie Johnson, Green Energy Institute:
    - Many EVs are affected by imports and could be impacted by tariffs
- Jason Altamirano with Titan Freight; has 3 HD tractor EV trucks and 3 MD EV trucks. There are costs folks don't see; buying chargers, installing chargers, electricity costs themselves; demand charges based on when charging occurs can exceed flat electricity cost. Charing a fleet of

vehicles leads to significant charging costs that can fluctuate wildly based on rate schedule; rates have decreased for them specifically because they've been able to readjust their charging times.

- Another cost; insurance. MHDV insurance is higher than ICE because upfront vehicle costs are higher.
- Operational costs; range and weight limitation.
- Jillian: has Titan Freight done an analysis of whether operation costs of EVs exceed ICEs? Jason says operation costs are lower, but with upfront costs it's hard to pencil out profit. The 75% DEQ reimbursement made the calculus profitable; would not be profitable absent that reimbursement.
- Jessica; what about staff time? How much work did it take to make these adjustments?
- Jason; starting in 2019, it took a lot of education and learning, including training for drivers. Took maybe 6 months but has smoothed out since then. Bigger issue is existing operations and whether operations have to be shifted; for box trucks, they need to have time loading at the dock and time charging
- Jason adds that different stakeholders are involved, including OEMs, utilities, agencies, financiers, and operational elements; so the end user has to be able to coordinate these elements
- Michael Graham; another new type of work for fleet operators is navigating grants, with compliance and reporting requirements
- Charlie Tracy; finding the right charging manufacturer and getting good service can be difficult. It's hard to get good maintenance in rural Oregon; may take weeks to a month to get a technician out to fit anything. Maintenance contract with ChargePoint, for example, almost doubles costs. There's also a clip/design problem with the charging equipment
    - Charlie Tracy; they now hazard their warranty to repair their own equipment.
- Michael Graham agrees with sticky; charging companies can go bankrupt or get bought, exhausting the supply of companies to fix equipment. This problem occurs in Portland.
- Charlie Tracy says it's funny to hear that this same issue occurs in Portland. Michael says warranty and software is more often an issue than the technical electrical work needed; gives example of garbage company providing their own work. Issue of warranty requiring a specialized electrician to install a simple outlet.
- Logan Telles; Eugene is examining that different stations have differing levels of difficulty for repairs. Also, chargers are networked with a shared data portal; the data portal is supposed to share info on outages of chargers, but these are often inaccurate.
- *from Michael Graham, Clean Cities to everyone: 10:39 AM Bad experiences add up. We saw it with biodiesel in the early 2000's.*
- Jillian; maintenance issues have come up, in terms of maintenance contractors and availability. Reliability of chargers is an issue; curious, in general, as to whether reliability is an issue, or whether state funding programs that require maintenance contracts as parts of grants; curious if folks see that policy design of grants is good or a barrier? In terms of maintenance contract costs and grant paperwork.
- Charlie Tracy thinks the required maintenance contract policy is a good approach; says they weren't thiknig that far down the road, but including it in the contract helps

companies understand prospective/future costs. So much of this is about scale; if you can charge a lot of cars, the costs aren't huge, but at small scale, it's hard to obtain efficiencies.
    - *from Robert Wallace, WyEast to everyone: 10:41 AM Tesla chargers are good....all others are questionable. I've had a lot of trouble with non-Tesla chargers.*
    - *from Logan Telles to everyone: 10:43 AM: Eugene buys 5 year maintenance agreements and then renews when we come to the end of those. We also buy the extended warranties*
    - Jason Altamirano; they have several chargers, and have had specific issues with ChargePoint for getting maintenance. However, DC Fast Chargers, obtained through dealership, with same Daimler parent company; the chargers are Power-Electronics, headquartered in Spain, with technicians available within a day or two. So, vendor matters. Agrees with Charlie Tracy that the clips are a problem!

## Grid Integration

- Jillian presented on key modeling findings relevant to EVs role in grid management.
- Grid expansion will be costly and complex, but EVs provide grid benefits by determining when and where EVs charge and serve as flexible load. Jillian showed findings that reducing vehicle flexible load contributions, as analyzed by the model, showed increased costs of about $4 billion.
- Oregon Electric Utility Landscape; Jillian reviewed a map of IOUs and COUs in Oregon, explaining significant differences in governance, rates, and other issues relevant to transportation electrification barriers that ODOE hopes to hear about with increased granularity through this process.
    - Jillian explained that IOUs are required to produce integrated resource/clean energy plans, distribution system plans, and transportation electrificationplans, that all relate to EVs in some way. IRPs focus on bulk power system and reliability in the longer term; distribution plans look towards the mid-term, about 10-years out, for distribution; and TE plans have 3-year planning horizons that describe EV incentives. More of a roadmap of TE infrastructure, investments, and outreach. Each utility provides for this planning differently.
    - COU planning is conducted through local boards and councils and in coordination with BPA. ODOE also supports COUs with COU mapping project.
- Minimizing EV impacts to the grid; there are several strategies available. TE planning, changing rate designs for timing of charging (consistent with demand charges described by Jason earlier); demand-response and managed charging programs, as well as vehicle to grid (V2G) adoption.
    - Jillian understands PGE to be the only IOU with an active managed charging program. Jillian explained that, under an active managed charging program, the utility or PGE has some amount of control over that charging schedule, with consumers having the option to opt-in and opt-out flexibly.
    - Jillian presented on Pacific Power as having a time-of-use program which uses rate design to incentivize drivers to charge their vehicles at off-peak times.
    - Kate Hawley, PacifiCorp, explains that their program is a version of a managed charging program; it does short stops of when vehicles would charge on the grid and so

addresses frequency response instead of load shift. Says about 75 percent of LDV charging already occurs off-peak based on their study. Kate says this follows from both time-of-use rate and naturally

- *from Ingrid Fish City of Portland to everyone: 10:51 AM: Do we know what impact gutting and/or forcing BPA to be privatized will have on our utility landscape in terms of costs and ability to have sufficient access to electricity?*

## Whiteboard Exercise 2

- What are barriers to cost-effective and timely buildout of charging infrastructure, to utility upgrades, to operating EVs as a flexible load? Where is more data or information needed?
- Need around understanding/needing assistance from utilities as to what rate scheduled are available, what's the best charger to install; Jessica knows PGE and PacifiCorp have consumer outreach programs. Asks if utilities can provide insights they have
    - Nancy Bennett: PGE's fleet charging program works with different fleets (transit, delivery, box trucks, buses, garbage, etc); what they've heard is that lead-time is an issue; need to get in and plan system upgrades in a timely manner. That lead time can be a barrier; many fleets don't have experience working with utilities, so maybe PGE would work on meeting fleets where they're at, trying pre-education; says PGE has a team working on this, but will otherwise coordinate with PGE team members for info.
        - Jessica: Michael, Clean Cities, has heard good things about PGE's program. What were challenges to building that program.
        - Nancy: PGE continues to learn as the market adjusts. There is a need on PGE's side certainty around policy, such as ACT; PGE can't turn on a dime to react to policy. Says PGE wants to react to policy but avoid overbuilding
    - Jason Altamirano; Titan was first PGE fleet program partner. Says other companies who don't have PGE have different experiences. Would like to see funding for other utilities to provide similar functions. Says the whole process started with the design and planning; identify truck operations (charging hours, planned miles, energy efficiency in kw/mile). Once load requirement profile is defined in EV terms, then charger info can be shared; says PGE was helpful on this subject, especially concerning the size of chargers; everyone wants fast-chargers, but using 60kw vs 180 kw chargers can be the more economical choice, consistent with utility advice.
        - Agrees that TE projects have several year timelines. Make-ready infrastructure costs of transmitting from powerline to panels is significant; was about half-a-million dollars for Titan. PGE helped in assessing and planning for these costs; Jason says PGE also helped through actual construction
    - Kate Hawley, Pacific Power; says they have a technical assistance program for commercial customers with estimates on utility-side upgrades. PacifiCorp is planning to expand this program and provide further assistance. Because of constrained areas on the grid, system impact studies can be required and impose time and costs.
        - Kate says PacifiCorp offers a custom incentive, changing based on their new TE plan, rather than direct assistance like PGE. Reason for this approach was that PacifiCorp couldn't afford capital investments in the same way.

        - Jessica; for system impact study, does that examine project needs alone, or other likely projected needs
            - Kate; depends; these studies may assess other planned increases on system load, such as data centers.
    - Ingrid Fish; how do we tackle high costs of vehicle fast-charging? Facilitating partnership between businesses and agencies could be valuable to map-out where charging is needed so that a single siting effort could meet needs of several users
    - Ingrid: another barrier is cost and access; it's better for utilities to remind folks that level 1 charging is often sufficient for LDV VE.
- Any experience from COU perspective?
    - Juan, EWEB; there's a need for a proactive approach to get ahead of needs. EWEB has limited resources but this proactive approach of identifying likely future needs would be ideal.
    - Jessica; what are challenges around time-of-use rates?
    - Juan; EWEB is doing an assessment of what new LDV loads are projected; ODOE vehicle registration data is useful, and if that could be given to smaller utilities, that can be helpful in understanding where needs will likely be. Juan also says EWEB is working on producing a menu of DR programmatic options that COUs and smaller utilities may be able to implement based on their needs and situation. Having projections on where loads are expected and what peak demands will be in the next five or so years would be useful.
    - Charlie Tracy agrees resources are the barrier for smaller utilities. Also EV loads aren't treated too differently than other loads; demand-side management and time of use rates are great, but if you have BPA as your power-supplier, you're not-for-profit and need to pass on costs in a fair and equitable way. So, BPA doesn't send strong price signals that would justify strong DR or time-of-use programs. Need to find value that COUs don't see the same way as IOUs
        - Juan thumbs up
- Jason; on charging control and management. Different chargers have different softwares; third-party softwares can allow for fine-tuned management. ChargePoint lost server control for their level 2 chargers. So, things depend on charger installed.
    - Also, consumers in multifamily units and rentals have limited control over their charging access and charging management
- *from Robert Wallace, WyEast to everyone: 11:37 AM: I shared this product on the board. This can make it easier to install Level II at a residence/rental. https://connectder.com/products/ev/*

## Key Finding 3: VMT

- Jillian presented the modeling findings regarding the value of VMT reduction
    - Failing to reduce VMT by state goals of 20 percent per capita resulted in economy-wide costs of $25 billion, more than either of the slower electrification scenarios.
    - A caveat here is that the model does not include the cost investments that would support VMT reductions, such as an expansion of the transit system
    - The modeled VMT reduction is based on Oregon's 2013 Transportation Strategy, as updated in 2018 and 2022; this goal is partially supported by the Climate-Friendly and

Equitable Communities program and rule that requires Oregon's eight largest metropolitan regions to update land use and transportation plans to reduce car dependency.

## Whiteboard Activity 3:

- What are barriers preventing people and businesses from driving less; to building out non-car infrastructure – is current investment sufficient; what are barriers to implementing land use policies that encourage less driving, such as Climate Friendly and Equitable Communities; where is additional data needed.
- Lewis; have we considered using the term transportation VMT "efficiency" vs reduction? Says that the term "reduction" can have some sensitivities.
    - Jillian: ODOE has heard that the term "efficiency" may be more accurate and would appreciation adding this framing element to the whiteboard
- "Usurping land-use processes for targeted industries"
    - Brett Morgan; there have been gradual erosion of processes for land-use for specific types of development. Allowing for one-offs erodes goal-setting and modeling to provide for VMT reduction
- Jessica: Transit; tension between EV adoption and encourages reliance on transit. Do folks have any thoughts on that tension in particular.
    - Ingrid: this issue is important in Portland. Reality is some modes always need to run; transit and freight and driving for people in some circumstances. So, Portland's focus is on EV and VMT reduction, and what demographics should be targeted for VMT reduction and which for EV adoption and EV charging. Ingrid says Portland did a spatial data analysis to identify where these factors were at play.
    - Logan: Expresses complete agreement with Ingrid. Doesn't see EV adoption and EV adoption as contradictory. Logan sees electro micromobility, such as electric scooters and bikes, can serve as a bridge towards walkability from people who otherwise would drive. Folks who adopt e-bikes would otherwise not be bike-users, in Eugene's study.
    - Ingrid: we know what we need to do. It isn't rocket science. What's important is getting sustainable funding and the issue of transitioning budget for road infrastructure versus transit infrastructure.
    - Lewis: agrees with framing of EVs and transit as complementary. Thinks interoperability is important to consider, like putting bikes on busses and considering complementary strategies
    - Tonia: seconds Ingrid's point about sustainable funding for transit, competing with other cities for road funding. Says they want to support road maintenance and EVs; they're just focused on providing reliable service to dependent riders. Even things like Sunday service are a priority for them.
    - Robert Wallace: there are challenges in terms of availability of goods and services in proximity towns. Another issue is return-to-office. As people get more efficient vehicles, concerned that VMT may increase; they're more concerned with electrifying vehicles and providing more efficient vehicles to high-mileage drivers.
    - *from Ingrid Fish City of Portland to everyone: 12:15 PM: And super gasoline users - those who are driving pickup trucks long distances.*

- Brett Morgan
  - Says VMT reductions will differ in different parts of the state.
  - In terms of scale; Oregon has not sufficiently invested in rail and something like the pioneer line along I-84 could be transformational. So, mentioning scale of investment and calling out rail explicitly would be valuable. Ingrid agrees.
- *from Logan Telles to everyone: 12:16 PM: I don't have a product to share right now, but the City of Eugene will be working on an SS4A funded "First and Last Mile Safety Study" this year to help identify walking/biking project recommendations for our entire LTD network this year (700+ transit stops). Anyone who wants to learn more about our planned methodology is welcome to reach out*
- *from Tonia Moro to everyone: 12:17 PM: Logan, I am very interested; will send you my email address.*
- *from Ingrid Fish City of Portland to everyone: 12:17 PM: Plus one to the comment about investing in rail for commuting throughout Oregon*
- Ingrid: Oregonians want to enjoy mountains, coast, landscape, outdoors; it is difficult to do these without a vehicle. Would be valuable to find transit mechanisms for these needs and purposes; most important thing is frequent, reliably, cheap service that can meet these needs.

## Next Steps

- Jillian describes there are means to engage via the public portal or emailing her directly.
- Jillian described upcoming modeling office hours open to PWG members to discuss modeling questions.
- Jillian reviewed upcoming TE meetings on April 10 and 30th, as well as a broader PWG plenary meeting on May 21. Jillian stated that complimentary analyses are likely to be discussed in a meeting to be held in early April.
- Jillian asked that PWG members consider existing barriers and needed policy in advance of next meeting
  - Jillian highlighted a list of existing policies relevant to the scope of the PWG, already organized by predicted barriers. Jillian explained that federal funding is highlighted in orange text. Jillian will share these policies after the meetin.
- Jillian expressed appreciation to the PWG and

## Virtual Meeting Chat

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|---|---|---|---|
| 4-Mar-25 | 9:33 AM | from Josh Price, ODOE to everyone: | joshua.price@energy.oregon.gov |
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| 4-Mar-25 | 9:33 AM | from Jessica Reichers to everyone: | Hi, everyone! Please feel free to throw questions in the chat here as they come to you. Alternatively, you can raise your hand if you would like to speak instead. |
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| 4-Mar-25 | 9:35 AM | from Hugh Arceneaux ODOE to everyone: | Comment portal link: https://odoe.powerappsportals.us/en-US/energy-strategy/ |
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| 4-Mar-25 | 9:41 AM | from Marshall McGrady to everyone: | Marshall McGrady, IBEW Local 48, no plans |
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| 4-Mar-25 | 9:41 AM | from Stefenie to everyone: | Stefenie Griggs, ODOT |
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| 4-Mar-25 | 9:41 AM | from Brett Morgan He/Him to everyone: | Brett Morgan, Climate Solutions Transportation Policy Director, probably skiing a little! |
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| 4-Mar-25 | 9:41 AM | from Tonia Moro to everyone: | Tonia Moro - public interest attorney from So. Oregon. Not representing but bringing my experience as the Chair of the Board of the Rogue Valley Transportation District. |
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| 4-Mar-25 | 9:41 AM | from Jana Jarvis to everyone: | Jana Jarvis, Oregon Trucking Association. I'm spending spring break at the Capitol! |
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| 4-Mar-25 | 9:41 AM | from Logan Telles to everyone: | Logan Telles, City of Eugene, I'll be working over spring break |
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| 4-Mar-25 | 9:42 AM | from Kate Hawley, she/her, Pacific Power to everyone: | Kate Hawley, PacifiCorp TE Lead, Grandma is coming to visit! |
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| 4-Mar-25 | 9:42 AM | from Robert Wallace, WyEast to everyone: | Good Morning, Robert Wallace @ WyEast based in The Dalles, OR. I'm heading to Arizona for Spring Break...warm weather and sunshine!!! |
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| 4-Mar-25 | 9:42 AM | from Kyle Whatley - TriMet to everyone: | Kyle Whatley, TriMet, snowboard trip |
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| 4-Mar-25 | 9:42 AM | from Stu Green \| Forth to everyone: | Stu Green, Forth, working over spring break but hoping to snowboard. |

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| 4-Mar-25 | 9:42 AM | from Jamie Johnson, Green Energy Inst. at LC Law Sch, she/her to everyone: | hi all! Jamie Johnson, she/her pronouns, staff attorney at the Green energy Institute at Lewis & Clark Law School. I'm excited to cross country ski! |
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| 4-Mar-25 | 9:43 AM | from Ingrid Fish City of Portland to everyone: | Hello Everyone! I'm Ingrid Fish at the City of Portland. I work on transportation decarbonization policy and managed the development of the City's EV Strategy. Spring Break - My husband and I are going to Italy in April without our kids. Yay! During the PPS break we plan to ski on Mt. Hood, hoping for good snow. |
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| 4-Mar-25 | 9:45 AM | from Nancy Bennett to everyone: | Nancy Bennett, Environmental Policy, Portland General Electric |
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| 4-Mar-25 | 9:48 AM | from ctracy to everyone: | Charlie Tracy, Oregon Trail Electric Co-op, I will be at the "Taste of Nordic", which is a x-county ski tour and food festival. Check out https://anthonylakes.com/ |
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| 4-Mar-25 | 9:49 AM | from Hugh Arceneaux ODOE to everyone: | https://www.oregon.gov/energy/Data-and-Reports/Documents/OES-Transportation-Electrification-Key-Findings.pdf |
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| 4-Mar-25 | 9:54 AM | from Ingrid Fish City of Portland to everyone: | Can you share the source that state's that Oregon is 5th in the nation for EV Market share? |
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| 4-Mar-25 | 9:58 AM | from Jessica Reichers to everyone: | Hi, Ingrid - that information is from Atlas Public Policy's EV hub. https://atlaspolicy.com/ev-hub/ |
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| 4-Mar-25 | 10:02 AM | from Josh Price, ODOE to all panelists: | https://miro.com/app/board/uXjVIath1nM=/?share_link_id=713659216111 |
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| 4-Mar-25 | 10:02 AM | from Brett Morgan He/Him to everyone: | I fundamentally disagree with that citation on only one charger: I count around 100 CCS chargers that charge faster than 100KWh, many at 350KWh |
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| 4-Mar-25 | 10:05 AM | from Ingrid Fish City of Portland to everyone: | Sorry, how to you switch tools to the hand to move screen from pointer? |
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| 4-Mar-25 | 10:06 AM | from Hugh Arceneaux, ODOE to everyone: | In the toolbar towards the left of the screen if you click the cursor icon at the top there it should toggle your cursor between hand and cursor |
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| 4-Mar-25 | 10:06 AM | from ctracy to everyone: | I'm still waiting for the email from miro so I can join |
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| 4-Mar-25 | 10:06 AM | from Ingrid Fish City of Portland to everyone: | Got it. Thanks! |
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| 4-Mar-25 | 10:07 AM | from Hugh Arceneaux, ODOE to everyone: | Glad to help! |
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| 4-Mar-25 | 10:07 AM | from Brett Morgan He/Him to everyone: | I understand that Jason but I am tracking statewide at least 95 chargers with CCS1 ports that charge faster than 150Kwh, many of these at gas stations. I understand that not all chargers from a spatial point of view may not work with the largest trucks, but looking on plugshare, there appear to be a lot that are "depot" and pull through style. |
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| 4-Mar-25 | 10:17 AM | from ctracy to everyone: | Mine is working now. |
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| 4-Mar-25 | 10:38 AM | from Michael Graham, Clean Cities to everyone: | Yes |
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| 4-Mar-25 | 10:39 AM | from Michael Graham, Clean Cities to everyone: | Tracking the broken chargers (where they are, whether they are actually broken and, if they are broken, the exact nature of the issue) is a another big barrier that sours consumer sentiment on EVs. |
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| 4-Mar-25 | 10:39 AM | from Michael Graham, Clean Cities to everyone: | Bad experiences add up. We saw it with biodiesel in the early 2000's. |
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| 4-Mar-25 | 10:41 AM | from Christine Holland to everyone: | Hello. I am Christine Holland of PNNL and located in Vancouver, WA. I will be riding my bike somewhere...hopefully somewhere dry and sunny. |
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| 4-Mar-25 | 10:43 AM | from Logan Telles to everyone: | Eugene buys 5 year maintenance agreements and then renews when we come to the end of those. We also buy the extended warranties |
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| 4-Mar-25 | 10:43 AM | from Michael Graham, Clean Cities to everyone: | Jillian - I think just knowing where to find that maintenance provider for the maintenance contract is the barrier. It's not yet as easy as calling up a local electrician on Angie's list to fix the problem, folks just don't know where to go and areas of teh staff lack the expertise entirely. |
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| 4-Mar-25 | 10:44 AM | from Michael Graham, Clean Cities to everyone: | We use the EVITP site to help folks find contractors (note the gap east of the cascades): https://evitp.org/find-a-contractor/ |
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| 4-Mar-25 | 10:44 AM | from Robert Wallace, WyEast to everyone: | Also seen several issues with the Juicebox Level II units. They pulled out of the USA, left several Level II units unusable. |
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| 4-Mar-25 | 10:46 AM | from Hugh Arceneaux, ODOE to everyone: | https://odoe.powerappsportals.us/en-US/energy-strategy/ |
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| 4-Mar-25 | 10:46 AM | from Ingrid Fish City of Portland to everyone: | Can we keep the white board open during the remainder of the meeting? |
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| 4-Mar-25 | 10:46 AM | from Jamie Johnson, Green Energy Inst. at LC Law Sch, she/her to everyone: | Will we have access to what was written on the white board after the meeting? |
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| 4-Mar-25 | 10:46 AM | from Jessica Reichers to everyone: | Yes, Jamie - we will make the boards viewable, but not editable after this meeting. |
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| 4-Mar-25 | 10:48 AM | from Jamie Johnson, Green Energy Inst. at LC Law Sch, she/her to everyone: | Wonderful! Thanks, Jessica. |

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| 4-Mar-25 | 10:51 AM | from Ingrid Fish City of Portland to everyone: | Do we know what impact gutting and/or forcing BPA to be privatized will have on our utility landscape in terms of costs and ability to have sufficient access to electricity? |
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| 4-Mar-25 | 10:52 AM | from Jessica Reichers to everyone: | Hi, Ingrid. I don't think we know what the implications of the federally-led changes at BPA are, but it is a potential challenge that this group could flag. |
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| 4-Mar-25 | 10:56 AM | from Ingrid Fish City of Portland to everyone: | Thanks Jessica, I added it to the Miro board parking lot. |
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| 4-Mar-25 | 10:56 AM | from Jessica Reichers to everyone: | Great! Thanks, Ingrid! |
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| 4-Mar-25 | 11:00 AM | from Ingrid Fish City of Portland to everyone: | That's great news Kate! Love that most EV charging is happening during off peak hours. |
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| 4-Mar-25 | 11:12 AM | from Michael Graham, Clean Cities to everyone: | PGE Fleet Partner Program is fabulous |
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| 4-Mar-25 | 11:13 AM | from Ingrid Fish City of Portland to everyone: | Technical assistance for businesses transitioning their fleets is definitely needed! |
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| 4-Mar-25 | 11:14 AM | from Jillian DiMedio, ODOE to everyone: | Ingrid, can you add this to the board? |
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| 4-Mar-25 | 11:14 AM | from Jillian DiMedio, ODOE to everyone: | if you haven't already :) |
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| 4-Mar-25 | 11:14 AM | from Ingrid Fish City of Portland to everyone: | City of Portland has also had a great experience with the Fleet Partner Program. More people need access to it. |
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| 4-Mar-25 | 11:15 AM | from Ingrid Fish City of Portland to everyone: | Yes, Jillian I will add it to the previous board but will add it to the utility topic board as well. |
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| 4-Mar-25 | 11:20 AM | from Michael Graham, Clean Cities to everyone: | Pacific Power has a similar program offering |
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| 4-Mar-25 | 11:23 AM | from Michael Graham, Clean Cities to everyone: | 200KW = 4 electric HD trucks (roughly), each charging at the same time at 50KW (~8hr recharge from 10%-90% battery state of charge) |
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| 4-Mar-25 | 11:37 AM | from Robert Wallace, WyEast to everyone: | I shared this product on the board. This can make it easier to install Level II at a residence/rental. https://connectder.com/products/ev/ |
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| 4-Mar-25 | 11:54 AM | from Nancy Bennett to everyone: | Apologize but I have to leave early today |
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| 4-Mar-25 | 11:55 AM | from Jessica Reichers to everyone: | Thanks, Nancy. Really appreciate your input today! |
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| 4-Mar-25 | 12:15 PM | from Ingrid Fish City of Portland to everyone: | And super gasoline users - those who are driving pickup trucks long distances. |
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| 4-Mar-25 | 12:16 PM | from Logan Telles to everyone: | I don't have a product to share right now, but the City of Eugene will be working on an SS4A funded "First and Last Mile Safety Study" this year to help identify walking/biking project recommendations for our entire LTD network this year (700+ transit stops). Anyone who wants to learn more about our planned methodology is welcome to reach out |
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| 4-Mar-25 | 12:17 PM | from Tonia Moro to everyone: | Logan, I am very interested; will send you my email address. |
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| 4-Mar-25 | 12:17 PM | from Ingrid Fish City of Portland to everyone: | Plus one to the comment about investing in rail for commuting throughout Oregon |
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| 4-Mar-25 | 12:18 PM | from Robert Wallace, WyEast to everyone: | I've switched most of my miles from a diesel pickup to a tesla. Saving big $$, even though I'm driving the same miles. |
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| 4-Mar-25 | 12:19 PM | from Tonia Moro to everyone: | Would just add that the need to increase service competes with the districts desire to invest in ZEB. |
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| 4-Mar-25 | 12:21 PM | from Tonia Moro to everyone: | Want to add to this long distance driving issue - there are many in the state that have long distances to drive to best particiapate in state goverrnance . So plus one also on the intercity service/rail need. |
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| 4-Mar-25 | 12:21 PM | from Jamie Johnson, Green Energy Inst. at LC Law Sch, she/her to everyone: | second the need for frequent service! |
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| 4-Mar-25 | 12:23 PM | from Brett Morgan He/Him to everyone: | I will also add that HB 2017 and the STIF was transformational for transit statewide, including for dial a ride. paratransit, transit electrification, and so much more, but the need is so so so much more than what the STIF currently provides |
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| 4-Mar-25 | 12:23 PM | from Hugh Arceneaux, ODOE to everyone: | Once more for good measure! https://odoe.powerappsportals.us/en-US/energy-strategy/ |
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| 4-Mar-25 | 12:25 PM | from Robert Wallace, WyEast to everyone: | Uber/Lift often are not available in smaller towns. This creates a need for people to own/rent a vehicle to reach these destinations and travel about. |
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| 4-Mar-25 | 12:25 PM | from Jessica Reichers to everyone: | Thanks goodness we get to talk about solutions! It is so hard to just focus on barriers! |
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| 4-Mar-25 | 12:25 PM | from Ingrid Fish City of Portland to everyone: | https://open.spotify.com/episode/1LxUu91tZGIjtc2x6HpNUs?si=3e145d79d80c48e9&utm_medium=email&_hsenc=p2ANqtz-9SipqLKKfu3_Z7_cL3dzvpbChDoWTtTG1AQoHkamzVqPhehE8myBunc9oRNQ5Ljp-YpaPX_hmF5I5eIbPszGYdWBkN2pf1UEHZI_uJht5rIq4BdiE&_hsmi=283637637&utm_content=283637637&utm_source=hs_email&nd=1&dlsi=b2935eb96f3b4982 |
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| 4-Mar-25 | 12:25 PM | from Ingrid Fish City of Portland to everyone: | This is a great podcast about super users (above) |
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| 4-Mar-25 | 12:26 PM | from Jessica Reichers to everyone: | Thanks, Ingrid! |
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| 4-Mar-25 | 12:26 PM | from Ingrid Fish City of Portland to everyone: | Yay for talking about solutions! |
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| 4-Mar-25 | 12:26 PM | from Robert Wallace, WyEast to everyone: | @ Ingrid - Thank you! |
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| 4-Mar-25 | 12:26 PM | from Lewis to everyone: | Many thanks to all for a very productive and information meeting ! Lewis.Lem@PortofPortland.com |
| | | | |
| 4-Mar-25 | 12:29 PM | from Jessica Reichers to everyone: | Thanks, all! I really appreciate your investment of time and sharing your experiences and expertise in this area! Have a great week - get out an enjoy the sunshine (which just came out for me in the last hour). |
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| 4-Mar-25 | 12:30 PM | from Stu Green \| Forth <he, his> to everyone: | Thanks all. |

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| 4-Mar-25 | 12:30 PM | from Robert Wallace, WyEast to everyone: | Thank you all! |
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| 4-Mar-25 | 12:30 PM | from Tonia Moro to everyone: | Anyone interested - there will be public transit day at the legislature April 1. |

## Miro Whiteboard

*Below is a transcription of the feedback received in the 3/4/25 Miro Whiteboarding activity. The whiteboard is also available for review at:* 03-04 Transportation Electrification PWG Meeting - Miro

## Whiteboard Exercise 1

***Pathway 1: Vehicle Electrification***

*This topic includes light-, medium- and heavy-duty vehicle electrification (battery electric vehicles and hydrogen fuel cell) and charging and fueling infrastructure.*

*Questions considered:*
*What are the primary barriers to meeting Oregon's existing policies, including Advanced Clean Cars II and Advanced Clean Trucks?*
*What are the primary barriers to going beyond existing policy?*
*Where is additional data or information needed to overcome existing barriers?*

| ***Cost*** | ***Infrastructure*** |
|---|---|
| • No longer have grants and funding from Federal Government to support charging infrastructure and vehicle costs (+2)<br>• Not enough workplace charging<br>• Payload limitations in MDHD = fleet operator costs<br>• Smaller communities can have a difficult time recruiting a DCFC provider because we represent a smaller market than major metros - local incentives may be needed to get more DCFC but are not affordable for many small and mid-size cities (+1)<br>• There is no profit making model to support installing charging infrastructure at this point. IF<br>• analysis to optimize charging management to correspond with supply constraints, costs, and emissions<br>• Lower income folks are being left behind, even with incentives<br>• Increased tariffs for imported vehicles, including EVs<br>• Finding equitable and constitutional alternatives to gas tax for funding road maintenance<br>• The benefits of electrification are not significantly accounted for in current economics<br>• Threats to federal incentives, including IRA funds<br>• Due to higher replacement costs, insurance premiums are much higher for EV's.<br>• Upfront cost for Zero emission transit Bus -45% - 50% more expensive<br>• Battery costs for mid-life overheaul<br>• Utility upgrades required at each Transit site - not enough capacity and requires significant cost to upgrade<br>• Operating Chargers is not profitable.<br>• Hydrogen Cost - Transit avg. $1-2 cost/per mile | • Residents of multifamily buildings and renters have a hard time accessing charging to support EVs because they do not own or control the ability to install charging.<br>• Not enough work place charging.<br>• EVSE reliability (or lack thereof) adds to consumer range anxiety<br>• Lack of hydrogen fueling infrastructure in Oregon is a barrier for both MDH and light-duty hydrogen fuel cell adoption<br>• Lack of qualified electricians to install L2 chargers. Funding requires EV certified electricians and they are not avalible in rural Oregon. (+1)<br>• interconnection duration of DCFC service request too long<br>• Lack of standardized payment systems for fueling (+1)<br>• Lack of available MDHD public infrastructure<br>• Disaster resilience for charging stations - both for charger functionality and whether the charging station network can support evacuations<br>• Electricity costs for charging (especially public charging) are becoming too high and comparable to ICE fueling costs, eroding economic argument for electrifying<br>• Need for a more streamlined, less cumbersome and less expensive way to deliver charging access to all regardless of residential charging barriers. IF<br>• workforce challenges in grid planning.<br>• Scale is a big part of the equation. A broken unit at a large charging depot is a minor inconvenience. Focusing on efficiency of scale in installations is going to be key in the long run. |

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| • Other operational costs for electric bus = Charge management system and bus telematics<br>• Light duty electrification incentives are perhaps the most cost effective way to reduce carbon emissions. Less than $100/MT CO2 avoided<br>• Cost for redundancy for site electrification (e.g, microgrid solutions)<br>• Some station units are more expensive to maintain than others - hardware units that make it easy and affordable to replace the charging cable are very helpful<br>• Lack of funding for existing (and successful) electrification programs (+1) | • Funding for ne charging stations limited and will be reduced with new Federal direction<br>• utilities grid planning processes are not set up for increase of demand growth<br>• Small utility projects take at least 3-6 months to complete in the best of circumstances but they can take a year or more in other circumstance. Large utility projects can take 2 to 3 years, depending on the utility's schedule. (+1)<br>• Ensuring accessibility to lower income households, multifamily, including making at-home charging infrastructure available to renters, MFH<br>• EVSE analysis : 1) siting MHD EVSE with geospatial recognition for space and T&D capacity, 2) FAST charging capability<br>• Challenging to install capacity to charge over 1MW of trucks at a facility (~10 150kW dual-port chargers)<br>• Imperative to do an analysis of infrastructure for MHD<br>• Utilities need certainty when grid planning so policies constantly changing make forecasting and planning more difficult.<br>• Competing grid priorities from, e.g., incoming data centers influencing grid and transmission needs<br>• Hydrogen permitting and standarization (ex. NFPA 2 has multiple versions being used)<br>• general lack of funding for roads, maintenance, etc. in Or, including diminishing federal funds<br>• Utility upgrades required for site electrification and supply for hydrogen limited in northwest<br>• Charging station hardware units that are locked to a specific software provider create risk. If your provider increases prices or goes out of business you would need to replace the hardware |
| ***Technology Limitations***<br>• insufficient automation in grid planning to approve large DCFC charging hubs<br>• Current MDHD technology cannot haul exact same weights and distances as ICE<br>• Current MDHD technology is not available in all necessary vehicle platforms<br>• Charging rates are still too low to make electrification "easy", "seamless" for consumers/operators to adopt. Current tech requires "planning" by consumers. (+1)<br>• New technology "bugs" inhibit adoption (+1)<br>• Lack of good Charger Manufactures (+1) | ***Consumer Education and Awareness***<br>• Fleets: lack of awareness of advantages of Elect. Trucks versus ICE vehicles<br>• Preparing mechanics to work with EVs<br>• Because economic argument is so difficult, consumers/fleets interested in adopting must value soft values of EVs (social/enviro benefits) and this is a niche market of customers<br>• There are still a lot of myths and misinformation about vehicle electrification<br>• Rural cultural issues impede adoption despite favorable economics<br>• There is a huge gap in education and awareness, especially among low-income and BIPOC communities. |

- Connector type differences can be challenging for some - new adaptor tech is interesting but some consumers are nervous about whether it exposes them to liability
- we need a real-time EV Hosting capacity GIS system to identify placements for chargers
- Most MD/HD vehicles cannot receive more than 150-180KW charge
- technology is not available now when we need to avoid investment in future rolling stock
- No solution for end of life or bad lithium batteries
- Charging infrastructure speed and batter range needs to continue to increase. Without funding support innovation in this space slows. IF
- Need for power electronics to interface bn consumers and grid ( TOU pricing or day-ahead pricing) with goal of charge mgmt
- lack of interoperability for flexible charging (V1G and V2x) (+1)
- Every platform is different and needs to be simple like Tesla Supercharger
- Reliability for electric buses have been difficult to manage especially in colder climates
- Oregon should be ready to get creative: e.g. explore innovate off-peak charging options that work for commercial vehicles
- today's technology will be outdated in 5 - 10 years as other technologies come on line
- Charging infrastructure interoperability and firmware updates
- Standardization of charging solutions ex. (J3105) - hardware equipment may not be compatibile
- Charge management system in early development - requires integration with existing systems to optimize charges sessions - ex. scheduling software, vehicle/charger telematics & utility rate case
- No commercially available ZEB for cutaway/minibuses

People need to understand why it benefits them to consider using electric vehicles (including buses, bikes and scooters) and those benefits need to be no brainers such as it is faster, cheaper and more enjoyable. IF

- In some parts of Oregon, there may be an issue with a lack of EV knowledge among dealership staff (+2)
- dealers are not very familiar with EV marketing. it feels that dealers are not interested in selling EVs
- Antiquated perceptions about light duty vehicle ranges leading to range anxiety
- Myths about EVs not being as efficient and climate friendly, as they really are, are wide-spread and are frequently used as excuses by Elected Officials to explain why they are not doing more to support EVs.
- Technology information gaps on how to use charging infrastructure (e.g. apps), need to have smart phone for integration
- Lack of education and awareness of the human health harms and costs of ICE vehicles, including from diesel particulate emissions
- Thermal event planning and hydrogen safety hasn't been fully understood
- Targeted education on EV options for fleet and commercial applications
- Many consumers are not aware of existing incentives for EVs and EVSE

***Other***

- Vehicle manufacturer capacity and ability to produce zero emission vehicles
- We are competeing with other states for limited EV inventory
- In the past, utilities have been some of the best resourced for local TE work - but Clean Fuels Credit Revenue has dramatically decreased over past year - will impact ability for local work
- Interest from fleets in MDHD waning due to current political climate
- The Highway Cost Allocation Study process has many issues. It is opaque and manages to a very narrow directive. It's a missed opportunity to align progress toward multiple state goals.
- Current social costs from ICE vehicles are not reflected in policy or pricing mechanisms
- Political opposition to ACT, at state and federal level (+1)

- lack of awareness of how each individual can contribute to emissions reduction with EVs. In other words, the value of EVs to the community
- 'vmt efficiency' in lieu of 'vmt reduction' ?
- threats to California's CAA waiver
- Data indicates consumers are more likely to purchase additional EVs after a first, Need more "pilot" adoption to spur more adoption

***Parking Lot***

- Lack of political champions
- It's way too easy to drive gas vehicles in Oregon. The system needs to support EVs by making it the no-brainer option for people. That means making it faster, easier, cheaper and more fun to drive electric. It means making it expensive, slow and less enjoyable to drive gas vehicles. This is for both light and heavy duty vehicles.
- Pilots are essential but take time and money to be successful and to enable trust and culture change. Example: EV carshare programs take time, support and program/technology tweaks before they reach a tipping point to gain enough users to be profitable.
- Competing needs and issues such as houselessness and basic lack of transportation funding take resources and attention away from government staff and elected officials. This results in less work being done in the EV space.
- Businesses/Industry do not have EV experts on staff to troubleshoot barriers. They need technical assistance including a clear rationale for why to transition to EVs.
- We do not know what impact gutting and/or forcing BPA to be privatized will have on our utility landscape in terms of costs and ability to have sufficient access to electricity.

## Whiteboard Exercise 2

***Pathway 2: Grid Integration***

*This topic includes utility planning and upgrades, rate design, charging infrastructure interconnection timelines and processes, passive and active managed charging programs, and vehicle-to-x.*

*Questions to consider:*
*What are the current barriers to the cost-effective and timely buildout of charging infrastructure?*
*What are the current barriers to the utility upgrades required?*
*What are the current barriers to operating EVs as a flexible load?*
*Where is additional data or information needed to overcome existing barriers?*

| ***Cost of Infrastructure Upgrades*** | ***Utility Processes*** |
|---|---|
| • lack of proactive investment. Distribution system planning should be done over longer time horizon to reveal electrification efforts that would warrant larger upgrades. this would avoid multiple incremental upgrades that end up costing more than one big upgrade<br>• Cost for interconnection is substantial at scale (outside of 1-4 DCFC, roughly)<br>• Lack of coordination among users of DCFC infrastructure to enable decreasing costs and increasing shared use of infrastructure.<br>• If transmission upgrades needed very difficult to get through siting and permitting process in Oregon.<br>• High degree of scrutiny on costs for utilities. Who pays for upgrades major consideration | • Limitations in transitioning electricity sources to 100% renewable and the inability of utilities to meet already agreed upon timelines to do so.<br>• distribution system upgrades should utilize more automation to implement proactive investments and reveal system bottlenecks before they occure<br>• Technical assistance for businesses transitioning their fleets is definitely needed!<br>• Utilities not necessarily promoting level one charging where it can be a sufficient solution,<br>• Smaller utilities could use additional resources to help customers electrify<br>• Utility Processes |

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| • The need to increase and upgrade transmission and generation infrastructure to support increase load and the available land to site new infrastructure. Cost and logistical barriers.<br>• For existing MFH, extremely expensive to install new charging infrastructure<br>• Lack of model cost-sharing arrangements for multifamily homes (+2)<br>• Residential costs of installing chargers<br>• Costs above 1MW EV project interconnection are absurd (~20HD vehicles if charging at 50KW each, which is min charge rate acceptable)<br>• Lack of make-ready incentives outside of IOU programs<br>• EV utility rate cases may help with demand charges<br>• Make-ready infrastructure costs are significant and can be more than the chargers themselves. Incentives and/or utility assistance is helpful in the construction planning and implementation. | • Assistance needs to be provided to help consumers understand and choose the right chargers and Rate Schedules for their needs.<br>• Long lead times for interconnection (6+ months)<br>• Transmission Line Construction, "not in my backyard" issue<br>• Utilities have competing demands for limited capital. Need certainty from fleets for planning and investment<br>• More utility EV programs (make-ready/customer option) will be required to help with utility processes and costs<br>• Ratemaking - can't expect grid enchantments or even benefits of flexible load to be valued appropriately (resiliency valuation challenge) in the resources planning and allocated appropriately in ratemaking<br>• BPA poor pricing signals<br>• Utilities seeming unsupportive of leasing necessary equipment/assets<br>• Profit motive disincentive to IOUs to allow connect or encourage distributed generation/storage, including Evs as flexible load without compensation/ownership of infrastructure<br>• Some utilities still treat TE projects like stationary interconnection projects and they are inherently different load profiles but process/contract/fee structure has not adapted<br>• Rate Structure due to high kW for Level III<br>• Climate impacts on load projections, management needs (e.g. extreme weather events increasing)<br>• Qualified Vendor/Product Lists inhibit projects<br>• ensuring equitable rates that also reflect grid benefits<br>• Low-income communities who are reliant on public charging are forced to pay higher prices for charging and need to have charging discounts/tiered rate structures,<br>• Lack of utility capacity for interconnection at scale<br>• Large total power demand required at sites for medium/heavy duty vehicles<br>• Not all utilities are able to implement TOU rates (especially smaller ones) (+1)<br>• Outside of Portland IOUs and select COU/PUD, lack of expertise in TE-related project interconnection proposals (+1)<br>• Long lead times for power distribution equipment<br>• Lack of flexible rules/policies to allow EVSE installation without full nameplate capacity support from grid (i.e. using DERs/BESS to supplement instead of the grid)<br>• too many smart charge management pilots to gain confidence in load management strategies |

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| | • Limited resources to have a proactive approach to capacity mapping for response to new load inquiries |
| ***Technology Limitations***<br>• Battery to allow for Level III and reduce kW. Example Freewire Charge (out of business?)<br>• today's technology will be outdated in 5 - 10 years as other technologies come on line<br>• Impacts of climate change disrupting consistent access to electricity.<br>• load management technology/ on-site controllers still relatively nascent (+2)<br>• Charger Control limited and expensive<br>• Technology standardization would help but with different plug types, charger speeds, and vehicle voltage architectures, it will be the wild west for a while. (+1)<br>• Limited Power in Rural Areas for Level III<br>• Limited / no incentives for OEMs to develop / prioritize V2G<br>• Develop Route planning tool for medium duty. Factor in route terrain, distance between chargers. (+1)<br>• Many existing EV models can't do V2G<br>• Electric school buses have promising V2G technology. Battery very useful for utilities<br>• Energy loss from meter to charging infrastructure<br>• Vehicle to grid may be ready but vehicle to home is not - consumers will want that option<br>• Integration with clean energy distributed generation<br>• Emerging technologies (e.g. data centers) creating some uncertainty in grid management<br>• No viable cost effective redundancy/resiliency solutions for site electrification<br>• MHD vehicles may require higher rate of charge electric charging equipment to cut down times to charge<br>• lack of interoperability from DERMS to Evs (+2)<br>• Utility EV program to include overhead charging or inductive systems | ***Consumer Behavior***<br>• Perceptions / mistrust around managed load, e.g. fear of not having your vehicle available, data privacy<br>• Getting consumer buy in for active charge management / and time-of-use programs (+3)<br>• Utilities need to offer compelling incentives to join managed charging programs. PGE offers bill discount 2x year but relatively small<br>• Consumers who live in multi-family housing have a much more limited options for charging<br>• Everyone wants fast charging. May only need Level II<br>• Consumers - hesitant to sign on to corporations controling/commandeering assets the land owner uses or contributes<br>• we don't understand charging behavior sufficiently enough to consider EVs as a load resource in planning studies<br>• Patchwork issues: different rates and policies in different locations (different utilities) leading to confusion |
| ***Other***<br>• Need to identify that lower power charging can often meet the site need. Ie, bias toward installing DCFC<br>• Lack of EV-specific rates outside of IOUs<br>• Limits on Nuclear in Oregon (+1)<br>• Basic Knowledge of the Consumer about EV Charging. It may not be as complex as what they think (Level II)<br>• Lack of certainty, Dam Removal could change supply dramatically<br>• Utility electricity costs with MD/HD approaching parity with diesel (0.18/kWh = same per-mile cost when ULSD = $3.50/gal, assuming HD uses 2.6kWh/mile)<br>• EV grid integration and Home Energy storage grid integration should be complementary / similar policies | |

- We do not know what impact gutting and/or forcing BPA to be privatized will have on our utility landscape in terms of costs and ability to have sufficient access to electricity.
- Use of EV for backup power/resiliency
- Lack of existing at-home charging infrastructure in MFH limiting ability to determine when to charge for multifamily residents
- PUC approval process for TE plans to fund EV technologies that did not previously fit and were included in the TE plan
- Existing TE policies could be tuned to maximize participation in grid integration.
- Uncertainty on future of regional transmission planning
- Can be simple solutions for Level II charging. https://connectder.com/products/ev/
- EV for Virtual Powerplants

***Parking Lot***

- *No stickies*

## Whiteboard Exercise 3

***Pathway 3: VMT Reduction (per capita)***

*This topic includes investments in transportation options such as transit and biking infrastructure, land use considerations and transportation planning.*

*Questions to consider:*
*What barriers are preventing people and businesses from driving less?*
*What are the existing barriers to building out transit, biking, and walking infrastructure? Are the levels of investment sufficient?*
*What are the barriers to implementing land use policies that encourage less driving, such as Climate Friendly and Equitable Communities?*
*What additional data or information is needed to overcome existing barriers?*

| ***Infrastructure*** | ***Transportation Options*** |
|---|---|
| • Federal funding programs that help cities fund biking/walking projects are at risk of being eliminated<br>• park and ride spaces and other convenience/accessability right of way infrastructure costs - ex covered bus stops<br>• Roads and other vehicle infrastructure are not conducive to alternate modes<br>• Changes in FTA funding pose risk to future transit projects (+1)<br>• first and last mile mobility to get to transit<br>• We currently do not have a sustainable (fossil-fuel free would be ideal) funding model to support our transportation system. Therefore we can not invest in what we need to invest in to support reducing VMT.<br>• Focus on system completeness for roads but not for multimodal investments (+1)<br>• Improve access to transit, invest in transit supportive infra; stops, priority signals, real time tracking, fare collection, separation, etc. | • Electric micromobility devices like e-bikes and e-scooters are a huge opportunity for VMT reduction. Reaching many new riders who historically haven't biked<br>• Frequent and reliable transit options<br>• auto-centric design of the built environment (+1)<br>• Lack of options in rural areas<br>• Costs of electric bikes and education around their use<br>• buildout of transit - insuficient funding to maintain current service - operations costs - insurance etc.<br>• Geographic coverage and frequency of service are difficult trade-offs in planning transit service<br>• state funding less of a priority with budget restraints and funding competition between road maintenance and public transit<br>• lack of technical capacity for small local governments to compete for reduced vmt grant opportunities especially if federal<br>• vmt efficiency in lieu of |

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| • Close gaps in bicycle and pedestrian networks.<br>• Train transit in the PNW (and west broadly) often dependent on existing train lines and deferential treatment to the freight carriers<br>• High cost of construction materials and labor<br>• We are not organizing our transportation system budget to prioritize alternative transportation options and to support less SOV. Alternative use which puts less wear and tear on the roads.<br>• Improve safety for non-driving modes.<br>• ROW constraints can also be a big barrier in delivering certain safety improvements - for example doing protected bike lanes on long corridors is already an expensive project, but needing to move curbline on long stretch can make it cost prohibitive all together | • 'vmt reduction' ?<br>• costs of expanding transit service - frequency/weekend service;<br>• Lack of funding to support transit to make it easier, cheaper and more enjoyable than driving. Perceived safety on bus is also a big issue in Portland<br>• Expand Transportation Demand Management programs; Home and Work based<br>• Increase funding for non-driving modes<br>• Fewer / lack of options for low income folks is a barrier<br>• Incentivize EV for Uber/Lift Vehicles<br>• Pushing commercial operations to EV's with their limited range will increase VMT's to provide the same services. |
| ***Development Patterns***<br>• Gentrification and suburbanization trends impacting density and access to multimodal transportation options<br>• Transit resources are not available in many areas, especially distant rural ones (+1)<br>• Difficult delivering high quality transit service in low density areas - lack of density sets a line up for lower ridership<br>• land use in non-urban areas; tax incentives to jurisdictions to develop in urban growth boundaries; profit margin seemingly insufficient to build density<br>• Remote Work, trend has been to (try) bring people back to the office<br>• It can be difficult for smaller and mid-size cities getting TOD<br>• Focus development in ways that support EJ and frontline communities<br>• Missing middle housing is coming rapidly online from HB 2001, but it takes time for infill to happen<br>• Usurping land use process for targetted industries (+1)<br>• Focus on Urban areas for <VMT<br>• Need to invest in transit lines in order for riders to begin using them<br>• Supportive Land Use for reduced trip distances | ***Cultural Norms***<br>• Public Transit Difficult in small towns<br>• Struggle to believe there will be a reduction in miles driven.<br>• Rural Areas = More Miles (+1)<br>• cultural/educational issues around expanding transportation options - road diets unfavored<br>• Even in our largest metro (Portland), transit is almost never faster, more convenient, or cheaper that single occupancy vehicles. need better examples of what good transit looks like<br>• Low ridership inhibits more people from riding and feeling safe on transit. It's the chicken and the egg problem. Less people want to ride if few people are riding and it becomes a cycle.<br>• Cultural and neighborhood perceptions of bike infrastructure (e.g. "bike lanes = white lanes")<br>• Perceptions & safety concerns associated with alternative transportation (bikes, transit, walking)<br>• education around safe biking (see Bike Buddy program)<br>• NIMBYism with increased transit, bike and walking infrastructure<br>• cultural/political issues with even the concept of desiring reduction in vmt in rural/small urban areas<br>• Potential decrease long term in commuting due to remote work<br>• A cultural shift to the value and importance of a healthier lifestyle that as a country and planet we are struggling with. This should be a multi-cultural approach that addresses factors like language and ability as well. |

***Other***

- Local Resources/Products
- The physical layout of the lived environment
- Need effort/education about localism; communities to plan to meet more daily needs locally
- A thoughtful Road User Charge could do a lot to reduce VMT, reward efficiency, and provide incentives.
- Make Uber/Lift Services available in Rural Towns. Ride the rail to the country then have a method to get around.
- VMT is usually a proxy for either carbon emissions or congestion. It would be preferable to name it more precisely
- A different way to think about VMT could be "Miles Travelled by Mode"

***Parking Lot***

- What policy drivers actually exist to motivate VMT reduction? (+1)
- Walking, biking, scooting and transit are not currently more efficient, affordable, enjoyable or cheaper than driving. Why would you choose not to drive?
- Choice transit riders need a reason; EVs disincentivize choosing transit
- inter-operability and complementarity between EVs and transit and multimodal options ?