Transportation Electrification Underserved Community Engagement Process
Year 1 Report

Prepared on behalf of Portland General Electric

by Thuy Tu Consulting

with support from PKS International, Projectivity LLC, and Stamberger Outreach Consulting

MAY 2024

TABLE OF CONTENTS

PROJECT CONTEXT

Portland General Electric (PGE) is on an ambitious path to reduce the greenhouse gas emissions associated with serving its retail customers by 80 percent by 2030 and 100 percent by 2040, a target required by Oregon House Bill 2021. PGE is also supporting PGE customers who want to transition to electric transportation. To help ensure an inclusive transition to electric transportation, Oregon House Bill 2165 (HB 2165) defines underserved communities as residents of rental or multifamily housing, communities of color, communities experiencing lower incomes, Tribal communities, rural communities, frontier communities, coastal communities, and communities adversely harmed by environmental and health hazards.[1]

In 2023, PGE began a long-term (3-year) Underserved Community Engagement Process to engage members of underserved communities in developing its Transportation Electrification (TE) portfolio. PGE contracted with Thuy Tu Consulting to lead this project. Thuy Tu Consulting partnered with PKS International, Projectivity LLC, and Stamberger Outreach Consulting to recruit community members, facilitate community conversations, analyze resulting data, and prepare this report. PGE staff worked closely with the Thuy Tu Consulting team to provide program details, develop project research plans and goals, and participate in community discussion groups. This project is funded in part by the Oregon Clean Fuels Program which is administered by the Oregon DEQ. PGE receives credits from DEQ based on the number of residential EVs registered in the Company's service area. The revenue from monetizing these credits supports the equitable deployment of transportation in Oregon. This report includes results from Year 1 of the PGE TE Underserved Community Engagement Process.

PROJECT GOALS

The goals of the PGE TE Underserved Community Engagement Process are to:

1. Better understand the perceptions, attitudes, and needs of customers in underserved communities related to transportation electrification, allowing PGE to integrate these learnings into the design, build, implementation, and modification of TE programs.
2. Provide education about PGE TE programs and gather feedback and recommendations about how PGE can best provide these programs to underserved communities.
3. Build and strengthen relationships between PGE and underserved communities.

PROJECT COMPONENTS (YEAR 1)

- Working group feedback sessions
- Community-specific focus groups
- Written Report (this document)

[1] PGE's service area does not include any residents of coastal or frontier communities.

METHODOLOGY

TEAM ROLES

This project was a collaboration between PGE and Thuy Tu Consulting.

The Thuy Tu Consulting team included Thuy Tu, Ping Khaw, and her team at PKS International, Therese McLain of Projectivity LLC, and Jamie Stamberger of Stamberger Outreach Consulting. Thuy served as project manager and primary client contact and coordinated the work of the sub-consultants on the team. Ping coordinated the work of Therese McLain and Jamie Stamberger's work and many community-specific liaisons, to plan focus group and working group sessions, recruit participants, distribute payments, review and translate materials, and provide transcripts and notes from each session. Therese developed focus group discussion guides, facilitated focus groups, analyzed resulting data, and created detailed descriptions and results for each group. Jamie developed working group discussion guides, facilitated working group sessions, analyzed work group themes, provided summaries of results for each group, and led the development of the comprehensive report. All team members reviewed and contributed to this Year 1 report.

The PGE team included Juliáe Riva, who served as the primary project manager and working group coordinator and Kelly Yearick, who served as the primary project manager and focus group coordinator. They helped develop content and goals for all focus groups and working groups, attended and co-presented at all sessions, coordinated PGE program manager involvement, coordinated internal PGE team review processes, and provided feedback and guidance to the Thuy Tu team throughout the project. Eva DeCesaro supported the overall strategy and led multiple presentations in Spanish. Eva also presented on the Clean Fuels Program. Anik Shrestha presented on the PGE Municipal Pole Charging Pilot Program. Cal Conrad presented on the PGE Residential Smart Charge Pilot Program, and Adam Reese presented on PGE Schedule 50 EV charging rates. Anik, Cal, Adam, and Eva provided presentations about their programs during the working group sessions, answered participant questions, and gathered feedback. Jenn Latu, attended debrief meetings to keep apprised of this project and ensure alignment with other ongoing PGE community outreach and engagement efforts. The PGE communications and market insights teams reviewed session content and materials to ensure alignment with PGE marketing and messaging goals and guidelines.

WORKING GROUP SESSIONS

The Working Group was a single, community-centered group that included residents with demographic characteristics outlined in the HB 2165 definition of underserved communities. This strategy was used to build knowledge and relationships over time. Twelve unique individuals participated in four Working Group sessions, each covering a different topic area with the same participants. Community liaisons recruited participants through their community connections and through various networks such as family members, friends, colleagues, church groups and community groups. Each participant received $125 per session via their choice of an Amazon, Costco, or Fred Meyer gift card sent electronically or by mail.

The working group met four times between October 2023 and March 2024, and each session was two hours long. All groups were held online using Zoom. At each session, PGE provided an educational presentation about TE or a PGE TE program. Afterward, PGE answered any participant questions, and Jamie Stamberger facilitated discussion and feedback about the session topic area, gathering sentiments and recommendations from the group. Jamie prepared a summary of results, including themes and quotes, for each of the four sessions.

Overview of Working Groups and Participants

Date	Topic	Number of Participants	Participants included (X) *See Appendix A for detailed demographics						
			Tribal	BIPOC	Renter	MF	LI	Rural	EJ
10/24/23	TE and Community Engagement Overview	10	X	X	X	X	X	X	X
11/14/23	PGE Municipal Pole Charging Program	11	X	X	X	X	X	X	X
2/1/24	Residential Smart Charge Pilot Program, Barriers for renters	8		X	X	X	X	X	X
3/7/24	Schedule 50 Proposed Rate Changes, Clean Fuels Program Visioning	9	X	X	X	X	X	X	X
	Totals	12	1	10	6	7	7	3	4

Notes: Tribal = Registered Tribal members; BIPOC = identify as Black, Indigenous, or other People of Color; MF = live in multi-family housing; LI = communities experiencing lower incomes; EJ = community at higher risk for environmental health hazards receiving a score of 9 or 10 on the OR HB2165 scoring guide

COMMUNITY FOCUS GROUPS

Therese McLain of Projectivity LLC facilitated nine community focus groups between January and April 2024. Each group was held with members of a specific racial, cultural, or social group. This strategy was recommended for participants' comfort, the necessity of conducting some sessions in Spanish, and because affinity groups often have deeper, more robust discussions. This approach also allowed for the identification of themes and requests for specific community groups that PGE can use to implement equitable community engagement according to their unique interests and needs. Additionally, this strategy complemented the working groups by increasing the number of community members from whom PGE received input.

A total of 98 people participated in the focus groups. CELs community liaisons recruited participants through their community connections, and each participant received $70 via their choice of an Amazon or Fred Meyer gift card sent electronically or by mail.

Focus groups met one time each for two hours. All groups were held online using Zoom. Two groups were held in Spanish, co-facilitated by liaison Romeo Sosa and Paul Riek with Therese McLain, and Eva DeCesaro delivered the PGE presentation. Facilitating in Spanish when participants are bilingual but predominantly Spanish speaking ensures effective communication, enhances comprehension, and

promotes a more inclusive and respectful engagement environment. All sessions covered the same topics but with a different group of participants. At each session, PGE provided an educational overview of transportation electrification (TE), including PGE TE goals, an overview of electric vehicles (EVs), cost, charging and infrastructure. Afterward, PGE answered any participant questions, and Therese McLain facilitated discussion and feedback from the group, including transportation, education, charging payment and language preferences, requests for PGE support in community transitions to TE, and overall sentiments about TE. Therese prepared a comprehensive analysis for the ninesessions (See Appendix B), including a summary, theme sentiments, Strengths, Weaknesses, Opportunities, Threats (SWOT) audit, unresolved key issues, and recommendations.

Overview of Focus Groups and Participants

Date	Participant Identities	Number of Participants	Participants Included (X) *See Appendix A for detailed demographics						
			Tribal	BIPOC	Renter	MF	LI	Rural	EJ
1/4/24	Native American and Alaska Native	10	X	X	X	X	X	X	X
1/17/24	Black and African American	12		X	X				X
1/25/24	Hispanic and Latino/a/e	12		X	X	X	X	X	X
1/31/24	Asian and Pacific Islander	11		X	X	X	X		X
2/7/24	Asian and Pacific Islander	12		X	X	X	X	X	X
2/15/24	Primarily white low-income renters	10			X		X		X
3/26/24	Youth ages 20-25	9		X	X	X	X		X
3/28/24	Seniors ages 53-77	9	X	X	X	X	X		X
4/2/24	Hispanic and Latino/a/e living in rural areas	13		X	X	X	X	X	
	Totals	98	10	65	64	29	51	12	48

Notes: Tribal = Registered Tribal members; BIPOC = identify as Black, Indigenous, or other People of Color; MF = live in multi-family housing; LI = communities experiencing lower incomes; EJ = community at higher risk for environmental health hazards receiving a score of 9 or 10 on the OR HB2165 scoring guide

KEY FINDINGS & RECOMMENDATIONS

This section includes themes from all sessions of the working group, themes from all focus groups taken together, and community-specific themes from Indigenous, African American, Latino/a/e, Asian, and Pacific Islander-specific groups, and a group of primarily white residents.

Please note: Specific racial and cultural groups have distinct experiences and recommendations. When developing engagement strategies for specific communities, PGE must reflect on the themes and requests from that specific community.

WORKING GROUP THEMES

Working group session #1: Transportation Electrification (TE) and Community Engagement Overview

Topics and Goals:

Topics included introductions, a PGE presentation providing an overview of PGE and TE and beginning conversations about equity and access to TE. The discussion focused on answering Q/A about TE and EVs and hearing recommendations for better serving and connecting with participants' communities.

Participant learning objectives and goals for the session included:

- Get acquainted and build a general shared understanding of Transportation Electrification (TE).
- Share the purpose of Working Group sessions.
- Attendees learn more about PGE and PGE's role in Transportation Electrification (TE).
- Attendees learn about TE details and options and, overview of rebates/tax credits.
- Answer attendees' questions about TE.
- Hear initial thoughts and recommendations from attendees about barriers to and equitable access to TE.
- Hear initial recommendations for building relationships with attendees' communities.

Themes from participants:

Note: themes are listed in descending order from strongest themes to least strong themes

- Concerns about TE was the most mentioned theme in this group, and top concerns were that there are not enough EV chargers and high cost of EVs.
- Nearly all agreed there is a need for education and information about TE in their communities.
- About half expressed skepticism about the transition to personal electric vehicles, including reliable electrical grid, environmental impact of EVs, not sure TE is the answer, too new, and skeptical of focus on individual vehicles rather than public and fleet vehicles.
- About half agreed that connecting with communities through a representative from their community would be a good way to connect. One gave a double thumbs-up to this.
- About half said they would prefer in-person meetings.

- The following themes were mentioned by a few participants:
  - Community concerns about trusting and feeling comfortable with the information being shared by people and organizations from outside their community. This was a particular concern raised by an Indigenous participant related to Indigenous history with dishonesty and exploitation. One asked about previous PGE relationship-building work.
  - Specific needs and recommendations for connecting with and supporting Tribal communities, including rural internet connectivity problems, mistrust of outsiders due to history of violations, and work with Tribal representatives.
  - Meeting with communities at their locations. Preferred community locations vary by community. See community-specific recommendations from focus groups for details.
  - Translating educational materials into other languages besides English. No specific languages were mentioned in this group.

Working group session #2: Public Charging and Municipal Pole Charging

Topics and Goals:

Included a short refresher presentation about EV charging and a longer presentation about the Municipal Pole Charging Program. The bulk of the session was devoted to Q/A about chargers and charging and discussion about the benefits and drawbacks of different types of charging, including pole charging.

Participant learning objectives and goals for the session included:

- Describe municipal EV pole charging pilot program, gather feedback for PGE.
- Baseline awareness & understanding of public charging (recall locations, awareness of different speeds, price expectations, etc.), attitudes about public charging generally.
- Identify customer benefits (and concerns) of having public charging available in residential areas.
- How does access to public charging/pole charging impact customers perception of EV ownership, and what is influence on consideration for future?
- What potential downsides or detractors of distributed neighborhood charging are.
- Feedback on Pole Charging video
- Understand customer expectations on usage, payment, duration of pole chargers in neighborhoods.
- Identify ideal/expected charging locations- city core, suburban, commercial, multifamily, residential street parks, libraries.

Themes from participants:

- Although participants request more public charging for EVs in general, about two-thirds of participants in this group mentioned barriers and concerns they have related to public charging. Public safety of charging locations was the prominent concern shared, and this concern was primarily regarding neighborhood pole chargers.

  - Each of the following barriers and concerns was also mentioned by a few people:
    - Not enough chargers
    - Charging takes too long to do in public
    - Chargers not conveniently located
    - Questions about how to find chargers and know if they are occupied
    - Competition for parking on side-streets near rentals (related to pole charging)
    - Concerns around standardization for plugs, apps and payment methods
- Most participants gave recommendations for charging locations that would work best for them or their communities. The most recommended locations were gas stations and public locations like libraries, parks, rest stops, and shopping centers. Less than half said it would be best to charge at home.
- The overall response to neighborhood pole charging was lukewarm in this group. A little more than one-third of participants said they could see themselves using pole chargers.
- Two renters living in multi-family housing said public charging locations such as shopping centers would be more convenient for them than neighborhood pole charging.
- A couple of participants requested providing charging instructions languages other than English (no specific languages mentioned), and one requested neighborhood education about the chargers, especially for those who are not tech-savvy.
- In a very brief conversation about the costs of charging, one person said the costs seem cheaper than gasoline, and another raised concerns about charging per hour rather than for the amount used.

Working group session #3: Residential Smart Charge Pilot Program and Barriers for Renters

Topics and Goals:

Included a brief review of themes identified in work groups #1 and #2 to check for agreement among participants. The remainder of the session was dedicated to a deep dive into the Residential Smart Charge Pilot Program. Participants were asked for their feedback on the rebate and bill credit incentives provided, smart charging events, the enrollment process, barriers to renters, and recommendations for community outreach and engagement.

Participant learning objectives and goals for the session included:

- Describe and gather feedback about the PGE Residential EV Smart Charge Pilot Program.
- Review from previous sessions, including barriers to EVs.
- Introduce the Residential EV Smart Charge Pilot Program as one of PGE's efforts to make it easier and more affordable to charge at home (costs of EV charger installation, rebate programs and how they work, smart charge enrollment, and bill credits).
- Hear participant benefits and barriers to EV Smart Charge Pilot program, including specifically: rebate and seasonal incentive amounts, smart charging events, enrollment process.
- Gather information about barriers and opportunities specific to renters of single-family homes.

- Gather recommendations for further encouraging program adoption in underserved communities, including marketing and education recommendations.

Themes from participants:

- All but one participant felt the Smart Charge Program rebates (as of February 2024) were not enough to encourage them to install a level 2 charger at home. That one person said, "it's a start."
- Smart Charge bill credits of $25 per six months were not enough to encourage participants. Most said $100 would begin to encourage them.
- Participants did not seem worried about the pauses in charging at home that would be incurred through the Smart Charge Program.
- The Smart Charge program enrollment process seemed easy to most.
- The group agreed that a toolkit for talking with landlords would be helpful for renters, including information on increases in property values and the benefits of upgrading electrical panels.
- Some participants had creative ideas for other ways to incentivize the Smart Charge Program, including neighborhood charging hubs, earning money from your home charger, and helping to pay for increased EV car insurance.
- About half of participants made recommendations for outreach and marketing including social media, PGE bill inserts, through car dealerships, and projects like this that include diverse community voices.
- The three renters in the group said they face significant and unique barriers to installing a level 2 charger and enrolling in the program. The primary barriers were investing money in a property they don't own and needing to encourage their landlord to allow or pay for the installation. One homeowner said PGE should work to encourage landlords rather than with individual renters.
- A few participants most recommended highlighting information on financial savings and incentives in outreach efforts.

Working group session #4: Residential Smart Charge Pilot Program and Barriers for Renters

Topics and Goals:

Included a short presentation on Schedule 50 rate changes, followed by Q/A and feedback from participants. Also included a high-level summary of community engagement themes to-date and a short presentation about the PGE Clean Fuels Program. The second half of the session focused on an interactive visioning activity to identify group priorities and suggestions for future investment of Clean Fuels Program credit funds. The activity include time for self-reflection, think-pair-share in breakout rooms, and a Zoom white board to sort ideas into themes. Lastly, the group provided feedback on this Work Group engagement process, including what worked well and recommendations for improvement going forward.

Participant learning objectives and goals for the session included:

- Hear reactions, feedback, questions, and concerns about Schedule 50 rate changes.

- Share community engagement themes to-date with work group participants.
- Work with group to envision future Clean Fuels Program investments based on community engagement results.
- Gather feedback on work group process to inform improvements going forward.

Themes from participants:

- Schedule 50 proposed rate changes: about half of participants felt the new rates were reasonable and half felt the new rates seem high.
- Participants provided many suggestions for prioritizing PGE Clean Fuels Program funds into the future. Improvements to charging infrastructure was the most mentioned program area shared by more than half of participants.
    - Each of the following additional suggestions was mentioned by a few people:
        - Improving access to charging for people with disabilities
        - Improving language access (no specific languages mentioned)
        - Supporting non-profits
        - Investing in emerging technology (fast charging)
- For future community engagement around the Clean Fuels Program, most participants recommended meeting over zoom due to convenience, while about half said they would recommend in-person meetings with food provided. Two-thirds said social media is a good way to engage their community, and a few said community events or presentations would work well.
- In terms of feedback about this working group process, two-thirds said the sessions had worked well for them, that PGE had done a good job facilitating, and that they learned a lot through this experience. About half of the participants made improvement recommendations, and these centered around making it easier to understand complex concepts presented about TE, including providing presentations and topic material before sessions and providing a glossary of terms.

FOCUS GROUP THEMES

People participating in focus groups shared many rich and meaningful insights. This section lists the most mentioned themes across all focus groups for each topic area.

Outreach and Education:

Focus Group Questions:

- What forms of communication get your attention and are effective for you? Think about traditional channels like ads on TV, print, and radio; social media platforms like Facebook, etc.; community meetings/outreach; and mail.
- What languages are most helpful to have represented?

Focus Group Themes:

- Social media marketing and promotion was most recommended (all groups), and included recommendations for Facebook, Instagram, and TikTok.
- Materials available in multiple languages was next most recommended (8 of 9 groups). Twenty-three languages were mentioned. The number in parentheses indicates how many times that language was mentioned. Because this was not a representative survey, the number of times a language was mentioned does not necessarily indicate how important a language is to prioritize. The general theme among participants was that a diverse range of languages should be provided.
  - Spanish (19)
  - English (12)
  - Russian (10)
  - Mandarin (5)
  - Mayan and other Indigenous languages from Mexico, Central and South America (6)
  - Korean (3)
  - Cantonese (3)
  - Vietnamese (3)
  - Chinese (3)
  - Sign language (4)
  - African languages (2)
  - French (2)
  - Arabic (2)
  - Somali (2)
  - Ukrainian (2)
  - Tongan (2)
  - Khmer (1)
  - Hindi (1)
  - Tagalog (1)
  - Portuguese (1)
  - Braille (1)
  - Samoan (1)
  - Romanian (1)
- Promoting and educating through videos was next most highly recommended (8 of 9 groups), primarily through YouTube, but some also mentioned TikTok, especially in the youth focus group.
- Connect with communities through trusted community organizations was recommended in 7 of 9 groups; some were culturally specific and some were community-specific. See community-specific themes for specific organizations recommended.

- The following were suggested by two-thirds of groups (6 of 9);
  - Email communication
  - Community/public educational events
  - Printed materials like flyers and newsletters
  - Television ads, including two mentions of Univisión (Spanish-language TV station)

Charger "How-To" Information

Focus Group Questions:

- What's the best way to teach you how to use EV chargers?
- Where would you expect/like to see instructions on how to use public chargers?

Focus Group Themes:

- Video instructions were the most recommended, primarily accessed on YouTube through a QR code posted on the charger (all groups). People in 5 of 9 groups suggested video screens at the charging location.
- Many suggested charging information in multiple languages (7 of 9 groups).
- Many also felt car dealership should provide how-to information, including demonstrations and materials when the car is purchased (7of 9 groups).
- Two-thirds (6 of 9) recommended simple graphics for universal instructions that transcend language. IKEA and comic-book-style instructions were given as examples.
- Two-thirds of groups (6 of 9) also recommended using QR codes posted on chargers to direct users to information via smartphone.

EV Charging Payment Preferences

Focus Group Questions:

- What is the easiest/ most frequent way for you to pay for things (groceries, services, etc.)?
- What do you like about paying for other transportation options that you use (for example: gas, Trimet Hop pass, Biketown, Zipcar)?
- How would you want to pay for public EV charging if you own one or decide to own one in the future? On the bill, with a credit card, or other?

Focus Group Themes:

- Credit or debit cards was the most used payment methods and most recommended for EV charging payments (all groups).
- Payment by cash and through apps and smart phones were second most used (8 of 9 groups each). Cash was described as important for including workers in cash jobs and people who do not have bank accounts or credit cards. If machines cannot accept cash, participants in about half of groups recommended an option for a pre-paid card onto which people can load their cash.
- People in most groups said it is important to provide multiple ways to pay (7 of 9 groups).

- People in two-thirds of groups (6 of 9) said an option to be billed by PGE would be convenient especially when they are low on cash. A few participants had concerns about extra fees or confusion and lack of transparency if they added EV charging to their PGE bill.

Community Transition to Transportation Electrification

Focus Group Questions:

- For those who don't own an EV, what are your concerns or reservations regarding owning an EV?
- What changes or developments in the EV market, or your personal circumstances, would help you to make that switch?
- Not everyone owns vehicles or drives. PGE is helping to electrify school buses, tractors, and even bikes. What do you think about these initiatives, and what other ideas do you have to bring electrification to more communities?
- What can PGE do to support your community's transition to TE?

Focus Group Themes:

- *Concerns* – Most focus group participants described concerns about transportation electrification or barriers to adopting it.
  - The high cost of EVs and chargers was by far the most mentioned concern (across all groups). Many felt the costs made TE unreachable for them.
  - Battery range concerns (range anxiety) were mentioned in 8 of 9 groups.
  - Long charging times were another common barrier and concern (6 of 9 groups).
  - Maintenance concerns were also mentioned in 6 of 9 groups, including cost, battery longevity, frequency of specialized maintenance, and availability of qualified mechanics.
  - Concerns mentioned in 5 of 9 groups included:
    - Not enough chargers
    - Negative environmental impacts from mining, manufacturing, recycling, or disposing of EV batteries
    - Skepticism about PGE's focus on transitioning individual drivers to electric vehicles, including wondering if EVs are the correct approach to climate change, feeling that large corporations should be more of a focus, skeptical of PGE gaining profit from transitioning individuals to EVs and increasing their rates, concerns about the safety and security of new technology
  - Concerns mentioned in 4 of 9 groups included:
    - Battery performance in cold weather and power outages
    - EV safety concerns, with participants commenting on speed, quietness, potential health hazards, safety in accidents, and batteries catching on fire.
- *Requests* to help communities transition to electrified transportation.
  - Financial incentives such as bill discounts, vouchers, and free or reduced charging opportunities were by far the most requested type of assistance from PGE participants felt

would help them and their communities transition to electrified transportation (7 of 9 groups).

  - Focus on shared transit was the next most common request (6 of 9 groups). Types of transit suggested included electric bicycles (mentioned most), neighborhood shuttles, school buses, tractors, business vehicle fleets, and car shares.
  - Increasing community education about EVs and promoting them within communities was mentioned by 5 of 9 groups.
  - Other ideas mentioned less often include:
    - Focus transition on commercial fleets (3 of 9 groups)
    - Legislation to encourage multi-family complex owners to install EV chargers and other modes of increasing charging for renters at home (2 of 9 groups)
    - Increase the number of public chargers (2 of 9 groups)
    - Include maps of public chargers on chargers and kiosks (2 of 9 groups)
    - Include and support youth to learn about/access TE (2 of 9 groups)
    - Increase community financial assets through TE (2 of 9)
    - Stop raising PGE rates (1 of 9 groups but many in group

- *Benefits* of TE—A few participants mentioned the benefits of electric transportation. Fuel being cheaper than gas and a positive environmental impact were most mentioned (3 of 9 groups).

DETAILED WORKING GROUP SUMMARIES

This section includes a summary of themes from each working group session.

WORK GROUP #1: TE AND COMMUNITY ENGAGEMENT OVERVIEW

Overview:

Workgroup session #1 focused on introductions, providing a "level-set" of information about TE to the group, and beginning conversations about equity and access to TE. The discussion focused on answering Q/A about TE and EVs and hearing recommendations for better serving and connecting with participants' communities.

10	Participants
1	Already own an electric vehicle
3	Potentially interested in owning an electric vehicle
6	Detailed TE information was new to them
2	Already knew detailed TE information

The overarching themes that came up in this group included:

1. Barriers or concerns preventing participants from using EVs
2. Some skepticism about personal transportation electrification
3. A need for increased community education about EVs
4. Recommendations for better serving and connecting with communities

Barriers and concerns

Although we did not specifically ask, many participants told us what barriers keep them from using electric vehicles.

- Nearly all participants agreed not having enough chargers is a barrier in their community.

> *"My work has installed quite a few fast charging stations for the employees. If you don't have access to those, its' very difficult. The adoption rate is not keeping pace with the market demand of it, especially if you take the family to the coast, it's very limited, as far as charging your vehicle. That's a big barrier for people to consider especially with the cost of purchasing the vehicle, insurance, etc. It's good but the pace is not there to get everyone comfortable, people fear change. What does PGE plan 5, 10 years down the road to make the source more reliable and affordable for underserved community? A lot of people will hesitate to adopt."*

- Cost was the next most mentioned barrier, mentioned by about half of participants. Many of these said they are concerned about higher insurance costs for EVs, while some others were concerned about vehicle and battery cost.

- Difficulty accessing government financial incentives was mentioned by a few participants. This included difficulty navigating complex government applications and tax incentives not applying to those on SSI/disability who don't pay taxes.

> *"Another factor that's a barrier is the incentive program - it's so complicated, more education how to access it, how to use it would be helpful to people. It's there, but only a small percentage of people know how to use it. Underserved community access to those things - it's not easy. If you don't have computer or internet at home, like Tribal communities, even to travel to the closest library... Get people more access to it. Helpful to myself as well."*

- Other barriers mentioned included:
  - Not feeling safe using a car with an old battery

> *"I used to own a Prius car, and I don't use that car anymore because the battery was expensive to purchase for another replacement, so it is just parked in my parking lot I don't use it anymore. And I don't feel safe. I feel like I don't feel safe using that car because of that battery."*

  - Charging speed
  - EV considerations for people with disabilities
  - EV range
  - Being able to find a mechanic easily to service the vehicle

"Another concern about EV - where can I get the mechanic? I can fix my vehicle now, at every corner I can get someone to fix my car, but the EV, I don't think so."

Some skepticism about personal transportation electrification

Throughout the discussion, over half of participants expressed some skepticism about the transition to personal electric vehicles. Their concerns included:

- Concerns about overloading the electrical grid with the demand for EV charging (2 people).
- Environmental impact (2 people) including the amount of water used in battery development and the need to extract and procure enough Lithium for batteries.

  "Environmental degradation is a valid concern regarding the long-term viability of Lithium Ion batteries and is there even enough Li available to meet future demand for a carbonless future in the world? There are other promising electric storage technologies being explored that hold potential, but how can this be long term sustainable for our societal needs?"

- Why TE? A couple of people wanted more information about why EVs are the focus. One asked why not look into other sources of energy rather than focusing on electricity. Another voiced a need for more detailed information and research showing the benefits of transitioning to EVs.

  "Wondering what causes or motivates the change from regular vehicles to electricity. For those that may not want to change things. They feel safe and don't want to come out from their comfort zone. Transparency – this is for supporting underserved communities. I'm thinking there's going to be a lot of research coming in, for a lot of the community members they are going to ask a lot of questions, what is this, what are the changes, want to see more research, what's going on here. I know this is just the beginning, want to know more the advantages and disadvantages of changes."

- One said they would wait and see how EVs work before buying an electric vehicle.
- Another had questions about the focus on personal vehicles and wanted to see more focus on public transit and car sharing.

  "It sounds a little bit like what you're proposing is it's more helping individual people with cars, and I'd like to see more promotion of ride share, or like San Francisco has their bus system electrified, to see Portland's buses electrified. [with overhead electric lines]"

Need for increased EV education in communities

Nearly all participants in the group agreed there is a need for additional education and information about EVs and TE in their communities. They provided these examples of information that is needed:

- Motivations behind switching to EVs
- Advantages and disadvantages
- Mileage per charge and technology improvements in charging speed

- Cost comparison EV vs gasoline vehicle

Recommendations for community connection

- Several participants mentioned community concerns about trusting and feeling comfortable with the information being shared by outsiders. One asked what other relationship building work PGE has done in the past.
- About half of participants agreed that connecting with communities through a representative from their community would be a good way to connect. One gave double thumbs-up to this.
- Not very many thought the electronic Zoom format was a good way to build community relationships. About half said they would prefer in-person meetings.
- A few people mentioned specific needs and recommendations for connecting with and supporting Tribal communities. These included:
    - Many Tribal nations live in rural areas, this affects access to EV chargers and access to computers or internet to fill out rebate applications.
    - The connection of history and trust.

      "Among the tribes, there is a history of mistrust of people coming in and giving disinformation."
    - A recommendation to work with Tribal communities through a Tribal representative and present culturally specific information.

      "To have culturally specific of presentations, in our community, a tribal representative could possibly open conversations & participation."
    - One asked if there are any agreements in place with Oregon Tribal Nations.
- One participant recommended meeting with communities at their own locations.

  "Come out and meet where they are at, feel comfortable to connect with resources. I'm thinking some community members might not feel comfortable where you host events, like at the PGE building. Some may not feel comfortable or safe to go there. So, I'm thinking for some community members they might want to meet at a community center, or at the park, or church settings to share their thoughts and express their opinions."
- Several recommend translating educational materials into other languages besides English.
- One participant said it would help for PGE to offer free energy conservation devices or incentives for them to their customers as part of good customer service. This could include home chargers for EVs and battery storage for solar systems.

  "I've been a PGE customer for a long time. I've seen recently on the marketplace, they [private market] start selling a lot of energy saving devices for people to purchase for their homes and to use around the house for conservation. Want to see more of that, if they want to invest in that, we don't have to go to the other big companies to buy these devices, if they can be provided by PGE as an incentive or credit. As a rate payer, it's probably a good thing to expand or improve or make it more of the product you can save around the house….

Probably useful for long-term customer relationship or build with community. I appreciate it more now that I've been with PGE for a long time. In the same line, especially with home charging devices and battery storage for home when you have solar panels so when the sun shines you can store your battery for using when there is no sun. "

WORK GROUP #2: PGE MUNICIPAL POLE CHARGING PILOT PROGRAM

Overview

Workgroup session #2 included a deeper dive into the PGE Municipal (Pole) Charging program. Juliáe R. gave a short refresher presentation about EV charging and Anik S. provided a longer presentation about how the pole charging program works. The bulk of the session was devoted to Q/A about chargers and charging and discussion about the benefits and drawbacks of different types of charging, including pole charging.

11	Participants

Summary of themes

- Participants had many great questions about EV charging that were answered well by PGE staff.
- More drawbacks were mentioned than benefits about public charging in general. These included not enough chargers available, charging takes too long to do in public, chargers not conveniently located, concerns around standardization for plugs, apps and payment methods, and questions about how to find chargers and know if they are occupied.
- The overall response to neighborhood pole charging was lukewarm in this group. A small number said they could see how it could be convenient for multi-family renters who have no parking, although this did not apply to them personally. Two people fit this description and felt public charging locations would be more convenient for them.
- Public safety of charging locations was the most mentioned concern about pole charging. Competition for neighborhood parking was also mentioned.
- Requests for pole charging included providing instructions in other languages and providing neighborhood education about the chargers, especially for those who are not tech savvy.
- The most recommended locations for chargers were gas stations and public locations like libraries, parks, rest stops, and shopping centers. Slightly less than half said it would be best to charge at home, but this will require large batteries or having multiple portable batteries.
- In a very brief conversation about costs of charging, one person said the costs seem cheaper than gasoline, and another raised concerns about charging per hour rather than charging for the amount of electricity used.

Detailed results

Benefits and drawbacks of public charging in general

Benefits: One participant described the usefulness of public chargers when shopping or going on longer trips. Although we did not have much time to discuss charging costs, when we described PGE's cost to charge at public locations, one person said that seemed much cheaper than the cost of gas but wanted more statistics.

"[Public] locations are important because I use a Tesla, I live close to Fred Meyer in Beaverton which allows fast charging. My concern is the time to charge because, if it's quickly, we can save time when we charge. I charge at home, but sometimes charge in public. Sometimes my parents go to Seattle, and sometimes need to stop and charge and continue to go."

Drawbacks: Participants mentioned more drawbacks than benefits. Drawbacks included:

- There are not enough public chargers available.
- Charging takes too long to do in public.
- Chargers are not conveniently located near peoples' public activities.
- Concerns around standardized charging (plug compatibility and how to pay, credit cards vs needing apps for different types).
- Questions about how to find chargers and know if they are occupied and when they will become available.

"Accessibility and availability is going to be tough. I went to Lincoln City, and we had to park at the outlet mall and walk all the way to the beach. We had to wait for a spot even at the shopping mall, not enough installed. That's a prohibitive factor for people adjusting or adapting to these new models or lifestyles. My friend has a Tesla, but access is still limited at this point. Whereas at a gas station you can pull up to any on the highway. For underserved community will be the challenge."

"Since I live in SE Portland, I frequently go up Hawthorne or Belmont, and I haven't seen any charging stations in those areas where it's convenient. Might be a couple in the Fred Meyer parking lot, and I'd have to walk a long distance."

Feedback about neighborhood pole charging

The overall response to neighborhood pole charging was lukewarm in this group. Throughout the discussion, it also didn't seem to be helpful to hear that the pole chargers were intended for people who live nearby. A little over one third said they could see themselves using pole chargers. Only one person said pole charging would be most convenient for them because it would increase the number of chargers available in general (not a comment about charging near their home). A small number said they could see how it could be convenient for multi-family renters who have no parking, although this did not apply to them personally. Two people fit this description and felt public charging locations would be more convenient for them. One of these said pole chargers could cause more competition for parking on neighborhood streets.

"Pole charging - because I can find everywhere, I don't need to find at the market or the mall, the pole is better for me because I find everywhere."

The primary concern expressed was the public safety of pole charging locations, including concerns about personal safety, vandalism, and the safety of your car while parked in that location. One person

feels very unsafe about using electric vehicles in general and another wondered whether it is safe to charge in the rain.

"I'm glad you mentioned the high crime areas because I'm thinking about that: How are you guys gonna find out if that area is not safe and has a lot of crime activities? How are you guys going to decide where you are going to install those chargers?"

"Not sure about someone putting pole charger in my neighborhood. Not sure how I should feel about that - there will be a lot of people coming around my neighborhood."

Competition for neighborhood parking was another concern raised, where renters are not provided parking and there is already not enough street parking.

"Where I live in Cully Neighborhood, the main streets have limited parking, and the homeowners place cones in front of their homes to prevent tenants from parking [on the side streets], so [pole charger spots on] the side streets would put more limitations on apartment tenants."

Requests for pole charging included that instructions are provided in other **languages** and **neighborhood education** about the pole chargers, including how to use them for those who are not technologically savvy.

Best locations for chargers

All participants weighed in on what they feel are the most convenient locations for public chargers. About half of participants said **gas stations** and another half said **public locations like libraries, parks, rest stops, and shopping centers**. Slightly less than half said it would be **best to charge at home**, but this will require large batteries or having multiple portable batteries.

"I live at an apartment, small apartment so I don't have my own parking spot, and that area doesn't have any charger for EV cars, so not very convenient for me to buy an EV car at that place. But there are many gas stations nearby, so I think it's easier to have a charge station at a gas station because a lot of gas station don't have an EV spot. You can collaborate with gas stations - they are big and have a lot of spots that can be used for chargers for EV cars. That would be more convenient so I wouldn't need to research a certain place, I would just know."

"For adopting technology, prioritize level 2 at workplaces, public libraries, public parks, should have a mix of those destinations…those serve all the community underserved."

"Charge at home and replace with extra battery if it's possible - can the other one be charged while I'm driving? In the public there are too many crimes now you never know where you are going to be safe. I'm seeing a lot of things happening, it doesn't feel that comfortable to be somewhere charging your car, I think it's better at home."

Charging costs

The group had a very short conversation about charging costs, and only two participants commented on this. One participant said it seems that electric charging is much cheaper than the cost of gas. Another said they think it would be better to charge per kilowatt used than charging hours used.

"Seems quite a bit cheaper to charge an EV form the same mileage you'd get buying a gallon of gas. Do you have statistics on that?"

"Is there plan to change to per kw? Just thinking it is possible to throttle down charging making it more expensive."

WORK GROUP #3: RESIDENTIAL SMART CHARGE PILOT PROGRAM

Overview

Workgroup session #3 included a brief review of themes identified in work groups #1 and #2 to check for agreement among participants. The remainder of the session was dedicated to a deep dive into the Residential Smart Charge Pilot Program. Cal Conrad gave a detailed presentation about the program, and Jamie facilitated feedback and discussion about the program for the second half of the session. Specifically, participants were asked for their feedback on the rebate and bill credit incentives provided, smart charging events, the enrollment process, barriers to renters, and recommendations for community outreach and engagement.

8	Participants
3	Renters

Summary of themes

- Group agreed that themes from Work Groups #1 and #2 matched what they remember hearing.
- Several participants needed clarification about purchasing and installing L2 chargers, including PGE's role in selling and installing chargers and which chargers are included in the Smart Charge Program.
- Most felt the rebates provided are not enough to encourage them to install a level 2 charger at home.
- Smart Charge bill credits of $25 per six months were not enough to encourage participants. Most said $100 would begin to encourage them.
- Participants did not seem worried about the pauses in charging at home that would be incurred through the Smart Charge Program.
- Some participants had creative ideas for other ways to incentivize the program, including neighborhood charging hubs, earning money from your home charger, and help paying for increased EV car insurance.
- Smart Charge program enrollment process seemed easy to most.
- Renters face significant and particular barriers to installing a level 2 charger and enroll in the program. The primary barriers were investing money in a property they don't own and needing to encourage their landlord to allow or pay for the installation. One homeowner said PGE should work to encourage landlords rather than with individual renters.

- Group agreed that a toolkit for talking with landlords would be helpful for renters, including information on increases to property values and benefits of upgrading electrical panels.
- Outreach and marketing recommendations included social media, PGE bill inserts, through car dealerships, and projects like this that include diverse community voices.
- Highlighting information on financial savings and incentives was most recommended.

Detailed results

Questions about level 2 chargers

Several participants needed clarification about purchasing and installing L2 chargers.

- A few thought PGE was selling L2 chargers through the Smart Charge Program, and weren't sure where to buy them otherwise.
- Some requested the list of qualified L2 chargers included in the Smart Charge Program
- One thought PGE would help install the charger.
- One had thought all EVs come with L2 chargers (Cal clarified that some do as a package deal, but most cars only automatically come with a L1 charger)
- One had questions about being able to install a L2 charger if they already have solar panels at home

Feedback about Smart Charge Program Rebates

Most participants felt the rebates provided through the Smart Charge Program are not enough to encourage them to install a level 2 charger at home. Two of the three renters in the group said it was difficult for them to invest in a property that they may leave one day. One homeowner said the rebates are a start, but that monthly payments would likely be more of an incentive.

> *"My concern is with rent going up so fast for everybody, at least for us renters, would it be worth it to me to put something in if my rent goes up and I end up moving potentially? I'm glad there is some incentive, but our rent is going up so much so fast. We've been here 5 years, but will we be here long enough to make it worth it?"*

Feedback about Smart Charge Program Bill Credits

All but one participant said the $25 per six months bill credit was not enough to encourage them to join the program. One person said it is better than nothing. Jamie asked how much would be enough starting at $50, then $75, then $100. Most began to respond at **$100**.

Feedback about Smart Charge Events

Participants did not seem worried about the pauses in charging at home that would be incurred through the Smart Charge Program.

> *"I don't think it's that big of a deal, when you're asked and it's only three times, and it just makes sense for the energy curve, it really does."*

"They ask you right? As long as they ask you and you click yes or no it's not like they're not telling you and stopping your charging not knowing – I think it's still good."

Ideas for other Incentives

Each of the following ideas was proposed by one participant:

- Protecting the environment is another incentive

  "It's not just money, but also the electric cars, the purpose is to help the planet."
- Help paying for more expensive car insurance
- Neighborhood or community charger hubs, neighborhood prestige

  "Might be prestige for someone in the neighborhood to be charging resources in the block as we go on, there will be more EVs than there are combustion engines, there needs to be a local resource and someone to come down and you don't have to have the PGE truck come down. It's a community effort."
- Earning extra money by charging a fee to neighbors to use your charger

Feedback on Enrollment Process

Cal provided a live overview of the online application process for the Smart Charge Program. *Most participants said the process seemed straight forward and easy to use.*

Barriers and Needs for Renters

Three participants in the group were renters. *Two renters shared that they would face significant and specific barriers to installing a level 2 charger at their rental unit. The primary barriers were investing money in a property they don't own and needing to encourage their landlord to allow or pay for the installation.* One said they would need an electrical panel upgrade, which would add cost and be a difficult sell to their landlord. They went on to say that the process for them would be different than for homeowners because the renter would first need to get estimates of installation costs and estimates of the PGE rebate before approaching their landlord.

"I'm not gonna buy a charger if I know that my panel needs to be upgraded and it will cost me money and my landlord isn't going to be cooperative… You don't have a 200-amp panel in your apartment. There's a huge disparity in there for people with landlords... How do you sweeten the pot for a landlord? For renters, the process would be almost the exact opposite: we'd have to know how much, our landlord would have to get an estimate on a panel upgrade and how much the rebate would need to be, then PGE would have to say based on the account holder's income how much rebate you would get. There has to be perhaps more incentives for the recalcitrant. I'd have to have the panel upgraded, statistics on how panel upgrades increase the value of the home, reduce fire insurance - if PGE could put this together how to talk to you landlord type of thing."

"I think the more positive spin you can put on it, the more easy access gung ho DIY, this would increase your property value, I think would probably help a lot just being able to have that

instant gratification for the actual homeowner, because we can say we love it but truly for renters it's the owners that are the big in between guys and without them you're stuck, you really have to schmooze them, I guess."

Both renters said incentivizing their landlord would be important, and many participants agreed a toolkit for talking to your landlord would be helpful.

They suggested including information about how:

- An EV charger and a panel upgrade could increase property value
- An electrical panel upgrade reduces risk of fire

One participant thought it was better to work with multi-family landlords directly rather than working to encourage individual renters. Two participants felt having an EV charger would be a selling point for landlords.

"Can PGE work with local jurisdictions and larger rental complex owners to have shared public charging? If the trend is we're electrifying the country, for a healthy planet, why won't we go that approach instead of individual renter put up the money and then move? If they have that infrastructure already, it's a selling point for them. Wouldn't that approach work instead of individual renters trying to get on their own?"

Outreach and Education to Underserved Communities

Outreach and marketing methods recommended included:

- Social media (2)
- Advertising through PGE bill (2)
- Through car dealerships (1)
- One said it is important to ask diverse groups for their input, that this engagement project is positive (1)

"Asking so many different demographics is really important and smart. It's gonna make the program grow faster in my opinion."

Recommendations for information that would most encourage people included:

- **Financial savings or incentives was the most mentioned** (4)

"What kind of program can help me save? Let's not talk about the program yet, just leading with how much money you can save, then more into the program. Catch my eye."

- One participant asked if the Smart Charge Program is free to join
- Another said promoting benefit to the environment

WORK GROUP #4: SCHEDULE 50 RATE CHANGES, CLEAN FUELS PROGRAM

Overview

Workgroup session #4 included a short presentation on Schedule 50 rate changes, provided by Adam R. of PGE, followed by 10 minutes of Q/A and feedback from participants. Next, Jamie S. provided a high-level summary of community engagement themes to-date. Eva D. of PGE gave a short presentation about the PGE Clean Fuels Program, and Jamie, HK C. and Ping K. facilitated an interactive visioning activity to identify group priorities and suggestions for future investment of Clean Fuels Program credit funds. The activity include time for self-reflection, think-pair-share in breakout rooms, and a Zoom white board to sort ideas into themes. Lastly, the group provided feedback on this Work Group engagement process, including what worked well and recommendations for improvement going forward.

9	Participants

Summary of themes

- Schedule 50 proposed rate changes: about half of participants felt the new rates were reasonable and half felt the new rates seem high.
- Participants provided many suggestions for prioritizing PGE Clean Fuels Program funds into the future. Improvements to charging infrastructure was the most mentioned program area. Additional themes mentioned less often included improving access to charging for people with disabilities, improving language access, supporting nonprofits, and investing in emerging technology.
- For future community engagement around the Clean Fuels Program, many participants recommended meeting over zoom, while about half said they would recommend in-person meetings with food provided. Many said social media is a good way to engage their community, and a few said community events or presentations would work well.
- In terms of feedback about this working group process, many said the sessions had worked well for them, that the PGE had done a good job facilitating, and that they learned a lot through this experience. Improvement recommendations centered around making it easier to understand complex concepts presented about TE, including providing presentations and topic material before sessions and providing a glossary of terms.

Detailed results

Feedback about Schedule 50 Rate Changes

About half of the participants felt the proposed new rates were reasonable, and half felt they seemed high. One participant questioned the convenience of using public charging facilities outside of peak hours.

"If I want to avoid the peak charge, where am I going to charge? I need to come back home and drive back out to charge again at 10pm? That doesn't sound convenient to me."

PGE staff described that the new rates are in response to EV driver requests to switch to kWh and free up chargers (idle fees). They also acknowledged the inconvenience of avoiding peak charging times when relying on public chargers and said neighborhood pole charging and curbside chargers are being installed to increase convenience.

Feedback about Community Engagement Themes

Participants seemed to agree with the themes presented from community engagement efforts to date. Three voiced their support of specific aspects of the results including concerns about maintenance (specifically battery replacement costs), video charging instructions, materials in multiple languages, dealer charging education, and using QR codes. Two suggested step-by-step video kiosk models where people can go at their own pace.

"With video instructions, needs to be a step by step where you have to push a button to go to the next step because some people aren't as fast as others."

Clean Fuels Visioning and Recommendations

Improvements to charging infrastructure *were the most mentioned program area for prioritization, including:*

- Increasing the number and convenience of public charging locations (gas stations, rest stops, and indoor charging suggested by one participant).
- Improving the look and feel of charging stations, increasing feelings of safety.
- Installing chargers that are accessible for people with disabilities, including the hearing impaired, visually impaired, people with mobility issues.

  "We talked about reaching issues for people to reach out to the machine and stuff, or height of machines, I'm not familiar with them myself. I don't know if they are two-sided, if you have to park, a handicap station was something we mentioned."
- Increasing language availability at charging locations.

  "Also, languages: maybe world flags could be utilized so people could recognize their country's flag that might be quicker for them to access and utilize the machines."
- Increasing charging speed technology to reduce charging wait times.
- Ensuring the energy grid is reliable to encourage people to adopt EVs.

  "Want to make sure PGE invests in their infrastructure such as the grid: the more reliable it is the more people will feel comfortable they know where to go when charging their car."

Several said PGE should prioritize funds for nonprofits that have public benefits. One specifically suggested nonprofits that help the elderly with transportation. Another suggested some means for determining which nonprofits have the most beneficial community impact.

"My idea was we work in a nonprofit organization, we have senior groups, we host groups for seniors to come to our center to interact with other people, but we come to a problem: a lot of seniors cannot take the bus, or they don't have a friend or family to drive them. That limits a lot of people to go out and interact with people. If PGE works together with nonprofit organizations to provide a shuttle bus to pick up seniors to join community activity groups, that would be great. I saw earlier programs like meals on wheels, ride connection: those are nonprofits that are helping people get their transportation needs. I would like PGE to invest more in those parts."

Other suggestions mentioned by one participant each included:

- Prioritizing investments in children, such as through electric school buses
- Investments in public education to understand TE and EV changes

  "Continue education of the population: the more people are aware of better understanding technology, the changes, they feel more comfortable, adoption of technology will go faster. People tend to have anxiety to new change, so the more education we can provide through community or YouTube or different media for different populations, that would help adopting the technology."

- Concern that PGE selling EV credits to diesel producers does not help with Portland area diesel pollution, and that local metrics should affect the cost of credits for fossil fuel companies.

  "I'm having an existential crisis with PGE selling the credits of EVs to gas. Portland has some of the worst diesel pollution in the country. Selling the credits is going to let them continue to pollute. Supposedly we're supposed to be offsetting and becoming net negative in terms of carbon pollution. I'd like to see something, maybe they have to pay a lot more for credits if they are in a denser area like Portland, so they are going to pay a lot more than somebody say in Hood River..."

Strategies for Continued Engagement in Clean Fuels Program

The most recommended strategies for future community engagement around the Clean Fuels Program were meetings over zoom or engagement via social media. Some also said in person meetings would work well, and a few recommended community events or presentations. One person recommended engagement via a survey.

Feedback on Working Group Process

About half of participants shared what worked well, including:

- Learned a lot (most mentioned)

  "Every time we come to the meeting, we learn something new and talk about it. I really like what we learned, and I get to have conversations with friends, and we learn something."

- Zoom format worked well
- Relaxed approach and atmosphere (felt comfortable)

  "I was really impressed with how relaxed you have all made it for us, not intense or it's been like a conversation not a dictation."

- Diversity of people represented
- Email reminders before meetings
- Conversational format

Recommendations to improve working groups going forward centered around increasing participant ability to absorb complex new concepts presented. Specific recommendations included:

- Providing presentation materials before meetings for participants to review (most mentioned)

> *"Online Zoom is good, but it is hard sometimes to refer back to info on the slides. I print out the slides and refer back to them when I have a question about specifics. Perhaps providing the slides to each person in a file they can review ahead of time or go back to it as we move on as a group, yet still have a question - would be helpful."*

- Giving more time to understand complex concepts presented
- A glossary of terms and acronyms

DETAILED FOCUS GROUP SUMMARIES

This section includes a summary of themes from each focus group. When planning community engagement, it is important to consider communities' specific requests. Considering specific requests, especially from cultural communities, fosters inclusivity and respect for diversity and ensures that interactions are culturally sensitive and appropriately tailored.

NATIVE AMERICAN & ALASKA NATIVE FOCUS GROUP

Engagement with Native American Communities:
Oregon is home to nine federally recognized Native American tribes (citation: https://www.oregon.gov/DHS/ABOUTDHS/TRIBES/Pages/Tribes.aspx). Engaging with indigenous communities on transportation electrification (TE) is important for several reasons. First, Native American tribes have distinct cultural, economic, environmental, and tribal sovereignty interests, which should be acknowledged and integrated into policies and projects. Second, community engagement is crucial for addressing these communities' unique needs and challenges, which may differ significantly from the broader population. By involving Native American tribes in the conversation, TE efforts can be more effectively tailored to serve their specific needs, which not only benefits the tribes but also enriches the broader community by integrating diverse perspectives and knowledge systems into TE.

Key Discussion Points and Findings:

- Education and Information Access: Participants expressed a need for clear, accessible instructions on using EV chargers, with suggestions including instructional videos at charging stations, in-car displays, and community outreach at local events. Language accessibility was highlighted, with a preference for instructions in English, Spanish, and other languages as needed.
- Financial Considerations: Financial concerns are significant, with participants worried about the cost of EVs, charging, and potential impacts on energy rates. There was interest in understanding the full benefits of TE, including health and environmental impacts, and the need for financial incentives to make the transition more appealing.

- Overall Transition to TE: The group discussed the importance of addressing range anxiety, vehicle safety, and the environmental impact of EV production and battery disposal. There was a call for more education on the life cycle of EV components and the need for broader community engagement, including the involvement of youth and elders.

To support communities in the transition to TE, PGE can focus on:

- Developing comprehensive educational materials and outreach programs tailored to the needs of under-represented communities.
- Ensuring charging instructions are available in multiple languages and formats to accommodate various technological proficiencies.
- Exploring partnerships with local organizations and events to increase visibility and engagement.
- Addressing financial barriers through incentives, rebates, and clear communication of the long-term cost benefits of EVs.
- Enhancing public charging infrastructure with a focus on accessibility, safety, and reliability.
- Engaging with younger generations to incorporate their perspectives and ideas into TE initiatives.

Overall Sentiment:
The sentiment among participants was one of cautious interest, with a clear desire for more information and education on the benefits and practicalities of TE. Concerns about financial implications, infrastructure readiness, and the environmental impact of EV production were prevalent. However, there was also recognition of the potential health and environmental benefits of reducing emissions.

BLACK & AFRICAN AMERICAN GROUP

Engagement with Black/African American Communities:
Although relatively small, Oregon's African American population is primarily concentrated in urban areas. According to the U.S. Census Bureau, African Americans constitute approximately 2.2% of Oregon's population as of the 2020 Census. This demographic is primarily located in the Portland metropolitan area. Furthermore, income disparities, as indicated by the Central Oregon Health Data's Median Household Income by Race/Ethnicity: https://bit.ly/492LUom, show that the median household income for African Americans in Oregon is lower than the state average. This economic context underscores the importance of engaging with the African American community to ensure that the benefits of clean transportation and reduced transportation costs are equitably distributed.

Key Discussion Points and Findings:

- Education and Accessing Information: The overall sentiment was that PGE must proactively inform and educate the community about TE. Participants suggested that PGE use various communication methods, including social media, community events, and direct outreach, to ensure that information is accessible. There was a strong preference for receiving information from trusted sources within the community.
- Financial Considerations: Financial concerns were a major theme, with participants questioning the affordability of EVs, the cost of charging, and the potential impact on their electricity bills. There was a call for transparency from PGE regarding the costs associated with TE and a desire for financial incentives or assistance to make the transition more feasible.

- Overall Transition to TE: Participants were concerned about the availability and convenience of charging stations, the upfront cost of EVs, and the potential for increased electricity bills. There was also a desire for PGE to support community initiatives, such as solar panel installations and shared transportation fleets, to mitigate costs and promote TE.

To support communities in the transition to TE, PGE can focus on:

- Developing and implementing targeted educational programs about EVs and charging infrastructure, ensuring information is available in multiple formats and languages.
- Creating financial incentives or assistance programs to help offset the costs of purchasing EVs and installing home charging stations.
- Increase the visibility and accessibility of charging stations, particularly in underserved neighborhoods, and consider integrating charging infrastructure with community spaces.
- Engage in partnerships with local organizations and community leaders to build trust and ensure that TE initiatives are culturally relevant and responsive to community needs.
- Address concerns about EV production's environmental and human impact, particularly regarding the sourcing of materials and the disposal of old vehicles.

Overall Sentiment:

The sentiment of the African American focus group regarding transportation electrification is one of cautious interest mixed with concerns about practicality, cost, and infrastructure. Participants are curious about electric vehicles (EVs) but are worried about the availability of charging stations, especially in their neighborhoods and along highways. The upfront cost of purchasing an EV and the potential increase in electricity bills due to home charging are significant financial concerns. There is also a desire for more education on EVs and charging processes, with suggestions for community-based learning and accessible information at charging stations.

HISPANIC & LATINO/A/E GROUP

Engagement with Hispanic and Latino/a/e Communities – conducted in Spanish:

Demographic data from the U.S. Census Bureau (https://www.census.gov/quickfacts/OR) indicates that the Hispanic or Latino/a/e population in Oregon constitutes approximately 14% of the state's total population, signifying a significant portion of the populace whose needs and challenges must be addressed equitably in electrification policies. A study by Clark et al. highlighted that neighborhoods with higher proportions of residents of color, including Hispanic and Latino/a/e communities, tend to be near pollution sources (https://bit.ly/3SNQIsA). Therefore, hearing the voices of Hispanic and Latino/a/e communities can yield insights into culturally specific preferences and behaviors that could inform more effective and tailored program designs in an equitable, inclusive, and responsive transportation electrification transition.

Key Discussion Points and Findings:

- Education and Accessing Information: Participants expressed a need for education on TE, suggesting that information should be accessible through short, engaging videos, possibly on platforms like TikTok, and hands-on experiences such as test drives at DMVs or driving schools. They also recommended that auto dealers provide basic electric vehicle (EV) operation and maintenance training.
- Financial Considerations: Financial barriers were a significant concern. Participants suggested that PGE could support the transition by offering flexible payment options, discounts for

students with good grades, and scholarships for training in EV maintenance. They also emphasized the need for affordable EV options and incentives for low-income individuals.
- Overall Transition to TE: Concerns about the TE transition included the power grid's reliability during emergencies, charging infrastructure availability, and battery disposal's environmental impact. Participants also worried about the safety implications of fast, silent EVs, especially for young drivers.

To support communities in the transition to TE, PGE can focus on:

- Creating concise, engaging educational content in multiple languages and formats, including videos and hands-on training sessions, to teach communities about EVs and charging.
- Offering various payment methods for EV charging, including online, card, and possibly a pre-paid card system for areas with poor internet connectivity.
- Introducing discounts, rebates, and scholarships to make EVs and charging more accessible to students and low-income individuals.
- Investing in a robust, reliable charging network that addresses concerns about range and accessibility, especially for those living in apartments or are constantly moving.
- Partnering with auto dealerships and educational institutions to ensure new EV owners receive comprehensive vehicle operation and maintenance training.

Overall Sentiment:

The sentiment towards transportation electrification is mixed. While participants acknowledged the environmental benefits and cost savings associated with electric vehicles, concerns about reliability during power outages, range limitations, and environmental impacts were expressed. There was a desire for more information, financial support, and robust charging infrastructure to alleviate these concerns and facilitate a smoother transition to electric transportation. Overall, the sentiment is cautiously optimistic, contingent on addressing these challenges effectively.

ASIAN & PACIFIC ISLANDER GROUPS (2 GROUPS)

Engagement with the Asian Communities:

Garnering feedback from Asian communities on transportation electrification is crucial for several reasons. First, these communities represent a significant and growing demographic in Oregon, with Asians alone accounting for 5.1% and Native Hawaiian and Other Pacific Islanders alone accounting for .5% of the state's population, marking them as a critical stakeholder in urban and transportation planning discussions (https://tinyurl.com/mr3juawr). Second, engaging with Asian and Pacific Islander communities ensures that their diverse needs and concerns are accurately represented and addressed, fostering inclusivity in policy and infrastructure development. Third, it can uncover unique cultural and socio-economic factors that may influence the adoption and utilization of electrified transportation, enabling more tailored and effective strategies. Lastly, such feedback can identify potential barriers to electrification within these communities, guiding more equitable and sustainable transportation solutions.

Key Discussion Points and Findings:

- Education and Accessing Information: Participants emphasized diverse preferences for EV information, stressing the need for multiple channels—social media, in-person outreach, visual aids, and community events—to cater to various demographics and learning styles. There was also a significant interest in social media platforms and visual learning tools like YouTube for accessing information. English is the preferred language for communication, but the need for

multilingual resources was emphasized, particularly for older community members and those who may not speak English as a first language, along with inclusive language and accessible formats for those with disabilities.

- Financial Considerations: Participants discussed the financial implications of owning an EV, including the cost of EVs, charging infrastructure, and potential incentives. Flexible payment options were requested, including an "EV card" for payments, convenient digital payment methods like Apple Pay, credit cards offering rewards, free charging opportunities, and the need for solutions accommodating those who prefer or only have access to cash. They emphasized the importance of transparency and control over charging expenses.
- Overall Transition to TE: Concerns about the transition to EVs include the availability and reliability of charging stations, especially during power outages, infrastructure adequacy, the impact of cold weather on battery range, EV battery environmental impact and recyclability, job losses in traditional fuel sectors, and financial implications of EV ownership. Participants expressed interest in PGE's efforts to electrify public transportation and construction equipment to reduce noise and pollution.

To support communities in the transition to TE, PGE can focus on:

- Creating clear, multilingual content and using social media to show how to use EV chargers at the point of sale and public charging stations.
- Utilize diverse channels like social media, community organizations, and public events for broader reach, emphasizing a multi-faceted approach to engage diverse communities effectively.
- Include video guides and QR codes at charging stations for easy access.
- Offering incentives, rebates, or discounts for acquiring EVs and charging setups to reduce initial costs. Effectively communicating information on financial incentives for EV purchases and home charger installations is crucial, as participants frequently overlook or struggle to access these cost-saving opportunities.
- Ensuring reliable power supply, especially during extreme weather events, to address concerns about charging during outages.
- Exploring the development of wireless charging technology and portable batteries to simplify the charging process.
- Considering the integration of EVs into community transportation solutions, such as neighborhood shuttles, to improve accessibility for those who may not own a vehicle.
- Increasing community event frequency, including EV test drives and educational fairs, is essential for boosting awareness and hands-on experience, highlighting that regular engagement fosters community interest and knowledge.
- Having EV users as ambassadors to share their experiences, particularly regarding cost savings and practical tips for charging, suggests that peer-to-peer communication could be an effective strategy for PGE to build trust and relate the benefits of EVs to potential adopters.
- Consideration for the diverse needs of all community members, including those with disabilities and non-English speakers, stressing that inclusivity is crucial for equitable access to transportation electrification.

Overall Sentiment Group 1:

Overall, many participants expressed a positive attitude towards EVs, citing benefits such as cost savings on fuel and the appeal of quieter, seamless driving experiences. Two participants shared their positive experiences with EVs, and one shared the decision to purchase a hybrid vehicle first. The convenience of home charging and the environmental benefits were also noted. However, concerns

about the reduced range in cold weather and the need for a backup gas vehicle for longer trips were mentioned. Financial considerations remain a significant barrier, with calls for incentives and support to mitigate the costs of transitioning to electric transportation.

Overall Sentiment Group 2:
The discussions indicate an openness to EVs and reflect participants' growing interest in TE. One participant shared personal experiences of owning an EV, discussing benefits like cost savings on charging and reduced maintenance. Still, others raised concerns about infrastructure, such as the availability of charging stations and the performance of EVs in extreme temperatures. Additionally, discussions pointed towards a need for broader education and outreach by utilities and governments to support community transition to electrification, highlighting incentives and practicalities of EV ownership and charging solutions.

PRIMARILY WHITE, LOW-INCOME, RENTERS GROUP

Engagement with White, Low-Income Renters:
According to the U.S. Census Bureau's QuickFacts data for Oregon, approximately 86% of the state's population identifies as White (Source: http://tinyurl.com/hee9jwhw), with 11% living below the poverty line (Source: http://tinyurl.com/539tpw7n). Only 63.2% of households are owner-occupied, indicating the remaining 36.8% are renters (Source: http://tinyurl.com/hee9jwhw). Low-income individuals and renters may face unique barriers to adopting electric vehicles and accessing charging infrastructure, necessitating tailored approaches to address disparities and promote accessibility in transportation electrification initiatives.

Key Discussion Points and Findings:
- Education and Accessing Information: Overall, participants preferred concise and visually oriented communication methods, such as text messages, social media posts, and short videos, over traditional advertising channels like TV or print. To ensure inclusivity, they emphasized the importance of tailoring communication efforts to diverse linguistic and cultural communities, including Spanish, Russian, Somali, and American Sign Language.
- Financial Consideration: Participants preferred convenient and secure payment methods such as credit cards, Apple Pay, and apps like Venmo for various transactions, emphasizing simplicity and ease of use. They also highlighted the importance of accessibility and flexibility in payment options for public EV charging.
- Overall TE Transition: Participants expressed concerns regarding the transition to electric vehicles (EVs), citing issues such as charging infrastructure availability, charging time, environmental impacts of battery production and disposal, and concerns about the ethical sourcing of materials like lithium. They also highlighted the importance of addressing concerns about vehicle depreciation, technological advancements, and potential environmental trade-offs associated with EV production.

To support communities in the transition to TE, PGE can focus on:
- Expand Public TE in consideration of the economic impact on lower-income individuals. PGE should support and invest in electrifying public transit systems.
- Introduce financial incentives or subsidies for purchasing EVs or using electric public transportation, making it a more viable option for a broader segment of the community.

- Education and information on EVs and charging stations must be clear, concise, and accessible. Suggestions include using visual aids, offering information in multiple languages, and leveraging social media and community events for outreach.
- Concerns about charging infrastructure underline PGE's need to expand and enhance the charging network. This includes increasing the number of charging stations and ensuring they are conveniently located and capable of fast charging to reduce wait times.
- PGE should advocate for and support initiatives focusing on sustainable manufacturing practices and developing environmentally friendly and ethically sourced materials for EVs and their components.

Overall Sentiment:
The participants' feedback revealed a complex mix of optimism and concern. There is a notable interest in and support for the transition to EVs and electrified public transportation, with participants acknowledging the environmental benefits and expressing a desire for more electric options in public and personal transportation. However, participants also expressed significant concerns regarding the affordability of EVs, charging infrastructure availability, and the environmental and ethical implications of EV production, particularly concerning battery manufacturing and disposal.

YOUTH, RENTERS IN MULTI-FAMILY HOUSING GROUP

Engagement with Oregonian Gen-Zs:
In 2022, the Oregon Office of Economic Analysis reported that 22% of Oregonians are Generation Z, born between 2000 and 2018. This generation, characterized by Pew Research as the most racially and ethnically diverse, began entering the labor market in 2023. They are also fast becoming the Tool Belt generation. Gen Z prioritizes pursuing their passions, environmental concerns, social responsibility, and advocating for environmental justice, making them vocal, values-driven, and individualized compared to previous generations. *For the PGE generational focus groups, it is crucial to recognize the nuances of shared generational experiences and identities rather than simplifying them.

Key Discussion Points and Findings:
- Education & Accessing Information: Participants favor engaging and visually appealing content on social media and posters versus commercial messaging, highlighting a generational shift toward informative content with multilingual and accessible features like closed captions.
- Financial Considerations: There was a strong preference for payment flexibility and accessibility. They favor payment options that accommodate various financial situations, including income-based pricing, phone-based systems, and Electronic Benefits Transfer (EBT).
- Overall Transition to TE: Financial barriers and economic feasibility concerns punctuate the need for regulatory measures to stabilize electricity costs and enhance consumer confidence in transitioning to EVs. More charging infrastructure in rural and less commercial areas highlights the need for community-focused strategies to support broader electrification.

To support Gen-Zs in the transition to TE, PGE can focus on:
- Use platforms like TikTok, Instagram, and YouTube with high-quality, inclusive visual designs and multilingual options to effectively reach younger demographics.

- Equip charging stations with clear pictographs, QR codes, and digital displays for multilingual support and real-time availability updates.
- Develop financial incentives and sliding-scale payment options for electric vehicles and public chargers to enhance affordability for all income levels.
- Collaborate with local businesses and communities to integrate and expand the electric vehicle charging network in rural and underserved areas, enhancing visibility and normalization.
- Launch public education campaigns that objectively compare electric and gas vehicles, using clear and non-promotional messaging to build trust and correct misconceptions.

Overall Sentiment:
Participants appreciate the transition to TE for its environmental benefits but are concerned about costs, accessibility, and infrastructure readiness. They support its potential but emphasize the need for financial assistance, inclusive communication, and enhanced infrastructure to enable widespread adoption. The recent PGE rate hike and the newly proposed hike drew concerns, noting a sentiment of mistrust expressed in fear of monopoly where PGE controls electricity pricing, feeling coerced into higher costs, and concerns that switching to EV is primarily profit-driven.

SENIORS, RENTERS IN MULTI-FAMILY HOUSING GROUP

Engagement with Oregonian Gen Xers and Baby Boomers:
In 2022, the Oregon Office of Economic Analysis found that 22% of Oregon's population are Baby Boomers (born 1946-1964), and 20% are Generation Xers (born 1965-1980). Pew Research describes Gen Xers as situated between the larger Baby Boomer and Millennial generations, a demographic bridge characterized by independence, work-life balance, informality, technological adeptness, and high education levels. Britannica stated that Baby Boomers influenced national culture significantly through their music, fashion, and views on drug use, sexuality, and authority.
*For the PGE generational focus groups, it is crucial to recognize the nuances of shared generational experiences and identities rather than simplifying them.

Key Discussion Points and Findings:
Education & Accessing Information: Participants prefer nonintrusive, accessible communication methods that effectively convey information without overwhelming or pressuring them. These methods emphasize visual aids and community-based information channels.
Financial Considerations: Feedback emphasized the importance of secure and simple payment methods. Concerns were raised regarding the financial impact of integrating vehicle charging expenses into household electricity bills, alongside preference for transparent and easy-to-use payment systems.
Overall TE Transition: Participants' feedback centered around concerns regarding the practicality of charging options, safety during charging, and the economic viability of transitioning to EVs, highlighting mixed feelings about security, convenience, and overall readiness for the widespread adoption of electric vehicles.

To support Gen Xers and Baby Boomers in the transition to TE, PGE can focus on:

- Adapt communication strategies to audience preferences using traditional media for older demographics and digital platforms for younger ones. Provide materials in multiple languages, particularly Spanish, to match local demographic needs.
- To help users unfamiliar with new technology, create visually clear, multilingual instructional materials for EV chargers at stations, including QR codes for video guides.
- Increase the number of public charging stations, ensuring they are in safe, well-lit areas to mitigate security concerns.
- Create and promote financial incentives that reduce the initial cost of purchasing and maintaining an EV, such as subsidies or rebates, especially targeting lower-income consumers to encourage broader adoption.
- Organize community meetings and forums to educate on EV benefits, address technology concerns, and foster trust and acceptance.

Overall Sentiment:
Participants displayed mixed feelings towards TE, driven by positive views on environmental impacts but tempered by significant concerns over costs and infrastructure readiness. Enthusiasm for digital education and EV benefits contrasts with concerns over affordability, charging logistics, and the feasibility of widespread adoption.

RURAL HISPANIC AND LATINO/A/E GROUP

Engagement with: Latine/a/o Community Living in Woodburn, Rural Marion County, OR
Woodburn, OR, known for its dynamic identity and the highest concentration of Latine/a/o residents among Oregon cities, benefited from the Bracero Program's recruitment of approximately 500,000 Mexican workers during WWII, boosting agricultural output and supporting essential transportation networks, pivotal to the Allied war effort. Presently, the US Census Bureau estimates that 61.2% of Woodburn's population is Latine/a/o, reflecting a source of pride for residents, with the Woodburn School District notably commended for its high graduation rates among Latine/a/o students.

Key Discussion Points and Findings:

- **High Cost of Gasoline-Driven Transportation**: Participants highlighted the significant financial burden of gas-powered vehicles, citing substantial weekly fuel expenses and maintenance costs that impact their daily commuting and budget.
- **Information Accessibility and Media Preferences**: Participants need accessible, multilingual information about EVs across social media platforms, underscoring the community's diversity and the importance of tailored communication strategies.
- **Concerns about the Practicality of EV Transition**: Participants voiced concerns about the practical challenges of adopting EVs, such as the availability of charging stations and repair facilities. This highlights the need for extensive infrastructure development and clear communication for a successful EV transition.

To support Latine/a/o Rural Community residents in the transition to TE, PGE can focus on:

- Make electric vehicle information available on popular social media platforms in multiple languages, including indigenous ones, to cater to diverse linguistic backgrounds.
- Develop financial assistance programs, including discounts and subsidized pricing for electric vehicles and maintenance, to address the high costs highlighted by participants.
- Prioritize expanding and enhancing the visibility of charging infrastructure, especially in remote and rural areas, to address concerns about charging station availability on long trips and in less accessible locations.
- Implement educational campaigns and workshops in community spaces and schools to inform potential users about electric vehicles, addressing participants' desires for more comprehensive knowledge and hands-on learning.
- Offer flexible payment options for electric vehicles, accommodating cash and card preferences to ensure payment methods are not a barrier to adoption.

Overall Sentiment:
Participants expressed concerns about the high costs of gas vehicles and EVs, highlighting the need for accessible and comprehensive EV education in multiple languages across various media. They also emphasized the importance of developing infrastructure, like charging stations and maintenance services, to ensure a successful transition to electric transportation.

LESSONS LEARNED AND RECOMMENDATIONS

WHAT WORKED WELL OVERALL

- Everything went smoothly largely due to the robust Community Engagement Liaisons support system and methods used to approach and recruit community members. CEL facilitators (Jamie Stamberger and Therese McLain), CELs management, and the liaisons all worked seamlessly to support each other effectively, especially when there were gaps or issues; we were able to find support and expertise to help each other.
- Conducting recruitment through Community Engagement Liaison Services (CELs) and their presence at engagement meetings significantly enhanced inclusivity and participation by building trust within culturally specific and underserved communities. More than intermediaries, these liaisons are community leaders, advocates, and respected figures representing diverse populations. Their role in bridging gaps is crucial; their multicultural and multilingual capabilities enable effective communication of project messages and the importance of participant feedback
- The team collaboration among PGE staff and the Thuy Tu Consulting team in developing PowerPoint presentations as well as questions and themes for both work groups and focus groups helped ensure a good experience for participants and helped the team gather useful insights to help meet PGE goals.
- Having PGE staff, CELs liaisons, and facilitators all attend the engagement sessions allowed us to answer participant technical questions, encourage trust and openness, and keep on track to gather essential insights. This collaboration demonstrated the project's commitment to be inclusive and

equitable. The CELs liaisons who supported community-specific focus group sessions included Latinx community: Romeo Sosa; API community: Jay Kiet; Indigenous/Tribal: Daria Bingham; BIPOC community: XiuYing Wong-Somadi; Black community: Michelle DePass; White multifamily/low-income/renters: Stevie Wilson).

- The first six focus groups and project flexibility were crucial in identifying gaps in recruitment and allowed the team to add engagement to address these gaps as the project progressed. Identifying gaps allowed us to engage three additional groups through focus groups, broadening the reach of engagement to meet PGE and HB 2165 goals. The three groups engaged in subsequent focus groups included:
    - Youth (18-25) multifamily households living in the Portland Metro area.
    - Seniors (53+) multifamily households living in the Portland Metro area.
    - Rural community – Spanish speakers living in Marion County.
- In working groups, interactive activities and break out rooms successfully engaged participants and provided new ways for them to connect and build relationships as well as define and articulate their ideas.
- The large recruitment coverage area was helpful for liaisons. It is easier to recruit when the coverage area is larger, which gives the liaisons more flexibility.
- Attractive participation honorariums were helpful. Focus group participants were offered $70 per group and Working Group members were offered $125 per session.
- Having a long recruitment time (eight (8) weeks) was beneficial, allowing liaisons to approach a broader community in various counties.
- The Zoom meeting format worked well in getting good participation. It is not easy to gather so many participants from different counties to participate in a focus group, so Zoom is the only solution. While some participants said they would prefer in-person meetings, most were also appreciated the convenience of online meetings.
- Liaisons speaking participant language(s), were able to explain the project before joining.
- The frequency of the working groups worked well.
- Duration and the number of participants (kept at around 12) work well. Small groups allow every participant to talk and listen better.

CHALLENGES

- Stipend distribution can be a headache when the vendor's (such as Fred Meyer) site experiences crashes or bug issues. This caused a delay in stipend processing. Also, there is no control over the safe delivery of mail, so lost mail with gift cards has occurred a few times. Following through with the participants took time and extra expenses. Since then, our office has advised most participants to accept online stipends such as Amazon or Fred Meyer e-cards to avoid lost mail issue.
- Prior knowledge of the cost of EVs deterred some participants from joining the FG. With good information provided during the focus groups, many participants have left with better understanding of the program. So, the training materials for year 2 should focus on positive messaging or slogans that can be easily remembered and interpreted by the public.
- It is difficult to include participants from so many different areas/counties and meet all the requirements or the timing. For example, there were times when some participants wanted to

participate, but the timing did not work for them; some may not know how to access the Zoom platform, bad internet connections, or mistrust of agencies that they did not know well.

- Quite a few participants had their cameras turned off for most, or all of, the online meetings, and some were doing other activities such as driving and shopping during the sessions. These are common challenges of connecting through a convenient online format. However, they do make it difficult to connect and build relationships with participants and ensure they are able to meaningfully contribute to the discussion.
- In the working group sessions, hearing detailed new information for the first time and then being asked to provide feedback right away was difficult for participants. Providing participants with information and some guiding discussion questions and asking them to review before the sessions may help participants participate more fully and provide more comprehensive insights.

RECOMMENDATIONS FOR FUTURE ENGAGEMENT

For Recruitment:

- **Continue careful participant selection via CELs liaisons:** Participant selection is crucial to ensure diverse perspectives are represented, significantly impacting group dynamics and data richness. Community engagement liaisons excel in forming these groups, facilitating broader insights and open discussions through effective outreach and thoughtful selection based on backgrounds and experiences.
- **Better messaging and materials:** Provide useful and positive messaging/materials to liaisons before their recruitment. This will support and enable them to present and recruit better. The info CELs received is well-crafted, but it was not created for those who cannot afford the price tag of current EVs, even though these are the communities we want to hear from. Money is always the first concern in people's minds. Affordability and long-term savings must be the first message that gets people's attention and makes them willing to consider switching to EV.
- **Focus the recruitment on a smaller area** rather than combining participants from all seven counties for each focus group. Zoom in on one area, such as a focus group for Polk County only, rather than trying to include participants from all seven counties. With a smaller area of focus, this opens up the possibility of having in-person focus groups in the future. In-person meetings always create a better rapport, sincerity, and impression for the public.
- **Recruit via in-person methods:** This will make it easier to gain trust from the communities.
- **Consider asking participants if they will be able to turn their video on during the Zoom meeting and if they will be able to stay in one place and focus on the call.** If these participation levels are not able to be met, suggest liaisons inquire more about the barriers to this type of engagement to understand the limitations. Suggest considering these as requirements during recruitment. Although some deviations from these expectations are acceptable, making these expectations clear in recruitment may lead to deeper engagement through the Zoom platform.

Logistics:

- **Continue collaboration and established workflows between PGE and Thuy Tu Consulting teams.** Planning meetings, review timelines and processes, practice runs, co-facilitation, and debriefs

worked well to produce a good participant experience, useful community insights, and team alignment.

- **Continue CELs Liaison's presence in focus groups**: Having a liaison present at each focus group promotes a welcoming environment, which fosters comfort and inclusivity. The liaison works with the facilitator to build rapport and ease among participants, enhancing openness and communication, helping break the ice, and encouraging meaningful interaction.
- **Continue PGE support with content preparation and presentations**: Successful community discussion and work groups necessitate detailed preparation, including a clear guide on electric vehicles (EVs), types of chargers, costs, and infrastructure. The PGE presenters, who were knowledgeable and empathetic, effectively engaged participants – primarily non-EV owners – in Q&As about the significant shift from fossil fuels to hybrid or battery electric vehicles.
- **Continue professional facilitation**: The facilitator plays a vital role in steering the discussion, fostering a comfortable sharing environment, and maintaining focus. Effective facilitation demands active listening, empathy, skillful probing, and balancing participant engagement. Professional facilitators like Therese McLain and Jamie Stamberger adeptly handle sensitive subjects, promote equal participation, and adjust tactics to keep the conversation productive.
- **Maintain flexibility to add or adjust engagement**: Retaining the ability to add engagement as needed to reach specific groups will help ensure future success of engagement efforts. The additional three focus groups added after the initial six allowed the team to further engage communities to ensure all were represented, including youth, seniors, and multi-family housing residents.
- **Keep the presentations short and simple.** Although the presentations contain all the relevant and useful information and are clear, for many participants, especially those who are not used to learning so much information in such a short period, especially the focus groups that were held during the dinner hour, it can be a challenge. Consider especially that many participants participate through their cell phones. Make presentation text large and very succint.
- **Include more interactive activities during work groups** such as, games, quizzes, breakout rooms.
- **Consider providing slide show presentations to working group participants several days before each session with the request that they review the information briefly before the session.** This will make it easier for participants to engage and will yield more robust insights.
- **Zoom is recommended** if geographic recruitment goals remain the same. To offer in-person, smaller geographic areas must be determined for recruitment.
- With future outreach efforts planned for rural communities, the team is open to in-person focus group facilitation where necessary (e.g., in areas with poor Wifi connections.)
- Recommend frequency, duration, and number of work groups and focus groups remain the same in year two.
- Provide stipends via electronic means only, no physical cards.

YEAR TWO PROPOSAL

LOOKING AHEAD: WHAT'S TO COME IN YEAR 2

Gleaning from year one's outcome, summary, recommendations, and lessons learned, the consultant team recommends maintaining the same number of focus groups (6) and working groups (4). In Year 2, we propose conducting these sessions predominantly remotely, utilizing platforms such as Zoom. However, we remain flexible and open to exploring in-person options if deemed most effective or necessary based on evolving participant circumstances. This approach ensures continuity while acknowledging the potential benefits of both remote and in-person engagement. The proposed timeline for year two is outlined below.

RECOMMENDATIONS FOR FUTURE ENGAGEMENT

Suggested goals for focus groups and working group engagement for year 2 include outreach to the following communities.

- Rural communities (renters, multi-family) living in Yamhill County. Cities include but are not limited to Yamhill, Dundee, Dayton, Amity, Carlton, Newberg, McMinnville and Sheridan.
- Rural communities (renters, multi-family) living in Polk County. Cities include but are not limited to Dallas, Falls City, Grand Ronde, Monmouth and Rickreall.
- Rural community (renters, multi-family) living in Marion County. Cities include but are not limited to Silverton, Salem, Mt. Angel, Sublimity, Woodburn, St. Paul and Aurora.
- Renters, low-income, multifamily living in EJ areas or in Columbia County. Cities include St. Helens, Scappoose, Rainier, Columbia City, Clatskanie, Vernonia, Warren, Deer Island, Prescott and Birkenfeld.
- Rural communities (renters, multi-family) living in Washington County. Cities include but are not limited to Hillsboro, Cornelius, Forest Grove, Banks and Gaston.
- Black Indigenous and People of Color (BIPOC) CBOs that serve low-income, renters and multifamily communities.

As most of these community groups live in rural areas, the most effective means of engagement would be in person; hence, traveling will be required, and there would be a high likelihood of the sessions being on location and in person.

PROPOSED ACTIVITIES FOR YEAR 2

1. **Project Management:**
   - Internal meeting to finalize budget and task with design and management team.
   - Kick-off team planning with PGE staff to understand current affairs and recent developments.
   - Review policy updates.
   - Understand the scope of work & delivery.
   - Address gaps & changes.
   - Quality control (QC) project content and design.

2. **Planning & Recruitment:**
   - Project kick-off with the internal team.
   - Planning and recruitment of liaison representatives from underserved communities.
   - Work group kick-off, including community building and setting guidelines.
   - Design guidelines for effective workgroup presentation/participation to subject matter experts (SMEs) who will be in attendance.
   - Advise on appropriate participant compensation levels and other points of consideration, including the frequency, duration, subject, and timing of workshops.
   - Solicit & workshop recruitment. Liaisons will reach out and conduct recruitment.

3. **Education Materials & Curriculum Development:**
   - Education materials and curriculum development
   - Provide guidelines for effective workgroup presentation/participation to SMEs who will be in attendance.
   - Develop course curriculum and materials.
   - Meet with PGE staff to present messaging, marketing approach, and workshop content.
   - Get approval for final material content from PGE staff.
   - Reporting, findings, analysis, evaluation and recommendations.
   - Finalize education materials and curriculum.
   - Reminder to participants of the focus group participation, explain rules, and set expectations.

4. **Workshops Development, Focus Groups & Implementation:**
   - Workshop engagement planning with facilitators.
   - Dry run with facilitators to cover potential issues and ensure a smooth run.
   - Language translation to cover the in-language needs of the focus group participants.
   - Work with facilitators to create agendas, slide decks, and supportive materials for each workshop.
   - Scheduling workshops for facilitators and securing space when needed.
   - Community Engagement Liaisons (CELs) liaisons will remind workshop participants to attend workshops or recruit to cover last-minute dropouts.
   - Facilitators will moderate workgroup sessions to ensure productive conversations and objectives are achieved.
   - CEL management will record each session and provide facilitators content for after-session reporting.
   - Administer stipend distribution accordingly. The stipend amount is set at $60/person per workshop.

- Purchase & distribute stipends to workshop participants.
- Dissemination workshop reports and summary with PGE and Stakeholders.
- Help support & develop draft evaluation criteria to produce success performance measures for year 3.

5. Summary & Recommendations:

- CELs team will provide notes and summary report from each session to compile an overall report.
- The consultant team will share draft summary and recommendations with PGE staff for comments and edits.
- Provide final summary & recommendations to workshop participants and PGE staff and stakeholders.

6. Annual Report:

- Contribute to the annual report on long term engagement strategy and workshop participation and engagement strategy.

CONCLUSION

The TE Underserved Community Engagement project by PGE effectively and comprehensively gathered insights and recommendations for better engaging communities and tailoring TE programs to meet their needs. Year 1 of this project engaged 98 diverse community members through four working group sessions and nine community-specific focus groups. The project gathered valuable feedback and actionable recommendations about meaningful and inclusive community engagement in TE, specific PGE TE programs and incentives, and involved diverse communities in visioning for the future of the PGE Clean Fuels Program.

The strongest themes emerging from Year 1 of engagement include:

- Recommend education and advertising through social media, in multiple languages, and through videos on YouTube and TikTok.
- Information for using chargers requested through video and in multiple languages. Many recommended using simple language-free universal graphics and some recommended education at the point of EV sale. Considering charging accessibility for people with disabilities and renters was also important.
- With regard to EV charging payment preferences, many said credit cards and apps are the most convenient for them, although many also said cash and that multiple payment methods should be available.
- Participants expressed many concerns about TE, the most prominent being high cost, followed by battery range anxiety, long charging times and maintenance, among others.
- The most requested support for communities in the TE transition were better financial incentives, a focus on shared transit over individual drivers, and increased community education about TE.

The success of Year 1 of this engagement project can be attributed to a collaborative team approach, thorough planning, compelling PGE presentations, skillful facilitation, and strategic participant selection. Key learnings from the engagement process emphasize the importance of coordination among community engagement liaisons, effective recruitment tactics, appealing participation

incentives, and the suitability of Zoom meetings for widespread participation. Other successful techniques included well-crafted questions and prompts, community engagement liaisons' presence during the focus group sessions, presenter proficiency and adaptability, efficient facilitation, and identifying outreach gaps. Project challenges helped identify areas for improvement in future engagements and included stipend distribution issues, prior EV cost knowledge barriers for participants, gaps in the target population, virtual participation challenges, and logistical constraints. To improve future phases of the engagement project, the engagement team emphasized the need for better and succinct messaging and materials, focusing recruitment efforts on smaller geographic areas, incorporating in-person liaisons for trust-building, clarifying participation expectations during recruitment, and simplifying presentations and providing them beforehand for enhanced participant comprehension. Maintaining the frequency, duration, and number of focus groups and work groups while addressing logistical challenges and refining recruitment strategies will be crucial for the initiative's continued success in its second year.

APPENDIX A: PARTICIPANT DEMOGRAPHICS

Group Format:	Date:	Community:	Residents of rental housing	Residents of multifamily housing	People of Color	People experiencing lower income	Tribal community members	Rural community members	Communities adversely harmed by environmental and health hazards	Multnomah County	Portland Metro	East Multnomah County	Clackamas County	Washington County	Marion County	Yamhill County	Columbia County	Polk County
Focus Group	1/4/24	Native American and Alaska Native	4	6	9	3	9	1	1	0	0	0	2	7	0	0	0	0
Focus Group	1/17/24	Black and African American	8	0	12	0	0	0	9	9	9	2	0	2	0	0	0	0
Focus Group	1/25/24	Hispanic and Latino/a/e	8	2	12	12	0	1	6	3	3	6	4	2	2	0	1	0
Focus Group	1/31/24	Asian and Pacific Islander 1	3	3	11	5	0	0	7	6	6	6	2	3	0	0	0	0
Focus Group	2/7/24	Asian and Pacific Islander 2	7	1	12	1	0	2	4	3	3	3	0	9	0	0	0	0
Focus Group	2/15/24	White (Low-Income/Renter)	10	0	0	8	0	0	9	8	8	2	2	0	0	0	0	0
Focus Group	3/26/24	Youth in Multi-family housing	9	9	1	9	0	0	8	8	7	0	0	1	0	0	0	0
Focus Group	3/28/24	Seniors in Multi-family housing	7	7	0	5	1	0	4	4	9	0	0	3	0	0	0	0
Focus Group	4/2/24	Rural Hispanic and Latino/a/e	8	1	8	8	0	8	0	0	0	0	0	0	8	0	0	0
		Totals	64	29	56	51	10	12	48	41	45	19	10	27	10	0	1	0
Working group	10/24/23	Intersectional	4	3	8	5	1	3	4	4	4	2	1	3	1	1	0	0
Working group	11/14/23	Intersectional	6	3	8	7	1	4	4	4	4	2	1	4	1	1	0	0
Working group	2/1/24	Intersectional	5	2	6	5	0	2	4	3	3	2	1	3	1	0	0	0
Working group	3/7/24	Intersectional	6	4	6	6	1	2	4	4	4	2	1	3	1	0	0	0
		Totals	6	7	10	7	1	3	4	5	11	6	3	5	1	0	0	0

Group Format:	Date:	Community:	Native American and Alaska Native	Black or African American	Asian	Hispanic/Latino/a/e	Pacific Islander	White	Immigrant/refugee	Seniors (53 +)	Youth (20-25)	People with Disabilities	Homeowners	Community Resilience	Health & Wellness	Economic Development	Housing	Community Education	Energy Assistance	Direct Services	PCEF Grantee
Focus Group	1/4/24	Native American and Alaska Native	9	0	0	0	0	0	0	1	0	0	2	3	0	0	0	0	0	0	0
Focus Group	1/17/24	Black and African American	0	12	0	0	0	0	2	0	2	0	4	2	0	0	0	0	0	0	0
Focus Group	1/25/24	Hispanic and Latino/a/e	0	0	0	12	0	0	12	0	0	0	4	3	0	0	0	0	0	0	0
Focus Group	1/31/24	Asian and Pacific Islander 1	0	0	11	0	0	0	11	0	0	0	5	1	0	0	0	0	0	0	0
Focus Group	2/7/24	Asian and Pacific Islander 2	0	0	9	0	3	0	9	0	1	0	5	0	0	0	0	0	0	0	0
Focus Group	2/15/24	White (Low-Income/Renter)	0	0	0	0	0	10	0	0	1	0	0	0	0	0	0	0	0	0	0
Focus Group	3/26/24	Youth in Multi-family housing	0	0	0	1	0	8	1	0	9	0	0	0	0	0	0	0	0	0	0
Focus Group	3/28/24	Seniors in Multi-family housing	1	0	0	0	0	6	0	7	0	0	0	0	0	0	0	0	0	0	0
Focus Group	4/2/24	Rural Hispanic and Latino/a/e	0	0	0	8	0	0	8	0	1	0	0	0	0	0	0	0	0	0	0
		Totals	10	12	20	21	3	24	43	8	14	0	20	9	0	0	0	0	0	0	0
Working group	10/24/23	Intersectional	1	0	5	2	1	1	8	2	0	0	5	0	1	0	0	0	0	0	0
Working group	11/14/23	Intersectional	1	0	5	2	1	2	8	2	0	0	5	0	1	0	0	0	0	0	0
Working group	2/1/24	Intersectional	0	0	4	2	0	2	6	1	0	0	3	0	1	0	0	0	0	0	0
Working group	3/7/24	Intersectional	1	0	4	2	0	2	6	2	0	0	3	0	1	0	0	0	0	0	0
		Totals	1	0	5	2	1	2	8	2	0	0	5	0	1	0	0	0	0	0	0

APPENDIX B: DETAILED FOCUS GROUP ANALYSIS

NATIVE AMERICAN AND ALASKA NATIVE FOCUS GROUP

PGE TE – Focus Group Summary Report with Native Americans/Indigenous Groups
Date of FG: 1/4/2024 **No. of Participants:** 10
PGE Presenter: Kelly Yearick
Name of Facilitator: Therese McLain
Notetaker: Duyen Frederiksen
Time Started: 5:35 pm

SUMMARY OF PGE PRESENTATION

The following bullet-point summary outlines PGE's presentation and role as a leading electric utility in Oregon, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions.

1. Overview of PGE:
- Largest electricity supplier in Oregon, serving about half of the state's population.
- It is over a century old.
- Operates in 50 cities across seven counties in Oregon.
- Employs nearly 3,000 individuals.
- Functions as a private company and a public utility.
- Governed by a board of directors and corporate officers.
- Regulated by the Oregon Public Utility Commission.

2. Decarbonization Goals:
- Aim to reduce greenhouse gas emissions by 80% by 2030.
- Target to achieve a 100% reduction in greenhouse gas emissions by 2040.

3. Electrification Initiatives:
- Prioritizes electrification beyond homes, including electric vehicles (EVs), distributed solar, battery storage, and building electrification.
- Focus on providing reliable, affordable, and safe electricity.

4. Transportation Electrification (TE):
- The transition from internal combustion engines to EVs, including buses, trucks, and bikes.
- Electricity for EVs is increasingly sourced from renewable energies like wind, water, and solar.
- Electrifying transportation is critical for Oregon's air quality and climate goals.

5. Role in Transportation Electrification:
- Plans for future EV load demand.
- Develop transparent EV-specific rates.

- Research and test technologies for load management from renewables and electrified transportation.
- Supports the transition to electrified transportation systems.

6. Customer Engagement and Segmentation:
- Engages with residential EV drivers and non-drivers.
- Partners with non-residential entities like multi-family properties and businesses.
- Supports private and public fleets in transitioning to electric.

7. Focus Group Purpose:
- Amplifies diverse perspectives, especially from underserved communities.
- Aims to develop equitable electrification policies and technologies.
- Feedback will be compiled, analyzed, and recommendations in a final report product to PGE.

8. Transportation Electrification Insights:
- TE includes various electric vehicle types, from tractors to buses.
- Electrification significantly impacts greenhouse gas emissions and local air quality.
- Electric vehicles offer economic advantages like lower fuel costs and maintenance.

9. Types of Electric Vehicles:
- BEVs (Battery Electric Vehicles) and PHEVs (Plug-in Hybrid Electric Vehicles).
- BEVs operate solely on electric power.
- PHEVs combine electric power with a gas engine.

10. EV Range and Charging:
- The average BEV range exceeds 200 miles per charge.
- PHEVs offer flexibility with electric range and extended gas-powered travel.
- Charging systems include Level 1 (slow, home charging), Level 2 (faster, public and home charging), and Level 3 (DC fast charging).
- Public charging station availability is increasing in Oregon.

Post-Presentation's Questions and Answers Portion

1. *Participant question:* With the public charge, is it for folks who live in a college or dormitory setting that don't have access to the electrical charge?
   PGE response: Public charging is for anyone. However, it's most necessary for people who don't have the option to charge at home. About 90% of people who drive EVs charge at home. For people who live in multi-family properties or maybe renters, for example, and don't really have a choice of where they park their car or, for example, and don't really have a choice of where they park their car or whether there's charging or electricity there, public charging is going to be their go-to.

2. *Participant question:* What happens when there are power outages the grid goes down, or the grid can't handle the charging volume? This is not as much of an issue in our area in Oregon, but in California, they have grid problems.
   PGE response: It's a great question, but a very complex one in that, you're right, it's not something that we anticipate as an issue for us in Oregon, at least not in the immediate future. We don't see [this being an issue], and, across the country, there is, in the short term, no concern that the overall load from EVs will overwhelm the grid or be more than it can support.

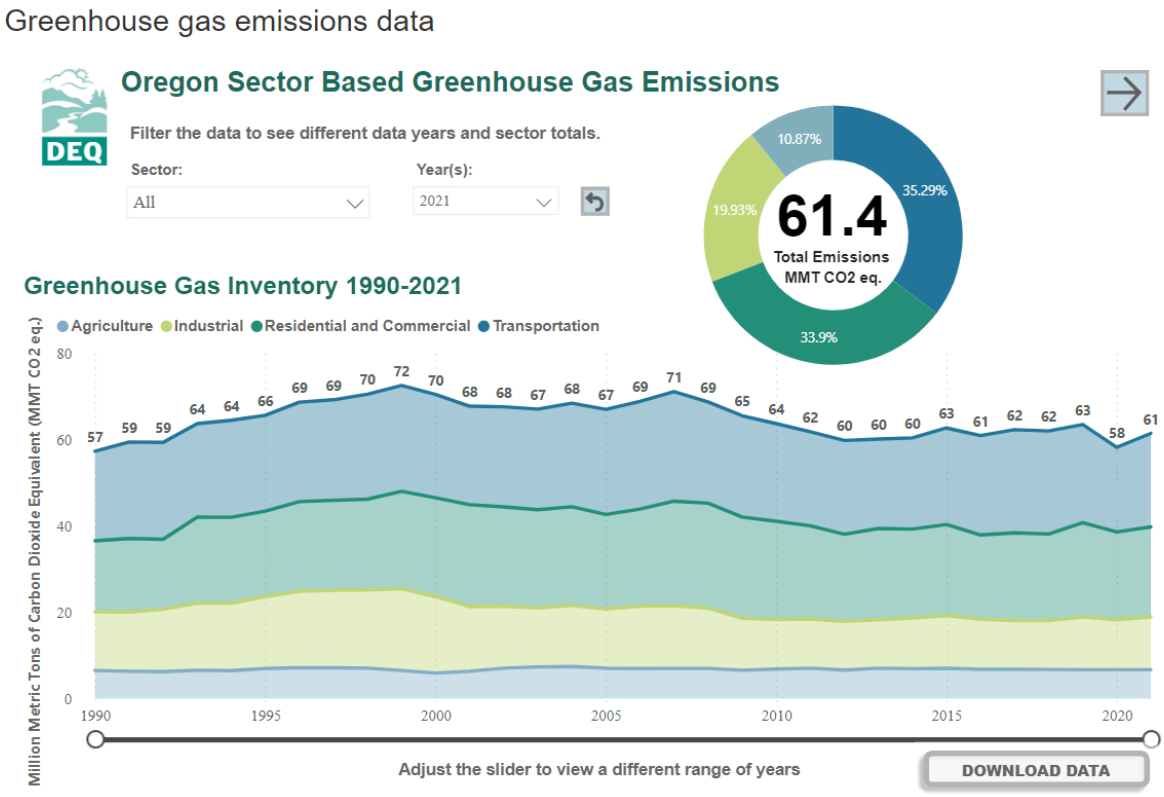
However, to your point, when there are outages or there's a need to cut power for whatever reason, whether that's public safety power shut off, for example, I would say because the batteries in the EVs are getting so much larger, you do not need to charge every day, maybe once a week you would need to charge. So right now, it's not a major concern for people that if the power went out for even a full day or more, they would be stranded or unable to get where they needed to go. Also, many companies and even utilities are exploring the opportunity to leverage the energy stored in those batteries to support the grid in those instances. It's pretty far off in terms of the visibility of that, but there could be a day when there's going to be an outage, and rather than my home losing power, I could plug my car in and have it power my home for, you know, a short period.

3. *Follow-up participant question:* Over the years. Our energy rates are going up. And with this shift into electric vehicles, pulling more power off the grid, what will that do to our energy prices? It's probably too early to have any idea of that. Still, I would presume everybody struggling right now lives paycheck to paycheck, and that's a big concern of mine, not just for myself but for family members and elders living off limited income.
   PGE response: PGE is not seeing any rate increases in the short term due to EV adoption. I think the extra load EVs require is being paid for by those consuming that energy, by the current owners.

Additional participant questions/comments

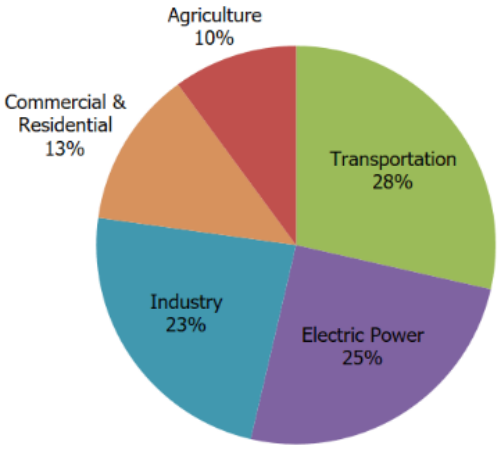
1. You mentioned fewer greenhouse gasses, but what about the amount of gasses used to create the EV cars and when it's time to get a new engine - how is it being recycled?
   PGE response:
   - Greenhouse Gas Emissions – I like to use the Union of Concerned Scientists EV tool which is regularly updated to reflect the carbon emissions of driving an EV depending on where you live and charge or fuel your vehicle. In the PNW, where much of our electricity comes from renewable sources like hydropower and wind, EVs can be fueled using much less emissions than gas cars. As a disclaimer, this tool estimates carbon emissions from EV charging but doesn't include vehicle or battery manufacturing or disposal pollution. Those emissions vary by vehicle but tend to be higher for electric vehicles than gasoline-powered ones, as battery manufacturing is energy and resource-intensive. Over the vehicle's lifetime, however, the global warming emissions benefits of driving on electricity far outweigh the emissions costs of vehicle manufacturing; most EVs "payback" their production emissions within one or two years of driving (about 20,000 miles driven), a period that will shorten as electricity grids get cleaner.
   - EV End-of-life and Battery Recycling – Given the higher emissions associated with producing EVs, we must get the most out of the batteries and the materials that go into producing them. Many governments are increasingly mandating that auto and battery manufacturers create programs to keep EV batteries out of landfills by extending their life through recycling or repurposing. Batteries are sometimes into their primary components, which can be reused in other applications. Car batteries can also be used for energy storage once they've surpassed their usable life as car batteries. Finally, some automakers, like General Motors, are repackaging usable components from old car batteries and selling refurbished car batteries to EV owners who need a replacement. This can drastically reduce the cost of replacing the battery in EV once the original battery has surpassed its usable lifetime (~80,000-100,000 miles).

2. What's the actual amount/% of emissions from vehicles exposed to the environment compared to other items/places/works/buildings letting off gasses/emissions?
   PGE response:
   Provided below is a snapshot of the breakdown of emissions in Oregon, provided by Oregon Department of Environmental Quality (more info/data here: Department of Environmental Quality : Oregon Greenhouse Gas Sector-Based Inventory Data : Action on Climate Change : State of Oregon)



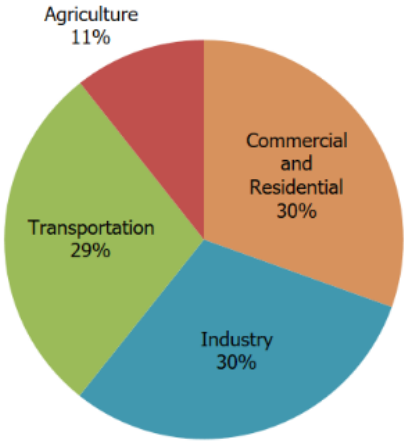
Emissions in the U.S. are tracked by the U.S. Environmental Protection Agency, summarized below (more info/data here: Inventory of U.S. Greenhouse Gas Emissions and Sinks | US EPA)

U.S. Greenhouse Gas Emissions by Economic Sector in 2021



Total U.S. Greenhouse Gas Emissions by Economic Sector

Image to save or print



Total U.S. Greenhouse Gas Emissions by Economic Sector and Electricity End-Use

Image to save or print

Note: All emission estimates from the *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2021*. Greenhouse gas emissions from commercial and residential buildings increase substantially when emissions from electricity end-use are included, due to the relatively large share of electricity use (e.g., heating, ventilation, and air conditioning; lighting; and appliances) in these sectors. Also, if emissions from electricity use are allocated to the industrial end-use sector, industrial activities account for a much larger share of U.S. greenhouse gas emissions. Land Use, Land-Use Change, and Forestry in the United States is a net sink and offsets 12% of these greenhouse gas emissions. This net sink is not shown in the above diagram.

3. Will there be a "portable charger" for your electric car... like for your phone and tablets..?
    a. And just the thought of how our world is going, it's crazy. The next 2-3 generations will have to be the ones who save our world… Wish we could have just been riding horses.
    PGE response:
    Most EVs come with a portable charger that can be taken from place to place. Since all EVs can be charged with a standard 110v outlet, these portable chargers can be really handy. For portable chargers that are equipped to work with a 240v outlet, it would require access to that sort of outlet. Some EV owners choose to have these installed in their homes, but these portable chargers are less 'portable' due to that requirement. There are also a number of solutions available in the private market currently.

4. I get around, and I have an SUV, but I also travel to communities where they don't have charging stations.
   PGE response:
   While PGE is supporting charging station installations within its service area, Oregon Department Of Transportation is committed to investing in charging infrastructure across Oregon through the Federal National Electric Vehicle Infrastructure (NEVI) program, providing over $100 million total toward EV charging infrastructure over the next several years, and recently launched a Community Charging Rebates Program to facilitate development of Level 2 charging in public venues and multi-family housing, prioritizing rural and disadvantaged communities.
   - For NEVI-funded stations, the NEVI program has rules about EV charging station locations:
     - Stations must be no farther than 50 miles apart from each other.
     - Stations must be located within one mile of an interstate or highway exit.
     - Stations must be placed along roads designed as "EV alternative fuel corridors.

     Oregon has 11 roads designated as an EV alternative fuel corridor: Interstates 5, 82, 84, 205, and 405; US Highways 20, 26, 95, 97, and 101; and OR Highway 42.

FOCUS GROUP QUESTIONS AND FEEDBACK

Summary

The focus group aimed to gather diverse perspectives, especially from underserved communities like the Native American/Indigenous groups, to identify unique barriers and develop inclusive electrification policies and technologies. The feedback would be analyzed qualitatively and synthesized into a report for PGE.

Participants discussed various topics, including the best ways to educate the Native American communities about EVs and charging stations. They suggested using QR codes for easy access to instructional videos, physical demonstrations for those less technologically inclined, and step-by-step culturally sensitive graphics with adequate lighting and large print. Some proposed having video ads at charging stations, similar to the video screens at gas pumps, or integrating instructional videos into the car's display system.

Concerns were raised about the environmental implications of EVs, the life cycle of batteries, and the emissions associated with producing EVs. Participants expressed skepticism about the overall environmental benefits of EVs and emphasized the need for more research and education on these topics.

Financial considerations were also a significant topic. Participants preferred various payment methods for EV charging, including cash, cards, phone apps, and auto transfers. They stressed the importance of making all payment options available to accommodate different preferences and circumstances.

Regarding the transition to EVs, participants shared concerns about range anxiety, the availability and reliability of charging stations, vehicle safety, and the environmental impact of mining for battery materials. They also questioned the responsibility of corporations in reducing greenhouse gas emissions and suggested that efforts should include electrifying corporate fleets.

Participants used various forms of transportation and had mixed experiences with public transportation. They highlighted the importance of involving youth and elders in discussions about TE and ensuring that the benefits of switching to EVs are clear and relevant to their communities.

Effective communication methods included local news, social media, community newsletters, going to community events like powwows, and word of mouth. Participants emphasized the need for information to be presented in layman's terms, using graphics and multiple languages to ensure accessibility.

Overall, the focus group provided valuable insights into the concerns, preferences, and informational needs of the Native American communities regarding transportation electrification. These insights will inform PGE's efforts to support an equitable and inclusive transition to electric transportation.

Sentiment Highlights on the Main Themes

Based on the provided participant responses, the data can be organized into four primary themes: Current Transportation Landscape, Education and Accessing Information, Financial Considerations, and Overall Transition to Electric Vehicles (TE). Each theme is accompanied by imparted sentiments expressed by the participants, categorized as positive, negative, or neutral.

Theme: Current Transportation Landscape
Sentiment: Neutral

- "I drive, and I use public transportation. I don't mind public transportation. It's a lot cheaper, but driving is more convenient. With little kids, it's hard to get everybody on public transportation sometimes."
- "I currently drive, but I have been a person who has used all modes of transportation. But currently, I'm driving, and for that part of the roads, it meets my needs in that area."
- "I drive a truck. It is a gas vehicle. I live in a very rural area that meets my needs. There is no public transportation."
- "I work Downtown PDX. I use public transportation. My family drives here within Washington County."
- "I use a gas-fuel car. My daughter uses public transportation to get to school."
- "I use public transportation when I can, but I also drive."

Theme: Education and Accessing Information
Sentiment: Neutral

- "I watch the news. Local channel news and then, of course, social media plays a big part in everybody's lives, but you know, for me, that's one of the things, and then podcasts and also newsletters."
- "A podcast like in between little breaks. Newsletters are another great way."
- "I look at my community newsletter through the mail. It's something that I'm expecting; I do a really good job checking my emails."
- "Word of mouth. Good feedback in person."
- "Instagram."
- "Emails and ads on social media. Instagram."
- "Community organizations - their email listserv/newsletter they send out weekly/monthly. Host a community dinner to provide education and gather feedback."

- "One thing that I think is easy and accessible is using QR codes."
- "Having little square graphics step-by-step on how to use it."
- "One thing I think about is those annoying little video ads at the gas pumps."
- "Most newer cars, especially the electric cars, seem to have a massive display somewhere on the inside, like a big touch screen or whatever."
- "When you purchase the vehicle, can't they show you how to charge, too? To be more informed on that."
- "Thinking about in-person stuff, just this past week, I got to go to one of the biggest pow-wows they have here in this area."
- "I would say just talk with the people, the community, get to know them as a person and not just like boss and workers."

Theme: Financial Considerations
Sentiment: Neutral

- "I would say I use cash for everything because I'm a server, but not many places take cash."
- "For me, it's by cards (credit and debit), by tap pay, or by my mobile phone apps."
- "I use cards and my phone as well."
- "My most common and easiest one is a card, but I've used all the other ones mentioned before and sometimes even apps."
- "The other thing I use too is the autopay set up with my recurring payments due, so I don't even see that."
- "I used to use the hop pass when I rode the MAX. I liked it. It was much easier than trying to pay the machine before the MAX came; if it was right there, you tap and go; it was much better than the app feature."
- "Make all the options available because a lot of people don't have access to bank accounts or don't have the technology on the phone to just tap and go."
- "I agree with all options, by all means, any way to pay for charging."
- "I agree because I've used all forms of payments."

Theme: Overall TE Transition
Sentiment: Neutral to Negative

- "For me, I've already weighed the options. I have several things. One was, of course, you know, I need to get to Arizona ASAP. I'm not going to be stopping for charging."
- "My concern is that until there are power stations, charge stations everywhere, I would be concerned if you pulled up to one of those stations and it was out of order, or somebody vandalized it, kicked it over."
- "Vehicle safety. For electric vehicles, they're not built the same as older model cars."
- "One of the things that I've heard, and I think it brings up a good point, and if we did have youth here who are really in tune with the environment, a lot of these students that are in college, they know the risk of electric cars."
- "I think selfishly, if I were gonna get an electric car, I would like to have the fast charger thing installed at home."
- "Nothing would make me switch to the EV market. It's just too new to me."
- "Why are we not trying to electrify the Amazon trucks and vans?"
- "I think discussing pros and cons. The fact of the matter is, most of what we have here in the United States is brought in on container ships and trucked (tractor-trailer, rail, etc.)."

In summary, participant responses reflect various experiences and opinions on transportation, education, financial considerations, and the transition to electric vehicles. The overall sentiment is predominantly neutral, with participants expressing practical considerations and concerns about each theme.

SWOT Analysis

Based on the focus group participant's verbatim responses (see page 11), a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was created for each of the main themes that PGE identified as key: education and access to information, financial considerations, overall transition to transportation electrification (TE), and an emerging theme for the Native American communities: concerns about the TE infrastructure and policies.

Education and Access to Information:

Strengths:

1. PGE's proactive approach to educating communities about TE and EV usage.
2. Use of QR codes and visual aids for easy access to instructions on charging stations.
3. Availability of multilingual resources to cater to diverse communities.
4. Potential for community outreach through local events and organizations.
5. Interest in leveraging technology (e.g., instructional videos) for education.
6. Recognition of the need to involve youth and elders in the education process.

Weaknesses:

1. Technological barriers for some community members, particularly elders.
2. Limited access to smartphones among some adults hinders the use of QR codes.
3. Concerns about the clarity and visibility of instructions at charging stations.
4. A need for more in-person demonstrations and education for certain groups.
5. Reliance on community members to disseminate information, which may not be consistent.
6. Skepticism about the environmental benefits and implications of TE.

Opportunities:

1. Expansion of educational outreach at community events and through local organizations.
2. Development of user-friendly, multilingual educational materials.
3. Partnerships with schools and colleges to educate younger generations.
4. Utilization of social media and digital platforms to reach a broader audience.
5. Creation of engaging content, such as videos and podcasts, to explain TE benefits.
6. Inclusion of TE education in community newsletters and local news outlets.

Threats:

1. Misinformation and doubts about the effectiveness and benefits of TE.
2. Potential resistance to change among certain community members.
3. Language and cultural barriers that may impede understanding.
4. Technological advancements outpacing the community's ability to keep informed.
5. Skepticism about the long-term environmental impact of EVs.
6. Reluctance to adopt new technologies due to concerns about reliability and safety.

Financial Considerations:

Strengths:

1. Awareness of the need for diverse payment options for EV charging.
2. Recognition of the financial benefits of TE, such as lower fuel costs.
3. Interest in financial incentives and rebates for EV adoption.
4. Understanding of the economic advantages of fewer moving parts in EVs.
5. Acknowledgment of the potential for reduced maintenance costs with EVs.

6. PGE's commitment to not increasing rates due to EV adoption in the short term.

Weaknesses:

1. Concerns about the affordability of EVs and charging infrastructure.
2. Anxiety about the cost implications of installing home charging stations.
3. Uncertainty about the cost of public charging and its variability.
4. Financial barriers for low-income and underserved communities.
5. Lack of clarity on the long-term financial impact of TE on energy prices.
6. Concerns about the cost of recycling and disposing of EV batteries.

Opportunities:

1. Development of affordable payment plans for EV charging.
2. Expansion of incentive programs for EV purchase and charging installation.
3. Education on the long-term cost savings of EV ownership.
4. Collaboration with financial institutions to provide loans or grants for TE.
5. Exploration of community-based funding models for TE infrastructure.
6. Advocacy for state and federal policies that support financial accessibility to TE.

Threats:

1. Economic disparities may limit access to TE for some communities.
2. Potential increase in energy prices due to higher demand from EVs.
3. Risk of financial strain on individuals living paycheck to paycheck.
4. Uncertainty about the future costs associated with TE technology.
5. Perception of TE as a financial burden rather than an investment.
6. The possibility of insufficient funding for necessary TE infrastructure.

Overall Transition to Transportation Electrification:

Strengths:

1. PGE's ambitious goals for decarbonization and greenhouse gas reduction.
2. Increasing availability of different types of EVs, including plug-in hybrids.
3. Growing public charging infrastructure within the PGE service area.
4. Recognition of the need for equitable, reliable, and accessible charging.
5. Interest in electrifying various modes of transportation beyond personal vehicles.
6. Potential for TE to improve local air quality and reduce tailpipe emissions.

Weaknesses:

1. Range anxiety and concerns about the availability of charging stations.
2. Safety concerns regarding lighter materials used in EVs.
3. Lack of TE infrastructure in rural areas and for long-distance travel.
4. Resistance to change and skepticism about the environmental impact of EVs.
5. Concerns about the recycling and disposal of EV batteries.
6. Limited experience with EVs among focus group participants.

Opportunities:

1. Expansion of charging infrastructure to rural and underserved areas.
2. Development of fast-charging technology to alleviate range anxiety.
3. Education on the environmental and health benefits of TE.
4. Involvement of youth in the conversation about TE's future.
5. Exploration of vehicle-to-grid technology to support the energy grid.
6. Advocacy for policies that support the transition to TE for all communities.

Threats:

1. Potential grid capacity issues with increased EV adoption.
2. Vandalism and safety concerns at public charging stations.
3. The environmental impact of mining and manufacturing EV components.

4. Resistance from communities that rely on traditional transportation methods.
5. The perception of TE as a responsibility and shifting that responsibility from individuals to corporations.
6. The possibility of technological obsolescence as TE evolves.

Concerns about TE Infrastructure and Policies:

Strengths:

1. PGE focuses on planning for future EV load demand and rate development.
2. Interest in leveraging EV batteries to support the grid during outages.
3. PGE's role in supporting businesses and cities to meet emissions goals.
4. Efforts to integrate EVs efficiently into the grid.
5. PGE's commitment to not increasing rates due to EV adoption in the short term.
6. The potential for TE to contribute to state and regional greenhouse gas reduction targets.

Weaknesses:

1. Concerns about the reliability of the grid and power outages affecting EV charging.
2. Uncertainty about the long-term impact of EV adoption on energy prices.
3. Questions about the recycling and disposal of EV batteries.
4. Lack of clarity on the proportion of emissions from vehicles versus other sources.
5. Concerns about the environmental impact of sourcing materials for EV batteries.
6. Limited access to charging for residents in multi-family properties or dormitories.

Opportunities:

1. Research and testing of technologies to manage renewable energy and EV load.
2. Exploration of portable charging solutions for EVs.
3. Development of policies that ensure equitable access to TE.
4. Engagement with corporations to electrify their fleets.
5. Creation of incentives for the development of TE infrastructure.
6. Collaboration with community organizations to address TE concerns.

Threats:

1. Potential for TE initiatives to be seen as insufficient or misguided.
2. Risk of TE being perceived as a burden on low-income and elderly populations.
3. The possibility of insufficient investment in TE infrastructure.
4. Concerns about the long-term sustainability of TE materials and technologies.
5. Resistance to TE due to cultural, economic, or practical reasons.
6. The perception is that corporate interests are pushing TE at the expense of individuals.

Unresolved Key Issues

1. Environmental and Health Implications of EVs:
    - Participants expressed skepticism about the environmental benefits of EVs, citing concerns about the mining required for battery materials and the potential unknown environmental implications of widespread EV adoption.
    - There is a need for more education on the life cycle of EV components, especially batteries, and how they are recycled or disposed of after use.
2. Cultural and Elder Education:
    - There is a significant need to involve elders and indigenous communities in education, ensuring that information is culturally relevant and accessible.
    - Participants suggested more focus groups in cultural settings and unity talks among BIPOC/under-represented communities to address transportation needs, especially for elders who struggle with public transportation.
3. Language and Communication Barriers:

- While English is commonly spoken, there is a need to consider multilingual education and communication strategies to reach non-English speaking members of under-represented communities.

4. Access to Information and Training:
    - Participants recommended using QR codes, instructional videos, social media such as Facebook, YouTube, podcasts, and Instagram, and in-person demonstrations to teach EV chargers.
    - There is a concern about the accessibility of these educational tools for those who are technologically challenged, such as the elderly or those without smartphones.
5. Financial Concerns:
    - Participants are worried about the cost implications of EV adoption, both in terms of the vehicle price and the potential impact on energy rates.
    - There is a need for clear information on financial incentives, rebates, and the overall cost-benefit analysis of owning an EV.
6. Infrastructure and Accessibility:
    - Concerns were raised about the availability and reliability of charging stations, especially in rural areas or for those who travel long distances.
    - Safety at charging stations, especially for women and during night-time, was mentioned as a concern.
7. Youth Engagement:
    - Participants emphasized the importance of involving youth in discussions about EVs, as they are more in tune with environmental issues and the future of transportation.
8. Payment Options for Charging:
    - There is a need for various payment options at charging stations to accommodate those who do not use credit cards or smartphones.
9. Range Anxiety and Vehicle Suitability:
    - The concern of not being able to travel long distances without frequent stops to recharge (range anxiety) is a significant barrier to EV adoption.
    - Participants also questioned the suitability of EVs for all types of transportation needs, such as heavy-duty vehicles or those used in rural areas.
10. Corporate Responsibility:
    - There is a perception that the responsibility for environmental sustainability is being pushed onto individuals rather than corporations, with questions about what larger companies are doing to transition their fleets to electric.
11. Market Developments and Personal Circumstances:
    - Participants are looking for specific changes or developments in the EV market that would make the transition more appealing, such as improved range, affordability, and infrastructure.
12. Effective Communication Channels:
    - There is a need to identify the most effective communication channels for reaching under-represented communities, including traditional media, social media, community meetings, and community newsletters.
13. Transition Support:
    - Participants seek support from organizations like PGE in transitioning to electric transportation, including clear information on the benefits and potential drawbacks.

These unresolved issues highlight the need for targeted education, improved infrastructure, financial incentives, and inclusive communication strategies to address the concerns and barriers under-represented communities, like the Native American communities, face when transitioning to transportation electrification.

Top Ten Recommendations

Based on the Native American Communities focus group discussions and feedback themes, here are the top ten recommendations for PGE to consider in their efforts to support transportation electrification (TE) among under-represented communities:

1. **Diverse Educational Materials**: Provide educational materials in multiple languages and written in easy-to-read layman's terms, including English and Spanish, and ensure they are accessible in digital and physical formats to cater to varying levels of technological proficiency. Make use of graphics, ensuring they are culturally sensitive.
2. **Hands-On Demonstrations**: Offer in-person demonstrations and tutorials on using EV chargers, particularly for elders and those who may be technologically challenged.
3. **Accessible Information**: Utilize QR codes for easy access to instructional videos, but also provide printed step-by-step instructions at charging stations for those without smartphones. Utilize graphics that resonate with community members.
4. **Community Engagement**: Engage with community organizations to disseminate information through newsletters, email listservs, focus groups, and having a resource booth at community events, dinners, and powwows—partner with Native American programs and colleges and universities. Examples of organizations that participants belong to are the Native American Youth & Family Center (NAYA), NARA Northwest, Indian Health Board Portland, and Trillium Healthcare.
5. **Financial Transparency**: Clearly communicate the financial benefits and costs associated with EV ownership, including information on incentives, rebates, and long-term savings on maintenance and fuel.
6. **Payment Flexibility**: Ensure that public EV charging stations offer multiple payment options, including cash, card, mobile payments, and possibly an option to add charges to the PGE bill to accommodate different preferences and capabilities.
7. **Address Range Anxiety**: Educate potential EV owners about the advancements in EV range capabilities and the growing availability of charging infrastructure to alleviate concerns about long-distance travel.
8. **Safety and Reliability**: Address concerns about vehicle safety, charging station reliability, and the need for well-lit, secure charging locations, especially for women and those traveling alone, particularly when charging at night.
9. **Environmental Impact Education**: Provide transparent information about the environmental implications of EVs, including the life cycle of batteries and the impact of sourcing materials for EV production.
10. **Corporate Responsibility**: Advocate for and support the electrification of corporate fleets, including delivery trucks and public transportation, to emphasize shared responsibility between individuals and corporations in reducing greenhouse gas emissions.

These recommendations aim to address the concerns, needs, and preferences of the Native American communities regarding transportation electrification and to facilitate a more inclusive and equitable transition to electric vehicles.

BLACK AND AFRICAN AMERICAN FOCUS GROUP

PGE TE – Focus Group Summary Report with Blacks/African American Groups
Date of FG: 1/17/2024 **No. of Participants:** 12
PGE Presenter: Kelly Yearick
Name of Facilitator: Therese McLain
Notetaker: Duyen Frederiksen
Time Started: 5:35 pm

PGE PRESENTATION

PGE provided transportation electrification (TE) and charging infrastructure presentations to the African American focus group participants, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions.

The presentation is consistent across all the nine TE focus groups and can be found in the ***"Summary of PGE Presentation."***

Post-Presentation's Questions and Answers Portion

1. Participant question: When people put chargers in their homes, what are they paying? A monthly fee or what are they being charged for the equipment?
   PGE response: It sort of depends. A lot of EV owners don't install any equipment. Most electric cars actually come with a charging station that you can just plug right into the wall with either a 110 or a 240-volt outlet installed where you park your car, and in that case, you would just pay an electrician to install that outlet for you. In other cases when people do choose to install a charging station, those stations cost a few $100 up to as much as a thousand dollars because of the different features that some companies like to offer. But once you purchase the charging station and get it installed, you're not paying any sort of recurring fees on top of that. You would just be paying for the electricity that you use.

2. Participant question: How soon do you think PGE will roll this out to the public? And does PGE already have anything set in place right now?
   PGE response: We have some programs to support people who are interested in installing charging stations. For example, we have a rebate program that could bring down the cost of that charger purchase that I just mentioned by either $300 or up to a thousand dollars for income-qualified customers. That's one program we have, I could list off several others as well, but given the time limits we have here tonight, I'm happy to follow up with some more information about those.

3. Participant question: Does PGE own any charging stations at this moment?
   PGE response: Yes, PGE owns and operates a handful of chargers called electric avenues. These are fast charging stations. We have about six of them across our service area.

4. Participant question: What programs have been set up for low-income people?
   PGE response: I will happily follow up with more information because I can only do it so much justice since other members of my team run those programs, and I want to make sure I get you the best information on that. But we have some.

Additional participant questions/comments

Verbatim question related to chargers:

1. And how many are they gonna have at one place to charge your car?
   PGE response:
   - PGE owns and operates charging stations across its service area through its Electric Avenues and Neighborhood Charging program. At its 7 Electric Avenue locations, there is charging available to charge up to 6 cars at one time. These chargers are predominantly fast charging stations. Additionally, PGE's Neighborhood Charging program is increasing charging access for people who typically park on the street or don't have garages or driveways for provide their own charging access. So far, PGE has installed 4 EV chargers throughout Portland, with many more to be added in 2024. They are being installed on utility poles in the right-of-way to provide charging access for cars parked on the street in residential areas.

2. What programs have been set up for low-income people?
   PGE response:
   - To help bring down the cost of purchasing and installing a Level 2 charger in your home, PGE offers several rebates. This rebate is $300 for all customers but is up to $1,000 for income-qualified customers. Additionally, for customers requiring an electrical panel upgrade at the time of the charger installation, a rebate of up to $1,000 for all customers or up to $5,000 for income-qualified customers is available. More info here.
   - PGE also offers an Income-Qualified Bill Discount program, which allows for a monthly discount of up to 60% off your energy use. More info here.

FOCUS GROUP QUESTIONS AND FEEDBACK

Summary

The focus group's discussion on their current transportation landscape highlighted varied experiences and concerns regarding transportation choices, especially in the context of electrification and charging infrastructure. The current and predominant mode of transportation among participants is personal vehicle use, driven by factors such as convenience, family responsibilities, and concerns over public transportation.

A participant mentioned using multiple modes of transportation, including driving, buses, ride-sharing services, and medical transportation, choosing based on convenience and availability. However, they expressed dissatisfaction with the cost variability of services like Uber and Lyft. Another participant, a parent with significant driving commitments due to their children's schooling, highlighted their reliance on driving while expressing concern over rising gas prices and the potential cost impact of electrifying roadways.

Safety and sanitation issues on public transportation were repeatedly mentioned. A participant from NW Portland described avoiding public transportation due to safety concerns, noting issues like drug use and mental health crises. Another participant, a health professional, emphasized the health risks associated with unsanitary conditions on public transit, such as cross-contamination and exposure to harmful substances.

While participants recognized the need for transportation electrification, concerns about safety and the financial impact of such a transition were evident. The discussion indicated a willingness to use public transportation if improvements in safety and cleanliness were made, alongside concerns about the affordability and feasibility of electric vehicles and charging infrastructure. This feedback

underscores the complexity of transitioning to an electrified transportation system, highlighting the need for addressing safety, sanitation, and cost-effectiveness to facilitate broader acceptance and use.

While there was an acknowledgment of the need for electrification of transportation for environmental reasons, participants were apprehensive about the cost implications and the current state of public transport infrastructure. Some expressed a willingness to use more public transportation if safety and cleanliness were improved, drawing comparisons to European systems.

As for Education and Accessing Information, the African American focus group emphasized the importance of effective communication and education strategies. The participants' insights reveal a shift from traditional media towards digital platforms and community engagement, highlighting the necessity for diverse and inclusive communication approaches.

Traditional forms of communication like snail mail and TV ads were deemed ineffective, with participants expressing a preference for modern, interactive methods. Influencer marketing, YouTube, social media platforms (Facebook, TikTok), and community spaces emerged as favored channels for information dissemination. The group emphasized the role of trusted sources and influencers in shaping perceptions and spreading knowledge about transportation electrification.

Participants highlighted the diminishing role of newspapers, turning instead to digital platforms for updates. They underscored the importance of offering information in multiple languages, including English, Spanish, Mandarin, Russian, and various African languages, to cater to diverse communities. A participant added Sign language, Ukrainian, Arabic, French, Tagalog, Korean, Portuguese, and Braille.

Community organizations were identified as vital for information dissemination. Participants suggested leveraging grassroots organizations, community health workers, and institutions like the Urban League and NAACP for outreach. The effectiveness of community-based approaches, such as Afro Village's initiatives and digital navigation projects, was emphasized, suggesting that localized information centers and kiosks could significantly educate the public. Other organizations mentioned were Portland Mutual Aid Network, IRCO, Latino Network, NAYA, Brown Hope, and KairosPDX.

There was a call for inclusivity in targeting audiences for education about electric vehicles (EVs) and charging stations. The participants urged for educational efforts to encompass all age groups and genders, stressing the need for seminars and practical demonstrations to familiarize people with EV technology and usage. They also pointed out the necessity of addressing practical concerns, such as charging station availability, the time required for charging, and the cost implications of EVs.

The need for collaboration between various stakeholders, including utility companies, car dealerships, and community organizations, was highlighted. Participants suggested that such collaborations could help provide realistic and contextual information about EVs, making them more accessible to diverse populations.

Regarding practical learning, there was a preference for hands-on instruction at dealerships, digital and print instructions at charging stations, and visual aids like QR codes and videos. The group also suggested incorporating EV education into community events and using public spaces like libraries and community centers for disseminating information.

Participants expressed concerns about the time spent at charging stations and the overall cost implications of switching to EVs. They proposed ideas like community investment trusts for charging stations and utility bill incentives to offset EV ownership costs.

Concerning financial considerations, feedback reveals diverse preferences and concerns related to payment methods. Participants predominantly favor card payments over cash, citing security and the ability to track and dispute transactions as key benefits. The convenience of card usage, especially in the context of transportation services like TriMet's 'Hop Pass,' is highlighted, allowing for easy and efficient transactions.

Acknowledging the risks associated with card payments, such as hacking and theft, underscores the need for secure payment systems. To mitigate risks, some participants advocate for payment methods that do not store personal information, like gift cards or disposable cards.

A significant aspect of the discussion centered around the flexibility of payment options. This includes the suggestion of allowing users to receive bills via mail and pay them later, which can accommodate those on fixed incomes or facing temporary financial constraints. The idea of setting a cap on the duration for deferred payments was proposed to balance convenience with financial responsibility.

The conversation also reflected an awareness of diverse economic statuses and life situations. Participants emphasized the importance of inclusive payment systems that cater to varying financial abilities and circumstances. This includes the need for options that support those who may rely on cash payments due to limited access to banking services or credit facilities.

The group discussed the practicality of integrating card payments with smartphone technology, enhancing accessibility and ease of use. For EV charging, there is a preference for at-home charging solutions, recognizing the convenience and time efficiency they offer.

With transitioning to transportation electrification, the primary concern was the scarcity of charging stations in neighborhoods and along highways, highlighting the inconvenience and potential risks associated with a depleted battery. The upfront cost of purchasing an EV was also noted as a significant barrier despite past rebate programs aimed at offsetting these costs.

Participants living without personal vehicles expressed concerns about the infrastructure in their residential areas, noting limited charging slots and the possibility of converting gas vehicles to electric. The quiet nature of EVs raised safety concerns, particularly regarding pedestrian awareness, as these vehicles are less audible than traditional ones.

The cost of EVs compared to traditional vehicles was repeatedly mentioned, along with the need for more accessible and strategically placed charging stations. Some participants expressed worries about potential government and corporate control over EVs, suggesting the need for legal safeguards against such issues.

Concerns about EV production's environmental and social impacts, particularly regarding raw material sourcing from countries that a participant said were from Congo, Cameroon, Angola, and Nigeria, were highlighted, emphasizing the need for international environmental justice and equitable decision-making.

Suggestions for improving the transition to EVs included thorough research and testing by utility companies before widespread implementation, ensuring the availability of parts and maintenance services, and considering the overall costs to consumers, including potential new taxes or energy costs.

The group also recommended more community engagement and education about the benefits and challenges of EVs. Ideas like promoting alternative electric vehicles (e.g., bikes, scooters) and solar panel initiatives were proposed to mitigate electricity costs and contribute to a healthier lifestyle.

The conversation extended beyond EVs to encompass broader environmental justice issues, including food sovereignty and the impact of the transition on diverse communities, particularly BIPOC farmers. The need for authentic, relatable marketing and communication strategies that address different communities' specific needs and concerns was emphasized.

Sentiment Highlights on the Main Themes

Based on the provided participant responses, the data can be organized into four primary themes: Current Transportation Landscape, Education and Accessing Information, Financial Considerations, and Overall Transition to Electric Vehicles (TE). Each theme is accompanied by imparted sentiments expressed by the participants, categorized as positive, negative, or neutral.

Theme: Current Transportation Landscape
Overall Sentiment: Neutral to Negative

Key responses:

- "I drive, I will take the bus sometimes. I've done Uber, I've done Lyft. I've used medical transportation. I guess some of it all kind of works in various ways."
- "I primarily use my vehicle... I drive as my main mode of transportation, only using bikes or walking for recreation."
- "I'm not a big, huge fan of Uber sometimes because I've noticed different prices depending on where you're going... Sometimes they can charge outrageous rates, or sometimes it won't cost me that much, and it can be really cheap."
- "The end of public transportation that I experienced has a lot of our community members in crisis and battling things that are beyond even their ability to control themselves... so are the opportunities for public drug use, and the MAXs and things have become a hub for such."
- "My electric bill went up drastically. With inflation and everything, I just want to be aware of what's to come next and how to prepare myself for this inflation."
- "I would ride the MAX way more if there were more safety measures and it was clean and organized, like in Europe."
- "I don't feel safe using public transportation. I use my car to get around when needed."
- "..the sanitation is an issue, but so are the opportunities for public drug use and the MAXs and things have become a hub for such.."

Theme: Education and Accessing Information
Overall Sentiment: Negative to Positive

Key Responses:

- "I don't read my snail mail unless it's a check, or I just throw the rest away, so that won't work."

- "Most people go to YouTube to find educational videos and information."
- "I primarily use social media, as well as email newsletters."
- "I would definitely say access on YouTube. I think some people, or I would say a lot of people have no real knowledge of electric vehicles to even want to purchase one."
- "I would say influencer marketing, so information coming from somebody that I know and trust."
- "I get most information from word-of-mouth. If you hear about something and you're kind of interested in it, you can Google it."
- "Community outreach in a way of who I follow on social media, so different organizations that repost and share various information."
- "I think community events are a big place where I get educated and access information."
- "Could include demonstrations at community events. Maybe the educational piece of how accessible charging can be at home with a regular home outlet could be attractive to more people."
- "I say be like Oprah, 'you get a car, you get a car, you get a car'."
- "I don't like TV, I don't like ads at all. I'm gonna be the first person to skip through it."
- "Watching the news can get really depressing, and a lot of the time, it's either a shooting or something. I don't really try to get any information from the news anymore."
- "I mean you could go to the gas station, and fill up your car in 5 to 6 minutes... But now, if you're going to go to the charging post, and you have to get a full charge, we're talking about at least an hour."
- "If PGE was giving people an idea of what's going to be happening and not just bringing it on us because when you spring stuff on people, they don't take very kindly to it."

Theme: Financial Considerations
Overall Sentiment: Neutral to Positive

Key Responses:

- "I use cards to pay for my stuff... If anything happens, I automatically cancel it... I like the Hop Pass because it makes it so much easier."
- "You should have the option of using your credit card or receiving a bill in the mail... It would just allow somebody to have the opportunity because some people get paid monthly, they have a fixed income."
- "I've experienced many different periods of life and some of which it was most convenient for me to utilize a debit or credit card... I think we just have to be mindful of the vast diversity of experience and economic status."
- "The easiest way is definitely a card and having the accessibility to have it on our wallet like on our phones."
- "I really liked the fact that we were able to do the Hop Pass and just get it on our phones and knock it out in a minute or two."
- "If I had an EV, I would definitely have, I would invest in getting a charger at my home, just because who has time to sit somewhere at 11 o'clock at night."
- "Online."
- "One option could be making an account that will automatically charge your card, with incentives."

Theme: Overall TE Transition
Overall Sentiment: Negative

Key Responses:

- "My biggest concern with having an electric vehicle is that in my neighborhood there's not like a lot of charging stations… and also on the freeway you don't really see any charging stations… the upfront cost of actually buying the electric vehicle because I know that's a good chunk of change."
- "Where I live… my parking lot is at my building, I think there's 3 slots for electric vehicles but I do not have an electric vehicle."
- "The noise level by those cars are really quiet and I like to be able to hear them coming… with these cars they're very quiet, so you don't always hear them approaching."
- "My number one concern, beyond anything else besides the safety one, is government and corporation control of the vehicle, being able to lock you inside the vehicle, navigate the vehicle to certain locations."
- "What do we do with our current vehicles? Where do they go? Where are we receiving any sort of benefit or rebate with regard to getting rid of those? Where would we get rid of them?"
- "The actual materials [for EVs] are mass-produced in Congo, Cameroon, Angola, Nigeria… These countries are suffering tremendously due to the conditions that they have to work in. That's very predatory, and I haven't really been able to see an alternative approach."
- "PGE not to rush into offering something to the world… without really doing their research and how it would have an impact… What's the stats, just looking at the statistics of it all."
- "Where these cars are made at or if they're foreign cars, what happens if these cars have to be replaced or fixed? Now we have to go to another foreign country just to get parts."
- "Understanding the overarching costs to us as consumers… Is that going to be the rollout of a new tax? Is that gonna be the rise in energy cost yet again?"
- "Make it authentic in your approach, through both your marketing materials and your internal team… meet us where we are, come into the community, and create a dialogue with us."

The participants' feedback also indicates important issues to the African American community, such as transparency and authentic engagement, broader environmental justice implications, and the idea of community ownership of charging stations through a community investment trust to provide financial benefits to residents.

SWOT Analysis

Based on the focus group participant's verbatim responses (see page 12), a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was created for each of the main themes that PGE identified as key: education and access to information, financial considerations, and overall transition to transportation electrification (TE).

Education and Access to Information:
Strengths:

1. Community-based organizations (CBOs) and trusted influencers are effective channels for disseminating information.
2. Participants prefer visual and hands-on learning, such as demonstrations and videos.
3. The use of multiple languages and formats (digital, print, video) can cater to diverse community needs.
4. Accessibility to information through familiar community spaces like libraries and schools.
5. Interest in learning about EVs is present, especially at the point of purchase (dealerships).

6. QR codes and digital platforms are convenient tools for quickly accessing information.

Weaknesses:

1. Lack of trust in certain information sources, such as car salespeople.
2. Concerns about the uniformity of charging station operations and the applicability of instructional materials.
3. Some participants are not proactive in seeking information unless it directly applies to them.
4. Potential information overload from too many sources can lead to confusion.
5. Reliance on word-of-mouth may lead to misinformation or incomplete information.
6. Resistance to new learning if no need or interest in EVs exists.

Opportunities:

1. Partner with CBOs and influencers to create tailored educational campaigns.
2. Develop clear, universal instructional materials for using EV chargers.
3. Leverage community events and spaces for educational outreach.
4. Offer incentives for attending educational workshops or seminars.
5. Utilize digital tools and social media platforms to engage younger demographics.
6. Create multilingual resources to ensure inclusivity.

Threats:

1. Rapid technological advancements may outpace the community's learning curve.
2. Misinformation spread through informal channels can undermine educational efforts.
3. Language barriers may prevent some community members from accessing information.
4. Digital divide issues where some community members cannot access online resources.
5. Resistance to change and skepticism towards new technology.
6. Potential budget constraints limit the reach and quality of educational programs.

Financial Considerations:

Strengths:

1. Awareness of financial incentives, such as rebates, can encourage EV adoption.
2. Participants are familiar with various payment methods, including cards and digital payments.
3. Interest in cost savings and financial benefits of EVs.
4. Some participants are open to the idea of on-bill payments for EV charging.
5. Community suggestions for financial support mechanisms, like community investment trusts.
6. Recognition of the long-term economic benefits of transitioning to EVs.

Weaknesses:

1. The high upfront costs of EVs are a significant barrier.
2. Concerns about the affordability of home charging installations.
3. Lack of knowledge about the total cost of ownership of an EV compared to traditional vehicles.
4. The financial vulnerability of some community members may limit their ability to invest in EVs.
5. Anxiety about potential increases in electricity rates due to TE.
6. Uncertainty about the resale value and repair costs of EVs.

Opportunities:

1. Expand rebate and incentive programs for low-income households.
2. Collaborate with financial institutions to offer affordable financing options.
3. Educate consumers about the long-term savings associated with EVs.

4. Develop programs to support the trade-in or recycling of traditional vehicles.
5. Advocate for policies that reduce the cost burden of TE on consumers.
6. Create community investment opportunities in TE infrastructure.

Threats:

1. Economic downturns or financial crises could further limit purchasing power.
2. Changes in government incentives or subsidies could affect affordability.
3. Inflation and rising living costs may prioritize other financial needs over EV adoption.
4. Potential for increased energy costs impacting overall savings from TE.
5. Market volatility affects the price and availability of EVs.
6. Disparities in wealth distribution could exacerbate inequalities in TE access.

Overall TE Transition:

Strengths:

1. Community interest in the environmental benefits of TE.
2. Recognition of the need for TE to address legislative and climate goals.
3. Openness to alternative forms of TE, such as electrified public transport and bikes.
4. Some participants expressed a willingness to adapt to new technologies.
5. Suggestions for creative TE initiatives, like shared transportation fleets.
6. Awareness of the potential health benefits from reduced emissions.

Weaknesses:

1. Concerns about the availability and accessibility of charging infrastructure.
2. Fear of being stranded due to limited range or charging options.
3. Anxiety about the safety related to zero noise of EVs.
4. Lack of clarity on the disposal or recycling of traditional vehicles.
5. Worries about the control and privacy implications of EV technology.
6. Skepticism about the motives and actions of utility companies and governments.

Opportunities:

1. Invest in widespread and accessible charging infrastructure.
2. Promote the development of TE in various sectors, not just personal vehicles.
3. Engage with communities to understand and address their specific TE concerns.
4. Foster partnerships with local businesses and organizations to support TE initiatives.
5. Advocate for policies that ensure equitable TE development.
6. Educate the public on the broader impacts of TE, including job creation and economic growth.

Threats:

1. Resistance to change and attachment to traditional vehicles.
2. Potential negative impacts on jobs in traditional automotive and oil industries.
3. Ethical concerns regarding the sourcing of materials for EV batteries.
4. Risk of TE initiatives exacerbating existing social and economic inequalities.
5. Misalignment between TE rollout and community readiness or acceptance.
6. Dependence on external factors, such as global supply chains and geopolitical stability.

Based on these SWOT analyses, it is possible to discern a top emerging theme that interlinks and extends beyond the three main categories: Economic Accessibility and Inclusivity – For the African American focus group, economic factors are key in the TE transition, highlighted by the awareness of financial incentives and the need for supportive community mechanisms. Challenges like high initial EV costs and the financial vulnerability of some community members underscore the necessity for inclusive economic strategies.

Unresolved Key Issues

The following unresolved key issues were identified:

1. **Accessibility of Charging Stations:** Participants expressed concerns about the availability and distribution of charging stations, especially in neighborhoods and along freeways. The lack of charging infrastructure could hinder the adoption of EVs.
2. **Affordability of Electric Vehicles:** The high upfront cost of EV purchasing is a significant barrier for many participants. There is a need for financial incentives or rebate programs to make EVs more accessible to under-represented communities.
3. **Education on EV Use and Charging:** There is a gap in knowledge about how to use EVs and charging stations. Participants suggested that education should be provided at the point of sale, such as dealerships, and through accessible formats like videos and manuals.
4. **Safety Concerns:** Some participants are worried about the quietness of EVs, which could pose a risk to pedestrians who rely on auditory cues for safety.
5. **Financial Considerations for Charging:** Participants discussed various preferences for payment methods for charging, including credit cards and billing options. There is a need for flexible payment solutions that cater to different financial situations.
6. **Impact on Electric Bills:** Concerns were raised about the potential increase in home electricity bills due to EV charging, especially following a recent rate hike by PGE. Participants are interested in how PGE plans to mitigate these costs.
7. **Equity in TE Transition:** There is a call for PGE to ensure that the transition to TE is equitable and includes benefits for under-represented communities, such as job creation and community investment.
8. **Effective Communication Channels:** Participants varied in how they prefer to receive information, with some favoring social media, community events, and word-of-mouth over traditional media. PGE needs to consider diverse communication strategies.
9. **Representation in Outreach:** PGE's outreach and educational materials must feature diverse communities and be available in multiple languages to ensure inclusivity.
10. **Concerns about TE Infrastructure Rollout:** Participants want assurance that the rollout of TE infrastructure is well-researched, planned, and executed without rushing to meet deadlines to avoid potential negative impacts on the community.
11. **Environmental and Global Justice:** Some participants expressed concerns about the global environmental impact of sourcing materials for EV batteries and the ethical implications of labor practices in other countries.
12. **Government and Corporate Control:** There are fears about the potential for government or corporate control over EVs, such as the ability to lock doors or navigate the vehicle remotely.
13. **Disposal of Current Gas Vehicles:** Questions were raised about what would happen to existing gas vehicles and whether there would be any incentives or support for their disposal.
14. **Technology Trust and Reliability:** Participants are concerned about the reliability of EV technology, including the potential for hacking or system failures.
15. **Community Support and Incentives:** Suggestions were made for PGE to provide community support, such as discounts on electric bills for EV owners, and to work with community-based organizations to facilitate the transition to TE.

These unresolved issues highlight the need for PGE to address concerns about infrastructure, cost, education, safety, and equity to successfully transition under-represented communities to transportation electrification.

Top Ten Recommendations

Based on the focus group feedback, here are the top 10 recommendations for PGE to consider in their TE outreach and implementation strategies for under-represented communities such as the African American Community:

1. **Infrastructure Accessibility:**
    - Increase the number of charging stations in diverse neighborhoods and along major travel routes.
    - Ensure charging stations are reliable and have clear instructions available in multiple languages.
2. **Affordability and Financial Incentives:**
    - Offer rebates, incentives, and financial assistance programs for purchasing EVs and installing home chargers, especially for low-income households.
    - Consider discounts on electricity bills for EV owners to offset charging costs.
3. **Education and Training:**
    a. Partner with dealerships to provide comprehensive education on EV use and charging during purchase.
    b. Create accessible, multilingual educational materials, including videos with QR codes at charging stations and community events.
4. **Community Engagement:**
    - Collaborate with Community-Based Organizations (CBOs) to disseminate information and gather feedback. Examples provided were Urban League, the NAACP, Afro Village, Portland Mutual Aid Network, IRCO, Latino Network, NAYA, Brown Hope, and KairosPDX.
    - Host listening sessions and community outreach meetings with amenities like food and childcare to increase participation.
5. **Diverse Communication Channels:**
    - Utilize a mix of traditional and digital media, ensuring representation in advertising that resonates with under-represented communities.
    - Leverage word-of-mouth and influencer marketing within the community for more personalized outreach.
6. **Payment Flexibility:**
    - Offer multiple payment options for charging services, including credit/debit cards, mobile payments, and possibly cash or billing options.
7. **Research and Development:**
    - Conduct thorough research and pilot programs before full implementation to understand the impact on the community and address potential issues.
8. **Environmental and Social Responsibility:**
    - Consider the global impact of EV production, including the ethical sourcing of materials and the environmental footprint.
9. **Incentivize Community Ownership:**
    - Explore the creation of a Community Investment Trust to allow community members to have a stake in the local TE infrastructure.
10. **Transparent Communication:**
    - Keep the community informed about upcoming changes, progress, and how they can be involved in the transition to TE.

These recommendations aim to ensure that PGE's TE efforts are inclusive, equitable, and responsive to the needs and concerns of the African American Communities.

HISPANIC AND LATINO/A/E FOCUS GROUP

PGE TE – Focus Group Summary Report with Hispanic and Latino/a/e Communities
Date of FG: 1/17/2024 **No. of Participants:** 12
PGE Presenter: Eva DeCesaro
Spanish Facilitator: Romeo Sosa and **English Facilitator:** Therese McLain
Translator and Note Taker: Romeo Sosa and AnnieKris Diego
Time Started: 5:35 pm

PGE PRESENTATION

PGE provided transportation electrification (TE) and charging infrastructure presentations to the Hispanic and Latino/a/e Communities focus group participants, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions.

The presentation is consistent across all the nine TE focus groups and can be found in the ***"Summary of PGE Presentation."***

Post-Presentation's Questions and Answers Portion

1. Participant question: Will all the changes that are coming be provided by the government? Are we going to receive some kind of discount to make the change between gasoline or the fuel that is now to go electric?
   PGE response: Yes, that is one of the biggest parts of the difficult change today. Generally, electric cars are more expensive than cars that use fuel. That is changing a little bit, but at the beginning, as we see, a lot of new technology is more expensive. Last year, the Inflation Reduction Act was passed at the federal level. You can receive $7,050 dollars to buy a new electric car, depending on the type of car. They must be made in the United States, but that is changing also in Oregon. We also have another $2,500 incentive to buy an electric car that they can give you at the dealership, and if you are qualified, there may be other incentives. If you qualify for low-income levels, they give you $5,000, which is difficult because the incentive comes from different places. It is challenging to handle all that from federal to state levels. In total, you have almost $15,000 in incentives, but still, if those cars start at 30,000 dollars, you still have a $15,000 balance, and that is still a lot.

2. Participant question: This topic we are discussing is only for cars or it also goes for home electricity? Since we have seen that home electricity is very expensive. Is there any way to help us to put solar panels?
   PGE response: Yes, there is. I'm not an expert on this, but in Oregon, we have the Energy Trust and another program within PGE. I can send you information, and the discount depends on the economic level of the household on your monthly bill. The other thing we will discuss is how you generally pay for electricity. Electric motors can use all the energy that goes to the battery. Fuel cars burn gasoline, and generally, the equivalent of a gallon of

gasoline and energy is like paying 1 dollar per gallon of electric energy, the same that you pay now, which is 4.20 of gasoline. Using electric cars is more economical.

3. Participant question: What is going to happen to the cars that are using gas?
   PGE response: I think that right now, there is a perception that someday there will be a law when they can no longer drive a car with fuel, but that will not happen. Many people do not use cell phones or smartphones; this is new technology, and many people will not switch to an electric car until they can no longer use their gas-fueled car. The important thing is when they are ready to make the change, they can save a lot and with less maintenance. People who use fuel cars are spending more because they tend to break, but I hope that will not happen. For example, with the school buses, and I work a lot in this program, they are removing the gasoline and diesel engines and are putting in battery and electric motors, and that change can be done little by little.

4. Participant question: What is the estimated time to recharge a vehicle?
   PGE response: When talking about electric cars, I always say it is as easy as 1,2,3. There are three levels of recharging for electric cars. Level one is how we charge our cell phones with the outlet plug at home. A car's battery is much larger than the battery of a cell phone, and it will take about 24 hours to charge, so let's say level one is very slow. Level two is the most common in people's homes, using the same type of electricity as clothes dryers or electric stoves. Generally, it takes four to eight hours, depending on the level of electricity that the charger has. Level 3/DCFC are the fastest chargers; those are the big ones that are the size of a refrigerator or something like you would see in Walmart or supermarkets, and other public places. For example, we visited family in Seattle, stopped to charge the car, and ate while the car was charging. The car can be charged at an estimated time of 20 to 40 minutes.

Additional participant questions

- When the car is recharged, how many miles does it drive?
  PGE response:
  Every car is different, but on average, the range for an EV is approximately 300 miles on a fully charged battery. This is enough for a round trip to Hood River or the coast.

- How do auto dealers help educate buyers about electric vehicle charging, how to use chargers, and how to use electric cars?

PGE response:
Dealership enthusiasm and engagement on EVs varies greatly by dealership. Some dealers have been prequalified to offer the state rebate at purchase, provide a level 2 charger with the car, and have specialty staff trained to talk about EVs. Other dealerships are more interested in selling cars. There is one dealer is the area who exclusively sells used Electric Vehicles:
https://www.plattauto.com/

Follow-up information links from PGE

- During the post PGE presentation Q&A portion, PGE stated they would send information on the income-qualified bill discount. Below is the link in Spanish:
  https://portlandgeneral.com/descuento-en-facturas-segun-ingresos
- For more information about solar panels, below is the link:
  https://portlandgeneral.com/energy-choices/generate-power

FOCUS GROUP QUESTIONS AND FEEDBACK

Summary

The detailed focus group feedback from the Hispanic and Latino/a/e communities regarding transportation electrification (TE) provides important insights across several critical themes: the participants' current transportation landscape, education and access to information, financial considerations, and the overall transition towards TE. This summary aims to distill the key findings from participants' feedback within these themes, offering an understanding of community perspectives, concerns, and suggestions that can inform efforts to facilitate the transition to electric vehicles (EVs).

Participants shared various modes of transportation, primarily relying on personal gasoline vehicles for their mobility needs. Concerns were raised about the practicality of EVs for long-distance travel, such as trips to Mexico, and the reliability of EVs during power outages. The comparison between the efficiency of gasoline vehicles and the economic and environmental benefits of EVs highlighted a mix of apprehension and acknowledgment of the advantages of electrification. Questions about battery replacement costs and the availability of mechanics trained in EV maintenance indicate a need for more information and infrastructure to support a transition to EVs.

A significant demand for education and information about EVs and TE emerged across the discussions. Participants preferred receiving information through social media platforms like TikTok, Facebook and Instagram, television, and community meetings, emphasizing the importance of accessibility in multiple languages, including Spanish and indigenous languages such as Mayan. The need for concise, practical information on using EV chargers and understanding the differences in operation between gasoline vehicles and EVs was evident. Suggestions included short instructional videos, test drive opportunities, and hands-on learning experiences at DMVs or dealerships. The feedback underscores the critical role of effective communication and education in facilitating the transition to TE, highlighting the need for tailored approaches to meet the community's diverse needs.

The conversation about financial considerations revealed a preference for various payment options for EV-related expenses, including credit cards, online payments, and mobile payment solutions like Apple Pay. Concerns about the affordability of EVs and the associated costs of transitioning, including charging, were prevalent. Participants suggested financial incentives, such as student discounts and support for new drivers, to make EVs more accessible and appealing. The feedback points to the necessity of addressing financial barriers to TE adoption through flexible payment solutions and targeted incentives.

Participants' concerns regarding the transition to TE included the reliability of EVs during power outages, the environmental impact of battery disposal, and the availability of charging infrastructure. The potential safety risks associated with young drivers and silent EVs and the challenges of transitioning to EVs for those constantly on the move were also highlighted. Suggestions for broadening the scope of TE included electrifying public transportation and providing educational support to facilitate the transition.

Despite these concerns, there was an acknowledgment of the environmental benefits of TE and a general interest in the electrification of various modes of transportation, including school buses, tractors, and bikes. However, apprehensions about the practicality of such initiatives and their impact on health and safety were noted.

The overall sentiment of the participants towards transportation electrification was one of cautious optimism mixed with significant concerns. While there is a clear recognition of EVs' environmental and economic benefits, apprehensions about infrastructure, education, and financial barriers loom. Participants were willing to consider EVs if these concerns could be adequately addressed, highlighting the importance of targeted education, robust support mechanisms, and infrastructure development in fostering a successful transition to TE. The feedback underscores the need for a comprehensive and inclusive approach to TE that addresses the specific needs and concerns of the Hispanic and Latino/a/e communities, ensuring that the benefits of electrification are accessible to all.

Sentiment Highlights on the Main Themes

Based on the provided participant responses, the data can be organized into four primary themes: Current Transportation Landscape, Education and Accessing Information, Financial Considerations, and Overall Transition to Electric Vehicles (TE). Each theme is accompanied by imparted sentiments expressed by the participants, categorized as positive, negative, or neutral.

Theme: Current Transportation Landscape
Overall Sentiment: Neutral to Negative

Key responses:
Note: Participants were mostly neutral about their current transportation landscape, and when they shifted their feedback to electric vehicles during the discussion on this particular theme, the sentiment was neutral to mostly negative.

- "I move around in my gasoline vehicle and it is efficient in the aspect that at the moment you can move around."
- "We have a hybrid, it is a good vehicle, it is very economical, very practical, we have a big car, and a pickup truck but we generally use the hybrid because it is cheaper."
- "Using electric cars is more economical. There was a comment that everybody is modernizing, so when there is more demand there will be more supply of cars."
- "I'm a little bit afraid of the change because I heard that during the recent storm many people lost electricity and electric cars didn't work."
- "I have a question about the replacement of the batteries. If the battery of a car is broken and the cost must be very expensive or the cost of the batteries of the car would be very expensive, compared to the repair of a gasoline vehicle."
- Imagine during a storm, an emergency, there's no power, what's going to happen?"
- "Have you also thought about the possibility of doing some kind of study with the residents who live in apartments, or with the administrators to implement some battery charging areas for these vehicles because there are people who do not have the time to go to a café or a supermarket, where there are usually these battery charging points to recharge their vehicle and be prepared?"
- "What worries me is the weather and the power going out. As of right now many people still don't have electricity after the storm. Electric cars will not be able to get charged without any electricity."

- "I am worried about the electric bicycle, I really biking, I don't know how the electric bicycle would work? Solar panels give us low-cost. Also, I want to mention electric bicycles. I believe it is dangerous."

Theme: Education and Accessing Information
Overall Sentiment: Neutral to Negative

Key Responses:

- "It would be very practical to have information in short videos that have information about the instructions."
- "In places the DMV, promote test drives so that people can see how it works..."
- "Educate people a little more and give the opportunity to the new generations."
- "It would be very good to help the new generations by supporting the schools or universities with some type of scholarship..."
- "I think it is better to receive on FB and Instagram which is what I use the most."
- "I belong to an association of Latino Builders, about 200 or 270 people, with whom we do training and share a lot of information..."
- "I'm a little bit afraid of the change because I heard that during the recent storm many people lost electricity and electric cars didn't work."
- "I have a question about the replacement of the batteries. If the battery of a car is broken and the cost must be very expensive..."
- "Have you also thought about the possibility of doing some kind of study with the residents who live in apartments, or with the administrators to implement some battery charging areas for these vehicles..."
- "I personally have a hard time putting gas in and I would really appreciate it if you had someone to guide you and teach you."
- "It should be an obligation of the concessionaire to teach the person the basics when he/she is going to buy an electric car..."
- "The dealers are focused on selling only because it generates money for them."
- "Dealerships are not going to pay extra time to people to explain it to you."
- "What worries me is the weather and the power going out."
- "My concern is the problem of environmental impact because I saw electric cars mostly have lithium and some other material out there."

Theme: Financial Considerations
Overall Sentiment: Neutral to Negative

Key Responses:

- "I'm a little bit afraid of the change because I heard that during the recent storm many people lost electricity and electric cars didn't work."
- "I have a question about the replacement of the batteries. If the battery of a car is broken and the cost must be very expensive or the cost of the batteries of the car would be very expensive, compared to the repair of a gasoline vehicle."
- "Have you thought about the people who live in condominiums or apartments that do not have the possibility of acquiring and having one of these devices that makes the charging of batteries more efficient?"

- "If they can offer a discount for students paying for membership and reduce them from $100, it goes down to 30 something that. Also, I think students who have good grades should be offered discounts or price reductions."
- "The problem I have is worrying about how much the change is going to cost us."
- "What worries me is the weather and the power going out... Electric cars will not be able to get charged without any electricity."
- "Using electric cars is more economical... They will go down in price and as Eva said everybody has their smartphones now."

Theme: Overall TE Transition
Overall Sentiment: Neutral to Negative

Key Responses:

- "It should be an obligation of the concessionaire to teach the person the basics when he/she is going to buy an electric car, from how to charge it, how to start it and how to use it, more than anything else it should be an obligation for them."
- "I was thinking about the fact that sometimes it is difficult to make transitions... I think that the dealers, those who sell the cars, should teach you because there are people who learn fast with technology but there are people who find it hard to learn the technology."
- "I want to add something to what the gentleman who just spoke said. The dealers are focused on selling only because it generates money for them."
- "I am worried about the electric bicycle, I really biking, I don't know how the electric bicycle would work?"
- "What worries me is the weather and the power going out. As of right now many people still don't have electricity after the storm. Electric cars will not be able to get charged without any electricity."
- "I am concerned about the young people... Imagine the young people in those cars, going back to the question asked earlier, if you can help with a bonus for the organizations $5,000, $4,000 or $3,000 so that those of us who want to learn to drive an electric car can go to school and pay for the classes."
- "My concern is the problem of environmental impact because I saw electric cars mostly have lithium and some other material out there. It would have a great environmental impact mostly in the extraction."
- "Currently there are no electric chargers everywhere for this type of vehicle. I do not work in one place because I am constantly moving all the time, then that would worry me if my battery ran out and I do not have a place to charge it."

The predominant sentiment from the Hispanic and Latino/a/e Communities is a combination of sentiments. Participants are cautiously optimistic, recognizing the benefits of EVs but also voicing significant concerns about practicality, cost, and infrastructure. This mixed sentiment is justified by the participants' balanced view of the advantages of EVs (e.g., reduced pollution, modernization, and potential cost savings) against the challenges they foresee (e.g., charging logistics, power outages, battery replacement costs, and the need for more information and support). The concerns about the transition, especially regarding education, accessibility, and financial implications, suggest that while there is interest in EVs, there is also a significant need for targeted support and reassurance to facilitate the shift from gasoline to electric vehicles.

SWOT Analysis

Based on the focus group participant's verbatim responses (see page 11), a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was created for each of the main themes that PGE identified as key: education and access to information, financial considerations, and overall transition to transportation electrification (TE).

Education and Access to Information:

Strengths:

1. Interest in short, accessible instructional content (e.g., TikTok videos) for learning about EVs.
2. Opportunities for hands-on learning through test drives and interactive experiences at dealerships and community events.
3. Recognition of the need for multilingual resources, including Spanish and indigenous languages.
4. The willingness of community members to learn and adapt to new technologies.
5. Use of social media and television as effective communication channels.

Weaknesses:

1. Lack of current knowledge about EV technology and charging infrastructure.
2. Concerns about the learning curve associated with new technology.
3. Potential resistance from dealerships to invest time in customer education.
4. Reliance on social media may not reach all demographics equally.
5. Limited access to information in languages other than English and Spanish.

Opportunities:

1. Collaborate with local organizations and schools to provide education and training.
2. Develop concise and engaging educational materials tailored to community needs.
3. Leverage social media influencers within the community to spread awareness.
4. Implement multilingual support and resources to cater to diverse linguistic needs.
5. Partner with dealerships to ensure comprehensive customer education on EVs and charging.

Threats:

1. Misinformation about EVs and charging could spread if not addressed.
2. Potential lack of interest from dealerships in providing thorough education.
3. Over-reliance on digital platforms may exclude those without internet access.
4. Cultural and language barriers may impede the effectiveness of educational campaigns.

Financial Considerations:

Strengths:

1. Familiarity with various payment methods, including cards and online transactions.
2. Interest in financial incentives for students and good grades.
3. Recognition of the long-term economic benefits of EVs, such as reduced fuel costs.
4. Openness to alternative payment methods for EV charging, like personalized cards.

Weaknesses:

1. Concerns about the high upfront costs of EVs and charging infrastructure.
2. Anxiety about the cost of battery replacement and specialized repairs.
3. Limited financial resources for some community members to transition to EVs.
4. Potential lack of affordable financing options for EV purchases.

Opportunities:

1. Introduce financial incentives and rebates for EV purchases and charging.

2. Offer affordable payment plans and financing options tailored to community needs.
3. Educate on the total cost of ownership, highlighting long-term savings.
4. Partner with financial institutions to provide accessible loan programs for EVs.

Threats:

1. Economic downturns could reduce the ability to invest in EVs.
2. Perception of EVs as a luxury rather than a necessity could hinder adoption.
3. Inadequate financial support from government or utility companies could be a barrier.
4. Competition from more affordable gasoline vehicles in the short term.

Overall TE Transition:

Strengths:

1. Community interest in reducing environmental pollution through TE.
2. Recognition of the modernization trend and potential for increased EV supply and demand.
3. Positive attitudes towards electrification initiatives, such as electric school buses and bikes.
4. Awareness of the benefits of hybrid vehicles as a transitional technology.

Weaknesses:

1. Concerns about the reliability of EVs during power outages or emergencies.
2. Anxiety about the availability of charging infrastructure, especially for those who travel long distances.
3. Fear of technological complexity and the need for specialized mechanics.
4. Concerns about the environmental impact of battery production and disposal.

Opportunities:

1. Develop robust, resilient charging infrastructure to alleviate range anxiety.
2. Promote the electrification of various transportation modes to increase public acceptance.
3. Engage with community members to co-create solutions for TE challenges.
4. Advocate for policies that support the expansion of TE infrastructure and incentives.

Threats:

1. Natural disasters and power outages could undermine confidence in EV reliability.
2. Slow adoption of TE due to cultural and behavioral resistance to change.
3. Potential environmental concerns related to battery production and disposal.
4. Safety concerns with silent EVs, particularly among younger drivers.

Unresolved Key Issues

Based on the feedback from the Hispanic and Latino/a/e focus group participants, several emerging issues that extend beyond the initially identified themes can be identified. These issues are practical concerns and barriers to adopting electric vehicles (EVs) within the Hispanic and Latino/a/e communities. Here are some of the emerging issues:

1. Long-Distance Travel Concerns: Participants expressed concerns about the feasibility of long-distance travel with EVs, such as trips to Mexico, which may not be adequately addressed by current infrastructure and charging options.
2. Reliability During Power Outages: There is a fear that EVs may not be reliable during emergencies, especially when power outages occur, as experienced during recent storms. This raises questions about the resilience of the EV charging infrastructure.
3. Charging Infrastructure for Apartment Dwellers: Participants living in apartments or condominiums highlighted the lack of charging infrastructure in such housing situations. This indicates a need for solutions that cater to residents without dedicated parking or charging capabilities.

4. Battery Replacement Costs and Repair Concerns: The potential high cost of battery replacement and the perceived scarcity of mechanics trained to repair EVs are significant concerns. Participants worry that this could make EV ownership less accessible and more expensive in the long run.

5. Incentives for Young Drivers and Students: There is a call for financial incentives and educational support for young drivers and students, including EV maintenance and repair training scholarships.
6. Environmental Concerns of EV Production: Some participants are worried about the environmental impact of EV battery production and disposal, particularly concerning lithium extraction and pollution.
7. Safety Concerns with Silent EVs and Youth Safety with High-Speed EVs: The silent nature of EVs is seen as a potential safety issue, especially for young drivers who may drive fast without the auditory cues associated with traditional vehicles.
8. Electric Bicycles and Health Concerns: There are worries about electric bicycles' safety and health implications, with one participant mentioning hair loss in children as a concern, which may indicate a need for further investigation into the health impacts of electric transportation options.

These emerging issues highlight the need for comprehensive solutions that address the practical realities of transitioning to electric transportation, especially in under-represented communities. It is essential to consider these concerns in developing policies, infrastructure, educational programs, and incentives to support the adoption of EVs and ensure that the benefits of transportation electrification are accessible to all.

Top Ten Recommendations

Based on the focus group feedback, here are the top 10 recommendations for PGE to consider in their TE outreach and implementation strategies for under-represented communities such as the Hispanic and Latino/a/e Communities:

1. **Develop Comprehensive Educational Materials in Multiple Languages:**
    - Create short, engaging instructional videos on social media platforms like TikTok, focusing on brevity and clarity to maintain attention.
    - Participants preferred concise and accessible information in their native languages, including indigenous dialects like Mayan and sign language.
2. **Hands-On Learning Opportunities**:
    - Offer test drives and interactive experiences at DMVs, driving schools, and community events to familiarize people with electric vehicles (EVs).
    - Direct experience can alleviate fears and misconceptions about EVs, and participants showed interest in learning through practical engagement.
3. **Dealer Education Obligation:**
    - Mandate that auto dealers provide thorough tutorials on EV operation and maintenance to new buyers.
    - Participants indicated that personal guidance is crucial, especially for those who struggle with new technology.
4. **Accessible Charging Infrastructure:**
    - Collaborate with apartment and condominium complexes to install charging stations for residents without private garages.

- Charging accessibility is a significant concern for those living in multi-unit dwellings, impacting their ability to own and charge EVs.

5. **Financial Incentives and Support:**
   - Offer discounts, rebates, and financial assistance programs, especially for students and low-income individuals, to make EVs more affordable.
   - Cost is a major barrier to EV adoption, and participants suggested that economic support could facilitate the transition.
6. **Training for EV Maintenance:**
   - Provide scholarships or support for technical training in EV maintenance and repair.
   - Concerns about the cost and availability of EV repairs suggest a need for a skilled workforce that can service these vehicles affordably.
7. **Diverse Payment Options for Charging:**
   - Implement multiple payment methods for public EV charging, including credit/debit cards, mobile payments, and prepaid cards.
   - Participants preferred convenient and reliable payment methods, highlighting the need for flexibility and security.
8. **Emergency Preparedness:**
   - Ensure that there are contingency plans for EV charging during power outages, such as backup generators or alternative charging options.
   - Concerns about reliability during emergencies highlight the need for a resilient charging infrastructure.
9. **Environmental and Safety Education:**
   - Educate the public on the environmental impact of EVs, including battery disposal and material sourcing, as well as safe driving practices.
   - Participants raised concerns about EVs' environmental and safety implications, indicating a need for clear and transparent information.
10. **Address Range Anxiety:**
    - Expand the network of public charging stations and provide clear information on range and charging station locations.
    - Participants worried about the availability of charging infrastructure, especially for those who travel long distances or have unpredictable schedules.

These recommendations aim to ensure that PGE's TE efforts are inclusive, equitable, and responsive to the needs and concerns of the Hispanic and Latino/a/e Communities.

ASIAN AND PACIFIC ISLANDER FOCUS GROUP 1

PGE TE – Focus Group Summary Report with the Asian and Pacific Islander Communities
Date of FG: 01/31/2024 **No. of Participants:** 11
PGE Presenter: Kelly Yearick
Name of Facilitator: Therese McLain
Notetaker: Duyen Frederiksen
Time Started: 5:35 pm

PGE PRESENTATION

PGE provided transportation electrification (TE) and charging infrastructure presentations to the Asian Communities focus group participants, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer

engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions.

The presentation is consistent across all the nine TE focus groups and can be found in the ***"Summary of PGE Presentation."***

Post-Presentation's Questions and Answers Portion

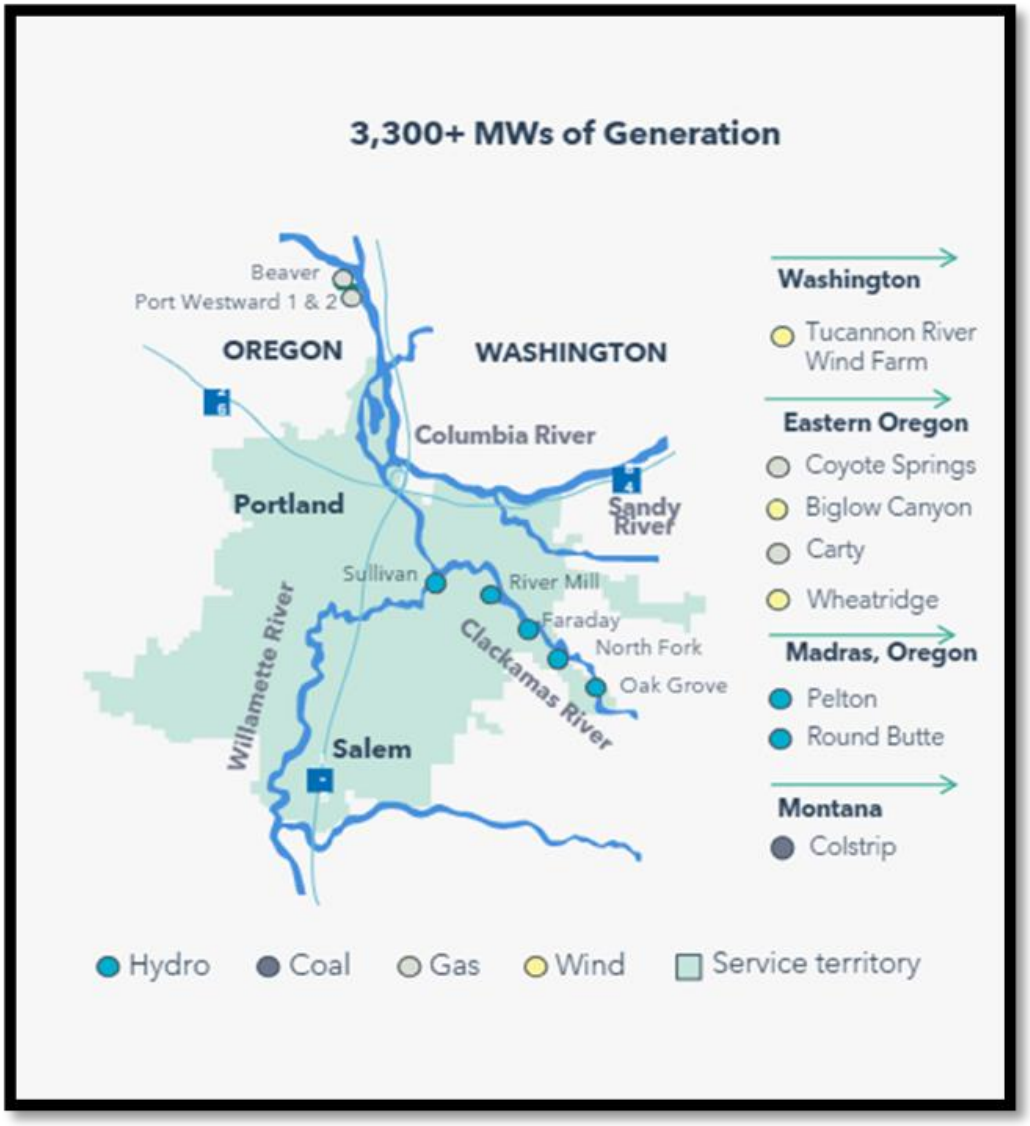
1. Participant question: Will there be more of the public charging ports in the future if there are more electrical vehicles? You mentioned that there's about 2,700 public charging ports in Oregon, will there be more in the future?
   PGE response: Yes, certainly. I think many of us are accustomed to seeing a gas station. The increase will necessitate more charging infrastructure to be built, and then the other thing is that unlike a gas car, where you rely on public infrastructure to refuel it since you can't access gasoline at your home, you can with an electric car and so still about 80% of EV drivers are actually, are charging their vehicles at home. So, while there will be a huge increase in the number of public charging stations available, there's sort of a balance that happens, where a lot of people are going to choose to charge at home if that's an option for them. But of course public charging is really important, and crucial for people who don't have access to power where they park their car.

2. Participant question: I have been driving an EV for over 6 years, but my big challenge is relying on the public charging stations when we go somewhere. I think that's what we need to know in advance, especially when we go somewhere that's not in the big city and there are not many people. Has PGE considered this situation, such as somewhere where there may be no electricity or limited access. I think that could be a big challenge for everyone to switch to EVs.
   PGE response: Are you referring to charging access when you go on a road trip to maybe more of a remote area?

3. Participant follow up: Yes, even now, I have a Tesla and the first charge stations along the coast are in Seaside and Lincoln City. Now they added one in Newport, but from Newport to Bandon there are no supercharging stations for Tesla. For such a long distance, that can be a challenge.
   PGE response: That's a great point and what I'll say is, PGE is really only able to support charging installation in its own service area. However, this is not a challenge unique to our customers, and so the state and federal government are funding a lot of infrastructure build outs. They're really prioritizing rural areas and places where charging infrastructure hasn't been yet. They're going to aim to bring the number of miles down to 50 miles or less between a charging station, so that way no matter where you need to travel, you have certainty that you'll be able to charge up somewhere along the way.

Additional participant questions

1. How Long can the battery last for?
   PGE response:
   Below is a map of PGE's service area, which covers 51 cities across seven counties within the State of Oregon:



2. Does PGE cover just the Portland Metro area or throughout Oregon? And, do they have plans to install charging ports in the rest area/stop along the I-5?
   PGE response:
   West Coast Clean Transit Corridor Initiative is a collaborative effort between 16 West Coast utilities to support the development of EV charging facilities
   along Interstate 5 (I-5), from San Diego to British Columbia, for heavy and medium-duty freight haulers and delivery trucks. PGE is one of the 16 utilities with service areas along that corridor, and we are actively working together to plan and build these
   medium and heavy-duty (MHD) truck charging sites. This model recommends a charging site every 50 miles and calls for three possible sites in the PGE service area. As part of this effort and to ensure heavy-duty charging is available in our service areas as the
   fleet electrifies, PGE is reviewing a site in the Salem area in addition to the Electric Island site near Interstate 5.

FOCUS GROUP QUESTIONS AND FEEDBACK

Summary

Given the comprehensive nature of the Asian Communities focus group feedback, the analysis encapsulates key insights derived from participant responses. It is grouped under the principal themes of their current transportation landscape, education and accessing information, financial considerations, and the overall transition to transportation electrification (TE). This summary aims to identify the predominant sentiments, concerns, and suggestions brought forward by the participants, culminating in an evaluation of the overall sentiment towards TE.

Participants utilize a mix of transportation modes, including gas-powered vehicles, hybrid plug-ins, and fully electric vehicles (EVs). There's a general satisfaction with current transportation methods, particularly for those working from home or with minimal commuting needs. However, the inclination towards EVs is evident, driven by their economic benefits and environmental advantages. Notable is the appreciation for the cost savings on fuel, the quiet and seamless driving experience offered by EVs, and specific features like Tesla's autopilot. Despite these positives, concerns regarding the practicality of EVs for long distances and in cold weather conditions highlight perceived limitations in current EV technology and infrastructure.

Effective communication channels for disseminating information on EVs and TE include social media, traditional media (TV, print, radio), and community outreach. Participants preferred multilingual information, accessible through digital and traditional platforms, to cater to diverse community needs. Visual and auditory learning aids at charging stations and digital resources like YouTube videos were recommended to educate the public on EV usage and charger operations. The emphasis on simplicity, accessibility, and inclusivity in education and information dissemination was clear, suggesting a need for tailored approaches to reach broader audiences.

Financial concerns are central to the discussion on TE, emphasizing the cost of EVs, charging infrastructure, and the impact on utility bills. The preference for digital payment methods, including credit cards and mobile payments (e.g., Apple Pay), for EV charging signifies a trend towards convenience and efficiency. Participants discussed the relative cost-effectiveness of EV charging compared to gas, highlighting the economic appeal of EVs. However, the initial cost of EVs and charging equipment, coupled with concerns about potential increases in utility costs due to the widespread adoption of TE, underscores the need for financial incentives and support mechanisms to facilitate the transition.

The transition to TE is met with cautious optimism. Participants acknowledged the environmental and economic benefits of EVs but expressed significant concerns regarding charging infrastructure, battery life, and the power grid's resilience, especially during extreme weather events. The potential for TE to contribute to more sustainable and efficient transportation is recognized, yet the need for technological advancements, infrastructure improvements, and financial incentives is evident. Ideas for expanding TE beyond personal vehicles, including electrifying public and utility vehicles, suggest a holistic view of TE's potential impact.

Overall, participants' sentiment towards transportation electrification is cautiously positive, with a clear recognition of its benefits and a keen interest in overcoming existing barriers. While there is enthusiasm for EVs' cost savings, environmental advantages, and innovative features, concerns about infrastructure, technology limitations, and financial implications highlight areas requiring attention from stakeholders, including utility companies like PGE. Addressing these concerns

through targeted education, infrastructure development, and financial support could significantly enhance public perception and adoption of TE, marking a critical step towards a more sustainable transportation future.

Sentiment Highlights on the Main Themes

Based on the provided participant responses, the data can be organized into four primary themes: Current Transportation Landscape, Education and Accessing Information, Financial Considerations, and Overall Transition to Electric Vehicles (TE). Each theme is accompanied by imparted sentiments expressed by the participants, categorized as positive, negative, or neutral.

Theme: Current Transportation Landscape
Overall Sentiment: Positive with Elements of Neutrality

Key responses:

- “I think it works perfectly. It’s gas...I just drive now."
- "I really like the hybrid because since I bought this car...I have not put any gas in it so it has saved me quite a bit of money."
- "I thought it was really good, very seamless, quiet, and easy to drive."
- "I’ve already driven more than 30,000 miles so it’s saved a lot of my money."
- "Driving the EV is definitely preferred for short distances...you’re saving a lot of money from buying gas."
- "This is my first time owning this half hybrid plugged-in vehicle and I love it."
- "I just noticed that with the Tesla during these last couple days when it’s really cold, you get a lot less range."
- "Sometimes it takes us about an hour just to charge the car...it’s also a disadvantage."
- "I keep one gas car because if you want to go somewhere and it’s not very convenient for you to charge the car, you have to turn to the gas car."
- "But at the same time, it’s also a disadvantage...where you can buy a coffee and walk around, and then come back to the car."

Theme: Education and Accessing Information
Overall Sentiment: Positive to Slightly Negative

Key Responses:

- "Today, social media like Facebook, and the social world is better and more effective for everyone."
- "They can put the information on YouTube and then we can split and show that in the communities...It’s very convenient to use YouTube videos on social media."
- "I think from my experience...Traditional TV is still kinda good for the people to look at and see very directly and it’s very clear for them."
- "If they have a barcode and then you can scan and then it will show a video on how to charge the car. That's more helpful."
- "Even my parents are old but they still have Facebook or something that they can log into. I think this is the easiest way."
- "The people can push the button like Chinese, they push the button there then it will show how to use the charger in whatever the language you select."

- "I would say, maybe by the charging station. I'm a visual learner, so I learned best to see something instead of reading just the instructions alone."
- For me, I don't think that I would be interested in attending a workshop...If we have something like a Youtube video, it would be more convenient information."
- "I don't think I would want them to, or at least not require them to have to go through all those steps with me, I think that would drive me crazy."
- "I don't think I would want to download any more apps on my phone personally...Everything nowadays has apps and it just feels unnecessary."
- "App required update once in awhile, so it's not very convenient in the long run."

Theme: Financial Considerations
Overall Sentiment: Positive to Neutral

Key Responses:
- "We're living in a technology world, so I think anything that is a card, like a readable card would be best."
- I heard there's Apple Pay, where you load your credit card into your Apple Wallet and then wherever you go, you use your phone and scan it through and pay."
- "Then for charging vehicle ways, with a Tesla you can just link your card and then you just go to a charging station and just put the charger in there."
- "The best way to pay that EV charge is that we can tie the plate number with any credit card...That vehicle charge is paid for with the credit card."
- "It's not. If I have no charge like 0 miles at Hood River and I come to Portland, it takes me about 10 min to charge up to 110 miles roughly and then it's only about 5 bucks or so."
- "Same with mine, it only costs around $5."
- "Can I ask a quick question for the people who own an EV car? When you charge the car, did they charge you a lot?"

Theme: Overall TE Transition
Overall Sentiment: Negative to Neutral

Key Responses:
- "That financial incentive is my biggest concern. The financial part because EV cars, as I know, it's still not quite cheap."
- "So even level 3 charging still takes hours for full charge, that's way too long."
- "The batteries will no longer hold the charge over time...And the battery is highly dependent on the temperature also."
- "So the very cost is almost like a car, right? The battery cost is like getting a new car instead?"
- "A lot of EV cars were stuck and did not start, and were not driveable. Is that true?"
- "If you cannot charge it then that's true. Strong system, a frame system."
- "My understanding is that the EVs really tend to try to have more people to drive this car and reduce pollution and improve our environment."
- "How long can the battery last for?"
- "I hope technology somehow advances to the point that it only takes like 15 min for the full charge then I might probably consider an EV."
- "I got my car 6 years ago and it's still running well but definitely the chargeable miles are lower than at the beginning."

- "I would say the neighborhood shuttle is kind of something...That would be very important, where the shuttle would just kind of drive around the neighborhood."
- "If they could switch over to electric bringing down the noise level, that would be great."

The Asian Communities value inclusive and accessible education and information dissemination, particularly in their languages. They preferred visual learning aids at EV charging stations and social media and video platforms for outreach, suggesting a need for multilingual and culturally sensitive materials. Additionally, there's an interest in practical solutions for EV adoption, reflecting concerns about costs, charging infrastructure, and the reliability of EVs in various conditions. These insights underscore the importance of addressing financial, educational, and infrastructural barriers to support the Asian Community's transition to TE.

Strengths, Weaknesses, Opportunities, Threats (SWOT) Analysis

Based on the focus group participant's verbatim responses (see page 11), a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was created for each of the main themes that PGE identified as key: education and access to information, financial considerations, and overall transition to transportation electrification (TE).

Education and Accessing Information

Strengths:

1. Participants are receptive to learning through modern technology, such as social media and YouTube, which can be leveraged for educational purposes.
2. The use of visual aids and step-by-step instructions at charging stations is seen as effective and helpful.
3. Multilingual support, including videos and instructions in different languages, is recognized as beneficial for diverse communities.
4. The preference for short videos and clear visual instructions indicates a straightforward way to educate users.
5. Participants acknowledge the convenience of integrated systems, such as vehicle-linked payments at charging stations.

Weaknesses:

1. There is a reliance on technology, which may exclude less tech-savvy individuals or those without access to smart devices.
2. Concerns about downloading multiple apps can be seen as inconvenient and cumbersome.
3. Some participants are not interested in attending workshops, indicating a potential challenge in engaging certain demographics.
4. A lack of consistent information across different charging stations can create confusion.
5. The need for education on the variability of EV range, especially in cold weather, is not fully addressed.

Opportunities:

1. Creating educational content that is easily accessible on popular platforms can reach a wider audience.
2. Providing multilingual support at charging stations and in educational materials can cater to the needs of diverse communities.
3. Simplifying the charging process and providing clear, audible instructions can improve user experience.
4. Leveraging community events and local newspapers can reach older generations who may not use social media.

5. Collaborating with local organizations and community leaders can help tailor educational efforts to specific community needs.

Threats:

1. Misinformation or lack of information about EVs and charging could lead to resistance or skepticism.
2. Language barriers may prevent some community members from accessing information.
3. Rapid technological changes could make current educational materials quickly outdated.
4. Potential overload of information through too many channels could lead to disengagement.
5. Resistance to change and attachment to traditional vehicles may hinder the transition to EVs.

Financial Considerations

Strengths:

1. Participants appreciate the cost savings associated with EVs, especially given high gas prices.
2. Interest in financial incentives, such as vouchers or discounts for EV users, indicates potential for increased adoption.
3. The use of familiar payment methods, like credit cards and mobile payments, is preferred for charging.
4. The idea of an EV-specific payment card or account could streamline the payment process.
5. Participants are open to the idea of prepaid cards for charging, which could facilitate budgeting.

Weaknesses:

1. Concerns about the high upfront costs of EVs and charging infrastructure are significant barriers.
2. Anxiety about the potential increase in electricity costs as more people transition to EVs.
3. The cost of replacing an EV battery is perceived as equivalent to buying a new car, which is a major concern.
4. Participants worry about the affordability of EVs and the potential for cost barriers to rise over time.
5. The need for financial literacy regarding the long-term savings and total cost of ownership of EVs is evident.

Opportunities:

1. Offering financial incentives or subsidies for purchasing EVs and installing home chargers could encourage adoption.
2. Educating consumers about the long-term financial benefits of EVs, including lower maintenance costs.
3. Developing partnerships with financial institutions to provide favorable loan terms for EV purchases.
4. Implementing a standardized payment system for public charging could simplify the process.
5. Exploring alternative business models, such as battery leasing, to reduce the upfront cost of EVs.

Threats:

1. Economic downturns or financial crises could reduce the ability of consumers to invest in EVs.
2. Potential increases in electricity rates could diminish the cost advantage of EVs over gas vehicles.
3. The perception of EVs as a luxury item could persist, deterring cost-conscious consumers.
4. If the cost of charging infrastructure remains high, it could slow down the expansion of charging networks.
5. The risk of power outages affecting the ability to charge EVs could be a deterrent for some consumers.

Overall TE Transition

Strengths:

1. Positive experiences with EVs among participants indicate satisfaction with performance and cost savings.
2. The environmental benefits of EVs are recognized and valued by participants.
3. Interest in electrifying various transportation modes, such as school buses and tractors, shows support for broader TE initiatives.
4. The idea of neighborhood shuttles as part of the TE ecosystem is well-received.
5. Participants are open to transitioning to EVs as technology improves and charging becomes more convenient.

Weaknesses:

1. Concerns about battery life and performance are prevalent, particularly in cold weather.
2. The current charging infrastructure is seen as inadequate for some, with long charging times and limited range.
3. Anxiety about being stranded during power outages or in areas without charging stations.
4. The perceived complexity of the charging process and the need for adaptors can be off-putting.
5. Resistance to change and attachment to traditional vehicles may hinder the transition to EVs.

Opportunities:

1. Battery technology and charging infrastructure improvements could address range and charging time concerns.
2. Public education campaigns can help alleviate fears and misconceptions about EVs.
3. Expansion of charging networks, including fast chargers, could make EVs more appealing.
4. Development of community-based TE initiatives, like neighborhood shuttles, could demonstrate the practical benefits of electrification.
5. Collaboration with utility companies to ensure reliable power supply and support for EV charging during outages.

Threats:

1. Potential resistance from communities that are attached to traditional gas vehicles.
2. The high cost of transitioning to EVs could be prohibitive for some consumers.
3. Technological advancements in EVs could outpace consumer adoption, leading to hesitation.
4. The impact of extreme weather conditions on EV performance and charging infrastructure could deter potential users.
5. Policy changes or lack of government support could slow the transition to TE.

Unresolved Key Issues

Based on the focus group feedback, several unresolved key issues emerged, each with its specific context:

1. **Range Anxiety and Charging Infrastructure**: Participants express concerns over the limited range of electric vehicles (EVs), especially in cold weather, and the availability and convenience of charging stations. This highlights the need for improvements in EV technology and expanded charging infrastructure.
2. **Cost Concerns**: The high cost of EVs and the associated charging infrastructure, including home chargers, is a significant barrier to adoption. Participants seek affordable solutions and incentives to make the transition more economically viable.
3. **Educational Gaps**: There is a clear need for more effective education on EV usage, particularly in using charging stations. The feedback suggests a preference for visual instructions and multilingual support to cater to diverse communities.

4. **Technological Familiarity:** Some participants were reluctant to adopt new technology for EV charging, including apps and digital interfaces. This suggests a gap in designing user-friendly interfaces that cater to all age groups and tech-savviness levels.
5. **Language and Cultural Barriers:** The Asian community highlighted the importance of multilingual education and information, suggesting that current efforts may not sufficiently address language diversity.
6. **Public Perception and Awareness:** Some participants were unaware of the benefits of EVs or had misconceptions about their capabilities, indicating a need for broader awareness campaigns.
7. **Financial Incentives:** There is a call for more financial incentives, such as rebates or tax credits, to make EV ownership more appealing and accessible to a broader range of consumers.
8. **Long-term Battery Performance:** Concerns about the longevity of EV batteries and the cost of replacement suggest a need for advancements in battery technology and warranty programs.
9. **Charging Time:** The time required to charge EVs, especially to full capacity, is a deterrent for some, highlighting the need for faster charging solutions.
10. **Accessibility of Charging Solutions:** The need for accessible charging solutions for people without home charging options, like those living in apartments or without dedicated parking spaces, remains unresolved.
11. **Sustainability of Power Supply:** Questions about the sustainability and reliability of the power supply for EV charging during extreme weather events or power outages were raised, underscoring the importance of a resilient energy grid.
12. **Integration with Public Transportation:** Suggestions for integrating EVs with public transportation, such as electrified shuttles for community mobility, indicate a broader vision for sustainable urban development that remains unaddressed.
13. **Education on Financial Benefits:** There's a need for clearer information on the long-term financial benefits of EV ownership versus traditional vehicles, especially concerning fuel savings and maintenance costs.

These issues collectively point to the need for comprehensive strategies addressing technological, financial, educational, and infrastructural aspects to support the transition to transportation electrification.

Top Twelve Recommendations

Based on the analysis of the Asian Communities Focus Group Questions and Feedback, the following recommendations emerge to address the unresolved key issues:

1. **Expand and Improve EV Charging Infrastructure:** Increase the number of public charging stations, especially fast-charging options, to alleviate range anxiety and support long-distance travel. Ensure these are strategically placed in convenient shopping centers, workplaces, and residential areas.
2. **Subsidize EV Costs and Charging Infrastructure:** Provide financial incentives for purchasing EVs and installing home and public charging stations. These could include rebates, tax credits, and grants to make EVs more accessible to a broader demographic.

3. **Develop Multilingual Educational Materials**: Create and disseminate educational content on EV technology and charging practices in multiple languages, catering to diverse communities to ensure information accessibility.

4. **Simplify EV Charging Process:** Work towards standardizing and simplifying the EV charging process, reducing reliance on multiple apps or complex steps, which can be a barrier to new users.
5. **Enhance Battery Technology and Recycling:** Invest in research to improve EV battery life, efficiency, and sustainability, including advancements in battery technology and recycling programs to address concerns over longevity and environmental impact.
6. **Implement Dynamic Pricing Models for Charging:** Explore dynamic pricing for EV charging to encourage off-peak charging, manage grid demand, and provide cheaper options for consumers.
7. **Increase Public Awareness Campaigns:** Launch comprehensive awareness campaigns highlighting the benefits of EVs, including cost savings, environmental impact, and technological advancements to address misconceptions and promote adoption.
8. **Offer Robust Warranties for EV Batteries:** Provide extended warranties for EV batteries to alleviate concerns over potential replacement costs and increase consumer confidence in EV durability.
9. **Integrate EVs with Public Transportation:** Support initiatives to electrify public transportation, such as buses and shuttles, to reduce overall emissions and introduce communities to electric transportation options.
10. **Promote Workplace Charging:** Encourage employers to install charging stations at workplaces, offering employees the convenience of charging their EVs during work hours.
11. **Facilitate Access to EV Charging for Renters:** Develop solutions for apartment dwellers and those without dedicated parking to access convenient EV charging options, such as shared community charging stations.
12. **Adopt Universal Payment Options for EV Charging:** Standardize payment methods for EV charging across different networks to allow for seamless use of credit cards, mobile payments, and possibly an integrated EV charging card.

These recommendations address the financial, technological, educational, and infrastructural barriers to EV adoption, making the transition to electric transportation more accessible and appealing to a wider audience.

ASIAN AND PACIFIC ISLANDER FOCUS GROUP 2

PGE TE – Focus Group Summary Report with the Asian and Pacific Islander Community
Date of FG: 02/07/2024 **No. of Participants:** 12
PGE Presenter: Kelly Yearick
Name of Facilitator: Therese McLain
Notetaker: Duyen Frederiksen
Time Started: 5:30 pm

PGE PRESENTATION

PGE provided transportation electrification (TE) and charging infrastructure presentations to focus group participants, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions.

The presentation is consistent across all the nine TE focus groups and can be found in the ***"Summary of PGE Presentation."***

Post-Presentation's Questions and Answers Portion

1. Participant question: So just for an average user that's going from a gas vehicle to an all-electric vehicle, what kind of I know, considering the average person drives about 30 miles a day, what would what price difference would I see in my monthly PGE bill if I were to switch over?
   PGE response: Personally, from my experience, I am someone who drives on the lower end of the spectrum on a given day. When we got our electric vehicle, our electric bill went up by about $20 a month. So again, I'm sort of at one end of the use case spectrum so it would depend on your own driving habits. However, I will drop this in the chat as well, but PGE has a costs and savings calculator on our website. I'm not gonna grab the link because it'll take too much time, but you could find it on our website pretty easily and that will actually allow you to look at specific vehicles you might be interested in buying, type in or plug in your number of miles that you drive in a year on average and it'll actually kind of help you estimate that right away.

2. Participant question: How expensive are the batteries to replace and how often do they need to be replaced?
   PGE response: Generally speaking, the batteries for a fully electric car will run anywhere from a few $1,000 to about upwards of $10,000, and that's a really big range first of all, and also a really big number. So I just want to say a couple things, one is that's really the largest thing you might ever have to replace. You can think of it as replacing your engine in a gas car. So when you're having to do that that's a really big thing. It's not a regular thing that most drivers have to do. The other reason that that range is so large is because a lot of EV manufacturers like Nissan, for example, are actually selling refurbished car batteries, so you can get them for a bit cheaper if they've been repurposed and rebuilt from being used in another EV previously, and so those are a lot less expensive. And then to answer the question of how often car batteries need to be replaced, for EVs, they are usually warranted around 8 years or 80,000 miles to a hundred 1,000 miles. That's when you would expect that replacement to occur.

3. Participant question: What's the initial cost of purchasing an all electric or hybrid vehicle?
   PGE response: That's one that is challenging to answer because it's a bit, I shouldn't say challenging, rather nuanced to answer because it's a range depending on what kind of car you're looking at. I would also point again to the costs and savings calculated on our website because it is constantly updated with all of the electric vehicles both fully and hybrid plug-in vehicles on the market and it has the MSRP and also helps you determine what you will actually pay once you consider the various text credits and rebates that are available off the purchase. And that wasn't a very satisfying answer I realized, so I would say the cost of electric vehicles is still more expensive than a gas counterpart. We're expecting cost parity to come around 2030, so we're a few years out from that. And I would say in general, you're going to expect to pay a few thousand more at minimum for an electric version of a gas car, but that upfront cost is really where the cost differences do a flip, because once you purchase the EV then the long lifetime fuel and maintenance costs are much lower. So it's helpful to think of it as the whole life cycle of your ownership, however, it's certainly that upfront cost is a huge barrier.

4. Participant chat feedback: I have been owning EV's for over 5 years and have a full electric garage (two EV's and an electric bike). I also am the energy champion at work and trying to move the fleet to Electrical in the future. Currently getting a company charging network off the ground.

FOCUS GROUP QUESTIONS AND FEEDBACK

Summary

The second Asian and Pacific Islander focus group discussion sheds light on various perspectives regarding participants' current transportation landscape, education and accessing information about electric vehicles (EVs) and charging infrastructure, financial considerations, and the overall transition to transportation electrification. These insights offer a multidimensional view of the participants' experiences, preferences, and concerns, which can inform strategies to support the adoption of EVs.

Participants' current transportation methods vary significantly, from exclusive use of EVs to reliance on public transit and gasoline-powered vehicles. The diversity in transportation modes highlights a mix of satisfaction and desire for change among the participants. The electric vehicle users expressed high satisfaction due to the cost efficiency and convenience of charging, especially when leveraging off-peak electricity rates. Conversely, non-EV users cite various reasons for not transitioning to EVs, including financial constraints, satisfaction with current vehicles, and lifestyle compatibility concerns.

The discussions revealed diverse preferences for receiving information about EVs and charging stations highlighting the significance of both digital and traditional communication channels. Participants advocate for utilizing online forums and social media platforms like Facebook, Instagram, and TikTok for peer-based learning and sharing experiences. This approach caters to a broad demographic, including younger generations who prefer engaging in creative content. However, there's also a notable appreciation for in-person engagement and traditional media channels among other participants. This diversity underscores the importance of a multi-channel approach. Additionally, the effectiveness of in-person interactions and community outreach, especially in culturally specific contexts, is emphasized. Educational content should be accessible and inclusive, with suggestions for multilingual instructions and visual aids to accommodate non-English speakers and ensure comprehensibility for all education levels.

Financial considerations emerged as a significant theme, with discussions on the cost of EVs, charging, and incentives. Participants expressed interest in financial benefits and savings as key motivators for transitioning to EVs. The discussion points towards a preference for convenient and familiar payment methods for EV charging, such as credit cards, and the importance of clear, upfront information about charging costs. The mention of incentives and rebates indicates a strong potential leverage point for encouraging EV adoption, provided these financial benefits are effectively communicated and accessible to potential EV users.

Participants expressed a mix of optimism and concern regarding the transition to transportation electrification. Concerns include the reliability of the power grid, charging infrastructure, and the environmental impact of EV batteries. However, there's also recognition of the benefits of electrification, particularly in terms of reducing dependence on fossil fuels and achieving cost savings. The feedback emphasizes the importance of addressing practical and perceptual barriers to EV adoption, enhancing infrastructure resilience, and ensuring the environmental sustainability of EV technologies.

Overall, the sentiment towards transportation electrification among the participants is cautiously optimistic, tempered by practical concerns about infrastructure, cost, and technology limitations.

There's a clear recognition of the potential benefits of EVs, both financially and environmentally, but also a need for comprehensive support and education to facilitate the transition. Ensuring robust infrastructure, providing financial incentives, and adopting inclusive, multi-channel education strategies emerge as critical factors for overcoming barriers to EV adoption and harnessing the positive sentiment towards transportation electrification.

Sentiment Highlights on the Main Themes

Based on the provided participant responses, the data can be organized into four primary themes: Current Transportation Landscape, Education and Accessing Information, Financial Considerations, and Overall Transition to Electric Vehicles (TE). Each theme is accompanied by imparted sentiments expressed by the participants, categorized as positive, negative, or neutral.

Theme: Current Transportation Landscape
Overall Sentiment: Mix of Positive, Neutral, and Negative
Key responses:

- "I have driven an electric car for the past 5 years, and so my landscape is fully EV...I could basically drive all week without having to charge again, as my car has a range of 325 miles."
- "I would love to own an EV if I had enough money because I know they don't have that much maintenance so that would be nice."
- "But, also I'm just thinking about the environment as well. I would love to own an EV."
- "I choose to have electricity from PGE on cost of service, so I charge my car after 9 pm, where it's only 4 cents per kilowatt hour."
- "Once a week I go into the office...and I take the MAX. But other than that it's mainly driving...The biggest thing I like about the MAX is not sitting in traffic."
- "I don't really use my car that much...most of my classes are online on Zoom and so I don't really need to go anywhere."
- We definitely put on a lot of mileage...it would definitely have to be something that held the decent charge."
- "For me, our transportation is not really trustworthy because all of my cars that I've gotten were used...I didn't feel safe on the MAX."
- "I'm gonna be in a lot of debt. So I don't really want to buy another car when my current car is paid off."
- "I would love to own an EV, but the prices don't look too good."

Theme: Education and Accessing Information
Overall Sentiment: Positive to Neutral

Key Responses:

- "I would recommend joining some forums and hearing what people are talking about for a certain vehicle that you may be interested in."
- "I feel like something that gets my attention is in-person contact...I'm more prone to interact and give feedback."
- "I would probably say more so social media...in a creative use that captures your attention."
- "Just regular commercials work pretty all right for me...I'll do a little more research after it's introduced to me."
- "The dealership gets you very much acquainted with the car for actually a whole hour and how to program the car."

- "Community newsletters would help a lot in church, where in the Tongan community, we help each other."
- "I would recommend it if you're interested in an EV before you buy one, join one of the online Facebook or Instagram forums."
- "I'm from Gen Z, so if you want our perspective, I would probably say more so social media."
- "English would be helpful for everyone but not everyone can speak English."
- PGE definitely does at least once a year, a public EV event...So definitely look into PFE because they've definitely put on an EV event to test drive and learn about EVs."
- "I think that works best with illustrations."
- "Just talking about EV cars, wouldn't mean much to us because we only care about surviving."
- I think a video would be helpful because I remember how recently in Oregon they started letting us pump our own gas."

Theme: Financial Considerations
Overall Sentiment: Predominantly Positive

Key Responses:
- "I would recommend going to a credit card...if you use the Costco Credit Card for paying for EV charging, you get 4% as well, so I 100% recommend that as the way to pay for your charging and it's pretty seamless this way too."
- "..but there are plenty of free charging out there. You just need to know where to find it...Once you have an EV, you can use apps like plug share, and that app will tell you where all the charging is, what it's going to cost."
- "I immediately thought of college when we have to do laundry, and how there was a machine right there that would change it from cash to a prepaid card...we could have some way to connect the cash to some sort of thing that can be used at the charging station."
- "I'm cool with the debit card, but definitely knowing what the bill is going to be or how much it's going to be charging per month or however, each time you charge it or use it is definitely helpful so you're not really surprised by whatever cost hits you."
- "Just like buying gas, wherever you go to charge, the price will be displayed and then as you charge, your total will be shown exactly in real time and you can cancel at any time."
- "Would people know how much their bill will be at the beginning of the month or after the
- month?...you just need to think through how you will know how much you're going to get charged because that impacts a lot of people's budgets."

Theme: Overall TE Transition
Overall Sentiment: Negative to Neutral

Key Responses:
- "What do we do when there's no electricity? I'd be worried."
- "Do we have enough resources to sustain the amount of power that will be needed?"
- "EVs lose some of their travel range in the cold, especially sub-zero temperatures. They also don't charge as quickly."
- "The batteries that they use, once that's done with, you can't recycle them, so it'll just end up in a landfill."
- "If I were to have an EV, I think I would probably charge it at home just out of convenience, but knowing that, if I were to charge it somewhere else, I'd have to physically be there for X amount of time."

- "The price to buy a vehicle of course."
- "Cost of vehicle, cost of charging, cost of maintenance."
- "I say yes, PGE should go forward with electrifying school buses, tractors, and bikes...it's not coming out of my pocket."
- "We should reduce our dependence on fossil fuels. Eventually, we may run out."

The participants' feedback also revealed that environmental considerations are important to Asian and Pacific Islander communities. For instance, a participant's significant interest in owning an EV due to lower maintenance needs and the desire to make environmentally friendly choices highlights an important aspect of environmental considerations. This interest is juxtaposed with concerns about the affordability of EVs and the reliability of used cars, indicating a broader concern for sustainable transportation options accessible to individuals at different financial levels. The mention of battery issues and the environmental impact of lithium batteries in EVs underscores the complexity of environmental considerations, where participants are weighing the benefits of EVs against potential environmental drawbacks.

SWOT Analysis

Based on the focus group participant's verbatim responses (see page 12), a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was created for each of the main themes that PGE identified as key: education and access to information, financial considerations, and overall transition to transportation electrification (TE).

Education and Accessing Information

Strengths:

1. PGE hosts public EV events, providing hands-on experiences and direct education to the community.
2. Word-of-mouth from peers who are EV users can be a powerful tool for spreading information.
3. Utilizing various platforms like YouTube, social media, and community outreach can reach different demographics effectively.
4. Recognizing the need for multilingual instructions can help reach non-English speaking communities.
5. Using visual instructions, such as videos or pictograms, can simplify the learning process for all literacy levels.
6. Encouraging participation in online forums can provide prospective EV users with a wealth of user experiences and advice.
7. Clearly communicating the financial incentives and cost savings associated with EVs can motivate community members.

Weaknesses:

1. Too much technical information can overwhelm and deter potential users.
2. While there is a need for multilingual resources, they may not be widely available, especially for less common languages.
3. Not all community members may have access to the internet or social media, limiting their access to information.
4. Current educational events like PGE's public EV event are infrequent, limiting opportunities for learning.
5. One-size-fits-all approaches may not address individual concerns or learning preferences.
6. Younger generations may not engage with traditional media channels like print or radio.
7. Potential users may not know where to start looking for information or may find the search process daunting.

Opportunities:

1. Increasing the frequency and variety of educational events can reach more community members.
2. Creating spaces for EV users to share experiences and tips can foster community support.
3. Tailoring information delivery to specific demographics can increase engagement.
4. Collaborating with local businesses for outreach can leverage existing community trust.
5. Highlighting financial incentives and rebates can make the transition to EVs more appealing.
6. Developing user-friendly apps with instructional content can provide on-the-go support.
7. Training community members to become EV ambassadors can help spread knowledge through trusted networks.

Threats:

1. Rapid changes in EV technology can make it challenging to keep educational materials up-to-date.
2. Incorrect information spread through social media or word-of-mouth can lead to confusion.
3. Financial constraints may prevent community members from prioritizing education on EVs.
4. Some communities may be resistant to change due to longstanding habits or skepticism.
5. Lack of resources in certain languages can exclude segments of the community.
6. A lack of digital literacy or access can prevent some from accessing online resources.
7. Worries about the adequacy of the power grid and charging infrastructure can undermine educational efforts.

Financial Considerations

Strengths:

1. Federal and state rebates and incentives can significantly reduce the cost of purchasing an EV.
2. EVs offer long-term savings on fuel costs, especially with smart charging strategies.
3. EVs typically have lower maintenance costs compared to traditional vehicles.
4. Using credit cards that offer cashback for charging can provide additional financial benefits.
5. Availability of free charging stations at locations like Walmart can reduce costs.
6. Real-time pricing information at charging stations helps users manage expenses.
7. PGE can educate consumers on how to maximize financial benefits from EV ownership.

Weaknesses:

1. The initial purchase price of EVs can be a barrier for many potential buyers.
2. Understanding and accessing available incentives can be complicated and time-consuming.
3. Free charging stations are not universally available, and their locations may not be convenient for all users.
4. Not all charging stations accept cash, which can be a barrier for those who do not use credit cards.
5. Consumers may need tools to help budget for EV-related expenses.
6. Lower-income communities may struggle to afford the transition to EVs even with incentives.
7. The resale value of EVs can be uncertain, affecting long-term financial calculations.

Opportunities:

1. Increasing the availability and simplicity of incentives can make EVs more accessible.
2. Collaborating with banks or credit unions to offer EV loans or financing options.
3. Campaigns focused on the total cost of ownership can highlight the long-term financial benefits of EVs.
4. Introducing more payment options at charging stations, including prepaid cards or mobile payments.
5. Implementing EV car-sharing programs can provide access without the need for ownership.
6. Group discounts for communities or organizations can reduce purchase costs.

7. Encouraging a robust market for used EVs can make them more affordable.

Threats:

1. Recessions or financial crises can reduce consumer spending power and interest in EVs.
2. Potential reductions or eliminations of government incentives can increase the cost of EV ownership.
3. Increases in electricity prices can diminish the cost savings of EVs.
4. Fluctuations in the EV market can affect affordability and consumer confidence.
5. General inflation can erode the purchasing power of consumers, making EVs less attainable.
6. Improvements in the fuel efficiency of gas vehicles can make them more financially competitive.
7. The potential need for home charging installations can add to the financial burden.

Overall TE Transition

Strengths:

1. Transitioning to EVs contributes to reducing carbon emissions and combating climate change.
2. The EV market is rapidly innovating, offering more choices and better technology to consumers.
3. Initiatives to electrify public transportation like school buses can garner community support and provide exposure to EVs.
4. Electrification efforts contribute to energy independence and sustainability.
5. Reduced emissions from EVs can lead to improved air quality and public health.
6. The growth of the EV industry can create new jobs in manufacturing, infrastructure development, and maintenance.
7. Electrification initiatives can serve as educational platforms for communities to learn about sustainable practices.

Weaknesses:

1. Concerns about the driving range of EVs and the availability of charging stations can deter adoption.
2. Doubts about the power grid's capacity to handle widespread EV charging can create hesitancy.
3. Transitioning to EVs may lead to job losses in industries related to traditional vehicles.
4. Some consumers may be uncomfortable with or distrustful of new technology.
5. The impact of extreme temperatures on EV performance can be a concern for some users.
6. Longer charging times compared to fueling gas vehicles can be seen as inconvenient.
7. Concerns about the environmental impact of battery disposal can counteract the perceived green benefits of EVs.

Opportunities:

1. Investing in charging infrastructure can alleviate range anxiety and support wider adoption.
2. Educating the public on how EVs can function during power outages and grid issues.
3. Offering training for workers transitioning from traditional vehicle industries to the EV sector.
4. Innovations in battery technology can improve performance and reduce environmental impact.
5. Collaborating with schools and universities to integrate EVs into educational programs.
6. Implementing pilot programs in diverse communities to demonstrate the benefits and feasibility of EVs.
7. Developing policies that ensure equitable access to EV benefits across all communities.

Threats:

1. The cost of EVs and charging infrastructure can be prohibitive for some communities.
2. Rapid advancements in technology can make current EV models quickly outdated.
3. Negative perceptions or misinformation about EVs can slow down the transition.
4. Potential regulatory hurdles can impede the development of charging infrastructure.
5. The emergence of alternative green technologies could compete with EVs for public and private investment.

6. Events like power outages from natural disasters can undermine confidence in the reliability of EVs.
7. Disruptions in the supply chain for EV components can affect availability and cost.

Unresolved Key Issues

Given the extensive feedback across various discussions, identifying unresolved key issues requires a structured approach, focusing on distinct areas such as the transportation landscape, education and accessing information, financial considerations, and the overall transition to electric transportation (TE). Here are 15 unresolved key issues, categorized and contextualized based on the participant responses:

1. **Range Anxiety and Charging Infrastructure:** Concerns about EV range and the availability of charging stations, especially in remote areas, indicate a need for a more robust charging infrastructure.
2. **Power Outages:** The impact of power outages on EV charging capabilities raises questions about the resilience of the electric grid and alternative charging solutions during emergencies.
3. **Vehicle Cost:** The high initial cost of EVs remains a barrier to adoption, suggesting a need for more affordable options or financial incentives.
4. **Environmental Impact of Batteries:** The environmental concerns related to EV batteries, particularly regarding their disposal and the cold weather's impact on battery efficiency, highlight a need for sustainable battery technologies and recycling programs.
5. **Effective Communication Channels:** Diverse preferences for receiving information (social media, in-person outreach, traditional media) underscore the importance of a multi-channel communication strategy to educate the public about EVs.
6. **Language and Accessibility:** The need for multilingual and accessible information (including visual aids for the deaf and hard-of-hearing community) emphasizes the importance of inclusivity in educational materials.
7. **Payment Methods for Charging:** Preferences for payment methods (credit cards, prepaid cards, billing options) and concerns about the predictability of charging costs suggest a need for flexible and transparent payment solutions.
8. **Incentives and Rebates:** The role of financial incentives in encouraging EV adoption points to a need for continued or enhanced rebate programs to offset the costs of purchasing and operating EVs.
9. **Concerns Over Job Losses:** The potential impact of a shift to EVs on jobs in traditional fuel sectors (e.g., gas stations) raises questions about workforce transitions and support for affected workers.
10. **Public and Non-Private Vehicle Electrification:** Interest in electrifying public and commercial vehicles (e.g., school buses, tractors) suggests a broader scope for TE beyond personal vehicles, with implications for policy and investment.
11. **Consumer Attitudes and Behavioral Change:** The varying levels of enthusiasm and concern among potential EV users highlight the importance of addressing psychological and behavioral barriers to adoption.
12. **Technology Integration and User Experience:** The need for user-friendly technology solutions, such as apps for finding and operating charging stations, points to an area for innovation and improvement.
13. **Impact of Weather on EV Performance:** Concerns about the performance of EVs in extreme temperatures indicate a need for technology improvements and user education on managing such conditions.

14. **Infrastructure Development for Remote Areas:** The lack of charging infrastructure in remote areas remains a significant barrier, underscoring the need for strategic planning and investment in these regions.
15. **Sustainability of EV Manufacturing:** Questions about the environmental sustainability of producing EVs and their components, including batteries, suggest a need for lifecycle analyses and sustainable manufacturing practices.

To ensure a smooth and inclusive transition to electric transportation, addressing these unresolved issues requires a collaborative effort among stakeholders, including manufacturers, policymakers, utility companies, and communities.

Top Twelve Recommendations

Based on the focus group feedback, here are the top 12 recommendations for PGE to consider in their TE outreach and implementation strategies for under-represented communities such as the Asian and Pacific Islander communities:

1. **Provide Financial Incentives and Information:**
   - Clearly communicate the cost savings of EV ownership in terms of monthly expenses.
   - Offer rebates, tax credits, and incentives for purchasing EVs and installing home chargers.
   - Educate on the long-term financial benefits, including lower maintenance costs.
2. **Increase Accessibility of Charging Stations:**
   - Ensure charging stations are available in remote areas and are reliable.
   - Consider the impact of temperature on charging efficiency and battery range.
   - Explore options for payment at charging stations, including credit cards, prepaid cards, and mobile payments.
3. **Enhance Education and Outreach:**
   - Utilize social media platforms preferred by different generations (e.g., Instagram, TikTok) for outreach.
   - Host community events and workshops to provide hands-on experience with EVs.
   - Create visual, easy-to-understand tutorials on using EVs and chargers, available in multiple languages.
4. **Develop Multilingual Resources:**
   - Offer instructions and educational materials in various languages, including Spanish, Korean, and languages spoken by Pacific Islander communities.
   - Use universal symbols and illustrations for charger instructions to cater to diverse literacy levels.
5. **Support Through Community Organizations:**
   - Partner with local community groups, churches, and non-profits to disseminate information and offer support.
   - Focus on community-specific concerns, such as financial stability and environmental impact.
6. **Promote Peer-to-Peer Education:**
   - Encourage word-of-mouth marketing by leveraging the experiences of current EV owners.
   - Create forums and support groups for potential and current EV owners to share experiences.
7. **Address Infrastructure and Power Concerns:**
   - Reassure communities about the reliability of the power grid and the availability of charging during power outages.
   - Plan for the expansion of the power grid to accommodate increased EV usage.

8. **Offer Diverse Payment Options for Charging:**
    - Provide multiple payment methods for public EV charging, including credit cards, mobile payments, and possibly on-bill payments.
    - Ensure transparency in charging costs and provide real-time billing information.
9. **Electrify Public and Commercial Transportation:**
    - Support the electrification of school buses, tractors, and bikes to expose more people to EV technology.
    - Work with businesses to transition their fleets to electric vehicles, providing a model for individual consumers.
10. **Ensure Dealerships Provide Comprehensive Education:**
    - Ensure that dealerships offer thorough tutorials on EV usage, including charging, during the purchase process.
    - Provide a list of charging stations and pricing to new EV owners.
11. **Create Accessible Instructional Content:**
    - Develop video tutorials and printed guides that are accessible to people with disabilities, including the deaf and hard-of-hearing community.
    - Consider the use of apps and online resources for instruction and support.
12. **Consider Environmental and Recycling Concerns:**
    - Address concerns about the environmental impact of EV batteries and their disposal.
    - Provide information on battery recycling programs and the overall environmental benefits of EVs compared to traditional vehicles.

These recommendations aim to ensure that PGE's TE efforts are inclusive, equitable, and responsive to the needs and concerns of Asian and Pacific Islander communities.

WHITE, LOW INCOME, RENTERS FOCUS GROUP

PGE TE – Focus Group Summary Report with White - Low Income, Renters, Multifamily Communities
Date of FG: 02/15/2024 **No. of Participants:** 10
PGE Presenter: Kelly Yearick
Name of Facilitator: Therese McLain
Notetaker: Duyen Frederiksen
Time Started: 5:30 pm

PGE PRESENTATION

PGE provided transportation electrification (TE) and charging infrastructure presentations to the White Low-Income, Renters, and Multifamily Communities focus group participants, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions.

The presentation is consistent across all the nine TE focus groups and can be found in the ***"Summary of PGE Presentation."***

Post-Presentation's Questions and Answers Portion

- *Participant question*: I was curious if environmentally there is any drawback to how intensive the super chargers are? At its current state, what is the cost to deliver the electricity that fast?

I'm curious why they're not more prevalent than a home charging situation and then I guess I'm also curious if it's more energy intensive to deliver it at that speed? And then my second question, which is maybe more important, but I was considering purchasing an electric vehicle before I decided on a hybrid because I didn't feel like the infrastructure was quite there yet. I'm curious what climate and disaster relief resiliency looks like for electric vehicles. Obviously, Portland gets storms and snowstorms where the power is just out completely. And I'm curious if there have been any conversations about how that plays out for folks' lives when they also may not be able to get in their car or get out of that situation. That was honestly more interesting to me.

PGE response: Those are great questions. There was a lot to that second one. So I want to make sure I answer all of it. So let me know if I didn't when I'm done. To answer your first question, I think pretty, I guess plainly, I would say or at least to answer it at the most high level and quickest way, it is a lot more expensive to install those fast charging stations because they're providing so much energy at one time that it just draws on the grid a lot more than like when you plug in a toaster or your computer at home, those are much smaller draws on the grid. And so it's a slower draw, which takes longer to charge up the battery. Whereas in a fast charging situation, you're pulling a lot of energy all at once. And just because of the way that we have to ensure that that energy is being delivered in a safe way, in a controlled way, it just is a more expensive infrastructure to put in. So to get your second question, I would say a couple of things, one. There are a number of automakers as well as charging station providers that are coming out with solutions to allow individual consumers like you and me to have their vehicle used as an energy storage solution for them. So if you think about it, you might carry around a battery pack that you use to charge up your phone every so often, or maybe it's even a laptop charging unit that you can take on the go with you. Your vehicle is like that too. And so there are a lot of automakers that are trying to capitalize on that, just like we are as consumers wanting to experiment with that option. For example, you could buy a Ford F150 Lightning and install a specific charging station, and that would allow you to use your car or your truck in that case, to send power back to your home in the event of a power outage. So I would say the market itself is providing a lot of innovation in terms of what we're able to do and how we can leverage electric vehicle batteries. And so that's pretty exciting to kind of see what the market itself is presenting. From the utility perspective, we are doing some testing of our own, like we have a few small pilots where we're testing this on a small scale with looking to do that with individual light duty vehicles, like what you would drive. But then also we're looking at that from a larger perspective of school buses, for example, that spend a lot of their time stationary and parked. And so as those school buses become electric, and have really giant batteries, we're trying to understand how we might use the energy in those batteries to help the grid in really hot summer days or in the cold of winter, when they don't need to be out driving anywhere, but might be able to provide services back to the grid and support the grid in that way. I think I might pause there because that was a lot of information.

    - *Participant follow-up question:* Not unlike a backup generator?
      PGE response: Correct, not unlike a backup generator. You need to make some choices as to what appliances to power with the battery like you do with a generator.

- *Participant question*: How much do people pay for electric bills if they charge at home? Level 1, I mean.
  PGE response: I would say speaking from my own experience, when I got an EV a couple of years ago, I noticed my electric bill went up by about $20 to $25 per month. Which again, I then

wasn't having to pay for gas at that same time. So while my electric bill was going up, my gas bill went to zero. And I would say I was paying more for gas than I am now for paying to fuel my car with electricity. And I noticed you put in parentheses level one. I would say the electricity that I pay at home for level one and level two is actually the same price. My utility doesn't care so much how quickly I'm pulling that electricity at my home, it's just how much is dispensed overall.

- *Participant question*: Yeah - power outage was bad and that might have made EVs useless; also I *heard that Lithium batteries are very low performing during super-cold weathers?*
  PGE response: There's a lot of really interesting research, but also just anecdotal evidence that shows that EVs actually perform as well, if not better than gas cars in really cold environments. What you may see or hear is that just because they're not a gas, they don't have a gas engine, that means they have to have a heat pump to provide heat to the vehicle. So in a gas car, you get heat for free, basically, you just get the heat off of the engine as it gets hot as it's running. But without an engine with just that motor, there's not a lot of excess heat being produced by the vehicle. And so the car has to provide that heat to warm the cabin to make us comfortable. So it's actually those types of things that cause the battery to decline more quickly, it's our use of those extra systems that cause the car battery to decline more quickly, in cold weather. The vehicle on the whole, if you didn't run the heat at all, or even if you were running, the heat runs just fine. In fact, some of the biggest EV adopters in the country are in very cold environments, like in the Scandinavian countries in Europe. So it's pretty fascinating stuff. But a lot of their performance will come down to us as the user of that vehicle and how much we're trying to ask of the car at the moment if that makes sense.

  - *Participant question:* What's the average lifetime of the batteries used in EVs? Do they need to be replaced every five years, etc.?
    PGE response: Most EV batteries are warranted for 8-10 years or 100,000 miles. At this point, EV drivers can expect that their battery would be less capable of charging up to the full range that it did when it was new. For example, a car might only be able to charge up to 200 miles instead of 250 miles after eight years. For some, the battery might need to be replaced or that might be preferable to achieve a longer range.

  - *Participant question:* Where does PGE source their electricity from? coal? Nuclear power? Renewable resources? Etc.?
  - *PGE response:* Water power, wind, solar, natural gas and a small amount of coal are all part of the diverse mix that makes up our energy generation facilities. To provide you with reliable energy at the lowest cost, we draw from a variety of energy options. Your energy might be coming from a hydroelectric, natural gas, wind, or solar plant that we own (or jointly own), or it might be power that we purchased on the wholesale market because it was a great deal. We also have a small amount of coal that we're working on eliminating from our resource mix no later than 2035. We use our transmission lines and the regional power grid to move the lowest-cost electricity in real time from where it's generated to where it's needed. Learn more here at PGE's: Energy Sources | How We Generate Energy.

  - *Participant question: And if it's coal, how does the amount of carbon emitted producing electricity compare to the use of gasoline cars? Two participants also wanted to follow up on this question.*
    PGE response: Check out the Union of Concerned Scientists' EV tool which is regularly updated to reflect the carbon emissions of driving an EV depending on where you live and

charge or fuel your vehicle. In the Pacific Northwest, where much of our electricity comes from renewable energy sources like hydropower and wind, EVs can be fueled using much less emissions than gas cars. As a disclaimer: this tool estimates carbon emissions from EV charging but doesn't include pollution from vehicle or battery manufacturing or disposal. Those emissions vary by vehicle but tend to be higher for electric vehicles than gasoline-powered ones, as battery manufacturing is energy and resource-intensive. Over the vehicle's lifetime, however, the global warming emissions benefits of driving on electricity far outweigh the emissions costs of vehicle manufacturing; most EVs "payback" their production emissions within one or two years of driving (about 20,000 miles driven), a period that will shorten as electricity grids get cleaner.

- *Participant question **(see page 26)**:* Does AAA roadside assistance service support EVs?
  PGE response: Yes! From AAA Oregon: If you're in the Portland Metro area and need a roadside boost, AAA can charge up members with discharged electric vehicles. After charging, your vehicle will have up to 10 miles of range (depending on the vehicle) to get to a charging station. AAA's roadside EV charging will provide up to a 30-minute Level II charge using the Blink IQ-200-M mobile charging unit with the standard J1772 plug for 10 or more miles of charge to your EV (depending on the type of vehicle). AAA now can charge most Electric vehicles, including Electric Motorcycles with this standard plug type. You can also charge a Tesla vehicle using the Tesla J1772 adapter. The mobile electric vehicle charging truck is very similar to AAA's other light services vehicles. The truck is equipped to allow AAA's technicians to provide traditional AAA Roadside Assistance capabilities to all motorists, such as battery testing and replacements, jump starts, tire changes, and fuel delivery. Check out AAA Oregon's website for more information: Electric Vehicle Charging Stations at AAA! | AAA Oregon/Idaho

- *Participant question (see page 23): Does PGE give deals for commercial transportation users for converting to EVs? I began seeing Amazon using electric delivery trucks around here lately. Business users will likely choose EVs if they help with their bottom lines.*
  PGE response: Yes, PGE's Fleet Partner program supports commercial fleets transitioning to electric. Specifically, we help these customers understand the charging needs of the various vehicles on the market today. More info here: Fleet Partner (portlandgeneral.com)

FOCUS GROUP QUESTIONS AND FEEDBACK

Sentiment Highlights on the Main Themes

Based on the provided participant responses, the data can be organized into four primary themes: Current Transportation Landscape, Education and Accessing Information, Financial Considerations, and Overall Transition to Electric Vehicles (TE). Each theme is accompanied by imparted sentiments expressed by the participants, categorized as positive, negative, or neutral.

Theme: Current Transportation Landscape
Overall Sentiment: Combination of Positive and Negative

Key responses:

- "I personally take public transit in Portland pretty much exclusively. I'd say this is some of the best public transportation I've seen."

- “I've been using the MAX for the last about 10 years, as long as I've been in Portland and I personally haven't had an issue."
- "I receive a discounted bus pass through work so I often use the bus, walk, or use my car for longer drives."
- "MAX line is my comfortable public transit as I find it more reliable."
- "I have a personal vehicle. I never really use public transit."
- "I have a personal vehicle but I work less than a mile and a half from home, so if I do drive, I'm not going very far."
- "Car meets my needs."
- "Public transit. Sometimes by car. Usually meets my needs."
- "The buses are late a lot but it happens, there's traffic."
- "I wish TriMet went all night because a lot of times if you ride the bus to work and if you get off late or if you work early, you can't take transit."
- "Mostly bicycle which limits my mobility based on weather, terrains, and my stamina."
- "I would like to use public transit more but I live in St. Johns and experience similar issues with the buses and are not close to a Max line."

Theme: Education and Accessing Information
Overall Sentiment: Positive to Neutral

Key Responses:
- "I definitely am more often on social media, and things like that. So more likely, like Instagram, things of that nature."
- "I piggyback off the texting and just in general, any form of communication that comes from a friend or family or coworker that's shared, whether it's a text message, and maybe a direct message or even a tweet but I'd say that that kind of carries some weight more than ads at all."
- "I second the discourse around accessibility, I think that was really lovely. I am not on social media and don't consume a lot of TV, so community organization and word of mouth is really important."
- "I would say again, simplified picture pictures, just easy to read instructions, comic style paneling and or an option for short video. Again, that's how my brain works better..."
- "Videos need to be close-captioned or accompanied by a sign language box. The great thing about close captions on YouTube is you can do multilingual captions or even automatic translations."
- I think someone would have to show me the first time but nice to have reminders on how to use it."
- "I think a combination of both definitely needs to be at the stations... if you can make the design intuitive enough, you don't really need instructions..."
- "I would say again, simplified picture pictures, just easy to read instructions, comic style paneling and or an option for short video."
- "I think someone would have to show me the first time but nice to have reminders on how to use it."
- "As far as what languages I think would be most helpful, I think you'd have to look at demographics for specific areas that you're looking into, because population varies."
- "I'm actively at all times trying to not be marketed to. So seeing ads and stuff I purposely don't look at them or entertain them really as much as possible..."

- "What is the nature of this communication? Advertising? or notices about preparedness? Or... I think different natures of communications call for different modes."
- "So for me, my attention span is little, a lot of the times. And if I were to see something out and about, I have a very short window of how long I'm going to look at it..."
- "Do charging stations already have illustrated decals to explain how to use them?"
- "So for me, my attention span is little... I'm more likely to watch a short clip... If it's too wordy, I will... lose interest... For me it is just easier to retain I think."
- "Videos need to be close-captioned or accompanied by a sign language box."

Theme: Financial Considerations
Overall Sentiment: Positive to Neutral

Key Responses:
- "Easiest way to pay: through my phone Apple Pay or credit card. I also use Venmo and Kuto on occasion."
- "Make it an easy pass or you could technically have something like a charging pass that will just pull money directly off of it."
- "I like to pay with a credit card in order to get points. I also like apps and online. I love Venmo as well."
- “Credit card. Convenience. It is most simple.”
- “Another possible idea is to link EV to an electric utility account.”
- I almost always use a debit card, or a credit card for emergencies.”
- "Another possible idea is to link EV to an electric utility account, making it possible to pay for EV charging stations along with the monthly household electric bills."
- "I wonder if an account could be created for billing that a bottle drop account could be linked to as partial payment and then a backup card/bank account could be used to cover the rest of the bill."
- "I almost always pay cash. That is not only just the easiest but is the safest - no hackers, no identity thefts."
- "I wonder if an app for EV charging would be helpful or a barrier."
- "I have a Hop card but the ways to reload those cards are quite limited here in the suburbs."
- “I think you could potentially install a camera to capture a license plate number when folks charge.”
- Gas stations take cash so EV charging stations also should and the Oregon state law prohibits cash-free businesses.”

Theme: Overall TE Transition
Overall Sentiment: Predominantly Negative

Key Responses:
- "For me, it's the charging time, that's just hands down. That's why I haven't even considered even looking at one..."
- "...then I heard about the batteries...the batteries are catching on fire."
- "...the concerns about lithium mining, specifically how it's often filed as slave labor, and essentially perpetuates genocide in a lot of places."
- "My first concern is infrastructure. When I had a purely electric car, there were not enough charging stations."

- "I am somewhat concerned about the environmental effects of the battery itself."
- "I am concerned about the charging time and cost to replace parts of the vehicle."
- "...not having access to charging station because of traveling to a place without charging stations available..."
- "I do not own an EV and I'm not interested in owning one- I am not able to afford one and I'm concerned about the environmental impact..."
- "Because of the technological advances, an EV depreciates a LOT faster than gas cars..."
- "The biggest thing that concerns me is the ultimate impact that the production EV has on the environment."
- "I used to live in a more rural area...and there was only one EV charging station..."
- "EV manufacturers need to ultimately explore alternatives to lithium or any other rare earth minerals, they damage the environment."

The participant's feedback indicates a neutral awareness of existing educational gaps and positive attitudes toward potential solutions. The collective feedback also showcases a strong inclination towards embracing diverse and innovative payment technologies for EV charging, with a practical recognition of the associated challenges. Finally, there is a strong concern about the transition to electric vehicles, highlighting significant barriers to adoption and acceptance. While there is a recognition of the potential benefits of TE, the focus group feedback suggests that practical, environmental, and ethical concerns currently overshadow these benefits.

SWOT Analysis

Based on the focus group participant's verbatim responses (see page 15), a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was created for each of the main themes that PGE identified as key: education and access to information, financial considerations, and overall transition to transportation electrification (TE).

Education and Accessing Information

Strengths:

1. Community engagement: Participants prefer local community outreach and word-of-mouth communication, which can be leveraged for effective education.
2. Visual learning: There is a strong inclination towards visual and hands-on learning, suggesting that visual aids and demonstrations could be highly effective.
3. Digital platforms: Social media and digital platforms are prevalent, offering a direct channel to reach and educate the community.
4. Multilingual needs: Awareness of the need for multilingual instructions indicates a readiness to cater to diverse communities.
5. Interest in learning: Participants are willing to learn about EV technology, indicating an engaged audience.
6. Accessibility of information: Suggestions for QR codes and embedded videos at charging stations show a path for making information easily accessible.
7. Creative ideas: Participants offer creative ideas like comic-style instructions and YouTube videos, which could make learning more engaging.

Weaknesses:

1. Overload of information: Participants actively try to refrain from marketing, which could make it challenging to capture their attention.
2. Limited attention spans: Short attention spans may hinder the effectiveness of educational materials that are longer and more complex.

3. Disparity in tech access: Not all community members may have equal access to digital platforms, potentially limiting the reach of online education.
4. Resistance to change: Some participants resist new technology, which could slow the adoption process.
5. Lack of familiarity: The novelty of EV technology may intimidate some users, creating a barrier to learning.
6. Distrust in advertising: A general distrust of ads could make traditional marketing methods less effective.
7. Varied learning preferences: Diverse preferences for learning styles mean that a one-size-fits-all approach to education may not work.

Opportunities:

1. Community events: Hosting "experience EV" events could provide hands-on learning opportunities.
2. Partnerships: Collaborating with local businesses and community organizations could amplify educational efforts.
3. Incentivized learning: Offering rewards or certifications for learning about EVs could motivate community members.
4. Integration with existing services: Embedding education in services like car dealerships or rental agencies could streamline the learning process.
5. Utilizing local media: Leveraging local newspapers and newsletters could reach less digitally connected audiences.
6. Educational campaigns: Tailored campaigns that focus on EVs' benefits and ease of use could address concerns and stimulate interest.
7. Policy support: Advocating for policies that support EV education, such as DMV programs, could institutionalize learning.

Threats:

1. Misinformation: Spreading rumors and misinformation about EVs could undermine educational efforts.
2. Language barriers: Failure to provide multilingual resources could exclude non-English speakers.
3. Technological advancements: Rapid changes in technology could make educational materials quickly outdated.
4. Economic disparities: Lower-income communities may need more access to educational resources.
5. Cultural differences: Diverse cultural backgrounds may require different educational approaches, complicating the process.
6. Digital divide: A lack of digital literacy could prevent some community members from accessing online resources.
7. Environmental concerns: Worries about the environmental impact of EVs could deter interest in learning about them.

Financial Considerations

Strengths:

1. Payment flexibility: Participants are accustomed to various payment methods, suggesting adaptability to new payment systems for EV charging.
2. Interest in cost savings: The community is interested in the potential cost savings of EVs compared to gas vehicles.
3. Awareness of subsidies: Participants know the potential for subsidies and incentives, which could encourage EV adoption.

4. Openness to innovation: Suggestions for linking EV charging to utility bills show openness to innovative payment solutions.
5. Financial literacy: Participants discuss financial considerations openly, indicating a level of financial literacy that can be built upon.
6. Recognition of economic benefits: There is an understanding that EVs could be economically beneficial in the long run.
7. Support for public transportation: There is support for the electrification of public transportation, which could be more affordable for low-income communities.

Weaknesses:

1. Cost concerns: High upfront costs of EVs are a significant barrier for low-income communities.
2. Limited access to charging: Concerns about the availability and cost of charging infrastructure could deter EV adoption.
3. Economic barriers: The financial strain of transitioning to EVs is a concern, especially for those without disposable income.
4. Depreciation worries: Rapid depreciation of EVs could discourage investment in them.
5. Reliance on cash: Some participants prefer cash, which may differ from modern EV charging infrastructure.
6. Lack of financial incentives: With sufficient financial incentives, the switch to EVs may be economically viable for many.
7. Resistance to recurring costs: The idea of recurring costs, such as subscription models for charging, may only appeal to some users.

Opportunities:

1. Financial education: Providing education on the long-term savings of EV ownership could alleviate cost concerns.
2. Incentive programs: Developing incentive programs for purchasing used EVs could make them more accessible.
3. Partnerships with financial institutions: Collaborating with banks and credit unions could offer financing options tailored to low-income buyers.
4. Subsidized charging: Offering subsidized or capped charging pricing could lower the entry barrier.
5. Public-private partnerships: Engaging businesses to provide charging infrastructure could reduce consumer costs.
6. Government grants: Advocating for government grants and tax credits could make EVs more affordable.
7. Community-based initiatives: Local initiatives, such as church-sponsored charging stations, could provide affordable access to charging.

Threats:

1. Economic downturns: Recessions or economic downturns could further limit the financial capacity of low-income communities to invest in EVs.
2. Rising energy costs: Increases in electricity prices could negate the cost savings of EVs.
3. Inequitable policies: Policies that favor higher-income individuals could exacerbate financial disparities in EV adoption.
4. Market volatility: Fluctuations in the EV market could create uncertainty around the financial viability of EVs.
5. Technological obsolescence: Rapid advancements in EV technology could lead to higher replacement costs and discourage investment.
6. Hidden costs: Unanticipated costs, such as battery replacement or maintenance, could deter potential EV buyers.

7. Competition from gas vehicles: As long as they remain affordable and convenient, they may remain the preferred option for low-income communities.

Overall TE Transition

Strengths:

1. Environmental consciousness: Participants show a strong interest in the environmental benefits of TE, which can be a driving force for adoption.
2. Support for public TE: There is enthusiasm for the electrification of public transportation, which could lead to broader acceptance of TE.
3. Community ideas: Participants offer creative ideas for TE initiatives, such as car-sharing programs and electric bikes.
4. Interest in ethical manufacturing: Concerns about ethical manufacturing could lead to support for TE initiatives that prioritize sustainability.
5. Willingness to adapt: Some participants expressed a willingness to adapt to new technologies if given proper support.
6. Recognition of TE benefits: There is an understanding of the long-term benefits of TE, such as reduced emissions and lower operating costs.
7. Advocacy potential: Participants passionate about TE could become advocates within their communities.

Weaknesses:

1. Charging infrastructure concerns: Anxiety about the availability and convenience of charging stations is a significant barrier.
2. Battery concerns: Worries about battery life, replacement costs, and environmental impact could deter adoption.
3. Technological intimidation: The complexity of EV technology may intimidate some potential users.
4. Accessibility issues: TE may not be accessible to those without the financial means to participate.
5. Limited range anxiety: Concerns about the driving range of EVs could prevent some from considering a switch.
6. Ethical concerns: Issues around the ethical sourcing of materials for batteries could tarnish the image of TE.
7. Depreciation and resale: Fears about the rapid depreciation of EVs could make them less attractive to potential buyers.

Opportunities:

1. Infrastructure expansion: Investing in charging infrastructure could alleviate range anxiety and support TE adoption.
2. Education on battery technology: Providing clear information about battery life and recycling could address environmental concerns.
3. TE in public services: Electrifying public services like school buses could demonstrate the practicality and benefits of TE.
4. Community-based TE projects: Initiatives like community car shares could make TE more accessible and visible.
5. Partnerships for ethical sourcing: Collaborating with manufacturers to ensure ethical sourcing could improve the image of TE.
6. Government support: Advocacy for government support in TE could lead to more favorable policies and incentives.
7. Technological advancements: Continued improvements in EV technology could address concerns about range and charging times.

Threats:

1. Economic barriers: The high cost of transitioning to TE could be prohibitive for many in under-represented communities.
2. Misinformation: The spread of misinformation about the safety and reliability of EVs could hinder adoption.
3. Resistance to change: A general resistance to adopting new technologies could slow the TE transition.
4. Environmental trade-offs: Concerns about the environmental impact of battery production could lead to skepticism about the overall benefits of TE.
5. Market competition: The continued development and marketing of gas vehicles could compete with TE efforts.
6. Policy inertia: A lack of supportive policies could stifle the growth of TE.
7. Technological disparities: The digital divide could prevent some communities from fully participating in the TE transition.

Unresolved Key Issues

Given the extensive feedback across various discussions, identifying unresolved key issues requires a structured approach, focusing on distinct areas such as the transportation landscape, education and accessing information, financial considerations, and the overall transition to electric transportation (TE). Here are 16 unresolved key issues, categorized and contextualized based on the participant responses:

1. **Targeted Communication and Language Diversity:** Participants expressed concerns about the effectiveness of traditional advertising mediums like TV and radio, especially among younger demographics who predominantly use social media and streaming services. The need for targeted communication strategies that leverage platforms like Instagram, YouTube, and email was highlighted. Additionally, the importance of language diversity in outreach efforts was emphasized, suggesting that materials should be available in languages reflective of the local demographics, including Spanish, Russian, Slavic, Mandarin, Somali, and potentially indigenous languages of Mexico/Central America for communities with limited Spanish proficiency.
2. **Accessibility for Diverse Populations:** There's a consensus on the need for inclusive communication strategies for the visually impaired, hard of hearing, and non-English speaking populations. Suggestions include visual aids, QR codes, close-captioned videos, and sign language options to ensure that information is accessible to everyone, including those who may not be drivers but are part of the EV ecosystem as passengers or caretakers.
3. **Community Engagement and Word of Mouth:** The document highlights a strong preference for information dissemination through community networks, word of mouth, and local organizations. This approach is viewed as more trustworthy and effective than traditional advertising. Engaging with neighborhood associations, local newspapers (e.g., Portland Mercury, North Peninsula Review, Portland Tribune, Tualatin Valley Times, Wilsonville Spokesman, etc.) and community events (e.g., Portland Sunday Parkways) is suggested to increase awareness and education on EVs.
4. **Educational Content and Instructional Materials:** Participants suggested developing diverse educational materials, including simplified visual instructions, comic-style panels, and short videos to explain how to use EV charging stations. These materials should cater to different learning styles and attention spans, ensuring instructions are not overly wordy or complicated.
5. **Economic Considerations and Vehicle Accessibility:** Economic barriers to EV adoption were a recurrent theme. Suggestions were made for strategies to make EVs more affordable for the

average consumer, such as subsidizing the cost of charging, offering low-cost or used EV options, and providing economic incentives to encourage the transition from gas to electric vehicles. The discussion also discussed the potential economic impact on lower-income individuals and the importance of keeping public transportation costs affordable during the transition to electric buses.

6. **Infrastructure and Public Transportation:** The need for more widespread and accessible EV charging infrastructure was discussed, including converting gas stations to include EV charging options and integrating charging stations into existing community spaces like grocery stores and churches. There's also an emphasis on enhancing public transportation with electric options and ensuring that car-sharing services include EVs to facilitate broader access and familiarity with electric transportation.
7. **Diverse Payment Preferences and Accessibility:** Participants exhibit various payment preferences, including digital payment methods (e.g., Apple Pay, credit cards, Venmo, and Kuto), cash, and innovative solutions like billing through license plates or linking to utility accounts. This diversity underscores the challenge of designing a payment system that is accessible and convenient for all users. While some prefer the modern convenience of digital payments for their security and the ability to track expenses, others, highlight the importance of cash for its anonymity and security against digital threats.
8. **Integration and Compatibility with Existing Systems:** Suggestions such as linking payments to utility bills or creating accounts that could integrate other services point to a desire for streamlined payment solutions. However, the feasibility of such integration, both technically and in terms of user acceptance, remains to be determined. Implementing such systems could involve complex negotiations and partnerships between EV charging service providers, utility companies, and financial service providers.
9. **Privacy and Security Concerns:** Using license plate recognition for billing raises questions about privacy and data security. While this method could offer convenience, it also necessitates collecting and processing personal information, posing potential risks that must be carefully managed. The balance between convenience and privacy is a critical consideration that remains unresolved.
10. **Accessibility in Various Locations:** The concern about the limited options for reloading payment cards in certain areas highlights an accessibility issue. This indicates a broader challenge in ensuring EV charging and payment options are equally accessible in diverse geographic locations, including urban centers and more remote suburban or rural areas. The infrastructure for supporting various payment methods, especially for services like cash reloading or digital payment acceptance, must be consistently available to meet the needs of all users.
11. **Charging Infrastructure and Accessibility:** Participants express significant concerns about the adequacy of charging infrastructure, particularly in areas not well-served, such as rural locations or densely populated urban areas with limited parking. This issue encompasses not only the number of charging stations but also their distribution, reliability, and convenience for users who may need consistent access, such as those living in apartment complexes without dedicated parking spaces.
12. **Charging Time and Convenience:** The time required to charge an EV is a critical concern for participants. Comparisons to the quick process of refueling a gasoline vehicle highlight a perceived inconvenience that could deter potential EV users. This concern is particularly acute for those with urgent travel needs or those who cannot easily access fast-charging options.
13. **Environmental and Ethical Concerns Regarding Battery Production:** Several participants raised issues about the environmental impact of EV battery production, including the mining of lithium and other rare earth minerals, which is often associated with significant ecological damage and ethical issues. The concern extends to the end-of-life disposal or recycling of batteries, with

questions about sustainability and the overall environmental footprint of EVs compared to traditional vehicles.

14. **Economic and Affordability Issues:** The cost of EVs and their maintenance, including the high expense of replacing parts like batteries, is a major concern for participants. These economic barriers and concerns about the rapid depreciation of EVs due to technological advancements highlight the financial challenges that potential EV owners face.
15. **Safety and Reliability Concerns:** Safety issues, such as the risk of battery fires and reliability concerns in areas with sparse charging infrastructure, contribute to reservations about transitioning to EVs. These concerns underscore the need for continuous improvement in EV technology and support infrastructure to build consumer confidence.
16. **Alternatives to Current EV Technology and Policy Support:** Participants express a desire for innovation beyond current lithium-ion battery technology, suggesting alternatives like hydrogen fuel cells and a call for policies that support broader adoption of EVs, such as roadside assistance for EVs, battery recycling programs, and ethical sourcing of materials. This reflects a broader interest in sustainable, ethical, and practical solutions in the EV sector.

In summary, concerns encompass targeted communication strategies tailored to diverse demographics, emphasizing platforms like social media and multilingual materials. Accessibility considerations include inclusive communication methods, economic barriers, and infrastructure improvements to enhance EV charging accessibility. Additionally, there are persistent concerns regarding charging time, environmental impact, safety, and affordability, underscoring the need for comprehensive solutions that address technological, economic, and environmental aspects while ensuring inclusivity and consumer trust in the transition to EVs.

Top Twelve Recommendations

Based on the focus group feedback, here are the top 12 recommendations for PGE to consider in their TE outreach and implementation strategies for under-represented communities such as the White Low-income, Renters, and Multifamily Communities.

1. **Visual aids and simplified instructions:**
    - Create comic-style visual instructions for charging stations.
    - Install video screens at charging stations with step-by-step animated guides.
    - Offer hands-on demonstrations at community events and dealerships.
2. **Digital platforms and social media:**
    - Post educational YouTube videos with subtitles for broader accessibility.
    - Use QR codes on charging stations and community spaces to link to instructional content.
    - Engage with local online communities and social media influencers to spread the word.
3. **Local community organizations and media:**
    - Collaborate with neighborhood associations and local newspapers for educational outreach.
    - Consider local language needs and include materials in relevant languages, including Spanish, Russian, and indigenous languages.
    - Utilize community events like farmers' markets and church gatherings to educate and engage.
4. **Payment options for EV charging:**
    - Enable payment through credit cards, mobile apps like Apple Pay, and cash to accommodate all users.
    - Explore linking EV charging to utility bills for a consolidated payment method.

- Consider a pre-paid charging pass similar to toll road systems for convenience.

5. **Affordability and cost concerns:**
   - Subsidize the purchase of lower-cost or used EVs for low-income individuals.
   - Implement cap pricing or discounts for those transitioning to EVs.
   - Provide clear information on the long-term savings of EVs compared to gasoline vehicles.
6. **Transition to EVs in public transportation:**
   - Ensure that the electrification of public transport does not lead to increased fares for low-income riders.
   - Promote electric buses, bikes, and car-sharing programs to increase accessibility.
   - Engage with commercial transportation users to encourage switching to EVs, potentially offering incentives.
7. **Charging infrastructure and accessibility:**
   - Increase the number of public charging stations, especially in underserved areas.
   - Ensure that charging stations are reliable and have minimal wait times.
   - Provide clear signage and instructions at charging stations to reduce user anxiety.
8. **Environmental and ethical concerns:**
   - Educate the public on the environmental impact of EV batteries and recycling programs.
   - Promote the use of ethically sourced materials in EV manufacturing.
   - Explore alternatives to lithium batteries, such as hydrogen fuel cells.
9. **User experience with technology and design:**
   - Design intuitive charging stations that require minimal instruction.
   - Incorporate user-friendly technology in EVs and charging equipment.
   - Offer virtual or augmented reality experiences to familiarize users with EV technology.
10. **Community engagement and trust**:
    - Build partnerships with trusted community leaders and organizations to spread awareness.
    - Organize "experience EV" events to allow hands-on interaction with EVs.
    - Encourage word-of-mouth promotion as a trusted form of communication.
11. **Range anxiety and emergency support:**
    - Provide information on the range of EVs and charging stations' locations to alleviate concerns.
    - Ensure that roadside assistance services like AAA are equipped to support EVs.
    - Develop mobile charging solutions for emergencies.
12. **Benefits of EVs beyond personal vehicle ownership:**
    - Highlight the advantages of electrifying various modes of transportation, including school buses and tractors.
    - Encourage the installation of public e-bike charging stations to support alternative electric transportation.
    - Communicate the overall benefits of TE, such as reduced emissions and improved air quality.

These recommendations aim to ensure that PGE's TE efforts are inclusive, equitable, and responsive to the needs and concerns of the White Low-income, Renters, and Multifamily Communities.

YOUTH, RENTERS IN MULTI-FAMILY HOUSING FOCUS GROUP

PGE TE – Focus Group Summary Report with Youth (Gen Z: born between 1997-2021) Renters & in Multifamily Housing
Date of FG: 03/26/2024 **No. of Participants:** 9
PGE Presenter: Kelly Yearick
Name of Facilitator: Therese McLain
Notetaker: Duyen Frederiksen
Time Started: 5:30 pm

PGE PRESENTATION

PGE provided transportation electrification (TE) and charging infrastructure presentations to the Gen Z focus group participants, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions.

The presentation is consistent across all the nine TE focus groups and can be found in the ***"Summary of PGE Presentation."***

Additional participant questions (submitted to PGE team on 4/11/24)

1. I don't really have the greatest understanding of power grids, and how all that works, but where do charging stations, like the Blink charging stations or the ones with different names, get their power from - PGE or from another company?
   PGE response:

FOCUS GROUP QUESTIONS AND FEEDBACK

Summary

The Gen Z focus group discussions revealed a broad spectrum of insights from participants on themes ranging from the current transportation landscape to educational needs, financial considerations, and the overarching challenges and opportunities in the transition to electric transportation. The participants provided varied perspectives, illuminating the public's readiness and concerns regarding this significant shift.

Participants exhibited diverse transportation habits, including extensive use of bikes (both traditional and electric), public transit (buses, streetcars, MAX), and carpooling. Car reliance persists, particularly for longer commutes or when public transportation is unavailable. Some participants preferred public transport due to its convenience and environmental friendliness, though they also noted limitations, especially outside urban centers. Experiences with electric vehicles (EVs) varied, with most exposure through third-party platforms like Uber or borrowing from friends and family, indicating familiarity but limited personal ownership.

There was a strong consensus on the need for non-invasive, engaging educational strategies about chargers, EVs, and their benefits. Participants favored modern, digital-first communication channels such as social media platforms (Instagram, TikTok) and YouTube for information dissemination, citing their effectiveness in capturing attention and conveying messages succinctly. Traditional advertising methods, such as TV ads and mail, were viewed less favorably. The importance of accessibility was emphasized, with suggestions including multilingual content, closed captions, and simple, universal visual aids at charging stations to assist with the operation, akin to IKEA's pictographic instructions.

EDUCATION AND ACCESSING INFORMATION

Feedback	Recurrence
Importance of multilingual ads and accessibility features like closed captions	4
Importance of advertising being informative rather than purely promotional	3
Effective communication includes using simple visual aids and graphics at point of use	3
Dislike for interruptive ads, preference for non-intrusive ads like posters and social media	2
Using TikTok and Instagram for outreach, especially effective for younger audiences	2
Preference for accessibility in ads, including auditory and visual information integration	2
Advocacy for financial accessibility and concerns about the high costs associated with EVs	2
Concerns about monopolistic control over electricity pricing by utility providers in context of EVs	1

The group discussions highlighted significant financial barriers to adopting electric vehicles, primarily centered around EVs' high initial costs and perceived economic exclusivity. Suggestions for improving financial accessibility included implementing income-adjusted payment schemes like those used for public transit passes and offering varied payment options at charging stations, including cash and mobile payments. One participant expressed concerns about potential monopolistic behaviors by power providers and the need for pricing transparency and regulation. There was also feedback against electric utility increases, with the participant quoting a recent rate increase of 17.2% for residential customers.

FINANCIAL CONSIDERATIONS

Feedback	Recurrence
Desire for multiple payment options including cash and digital (like Apple Pay)	4
Preference for income-based pricing options similar to the TriMet Hop Card for public charging	3
Support for point of purchase payment to increase transparency	3
Importance of transparency in pricing and charges	2
Need for pricing and payment consistency across geographic areas	2
Concerns about potential monopolistic control over electricity pricing by PGE	1
Suggestion for government incentives to ease financial burden of electric vehicles	1
Preference for having low-income options and discounts during less busy times	1

Participants broadly supported moving towards an electrified transportation system but noted several challenges and requirements to facilitate this transition. Key points included the need for enhanced charging infrastructure, particularly in multifamily living situations and underserved areas such as rural locales. There were calls for legislative support to encourage the installation of home and public charging stations and for measures to ensure the affordability of electric power. Concerns were also raised about the environmental

integrity of the power sources for EVs, emphasizing the need for renewable energy to capitalize on the environmental benefits of electrification.

OVERALL TE TRANSITION

Feedback	Recurrence
Infrastructure inadequacies, particularly in rural areas and long-distance travel challenges	3
The importance of commercial and public sectors in leading electrification efforts	3
Financial barriers, especially the cost of electric vehicles and the electricity to charge them	2
The need for broader public acceptance and comfort with electric vehicles	2
Concerns about the strain on the power grid due to mass adoption of electric vehicles	1
Concerns about electricity being generated from fossil fuels and PGE's potential monopoly	1
The necessity of integrating electrification into small businesses and rural areas	1
Advocacy for policy support to stabilize electricity costs to encourage EV adoption	1

The overarching sentiment from the focus group suggests a community at the cusp of significant change, keen on embracing electric vehicles but cautious about the scale of transition and the readiness of infrastructure and economic models to support it. Participants seek clear, accessible information and tangible incentives to make the shift feasible and sustainable. They also highlighted the importance of inclusive approaches that address the needs of diverse demographic groups and balance the rollout of technology with supportive policies and community engagement.

In summary, the transition to electric transportation, as discussed by the Gen Z focus group, requires a multifaceted approach involving infrastructure enhancement, educational campaigns, financial incentives, and legislative support. There is a clear call for making electric vehicles accessible and affordable to a broader section of the population, ensuring that the transition is equitable and just, with a significant emphasis on leveraging technology and community-specific solutions to address the unique challenges faced by different groups within the community.

Sentiment Highlights on the Main Themes

Based on the responses provided by the Gen Z participants, the data can be organized into four primary themes: Current Transportation Landscape, Education and Accessing Information, Financial Considerations, and Overall Transition to Electric Vehicles (TE). Each theme is accompanied by imparted sentiments expressed by the participants, categorized as positive, negative, or neutral.

Theme: Current Transportation Landscape
Overall Sentiment: Positive to Neutral
This sentiment is characterized by general satisfaction with the current modes of transportation available (like biking, walking, and public transit), combined with neutral expressions about their experiences with these options, showing neither strong dissatisfaction nor exuberant positivity.

Key Responses:

- P1 - positive: "I get around on my bike, but I also will often walk or take the bus or MAX."
- P2 - positive: "I use electric city bikes and the bus and MAX primarily, and walking."
- P7 – positive: "But a lot of the times, I also use the electric bikes and the East scooters that are in the city. Those are helpful."
- P5 - positive: "I walk and use public transit, and then also the city bikes at night after Trimet stops running."
- P9 - positive: "I primarily take the MAX to and from school, and then when there's not an easy way to get somewhere on public transportation, then I'll drive but I don't like driving in the city at all so I primarily take public transportation."
- P3 – neutral: "It really is kind of situational because there have been situations where I do not have access to transportation exactly where I'm needing to go, especially if it is in the middle of nowhere."
- P4 – neutral with slight negative undertone: "I take the streetcar when I can, but sometimes I have to take my car. I would say mostly it's my car. And then to get to school I take the streetcar, I wish there were more streetcars."

Theme: Education and Accessing Information
Overall Sentiment: Positive with some Neutral and Negatives
Gen Z participants expressed approval for innovative and inclusive methods of information dissemination, especially those utilizing modern digital platforms and visual aids that enhance understanding and engagement. They are positive about the methods that cater to accessibility and inclusion but remain neutral and slightly critical about traditional advertising tactics, which they find less engaging or even intrusive.

Key responses:
- P4 - negative: "I just want to say, anytime I see an ad, on YouTube or on TV that interrupts me doing something, I immediately dislike the product."

- P2 - positive: "With the posters, I don't know about information, like electric vehicles, but pretty much anytime I see posters on the side of the street, it instantly grabs my attention, I'll read it, especially if it has good graphic design."
- P8 - positive: "I know this one's a little bit of a scary one for businesses, but TikTok I get a lot of information on there. Especially when I see businesses participating in the trends that are going on on TikTok, it makes me feel more trustful."
- P3 - neutral: "YouTube is a big one. I think for me, touching on a little bit of what's been said already, is that I don't like feeling like I'm being sold something, being informed about something, I love that."
- P6 - negative: "I feel like when I see ads that are focused on 'buy, buy, buy', or 'here's why you should buy this', I kind of tune it out."
- P3 - positive: "The closed captions are really nice, I strongly agree with that."
- P5 - positive: "I second Tiktok and Instagram, as well as word of mouth and local environmental organizations."

- P4 - positive: "If you're going to do something that's going to impact students, such as electrifying buses, or adding more charging stations around the university district, they have email lists."
- P5 - positive: "As far as languages, I believe having ads available in multiple languages is important. Maybe the top three spoken in the area?"
- P9 - positive: "Having both like a mixture of graphics and text and audio so that a variety of people can understand the ad or the information without needing to necessarily know how to read it."
- P3 - positive: "I was just gonna say also, another benefit of having closed captions is sometimes I just don't want to listen to things with my sound on or with my headphones."
- P5 - positive: “350 PDX” does a lot of work locally both policy-facing and people/community engagement.
- P6 – negative: “if the only way that I can use my vehicle is by buying electricity through PGE, then PGE kind of would have a monopoly on electricity. And so, I would kind of be locked into whatever prices PGE wants me to pay.”
- P5 - negative: “Stop raising rates! We can barely afford to survive as is. How are we supposed to buy electric if we have no money? It's completely anti-sustainability to raise rates 17.2% for residential buildings but only 11% (like you did in January) for industries when industries are the big polluters, not individuals.”

Theme: Financial Considerations
Overall Sentiment: Positive with a Touch of Neutral and Negative
The Gen Z participants showed a strong appreciation for innovative and inclusive payment options, especially those that facilitate ease of use and accessibility. They expressed positive views about payment flexibility and inclusivity but remained neutral or slightly concerned about potential hidden costs and the reliance on specific service providers.

Key responses:
- P2 - positive: "What I really like about the hop pass is that there's a program for low-income people that it maxes out once you pay $27 a month."
- P4 - positive: "I really liked the idea of applying low-income options like the hop card to the electric vehicle charging stations. That's a really good idea."
- P3 - positive: "I like having a cash option. I use my debit card for everything or Apple Pay, but there are a lot of people that only use cash."
- P8 - positive: "I would say having a cash option would be really useful."
- P1 - positive: "I think that using a point of purchase, similar to a gas station, where you pay while you're using it is kind of the ideal method."
- P2 - neutral: "I think being upfront about the costs is really important, and I worry with a bill that there might be some hidden fees."
- P4 - positive: "Just having the option because I think a lot of people are gonna get stranded as they transition."
- P9 - positive: "Having a way to pay with your phone and having a low income option similar to the hop card."

- P4 -negative with an element of resignation: “That's why we are here haha, PGE has a monopoly and will make $$ on us if we switch to electric. Only slightly -- but still better than going to a petroleum company. PGE needs to transition to a publicly owned utility. Period.”

Theme: Overall TE Transition
Overall Sentiment: Positive and Neutral with Negatives
Participants expressed enthusiasm about the environmental benefits and potential widespread adoption of electric vehicles (EVs). However, there is also a noticeable level of concern and caution regarding infrastructure readiness, financial barriers, and the practical implications of such a transition.

- P3 - neutral: "One thought that came to mind earlier, especially since I'm not familiar with what percentage of where PGE gets all of their energy or their electricity from... what strain would that put on the current power grid?"
- P6 - neutral: "The biggest barrier for me is financially both with the cost of investing in the vehicle itself, and then also paying for the electricity to charge it."
- P4 - negative: "If you wanted to drive from Oregon to Idaho... I'm wondering because it seems to me that it would be very possible that you would just get stuck out there."
- P5 - positive: "It reminds me of when cars were first invented... anyone could just start a small gas station out in the middle of nowhere."
- P6 - positive: "I think that's great. I think there's a lot of focus in general, in climate justice, movement on personal choices and personal consumption."
- P9 - positive: "Having the electrification of tractors and other public vehicles... would help to get other communities more comfortable with electric vehicles."
- P4 & P3 - negative: "We want reassurance that our cars won’t be charged with power from fossil fuels."
- P5 - positive: "Electrification of public transit and private vehicles is more important than individuals changing over."
- P3 - positive: "If you electrify the commercial side of things, residential will come around."
- P4 - neutral: "List of the large polluting fleets."

Analyzing the Gen Z focus group feedback reveals additional themes beyond the main themes of Education and Accessing Information, Financial Considerations, and Overall TE Transition. These include Environmental and Social Responsibility, Accessibility, and Inclusivity.

Environmental and Social Responsibility is a recurring theme, with participants expressing concerns about the source of electricity for EVs and the impact of rate increases on their ability to afford electric transportation. They also highlight the importance of targeting larger polluters, such as industries and corporations, rather than focusing solely on individual consumers.

Accessibility and Inclusivity are emphasized through the desire for clear, language-agnostic instructional materials for EV chargers, such as pictograms or videos, and the need for closed captions in advertisements for the hard of hearing. Participants also suggest that TE efforts should consider the needs of rural communities and small businesses, indicating a broader view of inclusivity that extends beyond urban centers.

These additional themes suggest that Gen Z participants are looking for TE solutions that are environmentally ethical, technologically savvy, and inclusive of diverse communities and socioeconomic backgrounds.

SWOT Analysis

Based on the focus group participant's verbatim responses (see page 13), a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was created for each of the main themes that PGE identified as key: education and access to information, financial considerations, and overall transition to transportation electrification (TE).

Education and Accessing Information

Strengths:

1. Gen Z's comfort with technology, such as smartphones and apps like Apple Pay, can be leveraged to facilitate EV charging stations.
2. Participants suggest creative solutions like integrating low-income options like the TriMet Hop Card for EV charging.
3. Word of mouth is a powerful tool among this demographic, indicating that community influencers could effectively spread information.
4. Platforms like TikTok and Instagram are highly engaging for Gen Z, offering potential channels for education and outreach.
5. The preference for visual instructions (pictograms, videos) can lead to the development of user-friendly interfaces at charging stations.
6. A mix of traditional and modern communication methods (posters, social media, community outreach) can reach a broad audience.

Weaknesses:

1. There is a perception that PGE has a monopoly, which could lead to distrust in the utility company's information.
2. Sole reliance on digital instructions or payment methods could exclude those without smartphones or internet access.
3. While visual instructions can be inclusive, lacking multilingual support could alienate non-English speakers.
4. Gen Z's aversion to disruptive advertising could make traditional marketing strategies less effective.
5. The sheer volume of information can be overwhelming, leading to confusion or disinterest.
6. Many participants need more experience with EVs, which could hinder their understanding and adoption of related technologies.

Opportunities:

1. Collaborating with schools and universities to disseminate information and provide hands-on learning experiences.
2. Developing community-based programs that offer personalized support and education on EVs and charging.
3. Offering rewards or incentives for completing educational modules on EV charging and maintenance.
4. Utilizing a mix of video, graphics, and text to cater to different learning styles and preferences.
5. Creating and distributing maps of charging stations to increase awareness and accessibility.
6. Encouraging legislation that supports the expansion of EV education and infrastructure.

Threats:

1. Rising electricity costs could discourage the use of EVs and erode trust in utility providers.
2. The spread of misinformation about EVs and charging could lead to confusion and skepticism.
3. Financial barriers may prevent under-represented communities from accessing educational resources.
4. Rapid changes in EV technology could make it difficult to keep educational materials current.
5. Variations in charging infrastructure across regions could complicate the learning process.
6. Fluctuations in the EV market could impact the relevance and effectiveness of educational initiatives.

Financial Considerations

Strengths:

1. Gen Z's preference for digital payments, such as Apple Pay, can streamline the payment process for EV charging.
2. Interest in income-based payment options for public charging could promote equity and accessibility.
3. Suggestions for government stipends or discounts for low-income individuals could encourage EV adoption.
4. Demand for clear, upfront costs at the point of purchase can lead to better customer satisfaction and trust.
5. The desire for multiple payment methods, including cash, can cater to diverse financial needs.
6. The TriMet Hop Card model for low-income individuals could be adapted to EV charging, providing financial relief.

Weaknesses:

1. Fear of being locked into PGE's pricing due to a perceived monopoly on electricity could deter EV adoption.
2. Anticipated increases in electricity rates may make EVs less appealing due to higher operational costs.

3. The high upfront cost of EV purchasing is a significant barrier for many, especially those in under-represented communities.
4. Concerns about potential hidden fees in billing could create financial distrust among consumers.
5. Participants living week-to-week may need help with the financial commitment required for EV ownership.
6. With legislation to cap electricity rate increases, the financial predictability of EV ownership is still being determined.

Opportunities:

1. Providing financial literacy programs specifically tailored to EV ownership costs and benefits.
2. Lobbying for government subsidies, rebates, or tax incentives to reduce the cost burden of EVs.
3. Collaborating with banks and credit unions to offer favorable loan terms for EV purchases.
4. Developing special utility rate programs for EV owners to mitigate the impact of rate increases.
5. Implementing clear pricing models at charging stations to help users manage their expenses.
6. Creating community charging programs with tiered pricing based on income or usage.

Threats:

1. Increases in electricity rates could disproportionately affect low-income individuals and deter EV adoption.
2. Persistent economic inequality may continue to limit access to EVs for under-represented communities.
3. Fluctuations in the EV market could affect EVs' affordability and perceived value.
4. Unfavorable changes in energy policies could increase the cost of owning and operating an EV.
5. General economic inflation could raise the cost of EVs and related services, making them less accessible.
6. If gas prices decrease or stabilize, the financial incentive to switch to EVs may be undermined.

Overall TE Transition

Strengths:

1. Gen Z's use of various transportation modes, including public transit and bikes, indicates openness to alternative transportation, including EVs.
2. A strong environmental ethic among participants suggests a willingness to adopt cleaner transportation options.
3. The positive reception to PGE's efforts to electrify public vehicles like school buses and tractors can foster community support.
4. Creative suggestions for transitioning to EVs, such as electrifying commercial fleets, can lead to broader adoption.
5. Charging stations at common destinations like grocery stores and libraries normalize EVs.

6. Interest in maintaining cultural diversity through language inclusivity in EV education and resources.

Weaknesses:

1. The high cost of EVs and charging remains a significant obstacle for many, particularly those in under-represented communities.
2. Worries about the adequacy of current infrastructure to support a widespread transition to EVs.
3. Concerns about EVs' driving range and charging stations' availability, especially in rural areas or on long trips.
4. There is uncertainty about the power grid's capacity to handle increased demand from EVs and where the electricity comes from.
5. Apprehension about being dependent on a single utility provider for EV charging, leading to potential exploitation.
6. Limited personal experience with EVs can hinder confidence in making the transition.

Opportunities:

1. Investments in power grid infrastructure to support the increased load from EVs and reassure potential users.
2. Extending EV infrastructure and education to rural areas to ensure equitable access and alleviate range concerns.
3. Collaborating with businesses to install charging stations and promote EV use.
4. Advocating for policies that support the transition to EVs, such as grid expansion and financial incentives.
5. Launching campaigns to educate the public on the benefits and practicalities of EVs.
6. Encouraging the electrification of commercial and public service vehicles to lead by example.

Threats:

1. Economic downturns or instability could reduce the financial capacity of individuals and communities to invest in EVs.
2. Potential future increases in utility rates could make EV charging less affordable.
3. The digital divide could prevent equitable access to EV-related technologies and information.
4. Inertia and resistance to change from traditional gas vehicles to EVs, especially among older generations.
5. Changes in government policies or lack of support for sustainable transportation could hinder the transition.
6. Skepticism about the true environmental benefits of EVs if the electricity is generated from fossil fuels.

Unresolved Key Issues

Based on the Gen Z Focus Group Questions and Feedback portion, here are fifteen unresolved key issues identified from the participants' responses:

1. **Accessibility of Charging Stations:** Participants expressed concerns about the availability and accessibility of charging stations, especially in multifamily housing situations and rural areas.

2. **Financial Barriers:** The high initial cost of electric vehicles (EVs) and the financial burden of transitioning to electric transportation were repeatedly mentioned as significant barriers.
3. **Education on EV Use:** There is a need for clear, accessible instructions on how to use EV chargers, potentially using pictograms or videos, to address the unfamiliarity with the technology.
4. **Information Dissemination:** Participants indicated a dislike for disruptive advertising and a preference for informative content that doesn't feel like a sales pitch.
5. **Effective Communication Channels**: The group suggested that social media platforms like TikTok and Instagram, as well as word of mouth, are effective ways to reach younger audiences.
6. **Language and Cultural Considerations:** Multilingual instructions, including closed captions for the hearing impaired, are needed to cater to diverse communities.
7. **Cost of Electricity:** Concerns were raised about the rising cost of electricity and how it might affect the affordability of charging EVs.
8. **Monopoly and Pricing:** Participants worried about potential monopolies in the electricity market and the need for price regulation to prevent exploitation.
9. **Payment Methods for Charging:** People want various payment options for EV charging, including cash, phone payments, and income-based pricing like public transit passes.
10. **Incentives and Subsidies:** Financial incentives, such as discounts or subsidies, were suggested to make the transition to EVs more affordable, especially for low-income individuals.
11. **Infrastructure Readiness:** Participants questioned whether the current power grid could handle a significant increase in EVs and whether there are plans to expand the grid accordingly.
12. **Corporate Responsibility:** There is a strong sentiment that corporations and industries should be the focus of electrification efforts due to their larger environmental impact rather than placing the burden on individuals.
13. **Public Perception of EVs:** The group discussed the need to combat the negative connotation around EVs being a luxury or a "rich person's cop-out."
14. **Range Anxiety and Travel Concerns:** Concerns were raised about the feasibility of long-distance travel with EVs due to the potential lack of charging infrastructure outside urban areas.
15. **Equity and Environmental Justice:** Participants emphasized the importance of ensuring that the transition to electric transportation is equitable and does not disproportionately impact under-represented communities.

Top Ten Recommendations

Based on the Gen Z Focus Group feedback, here are the top ten recommendations for PGE to support the community's transition to transportation electrification (TE):

1. **Educational Campaigns in Public Spaces**
    - P4 highlighted people's trust and familiarity with gas vehicles; an educational campaign can bridge the knowledge gap and make TE more approachable.

- Public education can demystify electric vehicles (EVs) and charging processes, reducing the fear of the unknown and building consumer confidence.

2. **Financial Incentives and Assistance Programs**
   - P2 emphasized the financial barrier of the initial investment; incentives can make the transition to EVs more financially feasible.
   - Long-term fuel savings are a strong selling point, but the high upfront cost of EVs is a deterrent that incentives can help overcome.
3. **Advocacy for EV Infrastructure in Multifamily Housing**
   - P3 pointed out the lack of charging options in multifamily units; PGE can lobby for legislation to require developers to include charging infrastructure.
   - Ensuring access to charging stations for apartment dwellers is crucial for the widespread adoption of EVs among all community members.
4. **Price Stability for Electricity**
   - P6 and P4 expressed concerns about fluctuating electricity costs; price stability can make owning an EV more predictable.
   - Assurance of stable and reasonable electricity rates can enhance the appeal of EVs over gas vehicles.
5. **Subsidized Home Charging Units and Bill Discounts**
   - P4 suggested providing free home charging units and bill discounts for low-income individuals to encourage EV adoption.
   - Addressing the perceived elitism associated with EV ownership can broaden their appeal and accessibility.
6. **Diverse Payment Options for Charging Stations**
   - Participants like P3 and P8 requested multiple payment methods, including cash and mobile payments, to accommodate different preferences and needs.
   - Various payment options ensure inclusivity and convenience, making public charging stations more user-friendly.
7. **Transparent Pricing at the Point of Purchase**
   - P1 and P2 favored a pay-as-you-go system for charging to avoid bill shock and promote transparency.
   - Consistency with other regions' charging systems can reduce confusion and make TE more user-friendly for residents and visitors.
8. **Accessible and Clear Instructions at Charging Stations**
   - P9 and P4 recommended having instructions in multiple languages and formats (video, pictograms) at charging stations to cater to diverse users.
   - Clear instructions can alleviate anxiety for first-time users and ensure that charging is a straightforward process for everyone.
9. **Community Engagement and Partnerships**
   - P5 suggested partnering with small businesses and rural communities to expand charging infrastructure and support local economies.
   - Engaging with communities directly can foster goodwill and ensure that TE benefits are distributed equitably.
10. **Electrification of Public and Commercial Fleets**
    - P6 and P9 noted the importance of electrifying commercial vehicles to set an example and reduce reliance on fossil fuels.

- Focusing on fleet electrification can have a significant environmental impact and normalize EVs in the community.

These recommendations are designed to address Gen Z participants' concerns, needs, and preferences, who represent a key demographic in the future of transportation electrification. By implementing these actions, PGE can facilitate a smoother and more equitable transition to electric vehicles.

SENIORS, RENTERS OF MULTI-FAMILY HOUSING FOCUS GROUP

PGE TE – Focus Group with People 55 and above (Baby Boomers and Gen Xers) Renting or Living in Multifamily Housing
Date of FG: 3/28/2024 **No. of Participants:** 7
PGE Presenter: Kelly Yearick
Name of Facilitator: Therese McLain
Notetaker: Duyen Frederiksen
Time Started: 5:32 pm

PGE PRESENTATION

PGE provided transportation electrification (TE) and charging infrastructure presentations to the Baby Boomers and Generation X focus group participants, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions.

The presentation is consistent across all the nine TE focus groups and can be found in the ***"Summary of PGE Presentation."***

Post-Presentation Questions and Answers Portion

1. P1 Question: I guess I have two questions. One is when you say public charging stations, for example, I will see stations offered by Fred Meyer or somewhere else but I also see stations like right on the public street. Public refers to both of those kinds of stations or if they're offered at a private company like Fred Meyer, is that still considered a public station?
   PGE response:
   Yeah, that's a great question. And yes, I would say all of those are considered public charging stations. For the most part, if you see a charging station at a commercial location like a Fred Meyer, you're going to be asked to pay to charge there. They're not typically offering those for free and so for that reason, they welcome everyone. And similarly, if you are seeing them (public street), sort of in the right of way, PGE actually has just started installing those in Milwaukee. And they're actually going up right now, up on utility poles, and so they're actually less visible to many people. But there's

signage down at the parking level. And those are also considered public charging stations, even though they're sort of just on the street, street parking.

2. P1 Question: And the other question related to your goals, you said that you were trying to be carbon-free by 2040 or something. All I'm just trying to understand is what that goal entails. Does that mean that all of your power production is supposed to be carbon neutral by that time, or does that include buying carbon credits elsewhere and all that kind of stuff. Is that the idea?
   PGE response:
   That's such a timely question because there are a lot of discussions about how PGE and other utilities that are being required by that house bill do so. They're going to achieve that goal. I can say sort of at the root of it. The target is for our power production and our systems so that the energy that we use and the energy that we produce, doesn't currently extend to energy that we might buy to send to us to send to customers, and that would be offset by renewable energy credits or something of that nature. But the way that the statute is currently, it's really kind of more confined to our production.

Additional participant questions (submitted to PGE team on 2/5/24)

1. If it (EV charging) were to go on the (electric) bill, the bill has all kinds of extra percentages that are added at the bottom for this and that and subtracted and added. If it went on the bill, would you be subject to all those fees and things that are added to your regular electric bill? If you're buying gas, you don't think about that, you just buy gas. And I'm sure that most of us are thinking of buying an electric charger that we would just be paying for the charge, but are we going to pay for all of that in addition? I'm also thinking if your bill is over a certain amount, you go into a higher cost area rather than the lower cost area. So if you're car charging, if you're driving a lot, and it goes on your bill, it could push everything with taxes going up.
   PGE response:

2. Question: You're using the word "pole charger," I think. What is that?
   Facilitator response:
   A pole charger is what PGE is installing, just like what Kelly mentioned earlier. Some of them have been built in Milwaukee and they're at the utility poles owned by PGE. So that's a pole that is PGE-owned and it looks like a utility pole charger.

3. Question: Does it look like a pole as opposed to the sort of box?
   Facilitator response:
   Yes, because they'll put a charging box on to the utility pole that's going to be accessible for the public to charge for a fee.

4. Question: Do you have the option of being billed if you have a(n) (electric) car?
   Facilitator response:
   I was on the Tesla site, and what happens with Tesla is that when you are an owner of a Tesla vehicle, you have an account with them, and with your account, you have to provide a credit card, a valid, working, non-expired credit card. And so when you go to a Tesla charger, and then you plug in, it knows that it's your car as it's connected to your

credit card. So, in this example, there's no cash payment. There are no slots for you to put your credit card or your debit card, it will just link itself to using your credit card.

5. Question: I'm sure there's a pin though?
   Facilitator response:
   In this instance with Tesla, there's no PIN. You plug and then you just wait, whether you go to a Starbucks or you wait in your car for 20-30 minutes for a full charge.

FOCUS GROUP QUESTIONS AND FEEDBACK

Summary

The Baby Boomers and Gen Xers focus group participants presented a diverse range of personal transportation habits and preferences, including reliance on private and public modes. Participants commonly utilize public transport options like buses and the MAX, supplementing these with walking and occasional car rides. This blend of transportation modes indicates an urban lifestyle with a preference for sustainable transport among some participants. One participant, in contrast, relies solely on driving a conventional car, while another has transitioned from a less efficient vehicle to a hybrid model, suggesting an awareness of environmental impacts yet maintaining personal convenience. Another participant shifted from biking to relying on rides for medical reasons, highlighting personal health and age as significant factors influencing transportation choices.

The Education and Accessing Information theme revealed varied preferences and experiences with information access regarding electric vehicles (EVs) and public transportation. Participants desired straightforward, accessible educational resources on EV technology and usage. Popular platforms for receiving information include YouTube, community newsletters, and company (PGE) emails, indicating a reliance on digital and community-based sources. Participants pointed to visual advertisements and direct mail as effective, while others noted the overwhelming presence of online ads, which they often try to avoid. The discussion underscores a gap between the available methods of communication and their actual effectiveness in reaching and engaging potential users of EVs and public transportation services.

EDUCATION AND ACCESSING INFORMATION

Feedback	Recurrence
Preference for visual aids and demonstrations (ads, videos, graphics) for learning about EVs	6
Utilization of YouTube for obtaining information and how-to guides	5
Interest in community meetings and local newsletters for receiving updates and information	4
Concerns about security and costs related to using public chargers	3
Dislike or avoidance of traditional advertising, preferring direct information sources (emails, direct mail)	3
Need for infrastructure development in apartment complexes to support EV charging	3
Desire for information in multiple languages to accommodate diverse populations	2
Skepticism about information from car dealers, preferring more neutral sources	2
Utilization of community and social networks to spread information and increase awareness	2

The financial aspects of using electric transportation were of concern to the group. The discussion centered around the methods and security of payment for charging electric vehicles. A preference for traditional payment methods such as credit and debit cards was noted, with apprehensions about the security of payment information at public charging stations. One participant's detailed attention to electricity consumption and cost management reflects a broader concern about the economic implications of integrating EV charging with household energy usage. The group expressed a need for transparent pricing and secure, convenient payment options to facilitate the broader adoption of EVs.

FINANCIAL CONSIDERATIONS

Feedback	Recurrence
Interest in using credit cards directly at chargers	3
Concern about security of payment information	2
Concern over billing complications with electric charges	2
Preference for direct debit or traditional payment methods	1
Convenience of mobile apps for payment	1
Desire for separation of household and vehicle electricity billing	1

Participants discussed the broader implications of transitioning to electric transportation, focusing on the practicality of EVs in their current lifestyles. Concerns about the availability and convenience of charging infrastructure, particularly for apartment dwellers, were prevalent. The economic feasibility of owning an EV, especially when compared to conventional vehicles, was questioned, as was the potential necessity of owning a gasoline vehicle alongside an EV to alleviate range and infrastructure concerns. This sentiment was echoed by others who felt that current EV technology might not fully meet their needs. The potential environmental impact of EV battery production and disposal was also a significant concern, highlighting the need for sustainable practices in the electrification transition.

OVERALL TE TRANSITION

Feedback	Recurrence
Concerns about security and safe charging locations	3
The high cost of EVs and the necessity of owning a gas car as well	3
Concerns about battery recycling and environmental impact	3
Charging time concerns and the logistics of waiting at charging stations	2
Need for better infrastructure to support charging in apartments	2
Worry about the impact of widespread EV use on the electric grid	2
Interest in preserving personal convenience despite environmental considerations	1
Perceived benefits of electrification beyond personal vehicles (e.g., bikes, buses)	1

The focus group discussions reveal a complex landscape of attitudes and experiences concerning the transition to electric transportation. Significant barriers remain while there is a general awareness of and interest in sustainable transportation options. These include the need for more effective communication and education on EV technologies, financial concerns related to the cost of usage and infrastructure, and practical considerations regarding the integration of EVs into daily life. Addressing these barriers through targeted education, improved infrastructure, and financial incentives could facilitate a smoother transition to electric transportation, aligning with broader environmental goals and consumer needs. Overall, the transition to electric vehicles is viewed as a positive step but requires significant structural and informational enhancements to meet potential users' diverse needs and concerns.

Sentiment Highlights on the Main Themes

Based on the responses provided by the Baby Boomers and Gen Xers participants, the data can be organized into four primary themes: Current Transportation Landscape, Education and Accessing Information, Financial Considerations, and Overall Transition to Electric Vehicles (TE). Each theme is accompanied by imparted sentiments expressed by the participants, categorized as positive, negative, or neutral.

Theme: Current Transportation Landscape
Overall Sentiment: Neutral with a Slight Lean to Positive
The neutrality comes from the straightforward descriptions of transportation habits without strong emotional expressions either for or against the methods discussed. The positive undertones are indicated by some satisfaction with current modes of transport and the adaptability shown by participants in managing their transportation needs effectively.

Key responses:

- P2 - neutral: "We either drive or walk and occasionally take the bus."
- P3 - neutral: "I typically bus home from work. Sometimes I'll get dropped off in the morning. Walk and of course, the MAX."
- P4 -positive lean: "I live downtown, so I don't have a car, but I will take a bus or I will walk."
- P5 - neutral: "I just drive a regular car."
- P1 - positive: "I've been pretty happy with the experience I've had on the bus."
- P1 - positive: "I like my Prius, it's fine."
- P6 - positive: "And I felt like that was my contribution to climate problems..." (Context: Transportation choices.)
- P6 - positive: "I would never give this up because it makes me feel good." (Context: Emotional connection with biking.)
- P6 - positive: "I think I'm probably recovering. I had a stroke... my therapist is pretty amazed by my recovery and I think it possibly was because of all those years of biking..."
- P1 - neutral: "Since then, I've had a Prius and my day usually consists of driving from the house to a place that I hang out a couple of miles away..."

Theme: Education and Accessing Information
Overall Sentiment: Neutral and Positive
The overall sentiment or feeling can be categorized as neutral and positive. The neutral aspect arises from the factual descriptions of how participants currently receive and perceive educational content and information dissemination methods. The positive aspect is evident in the proactive interest and suggestions for improving access to information about electric vehicles (EVs) and other related technologies.

Key Responses:

- P4 - neutral: "For me, it would probably have to be, TV or TV ads, and things like Facebook and things like that."
- P6 - positive: "But I am interested in community meetings... I also look at the community board at the library."
- P3 - neutral: "I would say through YouTube, I would notice ads... And I guess flyers through the mail. I would notice that too."
- P2 - positive: "Well PGE sends out a newsletter by email, and I do read that."
- P1 - neutral: "Because I do drive at least each day almost, I do hear the radio in the car."
- P5 - neutral: "I'm just on the computer all the time... I noticed today if you buy anything on Facebook, I was just, I just had to change shoes and I mean, you look up 'shoes' and all of a sudden you're getting tons of ads about shoes all over them."
- P2 - positive: "I would like to see just a neat little graphic on the station. Plug it in here, that kind of thing with a picture of the cord and where you're supposed to plug it in and that would be good enough."
- P3 - positive: "They have to have chargers there, right?... they should be able to demonstrate it quickly."** (Context: actual demonstration.)
- P1 – neutral with hint of negative: "A dealer... I don't think I would see them as necessarily my best source of information on something like that."
- P3 - positive: "I would like to go to the website and have videos such as 'this is on charging' or 'this is on blah, blah, blah'."
- P1 - positive: "if as an apartment dweller, it's only going to work out for me to be living in an apartment complex that has a charging infrastructure involved, somebody should be somehow luring these apartment builders or managers or whatever to actually have that infrastructure present."
- P4 – neutral with a hint of negative: "I don't even know if they just did an 18% increase in January of this year... It just seems to keep going up."
- P1 - positive: "My understanding of what that's about is just simply balancing the demand and supply times of the day."
- P6 - positive: "I think that when you have a QR code you can just put on your phone and then go to a video would be the most applicable to most people."

Theme: Financial Considerations
Overall Sentiment: Neutral with Concerns
The overall sentiment expressed by participants can be characterized as predominantly neutral with concerns, which implies a mixture of neutral and negative sentiments. The neutral aspect comes from the straightforward descriptions of their current payment methods and preferences. The negative undertone is apparent in the concerns about security, the complexity of payment methods, and the potential financial implications of integrating electric vehicle (EV) charging with regular billing.

Key Responses:
- P4 - neutral: "Do you have the option of being billed if you have a(n) (electric) car?"

- P4 - negative: "I was just thinking about theft deterrents. If somebody takes your Tesla and charges it, but they probably have a thing where you can 'Cancel my Tesla' or something."
- P1 - neutral: "I am an old-fashioned debit card guy generally, but recently I've at least a little bit gone to some apps on the phone where I can wave the put some money on my app..”
- P2 - neutral: "I would not want to have my car combined with my house's electricity because I like to monitor it very carefully."
- P2 - negative: "If it were to go on the bill, would you be subject to all those fees and things that are added to your regular electric bill?"

- P2 - negative: "I would worry that these stations, which don't have anybody monitoring them, that are just sitting out, would be someplace that someone would try to put one of those things where they steal your credit card information when you put it in."

Theme: Overall TE Transition
Overall Sentiment: Negative and Neutral
The overall sentiment is a combination of negative and neutral. The negative sentiment predominantly concerns practical challenges such as infrastructure, cost, and the impact of electric vehicles (EVs) on daily life and the environment. The neutral sentiment is reflected in the factual descriptions of current experiences and general thoughts on the transition without a strong emotional charge.

Key Responses:
- P3 - negative: "I did want to get an electric car and we do live in an apartment..." (Context: logistical.)
- P1 – negative: "I think economically, right now, EVs are still rather expensive...".
- P1 – neutral; not overtly negative: "I mean, for me, personally, I think that range of battery would be a factor..."
- P2 - negative: "Well, all the things that P3 said about security are important to us..."
- P5 - negative: "I just had a major concern about the battery recycling itself..."
- P2 - negative: "What's going to happen to the electric grid?"
- P7 - neutral: "Regarding the battery recycling, they have to be recycled completely..."
- P6 - neutral: "For whatever reason, my concerns are quite different..." (Context: broader environmental and societal issues related to petroleum usage.)
- P1 - positive: "It does strike me positively that PGE is helping to electrify bikes, tractors, and buses..."

Participants expressed concerns about adopting electric vehicles (EVs), focusing on several key areas: security issues at public charging stations, the safety of payment methods, and the adequacy of charging infrastructure, especially for those who have private garages. They highlighted apprehensions about EV range for long trips and the potential strain on the electric grid with widespread EV use, emphasizing the need for resilient energy infrastructure. Economic concerns were also noted, particularly the impact of rising

electricity costs on the total cost of EV ownership. Additionally, the dual ownership of EVs and gasoline vehicles was discussed, reflecting transitional vehicle ownership patterns and the possible necessity for a multi-car approach during the early phases of transportation electrification.

SWOT Analysis

Based on the verbatim responses of the Baby Boomers and Gen Xers focus group participants (see page 13), a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was created for each of the main themes that PGE identified as key: education and access to information, financial considerations, and overall transition to transportation electrification (TE).

Education and Access to Information:

Strengths:

1. Participants use various channels to access information, including YouTube, community meetings, email newsletters, and community boards at local libraries, which provide multiple avenues for education.
2. There is a genuine interest in learning about EVs and their charging processes, as evidenced by participants' willingness to attend demonstrations and read instructional materials.
3. Some participants are actively involved in community organizations and networks, which can be leveraged to spread information and education about transportation electrification.
4. Certain participants are comfortable with digital platforms like YouTube and Google Maps, suggesting that online tutorials and apps could be effective educational tools.
5. Participants expressed interest in learning from friends and acquaintances who already own EVs, indicating that peer-to-peer learning could be a strong method for information dissemination.
6. There is an awareness of the need for multilingual resources, which is crucial for reaching a broader audience within under-represented communities.

Weaknesses:

1. Participants express skepticism about receiving information from car dealers, which could hinder the effectiveness of dealership-based education.
2. Some participants have had negative experiences with online help videos, leading to distrust in the quality and accuracy of available instructional content.
3. Apartment dwellers are still determining the availability of charging infrastructure, indicating a gap in knowledge about existing and planned EV charging options.
4. Not all participants have access to or are comfortable with smartphones and digital technology, which could limit the reach of online educational resources.
5. Participants worry about the security of their financial information when using public chargers, which could deter them from seeking information on how to use these services.
6. There is a tendency among participants to ignore or avoid advertisements, which could make it challenging to capture their attention through traditional advertising methods.

Opportunities:

1. Tailoring educational resources to local community centers, libraries, and neighborhood organizations can help reach participants where they are most engaged.
2. Participants appreciate clear visual instructions, suggesting that simple, well-designed graphics and diagrams could be effective educational tools.
3. Hosting public forums or town halls on EVs could provide a platform for in-depth learning and discussion.
4. Encouraging the development of EV charging infrastructure in apartment complexes could address accessibility concerns for apartment dwellers.
5. Partnering with trusted community organizations and nonprofits could lend credibility to educational efforts and increase outreach.
6. Demonstrations and interactive experiences, such as test drives or hands-on charging tutorials, could engage participants and enhance learning.

Threats:

1. Concerns about theft and safety at charging stations could encourage individuals to consider EVs.
2. Participants are worried about the costs associated with EVs, including charging costs and potential increases in electricity rates, which could impede the transition to electric transportation.
3. Resistance to adopting new technologies, such as payment apps or QR codes, could slow down the adoption of EVs among certain demographics.
4. The potential for contradictory information, especially from unofficial sources like YouTube, could lead to confusion and misinformation.
5. Questions about battery recycling and its impact on the electric grid represent potential obstacles to the acceptance of EVs.
6. Worries about the time it takes to charge an EV and the availability of charging stations during long trips could deter potential EV buyers.

Financial Considerations:

Strengths:

1. The integration of charging costs into existing billing systems, such as with Tesla, simplifies the payment process for users, eliminating the need for cash transactions or card swiping at charging stations.
2. The absence of a PIN or physical payment at Tesla charging stations reduces the risk of credit card theft, a concern at unmanned charging locations.
3. Participants are open to apps and phone-based payment systems, indicating a willingness to adapt to new technology for convenience.
4. Monitoring electricity usage online allows users to manage their consumption and costs effectively.
5. Various payment options, including credit cards and potentially pre-loaded passes, cater to different preferences and needs.
6. Participants are conscious of how electric vehicle (EV) charging could affect their overall electricity bills, indicating a level of financial literacy and cost awareness.

Weaknesses:

1. Concerns about the complexity of payment systems, such as the TriMet Hop pass, and the security of credit card information at public charging stations could deter use.
2. Some participants need to be more comfortable with or knowledgeable about current payment technologies, which could hinder adoption.
3. Participants worry about additional fees on their electric bills and the impact of EV charging on their utility costs, indicating a need for transparent pricing.
4. Not all users have smartphones or access to apps, which could exclude them from certain payment methods.
5. The potential integration of EV charging costs with home electricity bills raises concerns about increased rates and the complexity of monitoring usage.
6. The fear of credit card skimming at unmonitored charging stations could discourage using credit card payments.

Opportunities:

1. There is an opportunity to educate users on the simplicity and security of EV charging payment options through platforms like YouTube and community events.
2. Encouraging payment apps with incentives could streamline the payment process and increase user comfort with technology.
3. Developing and promoting advanced security features for payment systems could alleviate concerns about credit card theft.
4. Clear communication about the costs associated with EV charging, including any additional fees, could build trust and encourage adoption.
5. Linking EV charging payment systems with widely used services like Google Maps could improve accessibility and convenience.
6. Creating a payment infrastructure that accommodates various methods, including cash options, could make EV charging accessible to a broader audience.

Threats:

1. Participants need smartphones or internet access to avoid barriers to using certain payment systems, which could potentially limit the adoption of EVs.
2. The perceived risk of credit card information theft at charging stations could undermine confidence in the payment infrastructure.
3. Concerns about the financial impact of EV charging on household bills could deter potential EV buyers.
4. Some participants' preference for traditional payment methods may need to change to new payment technologies.
5. The current infrastructure may only be ready to handle the increased demand for EV charging causing grid issues or long wait times.
6. Worries about battery recycling and the environmental impact of EVs could overshadow the benefits of electrification and affect the willingness to transition.

Overall TE Transition:

Strengths:

1. Participants utilize various transportation methods, including driving, public transit, and walking, which indicates adaptability and potential openness to new forms of transportation like electric vehicles (EVs).

2. Some participants expressed a strong environmental consciousness and a willingness to accept inconveniences for the greater good, suggesting a receptive attitude toward the environmental benefits of EVs.
3. Participants show engagement with technology, such as using YouTube and email newsletters for information, which could facilitate the adoption of EV technology and related educational resources.
4. There is an interest in community meetings and local organizations, indicating that community-based initiatives could effectively promote EV education and adoption.
5. Participants are conscious of their energy consumption and costs, which could drive interest in the long-term savings associated with EVs.
6. Concerns about safety and security when charging EVs in public spaces indicate a well-informed user base that values secure infrastructure.

Weaknesses:

1. Many participants live in apartments without EV charging infrastructure, presenting a significant barrier to EV adoption.
2. Some participants have no experience with EVs, which could hinder their ability to transition without adequate education and support.
3. The cost of EVs and the perceived complexity of payment options for charging could deter potential users.
4. Concerns about the adequacy of the electric grid and the potential for power outages may create skepticism about the feasibility of widespread EV adoption.
5. Participants are worried about the recycling of EV batteries and the overall environmental impact, which could affect their willingness to transition.
6. Car dealers are not trusted as a source of information, indicating a need for reliable and transparent educational resources.

Opportunities:

1. There is a clear opportunity for educational initiatives, such as YouTube tutorials and community demonstrations, to teach about EVs and charging.
2. Leveraging community organizations and local events could effectively spread information and encourage the transition to EVs.
3. Participants are receptive to using apps and online resources, suggesting that digital tools could be developed to assist with the transition.
4. There is potential for incentives to encourage apartment complexes and other residential areas to install EV charging stations.
5. Capitalizing on the environmental concerns of participants could drive campaigns that highlight the ecological benefits of EVs.
6. Providing clear information on the long-term cost savings of EVs compared to traditional vehicles could encourage adoption.

Threats:

1. Concerns about theft and vandalism at charging stations could discourage potential EV users.
2. Worries about the stability of the electric grid with increased EV usage could be a significant deterrent.
3. Anxiety about the proper disposal and recycling of EV batteries could pose a threat to acceptance.

4. The high initial cost of EVs and the perception of EVs as secondary vehicles rather than primary ones could limit market penetration.
5. The time required to charge EVs and the potential for long waits at charging stations could be considered inconvenient compared to gas refueling.
6. The risk of information overload and the spread of misinformation could create confusion and mistrust among potential EV adopters.

Unresolved Key Issues

The following unresolved key issues were identified:

1. **Battery Recycling Process:** There are concerns about recycling electric vehicle (EV) batteries and the environmental impact of potential battery waste.
2. **Electric Grid Capacity:** There are concerns about the electric grid's ability to handle the increased demand from widespread EV adoption and the potential for brownouts or blackouts.
3. **Financial Accessibility:** Many people are intimidated by the high cost of EVs, and more affordable options are needed to encourage widespread adoption.
4. **Charging Infrastructure for Apartment Dwellers:** Apartment residents need help accessing charging stations, which may deter them from considering EVs.
5. **Charging Time and Queue:** As more people switch to electric vehicles, there are concerns about the time it takes to charge an EV and the potential for long waits at charging stations.
6. **Security at Charging Stations:** When left unattended at public charging stations, there is anxiety about the security of payment information and the vehicle itself.
7. **Education on Charging Procedures:** There is a need for clear, accessible instructions on how to use charging stations, especially for those without internet access or smartphones.
8. **Range Anxiety and Infrastructure:** Worries about the driving range of EVs and whether the charging infrastructure is sufficient for long trips.
9. **Impact of EVs on Personal Electricity Bills:** There are questions about how charging an EV at home will affect household electricity bills and whether additional fees will apply.
10. **Incentives for Apartment Charging Infrastructure:** There is a need for incentives or regulations to encourage the installation of EV charging infrastructure in apartment complexes.
11. **Cost Comparison with Gasoline Vehicles:** Information on the long-term cost comparison between EVs and gasoline vehicles is needed, especially considering rising electricity rates.
12. **Public Awareness and Advertising:** Identifying effective ways to raise awareness and educate the public about EVs and charging infrastructure, particularly among demographics that need to be more engaged with digital media.

Top Ten Recommendations

1. **Partner with local community organizations to host educational workshops and demonstrations.**
    - Leverage existing community trust and networks to reach and educate under-represented communities.
    - Hands-on demonstrations can demystify the technology and address concerns about usage and safety.
2. **Create clear, concise, multilingual instructional materials for distribution in public spaces and through direct mail.**
    - Visual aids like infographics can simplify learning for those who prefer non-digital or direct learning methods.
    - Direct mail ensures reaching individuals who may not be active online or attend community events.
3. **Utilize local public access television and radio for educational segments.**
    - Reaches an audience that may not be engaged online but regularly consumes traditional media.
    - Provides an opportunity for in-depth discussion and education on transportation electrification.
4. **Offer a pre-paid charging card system like public transit cards.**
    - Reduces the risk of credit card fraud at unattended charging stations.
    - Allows users to budget and monitor their spending on charging separately from household electricity bills.
5. **Implement a transparent billing system that separates vehicle charging costs from home electricity usage.**
    - It helps users track and manage their expenses more effectively.
    - Prevents confusion and potential financial strain from increased utility bills.
6. **Provide financial incentives or subsidies for installing home charging equipment for apartment dwellers.**
    - Encourages EV adoption among residents without private garages.
    - Addresses the infrastructure gap in multi-unit dwellings.
7. **Increase the visibility and accessibility of public charging stations with clear signage and real-time availability information.**
    - It helps alleviate range anxiety and concerns about the time required for charging.
    - Encourages the use of EVs by making charging as convenient and predictable as refueling gas vehicles.
8. **Collaborate with security experts to enhance the safety of public charging stations.**
    - Addresses concerns about theft and vandalism, making users feel more secure while charging.
    - Promotes the use of public charging infrastructure by ensuring a safe environment.
9. **Advocate for policies that require new multi-unit dwellings to include EV charging infrastructure**.
    - Ensures future readiness and accessibility for residents choosing to transition to EVs.
    - Encourages developers to consider EV infrastructure as a standard amenity.
10. **Facilitate community-based peer learning and information exchange about EVs.**

- Utilizes the influence of community members who already own EVs to share experiences and advice.
- Builds a supportive network for potential and new EV owners within the community.

HISPANIC AND LATINO/A/E LIVING IN RURAL AREAS FOCUS GROUP

PGE TE – Latine/a/o Community in Woodburn - Rural Marion County, OR
Date of FG: 04/02/2024 **No. of Participants:** 8
PGE Presenter: Kelly Yearick
Name of Spanish Facilitator: Paul Riek
Notetaker: HK Cheng translated by Paul Riek
Time Started: 5:40 pm

PGE PRESENTATION

PGE provided transportation electrification (TE) and charging infrastructure presentations to the Latine/a/o community (Woodburn – Rural Marion County) focus group participants, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions. The presentation and discussions were conducted in Spanish, and notes were transcribed into English.

The presentation is consistent across all the nine TE focus groups and can be found in the ***"Summary of PGE Presentation."***

Post-Presentation's Questions and Answers Portion

- Question 1: Having an electric car, making the change from what we are already doing right now is going to be complicated, because what are you going to do with the one you already have? Who is going to want it, if there is going to be a change for everyone? And then you can also see how fuels have been going up and have been going up, what is going to happen with the prices they are giving now, are they going to [go up] very fast too, or are they going to keep getting cheaper?
  Spanish facilitator response:
  Well, it won't be overnight, but it is true that there will come a time when gasoline-powered cars will go down in value because most people will want electric. The other question, I don't think Eva will be able to answer, that's for the bosses.
  PGE response:
  There are many more levels above me.

- Question 2: I heard [in Eva's presentation] that you have two months to buy a car, is it a promotion or what is it? And when does the promotion end?
  Spanish facilitator response:
  Well, she said 2 months, I imagine April or May, but I am not an expert. If you are interested in taking advantage of that, there are 2 options: first, your question is

already in the recording, and we can research and get you the answer, and the other option is to go to where they sell electric cars and, as Eva said, where they sell electric cars it is in their interest to help you enroll in those programs so they can sell their car, so you can ask them, how does that work, when does it expire?

- Question 3: [Eva] said that if you buy an electric car, there are levels, and I heard that the fastest level is what, fast charging?
  Spanish facilitator response:
  That has nothing to do with the vehicle; it is the recharging stations. You can plug it in your own house or apartment, but that is like any device, it takes a long time, but if you park outside a supermarket or some other place where they have those rechargers, it is faster.

Additional participant questions

There were no additional participant questions during the focus group discussions.

FOCUS GROUP QUESTIONS AND FEEDBACK

Analyzing the Latine/a/o community (Woodburn – Rural Marion County) focus group responses, key insights emerged regarding participants' perspectives on the "Current Transportation Landscape," "Education and Accessing Information," "Financial Considerations—Payment Options," and the "Overall Transportation Electrification Transition." These insights offer a comprehensive understanding of participant concerns, preferences, and informational needs, which are critical for guiding future transportation and utility policies and practices related to transportation electrification.

Participants generally expressed concerns about the high costs associated with conventional gasoline-powered vehicles, particularly concerning fuel and maintenance expenses. Participants noted the burden of weekly gas expenses, which for some amounts to over $100. Despite the financial strain, personal vehicles are reliant due to their convenience for work commutes and family logistics. Additionally, alternative environmentally friendly transportation options, like bicycles, are utilized but seem more recreational than a primary mode of transportation.

Education and information accessibility were highlighted as crucial areas needing improvement, particularly regarding transitioning to electric vehicles (EVs). Participants suggested a variety of platforms for disseminating information, including social media channels like Facebook, TikTok, and Instagram, as well as traditional methods such as TV and radio. The need for information to be available in multiple languages, including indigenous languages such as K'iche' (or Quiché) and Mam – native to Guatemala and Mexico, was emphasized, reflecting the linguistic diversity of the participant group. This indicates a gap in current communication strategies, which may not adequately reach non-Spanish-speaking populations.

Feedback	Recurrence
Use of social media (Facebook, TikTok, Instagram, WhatsApp) for information dissemination	7
Production of videos and printed materials for education about electric vehicles	5
Need for multilingual information, particularly in indigenous languages like Quiché and Mam	4
Information to be provided at the point of sale (e.g., car dealerships) and in public places like schools	3
Information should be accessible in public media (radio, TV) and via direct mail (e.g., with bills)	3
Promotion of electric vehicle use through incentives and discounts	2

Financial considerations were a focal point, particularly concerning payment methods for transportation-related expenses. Participants indicated various payment preferences, including traditional (cash) and digital (cards and online payments) methods. The transition from cash to digital forms is noted, though some participants expressed discomfort with digital transactions due to concerns over tracking expenses. This reflects a broader hesitation that could influence the adoption of transportation services, especially new technologies like EV charging stations. Developing more accessible payment options and financing plans for EVs could help mitigate the economic barriers that potential users perceive.

Feedback	Recurrence
Preference for using cards for transactions	5
Availability of both card and cash payment options	3
Learning curve and adjustment to using cards	2
Concerns about overspending with card usage	1
Payment through various modes (online, by phone, by mail)	1

Concerns regarding the electrification of transportation were multifaceted, encompassing technical, financial, and educational aspects. Technical concerns included the availability of charging stations, especially in remote areas like mountains, and the accessibility of parts and maintenance for electric vehicles. Financially, the high cost of electric vehicles and the perceived lack of affordable financing options were deterrents. Educationally, there is a strong desire for more information about how to use EVs, suggesting a gap in current consumer knowledge and a potential area for intervention.

Feedback	Recurrence
Concerns about the availability of charging stations in remote areas or on long trips	2
Concerns about the availability and cost of parts and maintenance	2
High cost of purchasing electric vehicles and desire for financing options	2
Need for education on how to use electric vehicles, including classes and instructional materials	2
Request for multilingual information dissemination and inclusivity in communication	2

In summary, the focus group data paints a picture of a community that is cautious yet curious about transitioning to electric transportation. While cost and infrastructure concerns are prevalent, there is a strong underlying interest in the environmental benefits of such a transition. Addressing these concerns through thoughtful policy, education, and

infrastructure development could facilitate a smoother transition to a more sustainable transportation future.

Sentiment Highlights on the Main Themes

Based on the responses provided by the Latine/a/o community (Woodburn – Rural Marion County) participants, the data can be organized into four primary themes: Current Transportation Landscape, Education and Accessing Information, Financial Considerations, and Overall Transition to Electric Vehicles (TE). Each theme is accompanied by imparted sentiments expressed by the participants, categorized as positive, negative, or neutral.

Theme: Current Transportation Landscape
Overall Sentiment: Negative-Neutral

The focus group feedback can be analyzed as predominantly negative, particularly centered around the high costs associated with gasoline-powered transportation and the logistical difficulties it imposes. However, there are traces of neutral sentiment where participants express a basic satisfaction or acceptance of their current transportation method despite the expenses. Therefore, the combination of sentiments is best described as negative-neutral.

Key responses:

- P1 - negative: "I travel by car to work too. It's a bit of an expense, quite a lot, because my car is gasoline-powered, and work is somewhat far away."
- P2 - neutral: "I drive, but to take care of the environment we sometimes ride bicycles, and we like to ride bicycles."
- P3 - negative: "I use one tank of gas per week, 80 dollars a week, which is a bit expensive, and on top of that the insurance, tires, oil, etc."
- P4 - negative: "Right now it's difficult because my husband works and I take my children to their appointments or go shopping, so I am spending a little more."
- P5 - neutral: "I am satisfied to do what I need to do."
- P6 - negative: "I haven't had any problems getting around, only that gas is expensive, but on the bus I have a hard time getting around because I hardly use it."
- P7 - negative: "I spend a lot on gas to go to work. Sometimes it's far to work, so I spend $120 or $130."
- P8 - negative: "I do spend a lot; it's about 40 minutes to work. I spend on maintenance and gas and all that. And now the price of gas is going up again."

Theme: Education and Accessing Information
Overall Sentiment: Positive

Key Responses:
The positive sentiment is derived from participants' enthusiasm for leveraging various media platforms to improve education and accessibility of information about EVs. These responses collectively illustrate a proactive and innovative approach to educating the

public. They focus on accessibility and diversity and integrate multiple media formats to ensure broad reach.

- P1 – positive: "Social media would be good; Facebook and all social media. I think Facebook for seniors and TikTok for the rest."
- P1 – positive: "It would be good if this could be done in other languages; for example, in Guatemala there are many different languages. Quiché and Mam are most important."
- P2 – positive: "I think Facebook, because everyone is on Facebook."
- P2 – positive: "It would be good to include some of the Guatemalan languages, because there are many, about 23 languages."

- P4 – positive: "Well, I would say Facebook and TikTok and Instagram."
- P5 – positive: "Social media, TikTok, also Univision T.V."
- P6 – positive: "I listen to 93.1 El Rey Radio, watch Univision news and also social media like Facebook and TikTok."
- P8 – positive: "It could also be WhatsApp."
- P1 – positive: "I think that first, it would be good that when a person buys a vehicle, the company advises him/her on how it works, and later on they could make short videos and publish them on social media."
- P2 – positive: "I think it would be good to create some videos and some printed materials."
- P5 – positive: "Advertising on social media, handing out flyers and on TV. Have workshops in places like schools to teach us how to use electric cars."
- P7 – positive: "Ads on social media."

Theme: Financial Considerations
Overall Sentiment:
The participant responses collectively indicate various preferences for payment methods, with considerations of convenience, learning new methods, and concerns about financial management. The overall neutral sentiment reflects a mix of these factors without a clear skew towards either enthusiasm or dissatisfaction.

Key Responses:
- P2 - neutral: "With a card."
- P3 - negative: "I have learned to use a card; before I used to pay only in cash. I didn't like to have much contact with the banks, because between using cards and apps the money disappears, because you don't realize how much you are spending."
- P4 - neutral "[via Zoom chat] Card."
- P5 – neutral: "Sometimes online like Boost Mobile, sometimes by phone with a card and sometimes in cash. I would prefer to use a credit card because most of them are paid by credit card. I would prefer it to be the same, either card or cash, like at gas stations."

- P6 – neutral: "I use a card and cash only; I pay my bills by mail. With a card or cash, as in gas stations."
- P8 – neutral: "I think cash would be good. I think you can use both. If they ask us to pay with a card, we can use a card. If we don't have the experience, then we have to learn."

Theme: Overall TE Transition
Overall Sentiment: Negative and Neutral
The overarching sentiment regarding the theme from the focus group feedback combines negative and neutral sentiments. The quotes below reflect a complex picture where the environmental benefits of EVs are recognized but overshadowed by practical and financial concerns. The feedback indicates a need for more supportive infrastructure, clearer information about the costs and benefits, and policies that consider the diverse circumstances of potential users to facilitate a smoother transition to electric transportation.

Key Responses:
- P1 – negative: "I would be concerned if I took an electric vehicle into the mountains and couldn't find a charging point there. Also, if a part breaks on the vehicle, is it available at any auto parts store or only at the dealership?"
- P3 – negative: "The maintenance of these batteries that are going to move these 4 wheels, the services, the electric mechanics, how many are there? How many will there be in the future?"
- P5 – negative: "What to do if the battery runs out and there is no place to charge it on a long trip?"
- P5 – negative: "I don't have enough money to buy an electric car."
- P5 – neutral: "This is good for the environment; there would be no pollution."
- P6 – neutral: "I personally would like to have options like the current gasoline-powered cars, so I don't feel that they are forcing me to use an electric car." (Context: desire for choice and cautious.)

The participants' feedback expressed a desire to care for the environment by incorporating bicycles into their routine, showing an awareness of environmental impact and a willingness to adapt their lifestyle for sustainability. There is a strong emphasis on the need for information and resources to be available in multiple languages, particularly indigenous languages, to ensure inclusivity and effective communication within diverse Latine/a/o communities.

SWOT Analysis

Based on the Latine/a/o community (Woodburn—Rural Marion County) focus group participants' verbatim responses (see page 11), a SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was created for each of the main themes that PGE identified as key: education and access to information, financial considerations, and overall transition to transportation electrification (TE).

Education and Access to Information:

Strengths:

1. Participants strongly prefer using social media platforms like Facebook, TikTok, and Instagram, indicating that these channels effectively reach and engage the community.
2. There is a clear demand for educational content in multiple languages, including indigenous languages, which can enhance inclusivity and accessibility.
3. The community consumes information through various media, including social media, television, radio, and print, providing multiple educational avenues.
4. Participants expressed interest in learning through videos, printed materials, and workshops, suggesting a readiness to engage with hands-on and visual learning tools.
5. There is support for education at points of sale, such as car dealerships and schools, indicating opportunities for direct consumer education.

Weaknesses:

1. The need for materials in various languages, including indigenous ones, highlights a potential barrier to information access for non-Spanish speakers.
2. Some participants need more knowledge about EVs, suggesting that current educational efforts may need to be revised.
3. The wide range of suggested communication channels could lead to fragmented messages and information overload for the community.
4. Creating and distributing multilingual and multimedia content requires significant resources, which may take time to secure.
5. Relying heavily on social media and online content may exclude those with limited internet access or digital literacy.

Opportunities:

1. There is an opportunity to develop targeted educational campaigns using preferred social media platforms and other media channels.
2. Collaborating with local media outlets like Univision and El Rey Radio can amplify outreach efforts.
3. Offering materials in multiple languages, including indigenous ones, can increase the reach and effectiveness of educational programs.
4. Hosting workshops in community spaces like schools can provide hands-on learning experiences.
5. Introducing discount programs and financial incentives can motivate the transition to electric vehicles.

Threats:

1. The diversity of languages and cultures within the community could complicate the creation of universally understood educational materials.
2. Financial concerns about the cost of EVs and charging infrastructure may deter adoption despite educational efforts.
3. Worries about the availability of charging stations and maintenance services could undermine confidence in transitioning to EVs.
4. Rapid changes in EV technology may require continuous updates to educational materials, posing a challenge to keep the community informed.

5. Uncertainty around future transportation electrification policies and regulations may affect community perceptions and willingness to adopt EVs.

Financial Considerations:

Strengths:

1. Familiarity with card payments, indicating readiness for electronic transactions.
2. Adaptability to new payment methods, as some participants have transitioned from cash to card.
3. Credit card use is preferred due to its prevalence in current payment systems.
4. Openness to learning new payment technologies if necessary.
5. There is a possibility of integrating existing payment methods at charging stations, like gas stations.

Weaknesses:

1. Concerns about overspending with card payments due to lack of physical cash transactions.
2. Limited experience with card payments among some community members.
3. Some participants ' reliance on cash may not be supported by charging stations.
4. Potential resistance to abandoning traditional cash payments.
5. There is a need for education on managing finances with non-cash payment methods.

Opportunities:

1. Educating the community on the benefits and security of card payments.
2. Developing multi-lingual support for payment systems to increase accessibility.
3. Offering financial incentives or programs to encourage using cards for EV charging.
4. Integrating payment systems that accept both card and cash to cater to all preferences.
5. Partnering with financial institutions to provide community-specific card payment solutions.

Threats:

1. Potential exclusion of individuals who prefer or rely solely on cash payments.
2. The digital divide may hinder the adoption of card-only payment systems.
3. Resistance to change from traditional payment methods to digital transactions.
4. Cybersecurity concerns associated with card payments.
5. Some community members face financial barriers to obtaining credit cards.

Overall TE Transition:

Strengths:

1. Environmental benefits are recognized and valued.
2. Interest in learning and education about EVs is present.
3. Diverse communication channels (social media, videos) are available for outreach.
4. Multilingual resources can cater to diverse linguistic needs.
5. Participants show willingness to adapt to new payment methods for EV services.

Weaknesses:

1. Concerns about the availability of charging infrastructure, especially in remote areas.
2. Uncertainty about the maintenance and repair of EVs, including parts availability.
3. Financial barriers to purchasing EVs are significant.
4. Lack of widespread knowledge about EVs and their operation.

5. Anxiety about the transition to EVs and potential forced obsolescence of gasoline vehicles.

Opportunities:

1. Educational programs can demystify EV usage and maintenance.
2. Expansion of charging infrastructure can alleviate range anxiety.
3. Financial incentives could make EVs more accessible.
4. Multilingual and multimedia campaigns can broaden awareness.
5. Developing a robust second-hand EV market could lower entry costs.

Threats:

1. More charging stations are needed to deter adoption in rural areas.
2. High repair and maintenance costs could discourage potential EV owners.
3. Language barriers may limit non-English speakers' access to information.
4. The perception of EVs as a luxury or niche market could slow mainstream acceptance.
5. Resistance to change and attachment to gasoline vehicles may hinder transition efforts.

Unresolved Key Issues

The following unresolved key issues were identified:

1. **Charging Infrastructure Concerns:** Participants are worried about the availability of charging stations, especially in remote areas like the mountains, indicating a need for expanded infrastructure.
2. **Maintenance and Repair Uncertainty:** There needs to be more certainty about the availability of parts and specialized mechanics for EVs, which could hinder adoption due to concerns over repair and maintenance.
3. **Financial Barriers to EV Ownership:** The high cost of EVs is a significant barrier for participants, suggesting a need for financial assistance or incentive programs.
4. **Education and Training Needs:** Participants desire classes and instructional materials on using electric vehicles, indicating a gap in current education efforts.
5. **Language and Communication Barriers:** Effective communication about electric vehicles needs to address the diverse linguistic needs of underrepresented communities, including indigenous languages.
6. **Information Dissemination Methods:** The most effective platforms (e.g., social media, TV – like UniVision, radio – like El Rey Radio 93.1, printed materials) for disseminating information about electric vehicles to diverse audiences need to be identified.
7. **Payment Options for Charging:** Participants have varying preferences for payment methods when charging EVs, with some preferring cash options, indicating a need for flexible payment solutions at charging stations.
8. **Transition to Electric Vehicles:** There is concern about being forced to transition to electric vehicles without adequate options or support, suggesting a need for policies that consider consumer choice and readiness.
9. **Accessibility of Financial Programs:** Participants are unaware of existing discount or incentive programs for electric vehicles, pointing to a need for better promotion and accessibility.

10. **Trust in Financial Transactions**: Some participants would prefer to use cards and digital payments due to concerns about overspending, indicating a need for financial literacy and trust-building in the context of electric vehicle transactions.

Top Ten Recommendations

Based on the Latine/a/o community (Woodburn – Rural Marion County) focus group feedback, here are the top 10 recommendations for PGE to consider in their TE outreach and implementation strategies for under-represented communities:

1. **Multilingual Social Media Campaign:**
   - Utilize popular social media platforms like Facebook, TikTok, and Instagram to share information about EVs) and charging in multiple languages, including indigenous languages.
   - Participants expressed familiarity with these platforms and highlighted the need for information in languages other than Spanish, reflecting the community's linguistic diversity.
2. **Inclusive Educational Materials:**
   - Develop and distribute educational videos and printed materials in Spanish and other prevalent local languages at public places, car dealerships, and utility bill mailings.
   - Participants indicated a preference for visual learning tools and printed materials, which can be accessed at various touchpoints in the community.
3. **Community Workshops and Training:**
   - Organize workshops at local schools and community centers to provide hands-on training on using and maintaining EVs.
   - Participants showed interest in learning through direct engagement and expressed concerns about the practical aspects of EV usage.
4. **Partnership with Local Media:**
   - Partner with local radio stations like *93.1 El Rey* and television networks like *UniVision* to broadcast educational content about EVs.
   - Participants trust and use these media sources regularly, suggesting they are effective channels for reaching the broader community.
5. **Flexible Payment Options:**
   - EV charging stations should accept multiple forms of payment, including cash, credit cards, and mobile payments, to accommodate all users.
   - Participants expressed a mix of preferences for payment methods, with some still relying on cash transactions.
6. **Financial Literacy Programs:**
   - Implement financial literacy programs that educate community members on managing expenses with card payments and the financial benefits of EVs.
   - Concerns were raised about the invisibility of spending with cards, indicating a need for better financial management skills.
7. **Cost Transparency:**

- To address financial concerns, provide clear information on the total cost of ownership for EVs, including potential savings compared to gasoline vehicles.
- Participants are worried about EVs' upfront costs and maintenance expenses, suggesting a need for transparent cost-benefit analyses.

8. **Infrastructure Assurance:**
   - Invest in expanding the EV charging network, especially in remote areas, and ensure the availability of parts and maintenance services.
   - Participants are concerned about the availability of charging stations and parts, which could hinder their willingness to transition to EVs.
9. **Diverse Vehicle Options:**
   - Encourage the availability of electric options for different types of vehicles, including pickup trucks, to meet the community's varied needs.
   - Participants indicated a desire for electric versions of vehicles they currently use, such as pickup trucks, suggesting a need for a diverse EV market.
10. **Transition Support Programs:**
    - Create programs offering financial incentives, such as discounts or favorable financing options, for purchasing EVs and training electric car mechanics.
    - Participants are concerned about the costs of purchasing and maintaining EVs, and the need for skilled mechanics suggests a gap in the current labor market.

APPENDIX C: PGE FOCUS GROUP PRESENTATION SUMMARY

(consistent through all focus groups)

PGE Presenters: Kelly Yearick and Eva DeCesaro

Facilitator/Presenter: Therese McLain

The following bullet-point summary outlines PGE's presentation and role as a leading electric utility in Oregon, emphasizing its commitment to decarbonization, electrification, and advancing electric vehicle infrastructure and technology. Focusing on customer engagement, particularly in underserved communities, highlights PGE's approach to inclusive and sustainable energy solutions.

1. Overview of PGE:
- Largest electricity supplier in Oregon, serving about half of the state's population.
- It is over a century old.
- Operates in 50 cities across seven counties in Oregon.
- Employs nearly 3,000 individuals.
- Functions as a private company and a public utility.
- Governed by a board of directors and corporate officers.
- Regulated by the Oregon Public Utility Commission.

2. Decarbonization Goals:
- Aim to reduce greenhouse gas emissions by 80% by 2030.
- Target to achieve a 100% reduction in greenhouse gas emissions by 2040.

3. Electrification Initiatives:
- Prioritizes electrification beyond homes, including electric vehicles (EVs), distributed solar, battery storage, and building electrification.
- Focus on providing reliable, affordable, and safe electricity.

4. Transportation Electrification (TE):
- The transition from internal combustion engines to EVs, including buses, trucks, and bikes.
- Electricity for EVs is increasingly sourced from renewable energies like wind, water, and solar.
- Electrifying transportation is critical for Oregon's air quality and climate goals.

5. Role in Transportation Electrification:

- Plans for future EV load demand.
- Develop transparent EV-specific rates.
- Research and test technologies for load management from renewables and electrified transportation.
- Supports the transition to electrified transportation systems.

6. Customer Engagement and Segmentation:

- Engages with residential EV drivers and non-drivers.
- Partners with non-residential entities like multi-family properties and businesses.
- Supports private and public fleets in transitioning to electric.

7. Focus Group Purpose:

- Amplifies diverse perspectives, especially from underserved communities.
- Aims to develop equitable electrification policies and technologies.
- Feedback will be compiled, analyzed, and recommendations in a final report product to PGE.

8. Transportation Electrification Insights:

- TE includes various electric vehicle types, from tractors to buses.
- Electrification significantly impacts greenhouse gas emissions and local air quality.
- Electric vehicles offer economic advantages like lower fuel costs and maintenance.

9. Types of Electric Vehicles:

- BEVs (Battery Electric Vehicles) and PHEVs (Plug-in Hybrid Electric Vehicles).
- BEVs operate solely on electric power.
- PHEVs combine electric power with a gas engine.

10. EV Range and Charging:

- The average BEV range exceeds 200 miles per charge.
- PHEVs offer flexibility with electric range and extended gas-powered travel.
- Charging systems include Level 1 (slow, home charging), Level 2 (faster, public and home charging), and Level 3 (DC fast charging).
- Public charging station availability is increasing in Oregon.