



# Learning Lab Series

Learning Lab # 8 - September 7, 2023



# Meeting Logistics



Audio



Microphone



Chat box



Video



Raise Hand



Closed Caption

# Operating Agreements



Establishing norms with our communities is foundational to building trust

To create a **safe space**, we established **common agreements** such as **respect, honoring diversity of thought**, and **inclusivity**

**Practice curiosity** and **seek to understand different perspectives**

**Stay  
Engaged**

**Be Willing To  
Experience  
Discomfort**

**Speak Your  
Truth**

**Expect and  
Accept Non-  
closure**

**Share the  
Airtime**



[The courageous conversations framework](#)  
by Glenn Singleton and Curtis Linton

# Meeting Objectives

Share about Learning Lab Updates

Share about PGE's Transportation Electrification Plan

Share about PGE's Flexible Load Journey and Seek Feedback

Share timelines and next steps

# Agenda

10:00 – 10:10 Welcome, Introductions, Meeting Logistics

10:10 – 10:20 Learning Lab Update

10:20 – 11:00 Transportation Electrification Final Plan

11:00 – 11:05 *Break*

11:05 – 11:55 Flexible Load Customer Journeys

11:55 – 12:00 Closing Remarks & Next Steps





# Learning Lab Update

Shadia Duery, Learning Lab Project Manager

Learning Lab September 7, 2023

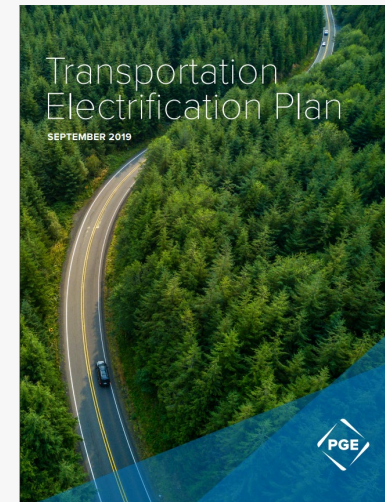


# Objective

Provide an update on Learning Labs



# Our Plans and Report



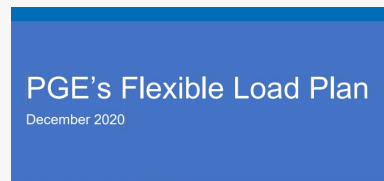
Transportation  
Electrification Plan  
SEPTEMBER 2019



**IRP:** estimates future energy needs & identifies the optimal portfolio of resources to meet those needs at the lowest costs.

**CEP:** informs our pathways to decarbonizing our energy mix.

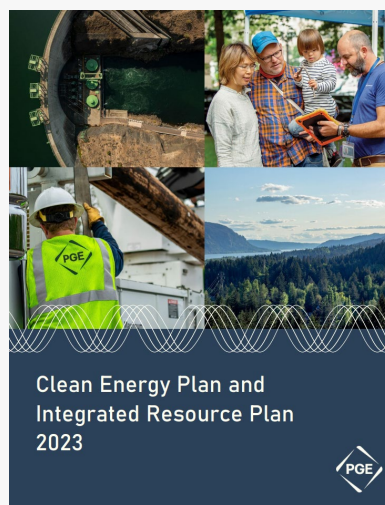
**TEP:** describes our actions in support of transportation electrification by proposing a portfolio of activities that facilitate our ability to **plan for, manage,** and **serve TE loads** rapidly coming to our system.



PGE's Flexible Load Plan  
December 2020



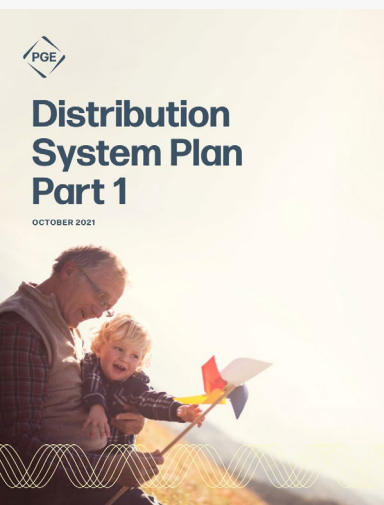
**MYP:** evaluates our Flex Load activities/programs such as demand response, which complement traditional generation resources and are key to our decarbonization efforts.



Clean Energy Plan and  
Integrated Resource Plan  
2023

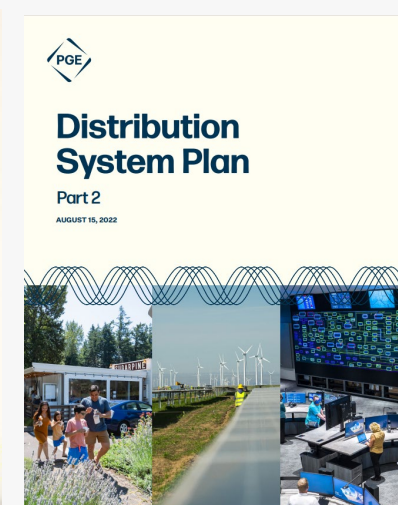


2022 ENVIRONMENTAL, SOCIAL & GOVERNANCE (ESG) REPORT  
Advancing toward  
a clean energy future



Distribution  
System Plan  
Part 1  
OCTOBER 2021

**DSP:** assesses our future distribution system capacity needs, forecasts where we will need more energy resources and prioritizes modernization projects that will make the most of new energy sources.



Distribution  
System Plan  
Part 2  
AUGUST 15, 2022

**ESG:** showcases our commitment to sustainability and highlights progress towards key goals including GHG emissions reductions, environmental stewardship, and advancing DEI.

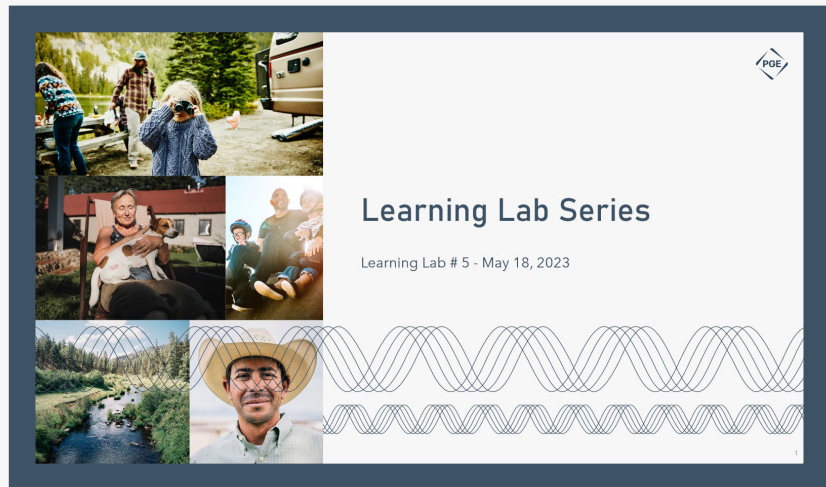


# Planning



## Audience

### Non-technical



### Technical



# Learning Labs | One-stop Venue

To Engage External Stakeholders participating in PGE's CEP, DSP, TEP, MYP

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**Audience:** Non-technical consolidated stakeholders | CEP, DSP, MYP & TEP

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**Topics:** Various planning initiatives & efforts CEP, DSP, MYP and TEP

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**Topics per Agenda:** 2 to 3

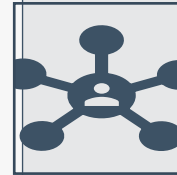
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**Cadence:** 6-8 weeks

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**Duration:** 2 hrs.

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## Communication Tools

- Mailbox: [LearningLabs@pgn.com](mailto:LearningLabs@pgn.com)
- Webpage: [Resource Planning | PGE](#)
- Online meeting platform: [Zoom](#)
- Collaboration tools: surveys, polls, online whiteboard
- Email communication:
  - ✓ Meeting invites
  - ✓ Learning Lab agenda with timeslots for topics being discussed
  - ✓ Follow-up email: Video link(s) & presentation materials

# Examples of Web Content and Email Communication



Greetings,

This is a reminder of our upcoming Learning Lab # 7, **Thursday, July 27, from 10 am -12 pm.**

PGE will re-introduce the discussion around community based renewable energy (CBRE) projects and consider how to build a community-centric process to identify and prioritize community benefits. In addition to initial concepts and next steps for a flexible acquisition process.

Please feel free to forward this invitation to other members of the public, government entities, non-profit organizations, community groups and businesses that want to participate in our planning processes.

If you have any questions, please don't hesitate to contact us at [LearningLabs@pgn.com](mailto:LearningLabs@pgn.com).

**Presentation materials** will be posted after the meeting on our [PGE Resource Planning Engagement website](#).

**Meeting platform:** [Zoom](#)

We look forward to seeing you at our meeting.

-Sustainability & Resource Planning Team



**Sustainability and Resource Planning**  
Email: [learninglabs@pgn.com](mailto:learninglabs@pgn.com) | Web: [portlandgeneral.com](http://portlandgeneral.com)  
**Portland General Electric Company** | 121 SW Salmon Street, 3WTC0306 | Portland, OR 97204

## PGE LEARNING LAB # 7

**When:** Thursday, July 27 | 10:00 am -12:00 pm

**Where:** [Zoom Meeting](#) | Meeting ID: 822 8141 6387 | Passcode: 707384 | Dial by phone: +1 253 215 8782 US

### Agenda:

- 10:00 - 10:05 Welcome, Introductions, Meeting Logistics
- 10:05 - 10:20 Flexible Load Multi-Year Plan Update
- 10:20 - 10:40 Flexible Load Customer Journeys
- 10:40 - 11:10 NEEA Proposal for Flex Load Market Transformation
- 11:10 - 11:15 Break
- 11:15 - 11:55 Community Based Renewable Energy Projects
- 11:55 - 12:00 Closing Remarks & Next Steps

**Audience:** Members of the public, government entities, non-profit organizations, community groups and businesses that want to participate in our planning processes.

### Meeting Goals:

- Re-introduce the conversation on CBRE projects
- Inform on Flex Load Programs and Concepts
- Share timelines & next steps

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## Resource Planning meeting materials

### 2023 IRP/CEP Roundtables

### 2023 Learning Labs

#### Jul. 27, 2023 Learning Lab 23-7

Agenda ([full video](#), [ppt](#))

- Flexible Load Multi-Year Plan Update ([video](#), [pdf](#))
- Flexible Load Customer Journeys ([video](#), [pdf](#))
- NEEA Proposal for Flex Load Market Transformation ([video](#), [pdf](#))
- Acquisition/Purchase of Community-Based Renewable Energy Projects ([video](#), [pdf](#))
- Closing Remarks & Next Steps ([video](#), [pdf](#))

#### Jun. 15, 2023 Learning Lab 23-6

Agenda ([full video](#), [ppt](#))

- PGE Sustainability and Resource Planning Team – Update ([video](#), [ppt](#))
- Community Benefits & Impacts Advisory Group (CBIAG) – Update ([video](#), [ppt](#))
- Level-set Flex Load – 101 ([video](#), [ppt](#))
- CEP/IRP Filing Questions & Answers ([video](#), [ppt](#))
- Closing Remarks & Next Steps ([video](#), [ppt](#))
- PGE Customer Resources

To view Learning Labs prior to June 2023, please visit [Meeting Archives](#).

## PGE LEARNING LAB JULY 27, 2023 | Follow up



**LearningLabs**  
To: LearningLabs  
Cc: Shadia Duery; Samantha Thompson  
Retention Policy: PGE 18 Month Retention (1 year, 6 months)

[Reply](#) [Reply All](#) [Forward](#)

Expires 2/1/2025

Greetings,

Thank you for attending last week's **Learning Lab # 7** on Thursday, July 27, 2023.

For those who weren't able to attend our live meeting or would like to revisit any topics discussed, please use the following hyperlinks to access [presentation materials](#) and the [video recording](#).

For your convenience, below is the recap and segmented video links to each presentation:

- Flexible Load Multi-Year Plan Update ([video](#), [pdf](#))
- Flexible Load Customer Journeys ([video](#), [pdf](#))
- NEEA Proposal for Flex Load Market Transformation ([video](#), [pdf](#))
- Acquisition/Purchase of Community-Based Renewable Energy Projects ([video](#), [pdf](#))
- Closing Remarks & Next Steps ([video](#), [pdf](#))

If you have any questions or would like additional information, don't hesitate to contact us at [learninglabs@pgn.com](mailto:learninglabs@pgn.com).

Again, thank you for your participation and enjoy the rest of your week!

-Sustainability & Resource Planning Team



**Sustainability & Resource Planning**  
Email: [learninglabs@pgn.com](mailto:learninglabs@pgn.com) | Web: [portlandgeneral.com](http://portlandgeneral.com)  
**Portland General Electric Company** | 121 SW Salmon Street, 3WTC0306 | Portland, OR 97204

### UPCOMING LEARNING LAB

**When:** Thursday, September 7, 2023 | 10:00 am - 12:00 pm

**Where:** [Zoom Meeting](#) | Meeting ID: 822 8141 6387 | Passcode: 707384 | Dial by phone: +1 253 215 8782 US

**Agenda:** TBA

**Audience:** Community service organizations, community-based organizations, municipalities, cities, OPUC Staff, Energy Trust of Oregon and interested members of the public.

### Resources:

- [Previous Learning Labs Materials](#)
- [TED Talk - On the US Power Grid](#)  
"What does the world's largest machine do?" - Henry Richardson"

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# Plans Engagement Website



Navigation bar with PGE logo, search bar, and links: My Account, Outages & Safety, Clean Energy Choices, Save Money, About Us, Help / Ayuda, Working With PGE.

- About
- Who We Are
- Clean Energy Future
- Climate Goals
- Sustainability Reporting
- Innovative Energy
- How We Generate Energy
- Resource Planning
- Resource Planning Engagement
- Resource Planning Meeting Materials
- Roundtable and Learning Lab Meeting Archives
- Integrated Resource Planning and Clean Energy Planning
- Distribution System Planning
- Multi-Year Planning
- Transportation Electrification Planning
- Procuring Clean Energy
- Community Involvement
- Diversity, Equity & Inclusion
- Newsroom

## Get involved

### Attend Resource Planning public meetings

At our public meetings we seek input and suggestions about our approach, priorities and the factors we should consider as we develop future resource plans across. We host a monthly Integrated Resource Planning (IRP) technical meeting and a monthly non-technical meeting covering:

- Clean Energy Planning (CEP)
- Distribution System Planning (DSP)
- Flexible Load Multi-Year Planning (MYP)
- Transportation Electrification Planning (TEP)

Members of the public, as well as government entities, non-profit organizations, community groups and businesses can participate in the resource planning processes by attending a public meeting or requesting separate meetings with individuals or small groups.

**The IRP/CEP Roundtable is** our technical public venue where we communicate with stakeholders about the inputs, assumptions and constraints included in the models we use to construct PGE's preferred portfolio recommendation.

**The Learning Lab is** our non-technical venue where we share PGE's internal processes for resource planning, request feedback and report on how partner feedback informs our planning processes. Additional time may be added at the end of the agenda for technical topics.

Navigation bar with search bar and links: Clean Energy Choices, Save Money, About Us, Help / Ayuda, Working With PGE.

## Resource Planning Meeting Materials

Here you will find information we've shared during the Roundtable and Learning Lab proceedings beginning June 2023.

**For meeting materials prior to June 2023, visit [meeting archives](#).**

### Navigate this page

- What's new
- Resource Planning meeting materials
- Learn more and connect with us

People can have an impact on the company's plans through participation. Participation in the informal process can help to create more transparency, influence PGE's plan as it is developed, and create space for direct input to PGE teams.

**Transparency: what can people better see or understand by participating?**

- The considerations and priorities of PGE, OPUC Staff, and other participating groups
- How PGE arrived at the action plan; what needs and opportunities PGE balanced during development of the plan
- How the action plan meets PGE customer needs

**Influence: what can people influence by participating?**

- The considerations and priorities PGE should consider during analysis and development of the action plan
- How our analysis treats information like costs, prices, climate change data, etc.

**Input: how does getting input from the public improve our plan?**

- You can show us our blind spots which PGE can incorporate into analysis and/ or the way we talk about our results
- A wider range of life and professional experiences helps us identify actions which serve more people and types of communities

2016 IRP Roundtables

2015 IRP Roundtables

### Previous CEP public meetings

2023 CEP Learning Labs

2022 CEP Learning Labs

### Previous DSP public meetings

2022 DSP Learning Labs

2021 DSP Learning Labs

### Previous TEP public meetings

2023 TEP Learning Labs





# Questions/ Comments



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kind of energy



# Transportation Electrification Final Plan

ELYSSIA LAWRENCE, PGE

Learning Lab September 7, 2023

# Objectives

Share PGE's Transportation Electrification Plan (TEP) Strategy & Budget

Share major highlights of TEP & what it means to our customers

Acknowledge stakeholder comments & how PGE incorporated them into their Final TEP

Share TEP procedural timeline & next steps



# PLAN for electric vehicle energy needs

## Forecasting EV Load Demand

Predicting when and where EVs will need electricity from the power grid using models and data from various sources.

## Strategic Decision-Making

Preparing for upgrading and managing the electric grid to make sure it can handle the extra demand from EVs in the future.



# SERVE electric vehicle energy needs

## Equitable Electricity Provision

Treating the need for power in EVs the same way we treat any other customer need for affordable, reliable and safe electricity.



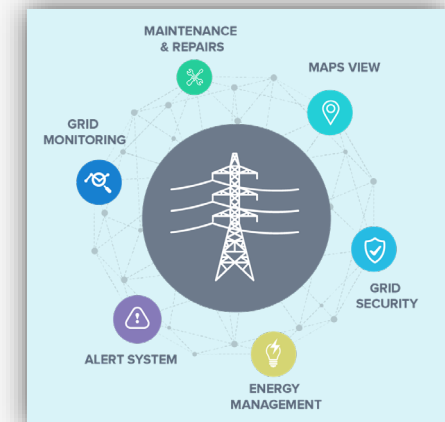
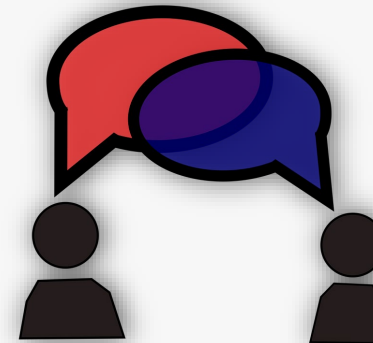
## Rate Development for EVs

Figuring out pricing plans for using electricity in EVs, just like how we create different plans for homes, businesses, and industries. Requires transparency and communication in rate development so customers and stakeholders understand what we're doing.



## Grid Management

Line extension agreements, interconnection requirements, data sharing agreements.



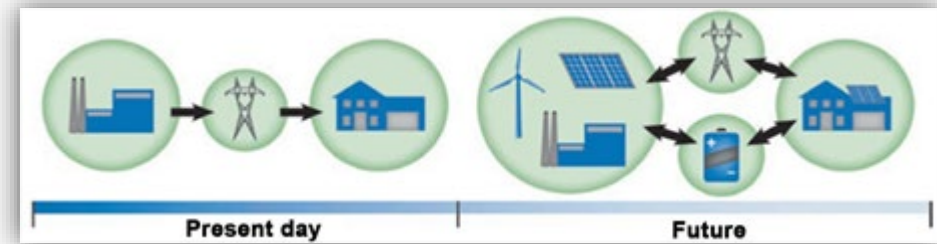
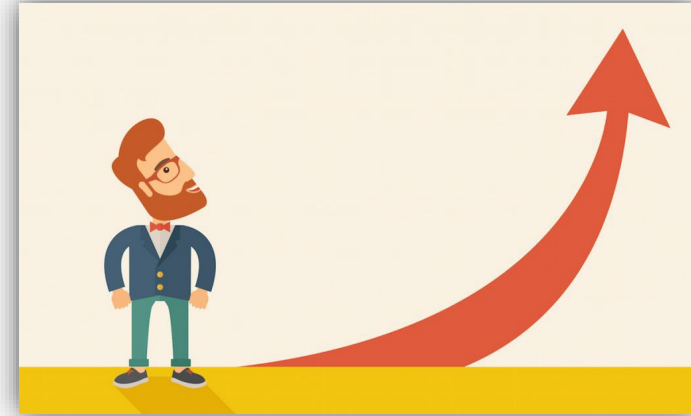
# MANAGE electric vehicle energy needs

## Balancing Demand

EVs need electricity and can also be flexible in when they use electricity to help manage the power grid.

## Grid Integration and Flexibility

By talking to EVs and their chargers, we're figuring out how they can work together with the electric grid, like helping manage the ups and downs of renewable energy sources, which keeps everything running smoothly.



# Funding Mechanisms



Transportation Electrification programs & infrastructure measures have four basic funding mechanisms to help support customers' transition to EVs



Capital Expenditures (CapEX)



Deferral/Operating Expenditures (OpEX)



Monthly Meter Charge (MMC)



Clean Fuels Program (CFP)

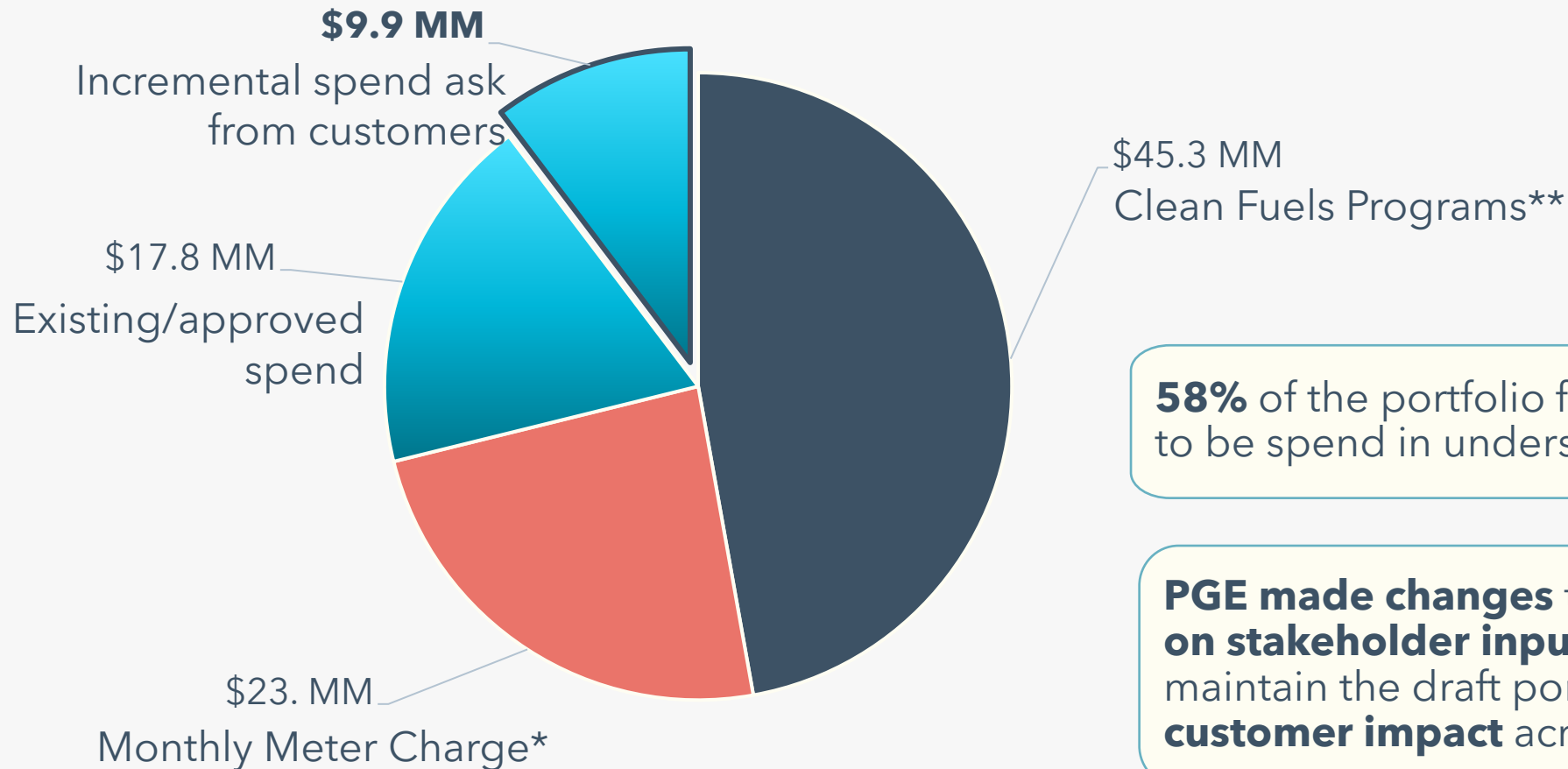
Traditional utility funds		Collected through customer bills from ALL customers		Collected via credits sold on the wholesale market that place a dollar value on carbon content of transportation fuels
Capital	Operating			

Money for	Building infrastructure or purchasing assets	Operating & maintaining of programs & assets	Funding Transportation Electrification Activities	Funding Transportation Electrification Activities to <u>benefit</u> residential customers
Collected through	Customer bills			Oregon DEQ program administered by PGE
Remarks			A charge <b>required by state law</b> (0.25 % of total revenues)	Not included in customer bills



# Transportation Electrification Plan Strategy

**\$96.0M** total portfolio to PLAN, SERVE & MANAGE transportation electrification which includes providing equitable access to charging



**58%** of the portfolio funding is forecasted to be spend in underserved communities

**PGE made changes** to the portfolio **based on stakeholder input** and was able to maintain the draft portfolio **0.15 percent customer impact** across all rate classes

\*HB 2165 mandated spend on TE activities

\*\*DEQ program funding

# Underserved Communities Defined by House Bill 2165:



Residents of rental housing



Residents of multifamily housing



Communities of color



Communities experiencing lower income  
(household income is less than or equal to 120% of  
state median income adjusted for household size)



Tribal communities



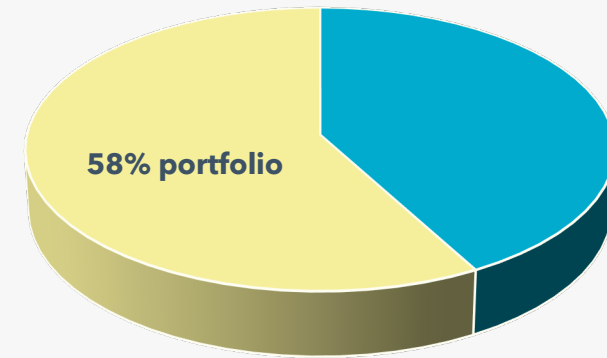
Rural communities



Communities adversely harmed by  
environmental and health hazards

\*HB 2165 (<https://olis.oregonlegislature.gov/liz/2021R1/Measures/Overview/HB2165>)

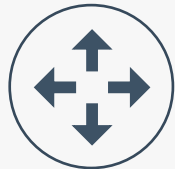
# 58% of the portfolio funding is forecast to be spent in underserved communities



Charging takes chargers, and without them you can't really consider switching to an EV



Having infrastructure ready to use in your neighborhood gives you access and confidence that an EV could work for you



Utility support helps enable this choice and attracts other investment in TE infrastructure where today there's low demand



Together, we can ensure underserved communities aren't left behind in the EV transition



We have been a community member for over 100 years, so you can rely on us to maintain the EV charging infrastructure we build



By installing chargers ourselves & helping others install chargers, we are supporting EV adoption - and better air quality



We'll be working with charging companies & site owners to encourage charger installation & help keep charging affordable

# Major Themes from Stakeholder Comments

## Feedback Themes

## Changes made to the plan



### Multi-family expansion

Concern about price-parity at multifamily sites

### Co-located curbside charging

Shifted Multi-family expansion funding to Municipal program to co-locate ~100 curbside ports near multi-family sites



### Multifamily - cost to charge

Concerned about property owner pricing for multi-family residents

### Tiered rebate to incent pricing

Same upfront rebate as other business programs with an additional incentive in 5 years if prices remain within 10% of schedule 50



### Schedule 50

Mixed themes between concerns on equity to concerns on market rates

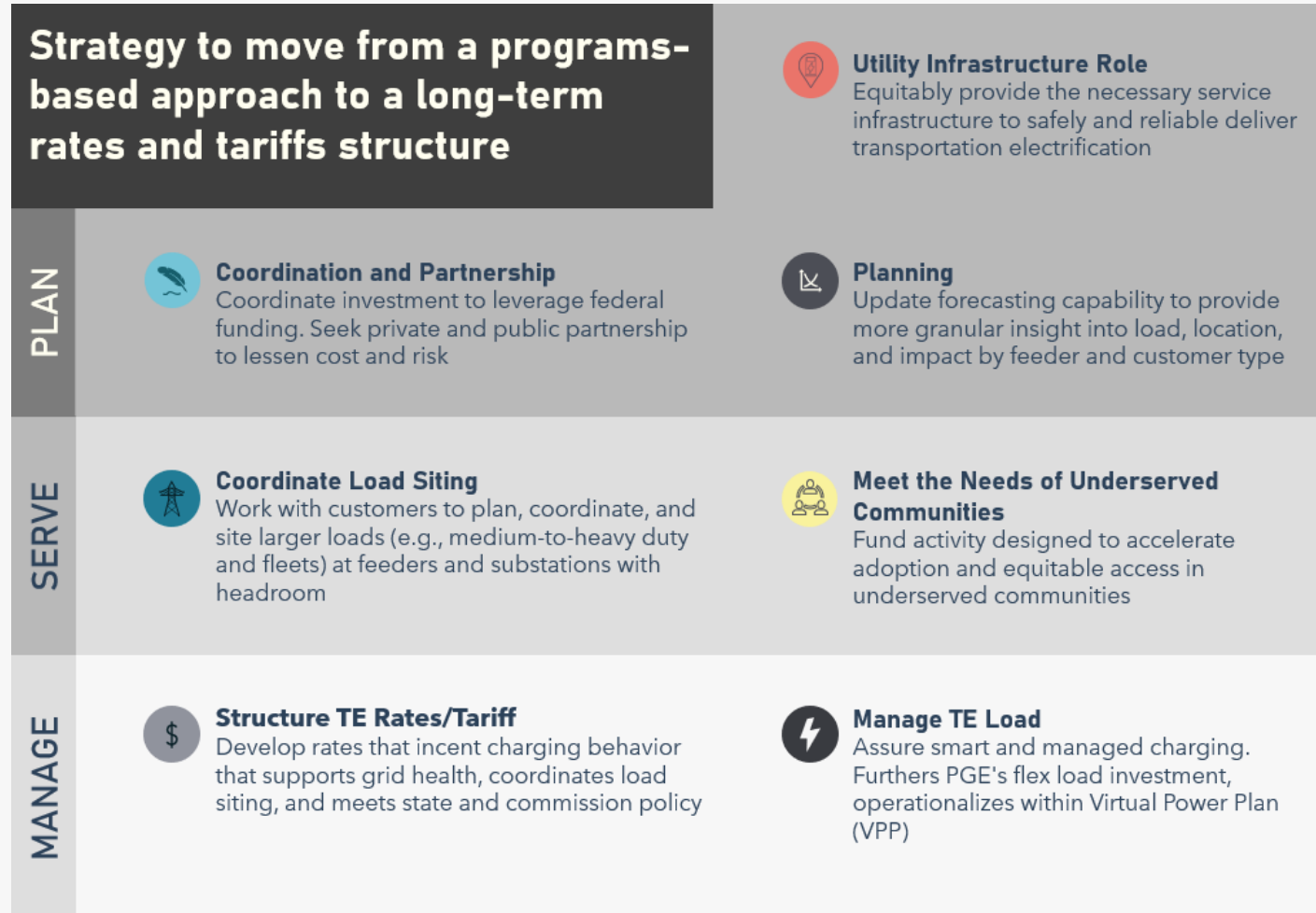
### Included future rate design principles

Level 2 - residential rate equity  
DCFC - evaluate mid-market rates and determine options for low-income





# Key PGE Priorities Moving Forward



A Summary of the Programmatic Activity can be found in the Executive Summary ([Chapter 1](#)) of the TE Plan

# Transportation Electrification Plan Budget 2023 - 2025



#	ACTIVITY	EXAMPLES	TOTAL
1	Fleet Partner Pilot	Make-ready rebates for fleet customers	\$ 18.1
2	Public Charging - Municipal and Electric Ave	Charging on utility poles in residential areas near multifamily units	\$ 13.7
3	Residential Smart EV Charging Pilot	Residential customer incentive for qualified charger, telematics, and managed charging	\$ 6.5
4	Heavy Duty Charging Pilot	Support for a heavy-duty charging location	\$ 3.6
5	Business and Multi-family Make-ready Solutions*	Charging at workplace and multifamily locations	\$ 2.5
6	Portfolio Enablement (AdopDER, Fed \$)	Covers the costs of planning for EV load including	\$ 2.4
7	Business EV Charging Rebates**	These activities are sunsetting	\$ 2.8
8	EV Ready Affordable Housing Grants**		\$ 1.0
<b>Subtotal Customer Rates</b>			<b>\$ 50.7</b>
1	Grants/Infrastructure	Community eMobility projects; Electric school buses	\$ -
2	Education and Outreach	Underserved community outreach, Ride-and-drives, Residential education campaigns	\$ -
3	Emerging Technology	Vehicle to grid demonstration, micromobility strategy, emerging technology demonstration	\$ -
4	Public Charging - Municipal*	Charging on utility poles in residential areas near multifamily units	\$ 2.0
<b>Subtotal Clean Fuels (2023 + forecast 2024-2025)</b>			<b>\$ 45.0</b>
<b>Total Budget</b>			<b>\$ 96.0</b>

\*Funded from both Customer Rates and Clean Fuels

\*\*These activities are sunsetting

# PGE's Transportation Electrification Plan Procedural Timeline





# Questions/ Comments





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kind of energy



# Break





# Flexible Load Journeys - Initial Cost

Binh Lu, PGE

Learning Lab | September 7, 2023



# Objectives

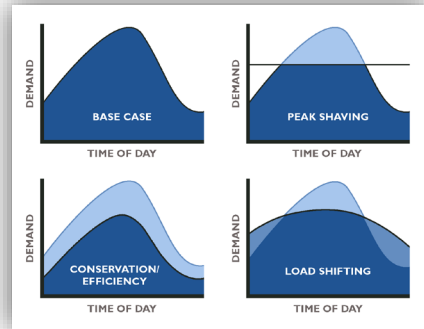
Refresh on Flex Load concepts

Share previous research on initial cost barriers & what PGE is doing about it

Seek input: Ways initial cost can be addressed



# Key concepts Refresher



**Flexible Load** means that people change how they use energy based on what the power grid needs.

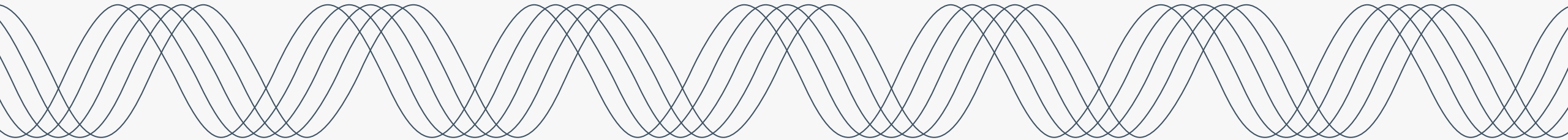
This is important for PGE's goal of reducing carbon emissions and using less traditional power from plants.

A **Customer Journey** is like a road trip of experiences that customers want and need, from when they first hear about something to when they become happy supporters.

The **Customer Journey is key to developing Flexible Load because**, in contrast to traditional utility resources like power plants, **CUSTOMERS MUST ACQUIRE & PARTICIPATE** for the resource to be successful.



PGE's market research has shown one of the **biggest challenges for customers to start using** energy efficient, flexible load, and resilient devices **are the INITIAL COSTS** (initial equipment and installation costs).



# PGE Smart Grid Test Bed (SGTB) community 2022 workgroup

## Summary of select comments



### **HISTORICALLY EXCLUDED COMMUNITIES**

Historically excluded communities should be part of the design considerations from the beginning.



### **COST NO MATTER HOW "SMALL"**

Any cost, no matter how "small", is a barrier for those below median income.



### **THAT'S FOR THE RICH AND POWERFUL**

There is the perception that adopting energy efficient, flexible load, or resilient devices are just for the rich and powerful. Even if they could afford it, they are just helping the rich get richer.



### **LACK OF FINANCING**

Customers that are part of vulnerable communities (BIPOC, rural, etc.) lack access to traditional financing methods. It is also time intensive to research options, which adds to the burden.

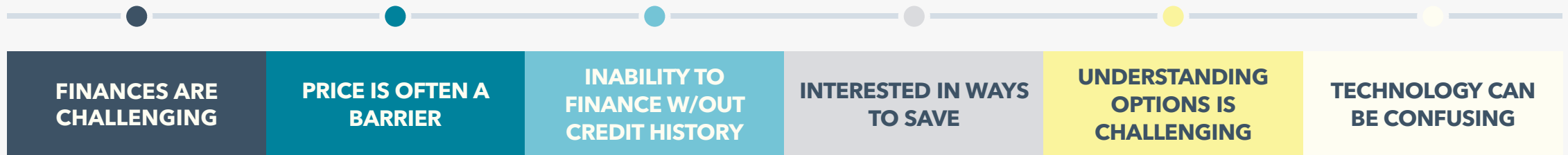
## Research Objective

Sought to better understand how low to lower-middle income homeowners think about:

- Money
- Budgetary needs and constraints
- Options for payment to repair, upgrade or make emergency purchases
- How folks decide what to do and how they research options
- Energy efficient products\* that may cost more even with available rebates

*\*For conversation purposes energy efficient products was used to describe traditional energy efficient devices as well as flexible load and resilient devices.*

## Research Results





# Rapid Needs Assessment

## Finding: Cost



### FINANCES ARE CHALLENGING

A significant portion of the customers in PGE's service area are lower income, with limited or no ability to save. This hinders their ability to buy energy efficient appliances and electrical equipment.

#### Traditional institutions barriers when it comes to financing:

- Access to credit
- Access to in languages beyond English
- Information is overly simplified

"The boiler is many years old, the house is old, there was no hot water. People live day by day. It is important to understand that. **All things are expensive.**"

"Almost all my appliances are gas. I had to install air conditioning. That cost me a lot of money, actually \$2,000 to get that installed. **I had to take out a loan.**"

"My youngest daughter is 3 years old. She has asthma. **My husband bought something to heat the home to keep the temperature normal.** We will pay more in medical insurance if she gets sick. If she goes to the hospital, **we will spend more money.** We must avoid the hospital. Better to avoid the hospital."

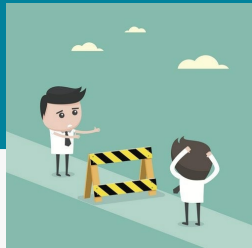
# Rapid Needs Assessment

## Findings: Price and Financing

### PRICE IS OFTEN A BARRIER

Participants know energy efficient appliances are better for them, less costly in the long-run, and healthier for the environment.

They are seldom able to afford them, and often have to settle for second-hand or donated used goods.



### INABILITY TO FINANCE W/OUT CREDIT HISTORY

Financing is often not available to lower income people with no credit history.

Interest on loans, even “no interest for the first year” can quickly become predatory if a payment is missed.

Assumptions about being low-income can misjudge people.



“I’m a low-income family even though my husband has a masters degree. He worked for the government in Puerto Rico. In another culture, it’s not easy for him to find a (similar) job.”

“An immigrant’s life is not easy. When I lived in my country [Eastern Europe]. I was a lawyer. I could afford a lot. Here, we don’t have savings. We do not buy expensive things. I’m trying to buy used.”

# Rapid Needs Assessment

## Findings: Saving, Options, Technology



### INTERESTED IN WAYS TO SAVE

All participants are interested in finding incentives, rebates, and tax credits, but don't know how or where to go.



### UNDERSTANDING HOW TO OPTIMIZE

Participants did not accept an offer, or buy a particular product, because they didn't understand the language used, or what the words on the efficiency "yellow tag" meant.

"Keep it simple" was a common request as illustrated by participants quotes about receiving information (e.g., thermostat offer) but not acting on it because it confused them.

### TECHNOLOGY CAN BE CONFUSING

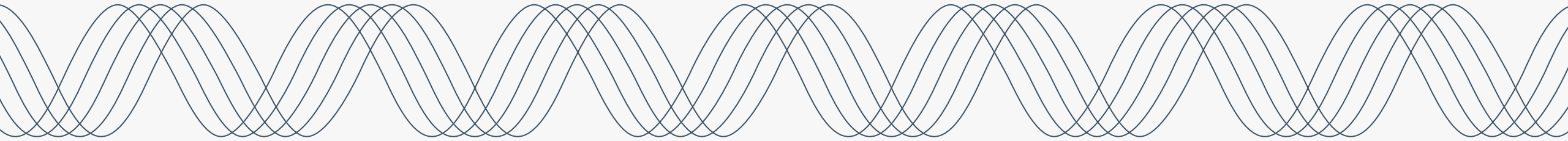
People have questions about the cost of buying and using efficient electric technologies.

Many are interested in solar, but don't know how to learn about it.

People with solar are interested in other sustainable improvements they can make to their home but think they might be too expensive.

PGE's market research has shown one of the **biggest challenges for customers to start using** energy efficient, flexible load, and resilient devices **are the INITIAL COSTS** (initial equipment and installation costs).

Although energy efficiency rebates, flexible load rebates/rewards and tax credits are available, they do not address the initial cost challenge.



# Ways that initial cost can be addressed Low/Moderate Income Customers



## EQUIPMENT AND INSTALLATION COSTS

- Helping customers understand installation choices that make expenses go up.
- Making agreements with installers to set fair prices (standards).



## REBATES AND INCENTIVES AT PURCHASE

- Get a lower starting cost with instant discounts (rebates).
- Combine other incentives from outside companies that are available (ex. Energy Trust of Oregon).



## 3<sup>RD</sup> PARTY FINANCING

- Work with lenders who are open to considering more than just your credit score when deciding if you can borrow money.
- Team up with lenders that have very low or no extra charges.
- Streamline repayment through your regular bills.



## 3<sup>RD</sup> PARTY SAVING

- Work together with lenders who offer tools to assist customers in either saving money or improving their credit.



# Discussion

## Ways that initial cost can be addressed



### EQUIPMENT AND INSTALLATION COSTS

- Helping customers understand installation choices that make expenses go up.
- Making agreements with installers to set fair prices (standards).



### REBATES AND INCENTIVES AT PURCHASE

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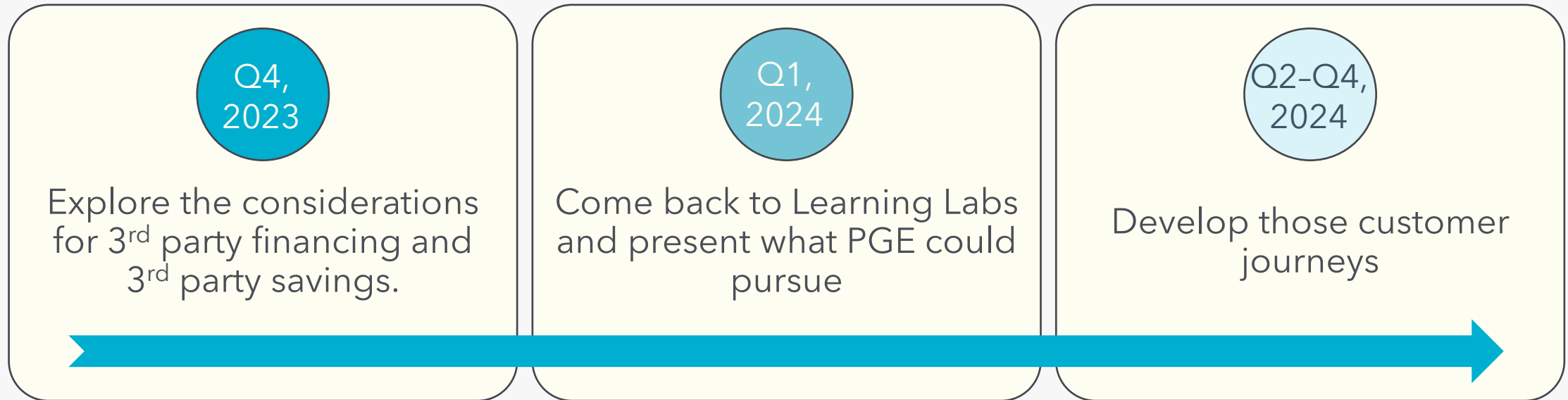
### 3<sup>RD</sup> PARTY SAVING

- Work together with lenders who offer tools to assist customers in either saving money or improving their credit.

## Discussion

1. Are we missing ways to address first cost for low/moderate income customers?
2. Are there other considerations for 3<sup>rd</sup> party financing that we should explore?
3. Are there other considerations for 3<sup>rd</sup> party savings that we should explore?

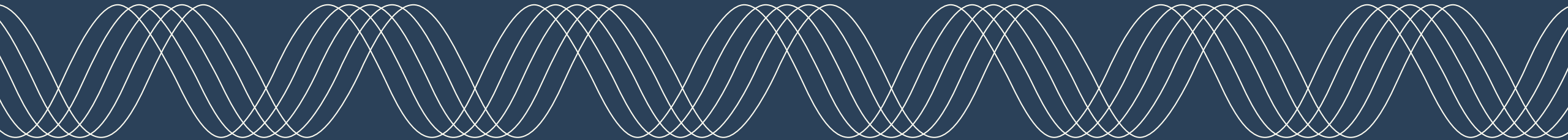
# Next Steps



# Questions/ Comments



# Next Steps and Closing Remarks





# Next Steps & Closing Remarks



- Sep 14 | CEP/IRP | OPUC Public Workshop | [LC 80](#)
- Sep 15 | TEP | Staff Report due [UM 2033](#)
- Sep 22 | IRP/CEP | Special Public Meeting - Commissioner Workshop | [LC 80](#)
- Sep 27 | PGE | CBIAG Monthly Meeting |10a-12p | [Zoom](#)
- Sep 29 | TEP | Comments on Staff Report due | [UM 2033](#)
- Oct 17 | TEP | Public Hearing & Commissioner Work Sessions Specifics | [UM 2033](#)
- October 19 | PGE | Learning Lab # 9 | 10a-12p | [Zoom](#)



Meeting materials and recording will be posted to our Plan's Engagement webpage at [Plan's Engagement | Portland General Electric](#)



For more information or if you have questions, please email us at [LearningLabs@pgn.com](mailto:LearningLabs@pgn.com)



Please continue participating in our dockets

- TEP [Docket UM 2033](#)
- CEP/IRP [Docket LC 80](#)

An

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Oregon

kind of energy

A photograph of an electric vehicle charging station. In the foreground, a black charging cable is plugged into a silver charging port. The background shows several white electric cars parked in a row, with other charging stations visible. The scene is outdoors on a paved area, possibly a parking lot, with a building and trees in the distance under a bright sky.

# Appendix - TEP

# Strategy to move from a programs-based approach to a long-term rates and tariffs structure.



## Utility Infrastructure Role

Equitably provide the necessary service infrastructure to safely and reliably deliver transportation electrification

PLAN



## Coordination and Partnership

Coordinate investment to leverage federal funding. Seek private and public partnership to lessen cost and risk



## Planning

Update forecasting capability to provide more granular insight into load, location, and impact by feeder and customer type

SERVE



## Coordinate Load Siting

Work with customers to plan, coordinate, and site larger loads (e.g., medium-to-heavy duty and fleets) at feeders and substations with headroom



## Meet the Needs of Underserved Communities

Fund activity designed to accelerate adoption and equitable access in underserved communities

MANAGE



## Structure TE Rates/Tariff




Develop rates that incent charging behavior that supports grid health, coordinates load siting, and meets state and commission policy













## Manage TE Load

Assure smart and managed charging. Furthers PGE's flex load investment, operationalizes within Virtual Power Plan (VPP)



Activity	Residential EV Smart Charge Pilot			
Strategic Alignment	 Structure TE Rates/Tariff  Manage TE Load  Equity			
Description	<ul style="list-style-type: none"> <li>\$300 rebate towards purchase and installation of qualified L2 at-home charger (\$1,000 income-qualified rebate)</li> <li>\$50 rebate for Tesla drivers with non-qualified chargers</li> </ul>			
What has changed	<ul style="list-style-type: none"> <li>Pilot extended; enrollment cap expanded</li> <li>Charger incentive decreased from \$500 to \$300</li> <li>Change of funding source in 2024: from deferral funded to MMC funded as of 2024</li> <li>Creation of future managed charging program</li> </ul>			
Load management	<ul style="list-style-type: none"> <li>\$25 seasonal incentive (six-month season; Oct-Mar, Apr-Sep) for allowing PGE to pause EV charging during peak loads</li> </ul>			
Target market	<ul style="list-style-type: none"> <li>Residential EV drivers residing in single family homes</li> </ul>			
Funding (\$MM)		<b>Previously approved</b>	<b>Requested with 2023 TE Plan</b>	<b>Total</b>
	<b>Total</b>	<b>\$2.4 MM</b>	<b>\$4.1 MM</b>	<b>\$6.5 MM</b>
	2022 MMC funds panel upgrade rebates and trade ally network development			

Activity	Public Charging - Electric Avenue & Municipal Charging Collaboration			
Strategic Alignment	 Coordination/ Partnership  Equity  Structure TE Rates/Tariff  Coordinate Load Siting  Manage TE Load  Utility Infrastructure Role			
Description	<ul style="list-style-type: none"> <li>Collaborate with municipalities on equitable access to public L2 charging infrastructure in underserved communities</li> <li>Deploy chargers more cost-efficiently via existing utility right-of-way assets. Informs potential private partnerships</li> </ul>			
What has changed	<ul style="list-style-type: none"> <li>Refocus from broader ownership of L2 infrastructure to helping provide infrastructure in underserved communities</li> <li>Remove DCFC ports</li> </ul>			
Load management	<ul style="list-style-type: none"> <li>Schedule 50 rate, with time of use and +\$0.19/ kWh at peak usage (3 to 8 PM weekdays, like TOD rate)</li> </ul>			
Target market	<ul style="list-style-type: none"> <li>+80 L2 ports focused on underserved communities (additional to 60 and 100 ports in the 2022-3 MMC budgets)</li> <li>Total 240 L2 ports = 12 percent of the total public L2 ports TEINA3 indicates needed by 2025</li> </ul>			
Funding (\$MM)		Previously approved	Requested with 2023 TE Plan	Total
	<b>Total</b>	<b>\$5.5 MM</b>	<b>\$10.1 MM</b>	<b>\$15.6 MM</b>

Activity	Business & Multi-family Make-ready Solutions			
Strategic Alignment	 Equity  Coordination/ Partnership  Structure TE Rates/Tariff  Utility Infrastructure Role			
Description	<ul style="list-style-type: none"> <li>Support EV ownership and charging access for business and multi-family properties</li> <li>PGE constructs make-ready</li> <li>Customer owns/maintains chargers and receives rebate on purchase of qualified chargers</li> </ul>			
What has changed	<ul style="list-style-type: none"> <li>More support for EVSE deployment to the underserved MF segment</li> <li>Reduced ports from +1,000 to 100 based on PGE and TEINA data showing that demand in underserved/low-to-medium income multi-family market is still developing</li> <li>Charger rebate split between initial deployment, and 5-year anniversary, with anniversary rebate contingent on maintaining prices to users within 10% of prices for PGE Schedule 50</li> <li>Focus on workplace, commercial, and multi-family segments (funded by 2023 MMC)</li> </ul>			
Load management	<ul style="list-style-type: none"> <li>Chargers able to respond to pricing or DR signals, but not subject to Schedule 50</li> <li>Provides data on multi-family charging profiles to develop the appropriate rate or future load management offering</li> </ul>			
Target market	<ul style="list-style-type: none"> <li>Workplace/commercial: 60 ports</li> <li>Multi-family: 40 ports</li> </ul>			
Funding (\$MM)		Previously approved	Requested with 2023 TE Plan	Total
	<b>Total</b>	<b>\$2.5 MM</b>	<b>\$0.0 MM</b>	<b>\$2.5 MM</b>

Activity	Fleet Partner			
<b>Strategic Alignment</b>	Coordination/ Partnership              Structure TE Rates/Tariff              Coordinate Load Siting              Utility Infrastructure Role              Manage TE Load              Planning			
<b>Description</b>	<ul style="list-style-type: none"> <li>• Provide free upfront planning and technical services to reduce the complexity of planning for fleet electrification</li> <li>• Provide custom incentives to help lower the costs of building electric fleet depots</li> <li>• Better understand how fleet size and load profiles impact the grid</li> <li>• Networked EV charging for future managed charging and demand response programs</li> </ul>			
<b>What has changed</b>	<ul style="list-style-type: none"> <li>• Reduce incentives by 50 percent, bringing the multiplier down from 15x to 7.5x in the following formula: Year 5 usage x LEA x multiplier</li> <li>• Lower maximum incentive cap from \$750K to \$400K</li> <li>• The above changes improve cost effectiveness and allow the pilot to reach more customers, sites, and ports while still providing an incentive to help overcome initial cost barriers faced by customers</li> </ul>			
<b>Load management</b>	<ul style="list-style-type: none"> <li>• Require installed chargers be qualified &amp; networked, with ability to perform demand response</li> <li>• Participants expected to participate in future PGE demand response programs</li> </ul>			
<b>Target market</b>	<ul style="list-style-type: none"> <li>• Non-residential fleets, with ~450 ports (2021-24), an additional ~500 ports (2024-2025), for a total of ~950 make-ready ports</li> </ul>			
<b>Funding (\$MM)</b>		<b>Previously approved</b>	<b>Requested with 2023 TE Plan</b>	<b>Total</b>
	<b>Total</b>	<b>\$8.7 MM</b>	<b>\$9.5 MM</b>	<b>\$18.1 MM</b>

# Key Terms – TEP Related



- **Capital Expenditures (CapEx)** - the company's capital expenditures
- **Deferral** - a regulatory filing made for the purpose of tracking costs associated with A) an unusual or extraordinary event that is not otherwise addressed within PGE's cost structure, or B) an approved or acknowledged program or pilot
- **Demand response (DR)** - Changes in [energy] usage by end-use customers from their normal consumption patterns in response to changes in the price of [energy] over time, or to incentive payments designed to induce lower [energy] use at times of high wholesale market prices or when system reliability is jeopardized.
- **Electric load** - total usage of electricity on PGE's system at any point in time
- **Electric Vehicle (EV)** could be passenger vehicles to medium- or heavy-duty vehicles
- **Flexible load (Flex Load)** - a dynamic form of DR capable of providing valuable grid balancing services. Grid balancing services are necessary for integrating high levels of renewable or variable energy resources. To supply grid balancing services, these demand-side resources must be available to grid operators throughout the day and capable of supplying several different types of energy products beyond peak load shifting.
- **Load** - combined demand for electricity placed on the system
- **Load growth** - increase in use of electricity on PGE's system (e.g., due to population growth, or adoption of EVs)
- **Load shape** - how electricity use changes throughout the day, which can change by customer type, season, type of load (e.g., EV)
- **Load shift** - shifting usage from on-peak to off-peak periods
- **Make-ready** - infrastructure to connect EVSE to the electric grid
- **Managed charging** - extension of smart charging scheduling at desired times to reduce cost and grid impacts
- **Non-wires Solutions (NWS)** - using distributed energy resources (e.g., EVs) grid constraints s reliably, resiliently, and affordably while also supporting environmental and energy justice goals, particularly for historically underrepresented communities
- **On-peak** - the period when customer demand is higher than normal. System costs are higher than average and reliability issues may be present
- **Operations and Maintenance (O&M)** - the company's operations and maintenance expenses
- **Pricing signal** - change in price of good or service (e.g., electricity) which indicates that supply or demand should be adjusted
- **Smart charging** - remote management of EV charging
- **Tariff** - a listing of the rates, charges, and other terms of service for a utility customer class, as approved by the regulator
- **Telematics** - a method of monitoring and managing cars by using data from vehicle onboard diagnostics and GPS vehicle tracking. Allows operational decision-making based on historical data and the dispatch of vehicles using real-time vehicle data
- **Time-of-Day (TOD)** the price of energy varies based on the time of day. Peak hours vary by rate class but are generally defined as the hours between 4-9PM. By shifting some electricity usage to non-peak hours when energy costs less (and is typically less polluting), you can lower your bill and support a healthier environment.

## Terms adapted from various internal sources, as well as:

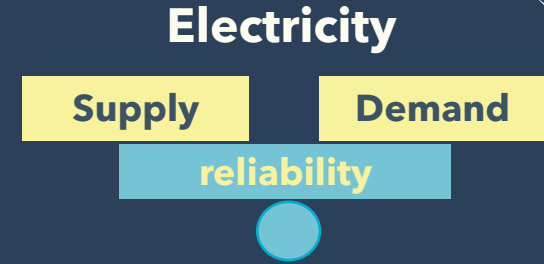
- *The Regulatory Assistance Project. Electricity Regulation In the US: A Guide Second Edition*, available here: <https://www.raonline.org/wp-content/uploads/2016/07/rap-lazar-electricity-regulation-US-june-2016.pdf>
- *PGE's DSP: Part Two filing*, available here [https://downloads.ctfassets.net/416ywc1laqmd/2Fr2nVc4FKONetiVZ8aLWMB/b209013acfedf1125ceb7ba2940bac71/DSP\\_Part\\_2\\_-\\_Full\\_report.pdf](https://downloads.ctfassets.net/416ywc1laqmd/2Fr2nVc4FKONetiVZ8aLWMB/b209013acfedf1125ceb7ba2940bac71/DSP_Part_2_-_Full_report.pdf)



A photograph of an electric vehicle charging station with several cars plugged in, set against a dark blue background. The image is partially obscured by the dark blue background on the right side of the slide.

# Appendix – Flex Load Journey

# The Electric Grid is Evolving

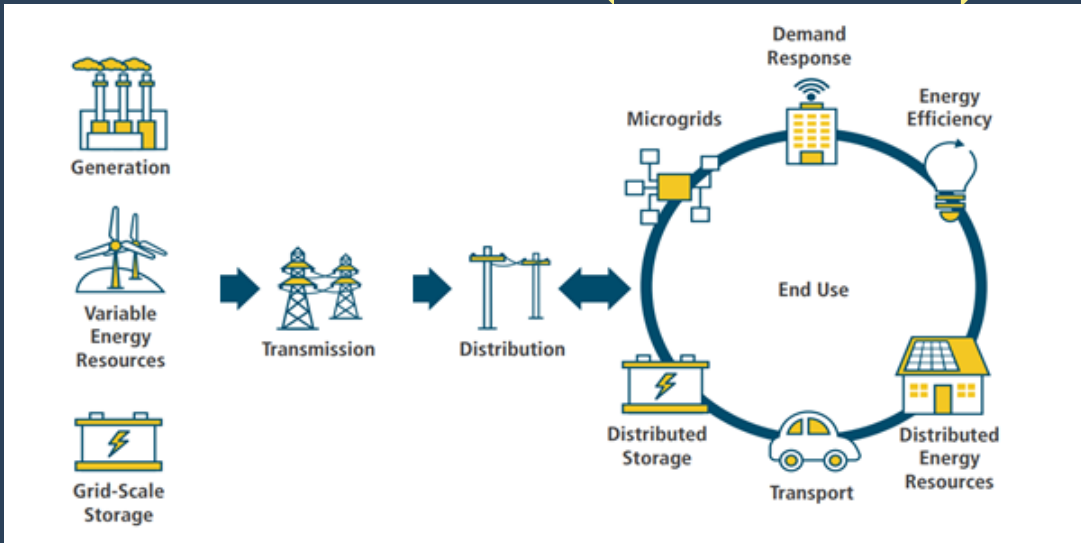


One way flow of power



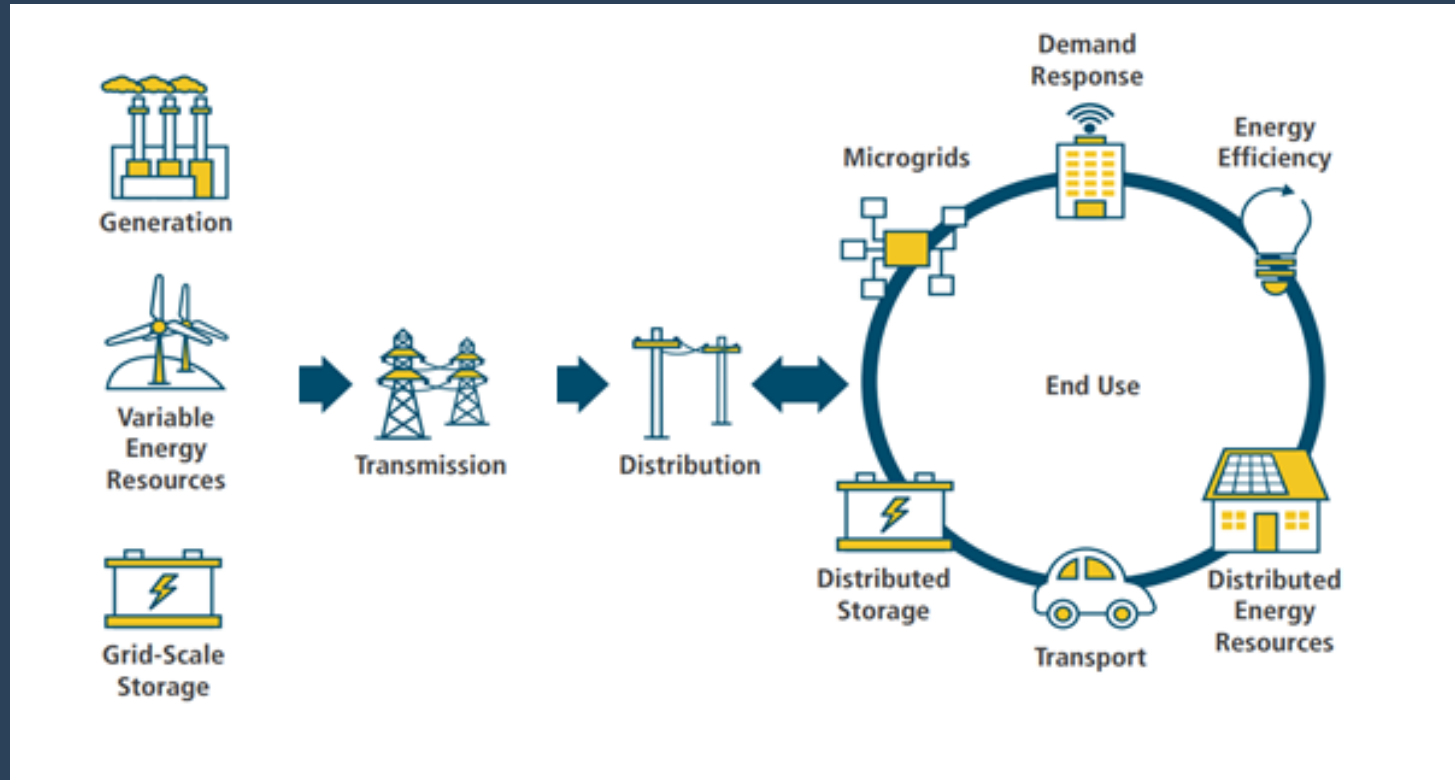
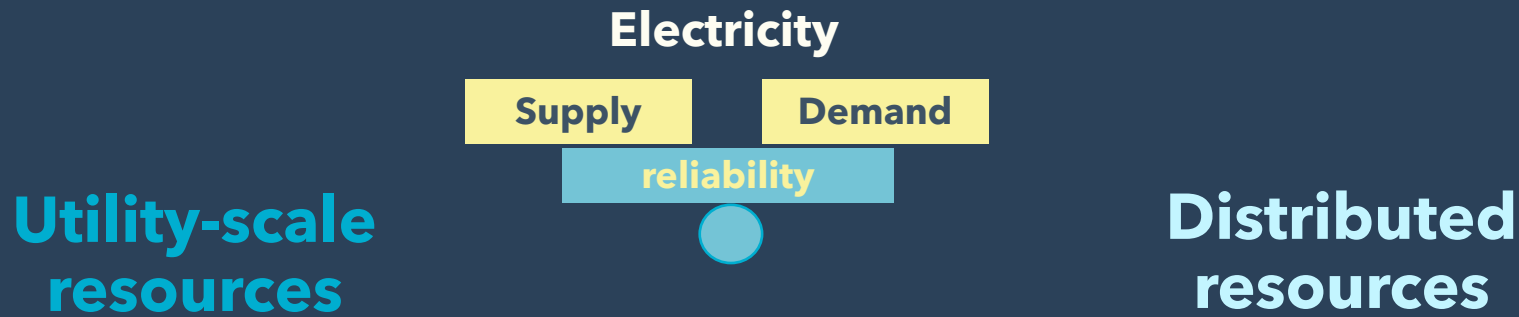
**FROM:** one-way power flow - large generation facilities to end users/customers

Two-way flow of power

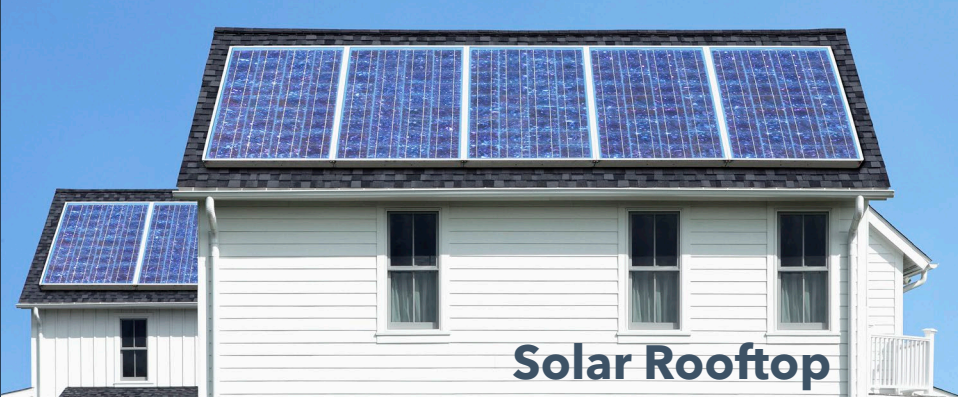


**TO:** two-way power flow - end users/customers can also generate power and/or interact with the electric grid

# Types of energy needed to meet demand every day



# Distributed Energy Resources (DER) examples:



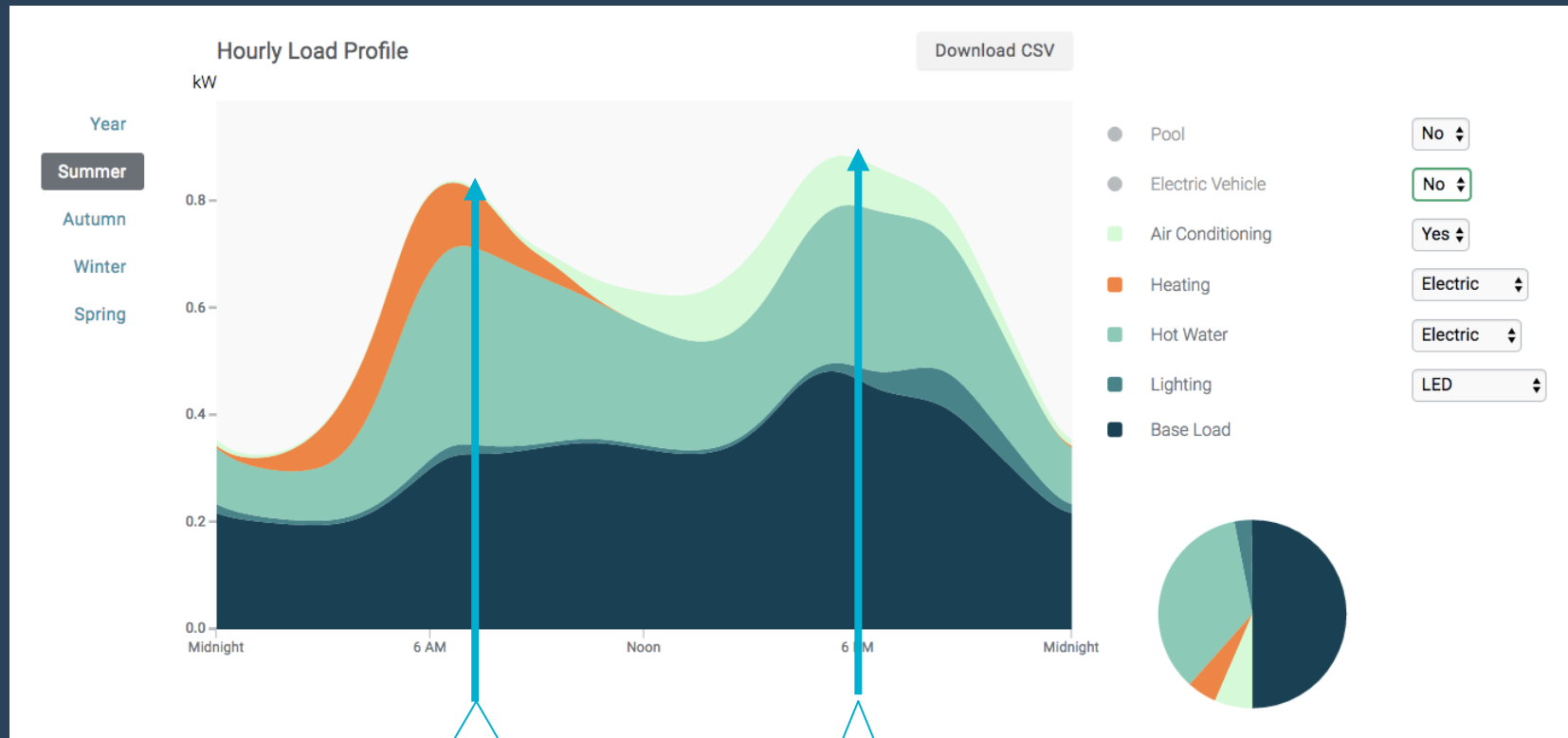


# Electric Utility Operations



To ensure reliability, utilities must be capable of meeting customers' electricity demand at every second

Illustrative Example of demand for electricity on a summer day in Palo Alto, CA



People getting ready for day

People return home from work

Source: [Aurora Solar](#)

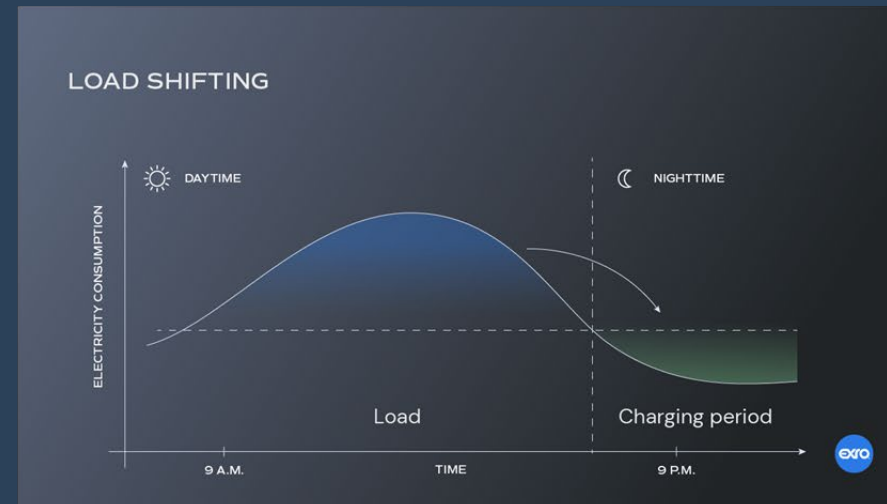
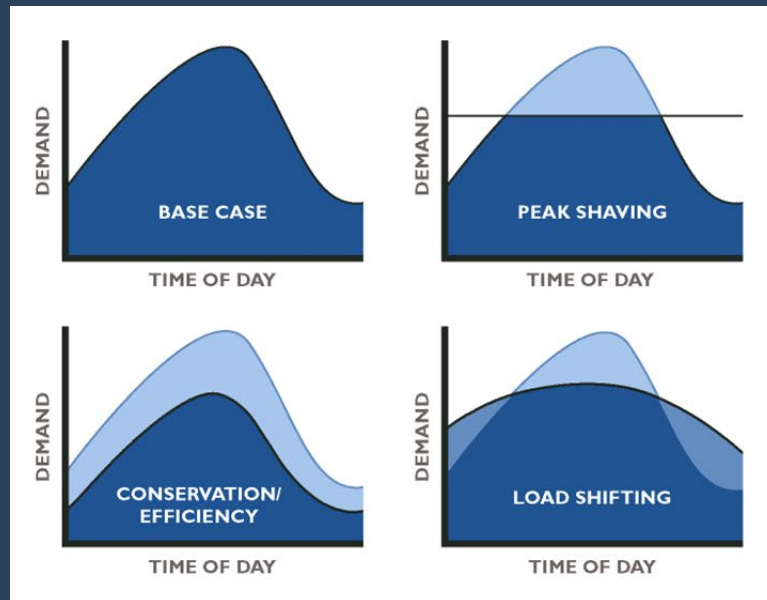


# Electric Utility System Planning

The system must be built to support the forecasted highest possible demand

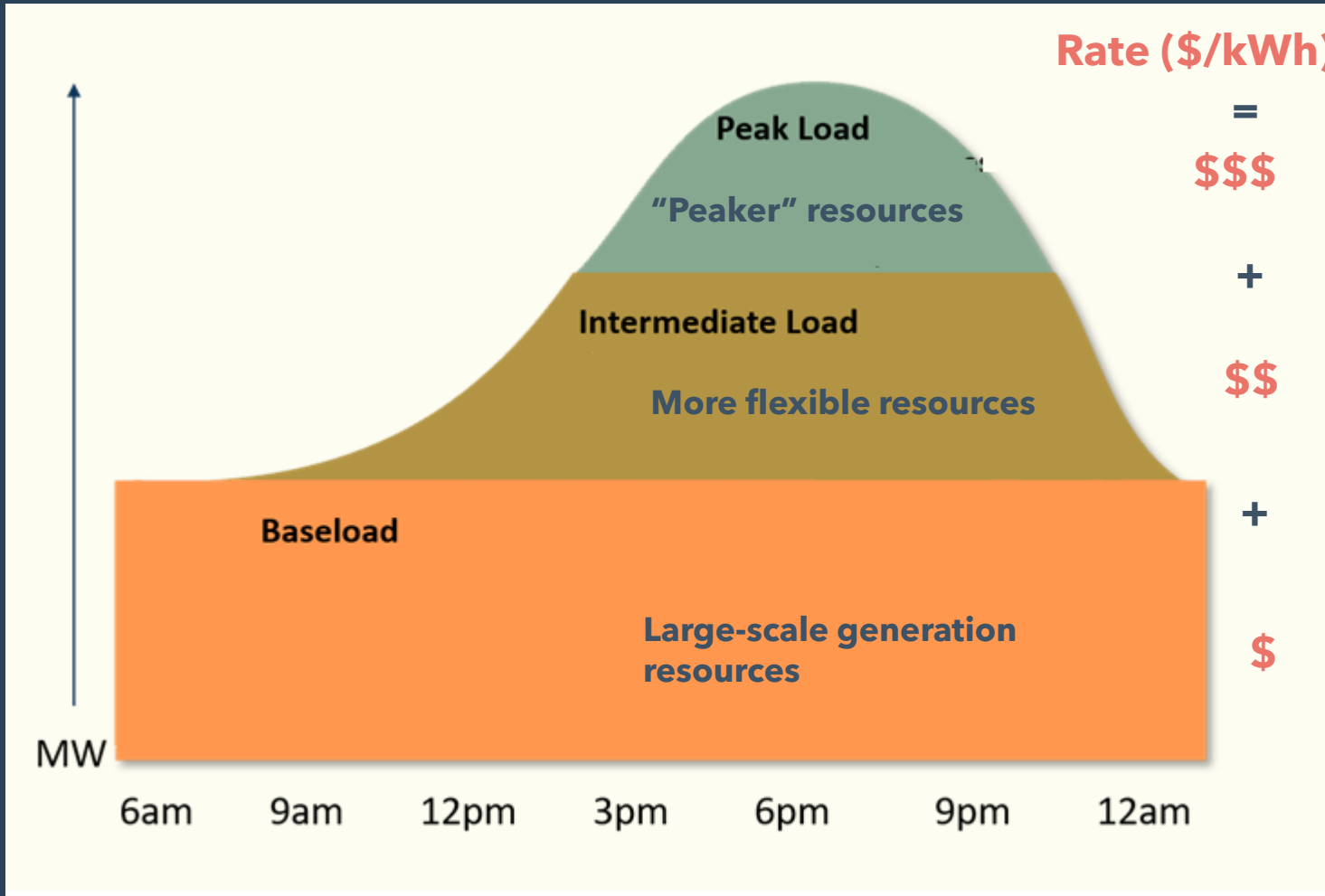
Increased energy demand requires additional:

- 1 Physical Infrastructure | generation facilities and grid capacity
- 2 **Energy Efficiency and Demand Response** | encourage a change in the use of electricity



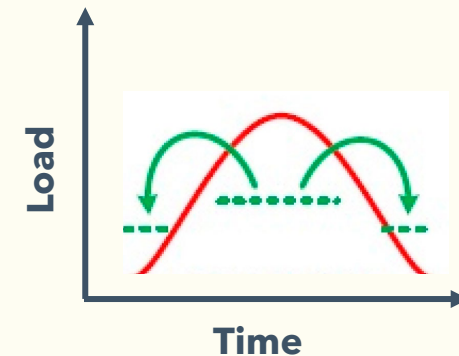
# Scheduling energy resources to serve load

Resources used only when loads are highest (a few times per year) can have high price impacts

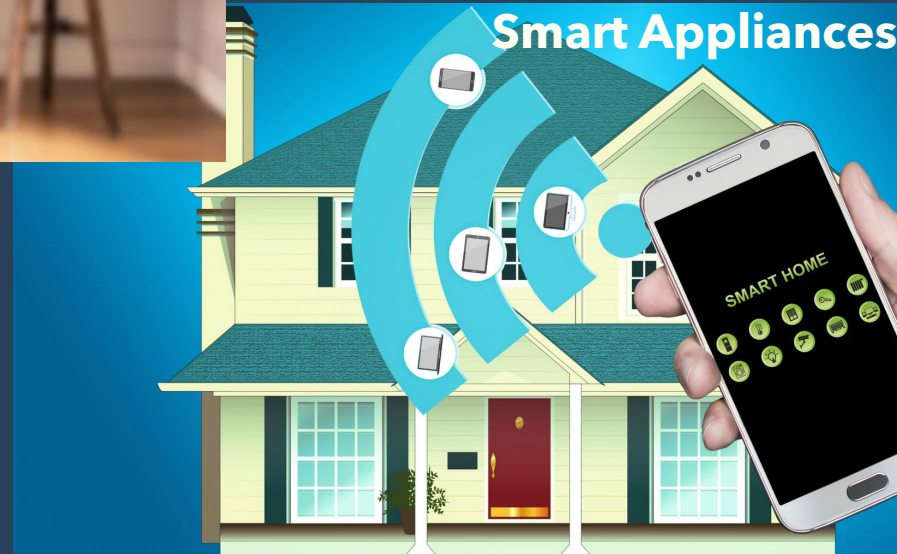


## Demand Side Management

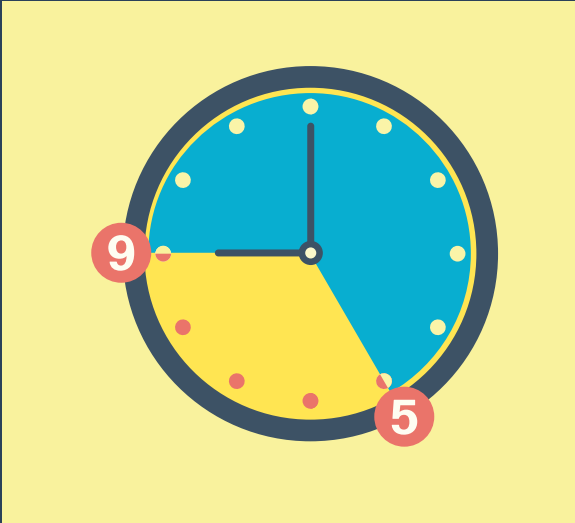
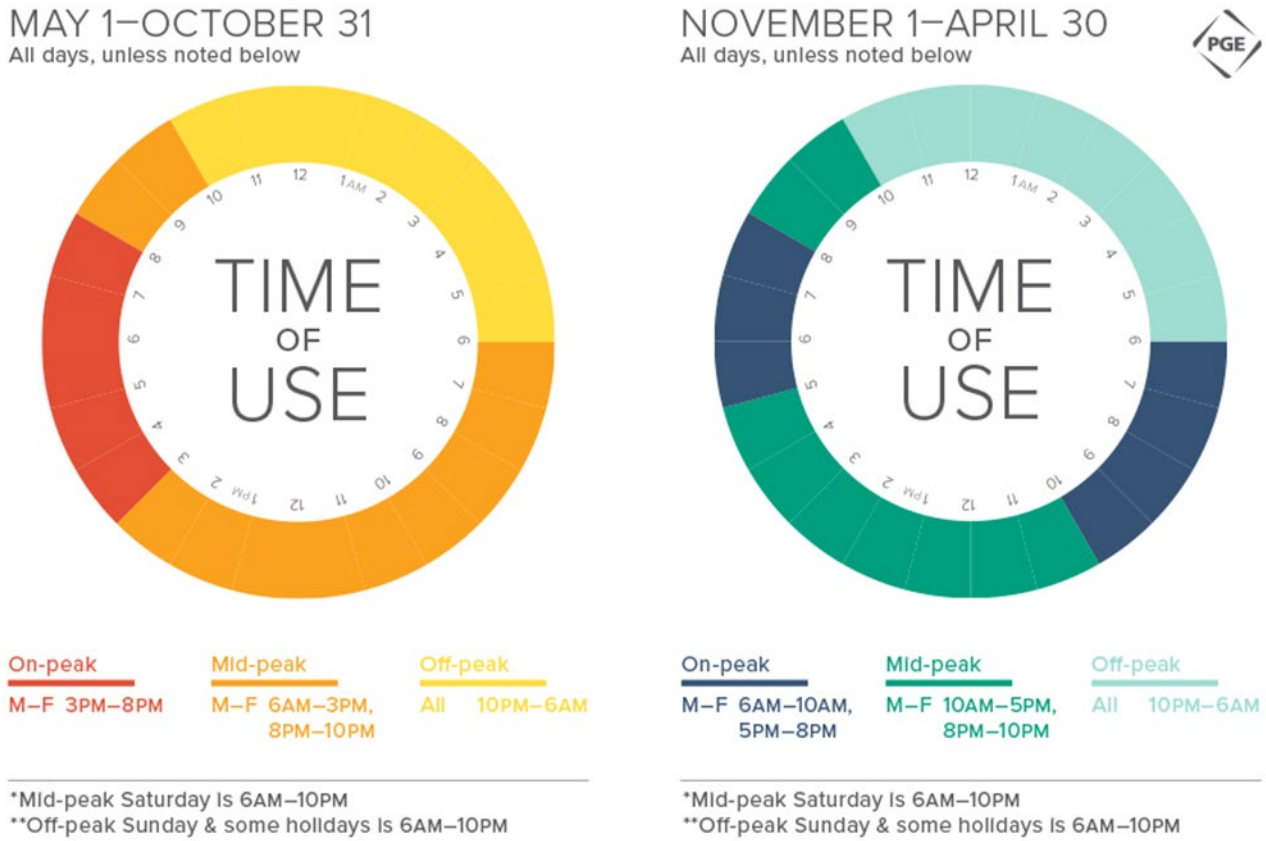
- Encourage a change in the use of electricity
- Move load from peak to off-peak
- Save customers money
- During extreme weather events can reduce the chance of brownouts and blackouts



# Smart Devices enable load flexibility



# Utility product & programs can encourage a change on the use of electricity



**FACT:**  
The national average customer participation on Flex Load Programs is 12%; at PGE it is 22%.

# Demand Response (DR) Event Example

## Aug 4, 2021, from 5- 8 pm (3hrs)

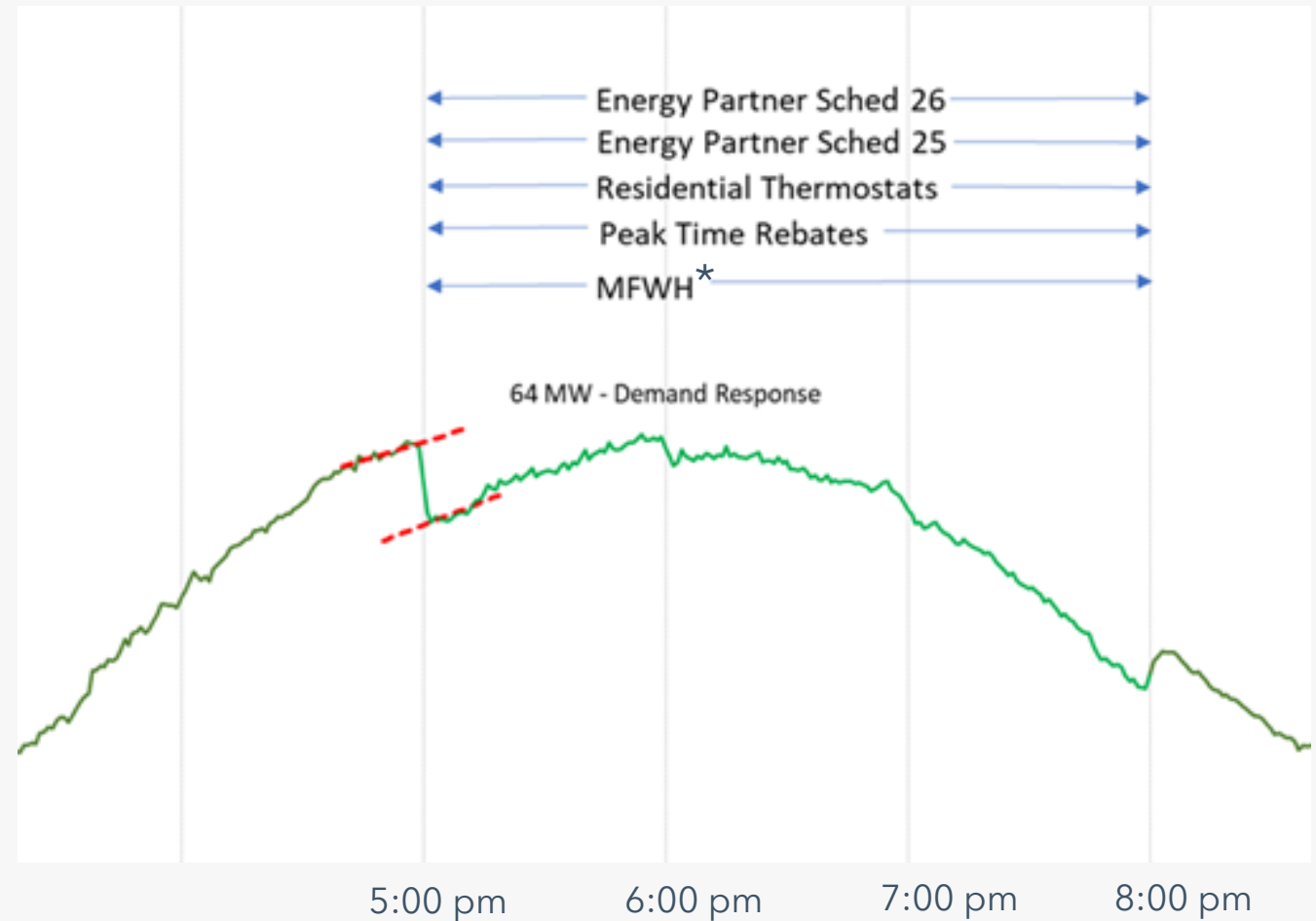
### Summer 2021

#### 11 Events

- 4 events in June
- 2 events in July
- 4 events in Aug
- 1 event in Sept

Range: ~25 MW ~69 MW

"All call" events consistently delivered 66 to 71 MW



\* MFWH: Multi-family water heater



# Rapid Needs Assessment

## September 2022



### WE ALL RISE

An Oregon-based, equity-centered research and engagement group. We All Rise works to foster more inclusive decision-making across our region. Too often, the people most affected by economic decisions have the least amount of influence in the process. Their mission is to change that.

### Research Objective

Sought to better understand how low to lower-middle income homeowners think about:

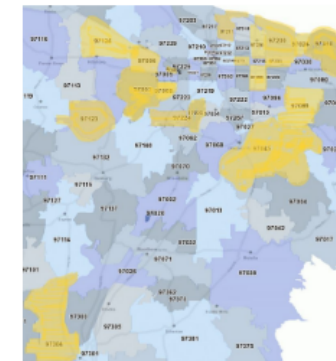
- Money
- Budgetary needs and constraints
- Options for payment to repair, upgrade or make emergency purchases
- How folks decide what to do and how they research options
- Energy efficient products\* that may cost more even with available rebates

*\*For conversation purposes energy efficient products was used to describe traditional energy efficient devices as well as flexible load and resilient devices.*



### Towards affordable energy efficiency and more sustainable energy grid demand

In the urgent pursuit to decrease per-household energy demand and deliver more affordable energy efficiency options to homeowners, it is essential that regional utility providers better understand the energy and financial perspectives of low to lower-income homeowner. This segment of customers is often understudied, misunderstood, or not included in new products and services offered – leading to a mismatch between available efficiency products and their widespread utility. Many low to lower-middle income home energy users face significant financial, informational, or language/cultural barriers to access options. PGE seeks to change that.



Nineteen zip codes were represented by homeowner participants, shown above in yellow.

We All Rise produced a Rapid Needs Assessment to understand the perspectives, needs, constraints, and behaviors of low-income homeowners' around home energy use.

1. We worked with PGE's Product Team to develop culturally relevant and easy-to-understand research questions.
2. We facilitated a series of workshops with low-income homeowner in collaboration with trusted community based organizations.
3. We produced and presented a Rapid Needs Assessment Report to PGE, including recommendations and gaps for further research.

This research is the first of its kind at PGE.

It has opened doors for more inclusive product research and has laid an important foundation for PGE's incoming Community Benefits and Impacts Advisory Group.

# Rapid Needs Assessment Participants



## Engaged with:

- Immigrant and Refugee Community Organization (IRCO)
- Affiliated Tribes of Northwest Indians
- PDX Black Excellence
- Coalition of Black Men
- Willamette Valley Development Offices
- Proud Ground

## Statement to participants

### Why **WE ALL RISE** Partnered to Conduct This Research

We believe everyone should be able to manage their home energy use and have access to affordable, efficient, and cost-saving options. As more people move to Oregon and energy demand increases, the state's energy grid is being strained each year. With higher energy prices, increased electricity bills, and older technology, we need more efficient ways to heat and cool our homes. At the same time, most energy-efficient options are expensive or out-of-reach.

To respond, we want to understand what it would take to create affordable and accessible energy-efficient options for all homeowners. That includes learning how people like you make decisions about your current heating and cooling, so that we can give recommendations on how to make options accessible to the people creating and designing those options.

## Participant Demographics

- Participants were low to lower-middle income (up to \$75k)
- Suburban, rural, urban across 19 zip codes
- Ages ranging from mid-20's to 60+
- Various ethnicities
  - African American
  - Arab/Caucasian Mix
  - Caucasian
  - Caucasian with African American Children
  - Eastern European
  - Hispanic/Latina
  - Indigenous-Caucasian Mix
  - Middle Eastern/Iraqi
  - Puerto Rican
  - Republic of Congo
  - Seneca Nation/Cheyenne
  - Vietnamese

