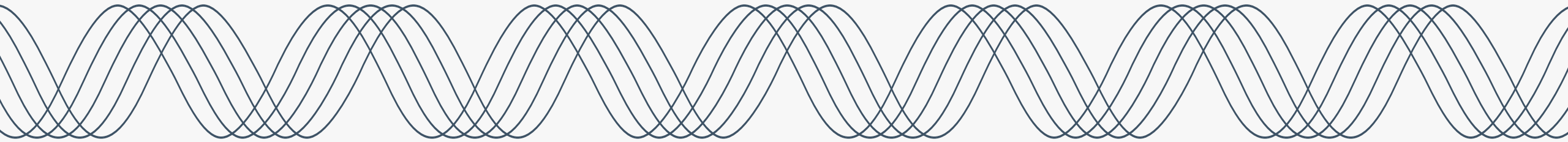




PGE CEP & IRP Roundtable 24-1

May 1st 2024



May 1st, 2024 – Agenda

9:00 – 9:15 Welcome | Introductions | Meeting Logistics

9:15 – 9:30 2024 Schedule | Feedback Form

9:30 – 10:15 CEP/IRP Update | Updates & Non-Updates

10:15 – 10:30 Community Benefit Indicators (CBI) Study

10:30 – 10:45 Transmission Study

10:45 – 11:00 Closing Remarks | Next Steps

Meeting Details

1

Electronic version of presentation

<https://portlandgeneral.com/about/who-we-are/resource-planning/combined-cep-and-irp/combined-cep-irp-public-meetings>

2

Zoom meeting details

- Join Zoom Meeting
<https://us06web.zoom.us/j/9291862450?pwd=Z3cvZ0FhVFhBMU0daNIBJZHFDUVF0QT09&omn=84372774388>
- Meeting ID: 929 186 2450
Passcode: 108126

3

Participation

- Use the raise hand feature to let us know you have a question
- Unmute with microphone icon or *6 on phones

Meeting Logistics



Focus on Learning & Understanding

- There will be no chat feature during the meeting to streamline taking feedback
- Team members will take clarifying questions during the presentation, substantive questions will be saved for the end (time permitting)
- Attendees are encouraged to 'raise' their hand to ask questions

Follow Up

If we don't have time to cover all questions, we will rely on the CEP/IRP feedback form (covered in next section)

A decorative pattern of overlapping white sine waves runs horizontally across the top of the dark blue background.

2024 Schedule | Feedback Form

Seth Wiggins, PGE

PGE has three recurring long-term planning meetings

Meeting	2024 Frequency	Technicality
CEP/IRP Roundtables	~Monthly	High
Distribution System Workshops	Every six weeks prior to DSP filing	Medium
Learning Labs	Upon request	Entry

2024 Schedules

CEP/IRP Roundtables

May 1st
June 5th
July 11th
August 7th
September 4th
October 2nd
November 6th
December 4th
January 8th, 2025

DSP Workshops

May 8th
June 13th
July 25th
September 5th

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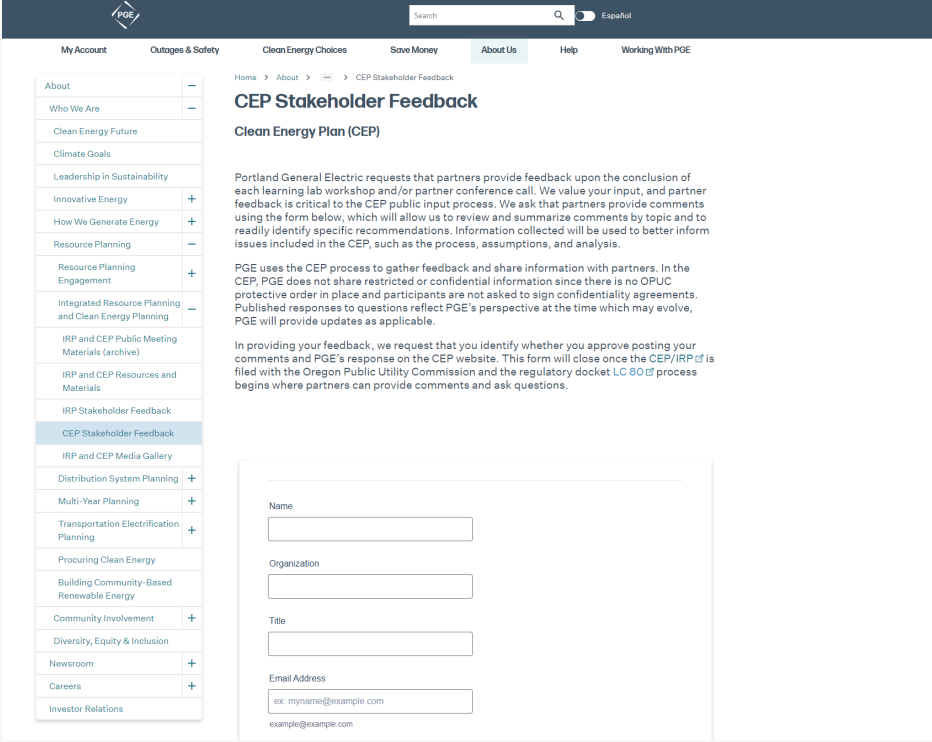
CEP/IRP Feedback Form

Seth Wiggins, PGE

In the development of the 2023 CEP/IRP, PGE utilized two feedback forms

Respondents were able to select whether they wanted their feedback published

For those that did, that feedback (and PGE's response) was added to the website



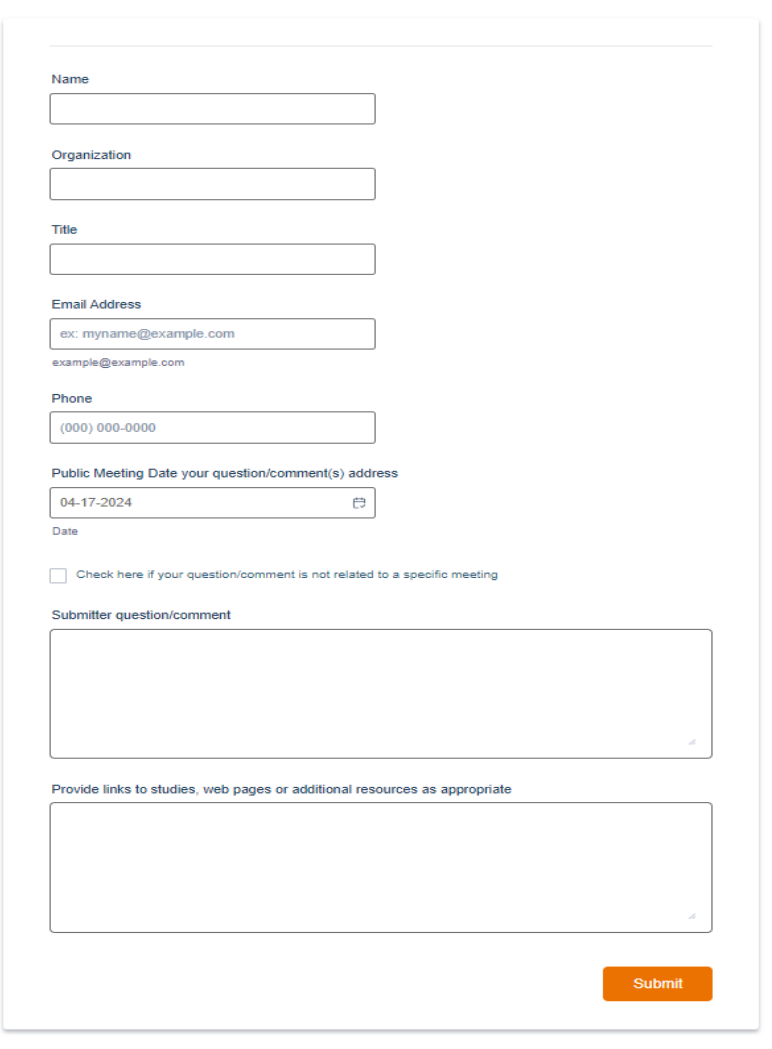
Two forms now combined into one

We now are using one feedback form

All feedback received will be posted on our website, along with PGE's response

This running list will also be included in our filings

Participants wanting feedback to remain confidential are encouraged to communicate with us at: IRP.CEP@pgn.com



The screenshot shows a web form with the following fields and elements:

- Name:** A text input field.
- Organization:** A text input field.
- Title:** A text input field.
- Email Address:** A text input field with placeholder text "ex: myname@example.com" and "example@example.com".
- Phone:** A text input field with placeholder text "(000) 000-0000".
- Public Meeting Date your question/comment(s) address:** A date input field with a calendar icon, showing "04-17-2024".
- Date:** A label for the date field.
- Check here if your question/comment is not related to a specific meeting
- Submitter question/comment:** A large text area for the main feedback.
- Provide links to studies, web pages or additional resources as appropriate:** A text area for additional resources.
- Submit:** An orange button at the bottom right.

A decorative wave pattern consisting of multiple overlapping, light-colored sine waves spans the top of the dark blue background.

CEP/IRP Update | Changes

Seth Wiggins, PGE

The IRP is a first step in a multi-step process that culminates in rate review at the Commission



PGE's IRP and CEP are regulatory requirements

The 2023 IRP was acknowledged with conditions at the January 25th public meeting

IRP Timing Requirement: *Following Public Utility Commission (PUC) acknowledgement of the previous IRP, investor-owned utilities (IOUs) must:*

1. Update that IRP within a year: **IRP Update due January 25th, 2025**
2. File the next IRP within two years: **Next IRP due January 25th, 2026**

An IRP update is an informational filing that reports on action plan progress, assesses changes in the planning landscape, and updates, and summarizes progress implementing planning goals.

IRP Updates vary in the complexity, with judgement required to determine:

- which components to refresh;
- which to maintain from the previous IRP; and
- what new analysis to add.

Three Main Objectives in IRP Modeling

Modeling Step	Component	2023 CEP/IRP Examples	2023 CEP/IRP Location
1. Estimate system needs	Energy need	Forecasted reference case energy need of 1308 MWa by 2030	Section 6.5
	Capacity need	Forecasted 432 / 123 capacity need in Summer / Winter 2026	Section 6.6
	Regulatory need	PGE forecasted to be sufficient (more RECs generated and/or banked than yearly RPS obligation) until 2037	Section 6.7
	Emissions reductions	PGE will use a linear emission reduction glidepath to reach 2030	Chapter 5
2. Characterize generation options	Traditional 'utility-scale' resources	Large-scale solar, wind, storage	Section 8.1
	Distributed energy resources (DERs)	Energy efficiency, demand response, utility-controlled customer-sited energy storage	Section 8.2
	Additional generation sources	Community-based renewable energy (CBREs)	Section 8.3
3. Create a resource plan	Action Plan	PGE will acquire approximately 260 MWa of non-emitting generation each year through 2030, pursue the study of additional transmission expansion options, etc.	Chapter 12

The following three slides outline which components of each modeling step PGE plans to update

1. Estimate System Needs

System Need Component	Data Source	Optimistic 2024 Timing	2023 CEP/IRP Location
Load forecast	PGE financial forecasting	Summer	Section 6.1
'Cost-effective' energy efficiency*	Energy Trust of Oregon	Summer	Section 6.2.3
'Cost-effective' demand response*	Distribution System Plan	Late summer	Sections 6.2.1 & 6.2.2
Qualified Facility (QF) forecast	PGE Origination team	Summer	Section 6.10.1
Small-scale renewable position	PGE IRP estimate	Late spring / early summer	New analysis; not in 2023 CEP/IRP
Electricity and natural gas price curves	PGE Operations	Late spring / early summer	Appendix H
Load scenarios	PGE IRP team	Fall	New analysis; not in 2023 CEP/IRP
Energy and capacity needs	PGE IRP estimates	Late Summer	Sections 6.5 & 6.6

2. Characterize Generation Options



Resource Option Component	Data Source	Optimistic 2024 Timing	2023 CEP/IRP Location
Supply-side resource economics	PGE IRP team (utilizing public estimates)	Spring	Section 8.1
Portfolio Community Benefit Indicators (PCBIs)	Consultant	Late summer	Section 7.1.4
Community Based Renewable Energy (potential)	Distribution System Plan	Late summer	Section 8.3
'Non-cost-effective' energy efficiency*	Energy Trust of Oregon	Summer	Section 8.2.1
'Non-cost-effective' demand response*	Distribution System Plan	Late summer	Section 8.2.2
Transmission options (both constraints and potential additions)	Consultant(s)	Summer	Appendix H.7, Sections 9.4.1 & 11.1.7
Resource ELCCs estimates	PGE IRP team	Late summer	Section 10.6
Small-scale renewable proxy resource	PGE estimate	Late Summer	New analysis; not in 2023 CEP/IRP

* The terms cost-effective and non-cost-effective have divergent meanings across planning documents. PGE here uses 'cost-effective' to signify that the quantities referenced were determined to be cost-effective *before IRP analysis* in their respective sources (ETO for EE, AdopDER for DR)

3. Create a Resource Plan

Resource Plan Component	Data Source	Optimistic 2024 Timing	2023 CEP/IRP Location
Portfolio analysis	PGE IRP team	Spring	Section 8.1
Yearly cost estimates	PGE IRP team	Late summer	Section 11.5.1
Hourly emissions evaluation	PGE IRP team, Consultant	Late fall/early winter	New analysis; not in 2023 CEP/IRP
Report on federal funding opportunities	PGE	Late fall/early winter	New analysis; not in 2023 CEP/IRP



CEP/IRP Update | Updates & Non-Updates

Seth Wiggins, PGE



**Clean Energy Plan and
Integrated Resource Plan
2023**



We are not Planning to Refresh Several Components in the CEP/IRP Update

Limited time and planning resources combined with additional requirements constrain our ability to redo all analysis

To focus on the areas discussed before, we are not planning on updating the following sections found in the 2023 CEP/IRP

Resource Option Component	2023 CEP/IRP Location
WECC prices	Section 4.4
Flexibility analysis	Section 6.8
Resiliency Chapter	Chapter 13
RPS position	Section 6.7
Tuned ELCCs	Appendix K
Market capacity study	Appendix G
Economics of CBREs	Section 8.3
Utility vs PPA analysis	Section 8.6

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Community Benefit Indicators (CBI) Study

Seth Wiggins, PGE

The 2023 CEP/IRP defined three types of community benefit indicators (CBIs)

Figure 48. OPUC Order 22-390: CBI Pathways

Resource (rCBI)	Portfolio (pCBI)	Informational (iCBIs)
<ul style="list-style-type: none"> • Informs and tracks progress on specific outcomes achieved through CBRE actions • Should be reflected in the CBRE potential study and in IRP portfolio scoring 	<ul style="list-style-type: none"> • Addresses the impacts of the utility's portfolio on communities • May or may not be tied to CBREs, and should be reflected in IRP portfolio scoring 	<ul style="list-style-type: none"> • Provides transparency into topics of importance to communities • May or may not directly inform portfolio scoring in the IRP

Context: PGE's IRP uses proxy generation resources

Proxy resources are intended to provide general characteristics of resources plausibly available to PGE to add to its system

For example: the 2023 IRP's SE Washington Wind does not represent any individual project size, cost, or system contribution (MWh, ELCC, RECs, etc.)

The same is true for other resources evaluated like the hybrid resources, CBREs, EE bins, DR, etc.

Choosing individual projects could create unnecessary inaccuracies and/or false precision in results, especially if there were large differences between various resources available

Going forward, we are evaluating our CBI approach

CBI Type	Attributed to	Location
Portfolio	Proxy resources (all generation types included in portfolio analysis)	Informing IRP Portfolio Analysis
Resource	Proxy resources (all <i>applicable</i> generation types included in portfolio analysis)	Driving IRP Portfolio Analysis
Informational	System conditions (describing various metrics of interest in PGE's service territory)	Within IRP filing

We are working with a consultant to develop CBIs

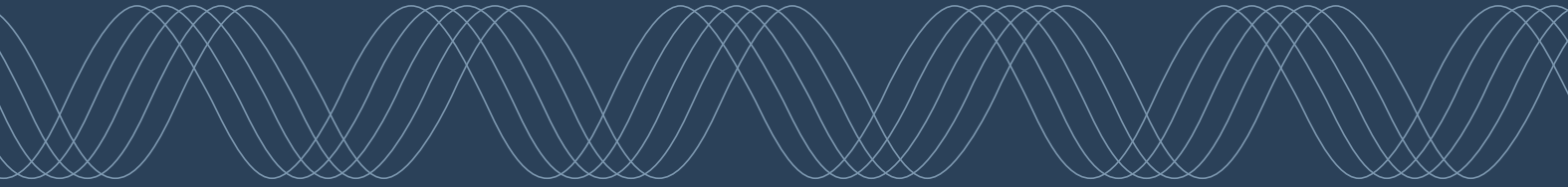


For this coming CEP/IRP Update, the consultant will estimate:

- The per MW portfolio CBI values for each proxy resource
- The quantifiable \$/MW resource CBI value for some proxy resources

Resource CBIs will influence portfolio analysis

The portfolio CBI implications of each portfolio of resources will be displayed in the document



Transmission Study

Seth Wiggins, PGE

There are two main components of transmission analysis in the IRP

1. Characterization of the existing transmission system: *If no transmission development were to occur, how much of each proxy resource would be available for PGE?*

In the 2023 CEP/IRP, PGE extrapolated from the TSRs* in BPA’s previous four TSEPs** to estimate this transmission capacity in each resource zone

For the IRP Update, we are planning to follow this methodology and update it with the results from the 2023 TSEP

Table 129. Transmission ATC by Resource Zone

Resource Zone	LTF	CF	Total
Christmas Valley	490	510	1000
Gorge	190	388	578
McMinnville	10	0	10
Montana	0	0	0
Offshore	0	80	80
SE Washington	0	150	150
Total	690	1128	1818

ATC Available transfer capability
LTF Long-term firm
CF Conditional firm

* Transmission Service Request
 ** TSR study and expansion process

There are two main components of transmission analysis in the IRP

2. Evaluation of additional transmission options: *What can PGE do to alleviate transmission constraints? How many MWs does that unlock, and where? At what cost?*

In the 2023 CEP/IRP, PGE utilized three proxy transmission resources:

- **South of Allston:** Opened 400 MW of PNW proxy resource additions across BPA's service area in 2027
- **Nevada Solar:** Access to up to 400 MW of proxy NV solar as early as 2026
- **Wyoming Wind:** Access to up to 400 MW of proxy WY wind as early as 2026

There are two main components of transmission analysis in the IRP

2. Evaluation of additional transmission options: *What can PGE do to alleviate transmission constraints? How many MWs does that unlock, and where? At what cost?*

For the 2023 IRP Update, PGE is considering working with a consultant to develop a list of transmission options and the associated costs and benefits of each

More details to come; we're currently scheduled to present findings from the consultant at a roundtable sometime this summer

Questions



A photograph of an electric vehicle charging station with several cars plugged in, set against a dark blue background.

Closing Remarks | Next Steps

A recording from today's webinar will be available in one week

Upcoming Roundtables: June 5th

Thank you

Contact us at
IRP.CEP@PGN.COM

Running List of Acronyms

ART: annual revenue-requirement tool	GHG: greenhouse gas	PSH: pumped storage hydro
ATC: available transfer capacity	HB2021: House Bill 2021	PUC: public utility commission
BPA: Bonneville Power Administration	IE: independent evaluator	PV: photovoltaic
C&I: commercial and industrial	IOU: investor-owned utilities	REC: renewable energy credit
CBI: community benefit indicators	ITE: information technology equipment	RLRR: low carbon price future
CBIAG: community benefits and impacts advisory group	ITC: investment tax credit	RPS: renewable portfolio standard
CBRE: community based renewable energy	kW: kilowatt	RRRR: reference case price future
CEC: California energy commission	LOLH: loss of load hours	RTO: regional transmission organization
CEP: clean energy plan	LT/ST: long term/ short term	SoA: South of Allston
CF: conditional firm	LTF: long-term firm	T&D: transmission and distribution
DC: direct current	MW: megawatt	TSR: transmission service request
DR: demand response	MWa: mega watt average	TSEP: TSR study and expansion process
DSP: distribution system plan	NAICS: North American industry classification system	Tx: transmission
EE: energy efficiency	NCE: non-cost effective	UPS: uninterruptible power supply
ELCC: effective load carrying capacity	NG: natural gas	VER: variable energy resources
EJ: environmental justice	NPVRR: net present value revenue requirement	VPP: virtual power plant
ETO: energy trust of Oregon	ODOE: Oregon department of energy	WECC: western electricity coordinating council
EUI: energy use intensity	PPA: power purchase agreement	