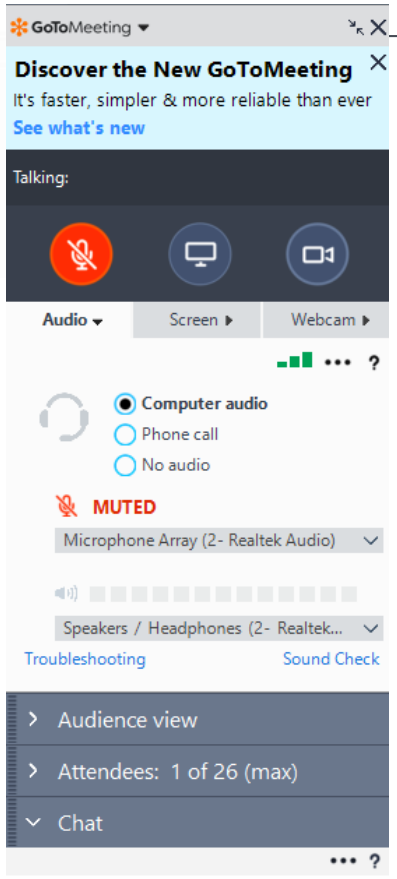
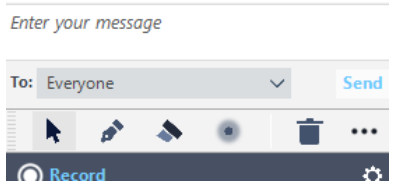
2021 IRP Webinar #13:

Market Risk Assessment, Stochastic Analysis, Preferred Portfolio and Clean Energy Action Plan, CEIP

March 5, 2021

Welcome to the webinar and thank you for participating!





Virtual webinar link: https://global.gotomeeting.com/join/965402149

Access Code: 965-402-149

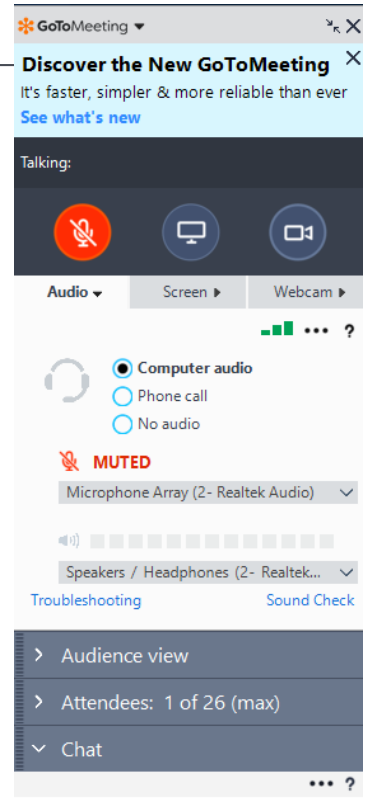
Call-in telephone number: +1 (872) 240-3311

This session is being recorded by Puget Sound Energy.
Third-party recording is not permitted.

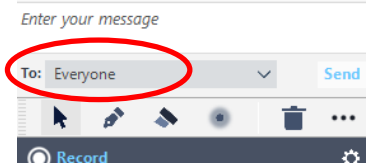
How to participate using Go2Meeting

Presentation Do's

- Mute your mic during the presentation
- You can participate in writing or verbally using the chat window
  - **In writing:** your question will be read
  - **Verbally:** type "Raise hand" and slide #, share with "Everyone"; please wait to be called on to ask your question
- Be considerate of others waiting to participate
- We will try to get to all questions



Raise hand, slide 33



This session is being recorded by Puget Sound Energy.
Third-party recording is not permitted.

Agenda

- Safety Moment
- Market Risk Assessment
- Electric and Natural Gas Stochastic Analyses
- Preferred Portfolio and Clean Energy Action Plan
- Overview of the Clean Energy Implementation Plan (CEIP) and Public Participation

This session is being recorded by Puget Sound Energy.
Third-party recording is not permitted.

PUGET SOUND ENERGY

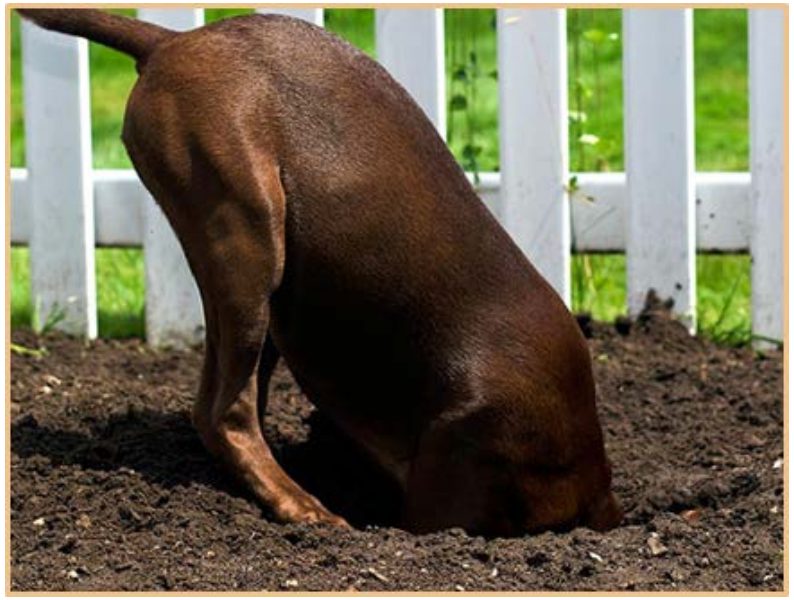
Safety moment: Call 811 before you dig

Know what's below. Call before you dig.

Dial 811 at least **two full business days** (not including the day you call) before you plan to dig, no matter the size of your project. It's not only smart, **it's the law**.

- It's important to have the locations of underground utilities verified and clearly marked
- Striking a natural gas or electric line may result in service disruptions, bodily harm, fines and/or repair costs

pse.com/pages/know-whats-below



PUGET SOUND ENERGY

Today’s Speakers

Irena Netik
Director, Resource Planning & Analysis, PSE

Paul Wetherbee
Director, Energy Supply Merchant, PSE

Elizabeth Hossner
Manager, Resource Planning & Analysis, PSE

Jennifer Magat
Senior Resource Planning Analyst, PSE

Alexandra Streamer & Elise Johnson
Co-facilitators, EnviroIssues

Gurvinder Singh
Senior Resource Planning Analyst, PSE

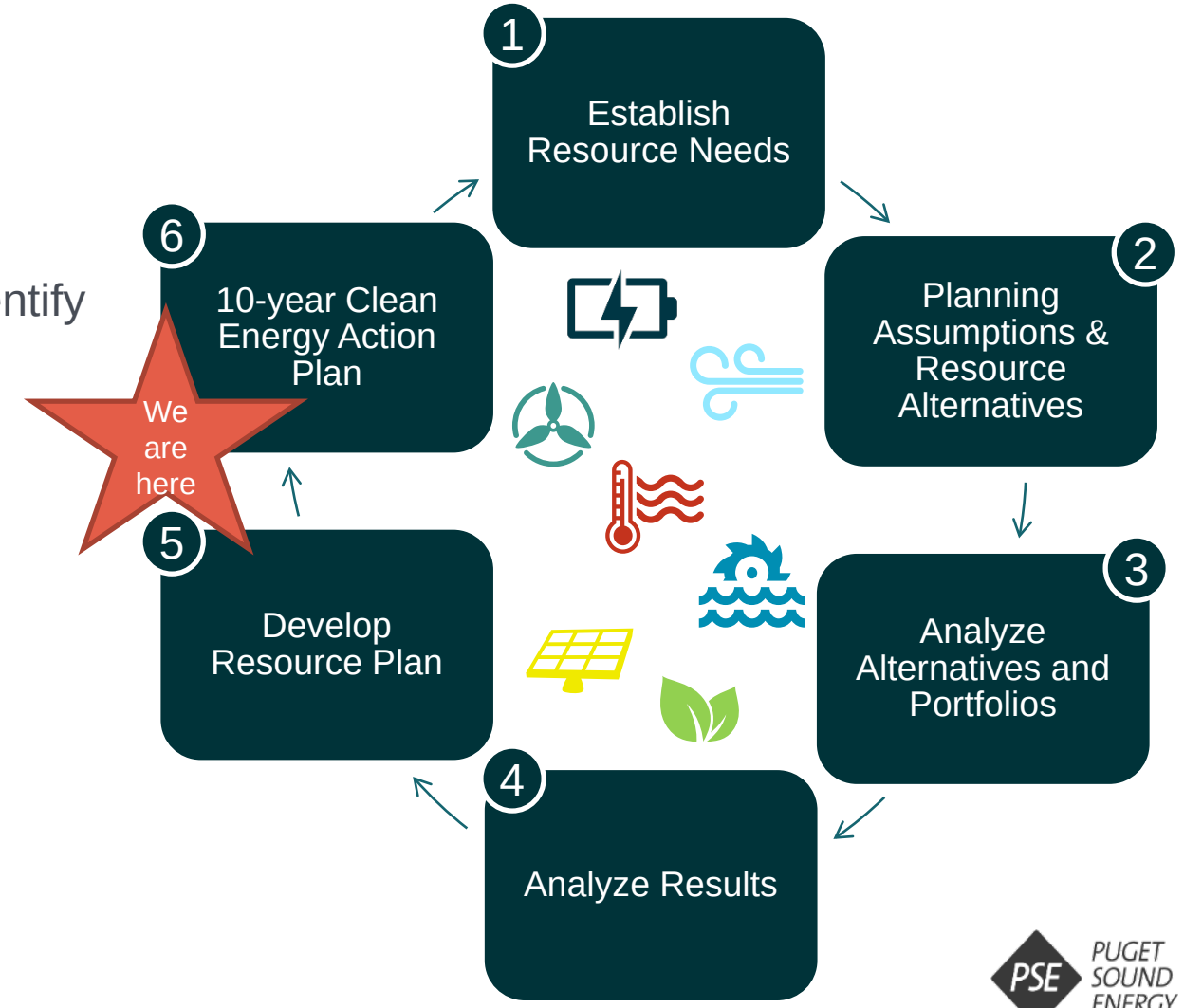
Diann Strom
Stakeholder Engagement Consultant, Clean Energy Strategy, PSE

Brian Tyson
Manager, Clean Energy Planning and Implementation, PSE

2021 IRP modeling process

The 2021 IRP will follow a 6-step process for analysis:

1. Analyze and establish resource need
2. Determine planning assumptions and identify resource alternatives
3. Analyze scenarios and sensitivities using deterministic and stochastic risk analysis
4. Analyze results
5. Develop resource plan
6. 10-year Clean Energy Action Plan



Thank you for participating in our IRP public process

Date	Action
May-Dec 2020	2021 IRP process: 10 PSE Webinars, feedback reports, consultation updates and numerous stakeholder engagements & communications
Dec 15, 2020	PSE Webinar 11: draft portfolio sensitivity results
Dec 28, 2020	WUTC adopted final IRP/CEIP rules
Jan 4, 2021	Draft Electric & Gas IRP posted online and filed with WUTC
Feb 5, 2021	End of opportunity to file written comments with WUTC
Feb 10, 2021	PSE Webinar 12
Feb 26, 2021	WUTC Open Meeting on draft IRP
Mar 5, 2021	**PSE Webinar 13**
Apr 1, 2021	Final Electric & Gas IRP posted online and filed with WUTC

Documentation of sensitivities analyzed in this IRP is included in Appendix A.

https://pse-irp.participate.online/2021-irp/reports

PUGET SOUND ENERGY

Market Risk Assessment

PUGET SOUND ENERGY

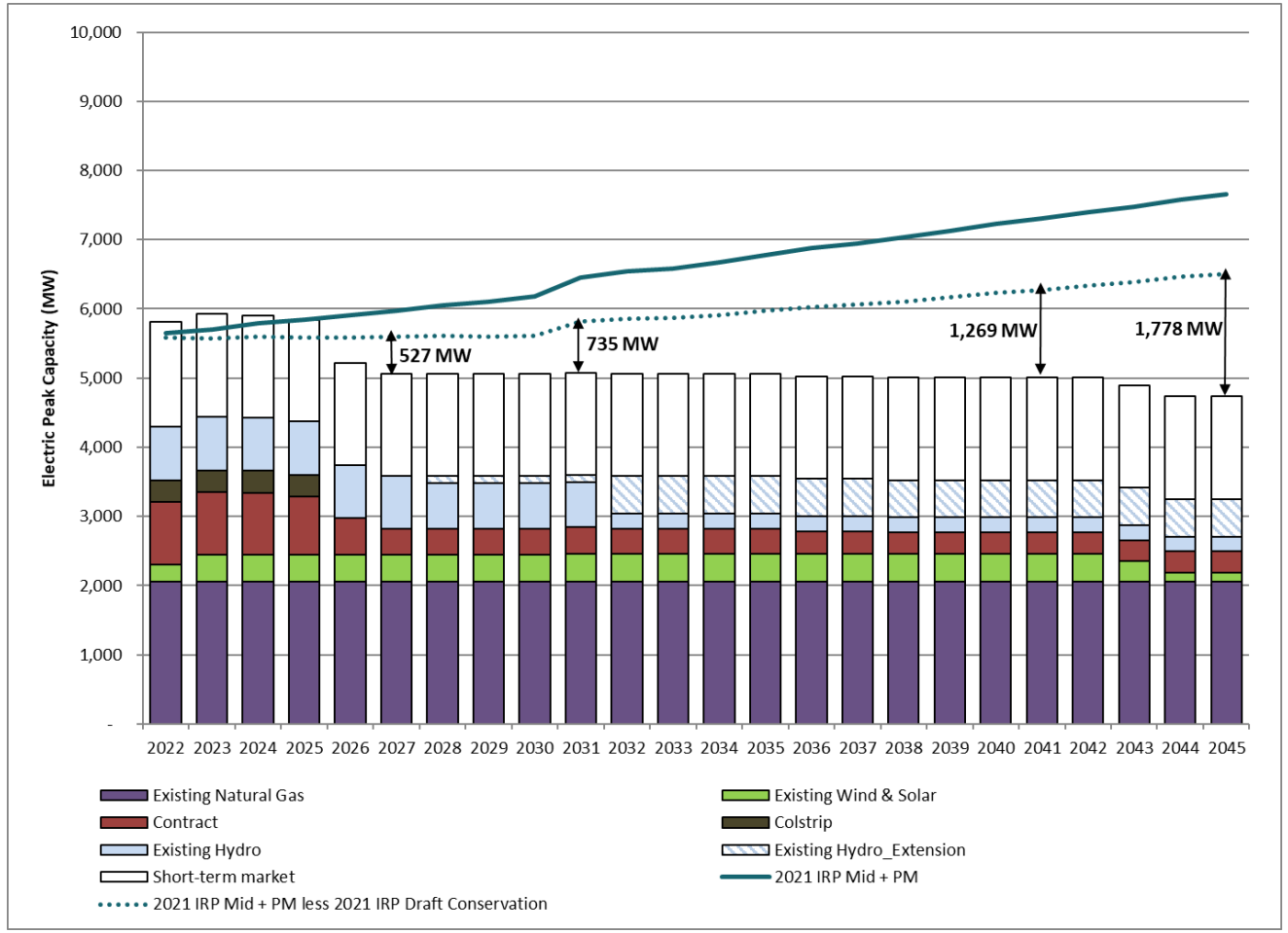
Participation Objectives

- PSE will consult with stakeholders on the approach for reducing market purchases for peak capacity planning.

  IAP2 level of participation: CONSULT

PUGET SOUND ENERGY

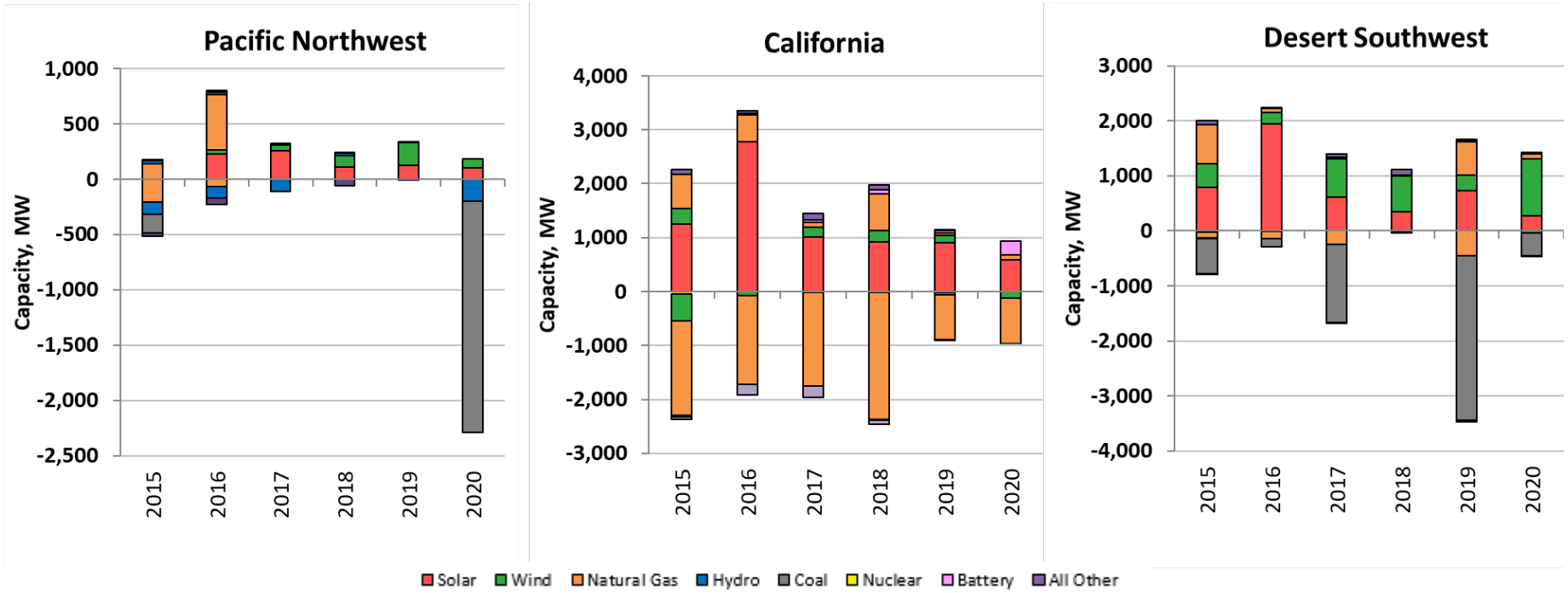
Peak Capacity Need assumes 1500 MW of Mid-C market purchases



- PSE's current transmission portfolio includes 1,500 MW of firm transmission rights that can be used to purchase energy at the Mid-C and deliver to PSE.
- PSE relies on the 1500 MW of Mid-C market purchases for peak capacity planning (white bars on the chart).

Dispatchable high-capacity resources are declining in the West

- While substantial wind and solar resources have been built in the West, dispatchable high-capacity thermal generation has been retired.
- Pacific Northwest coal retirements in 2020 reduce the energy available to procure through bilateral transactions at the Mid-C trading hub.



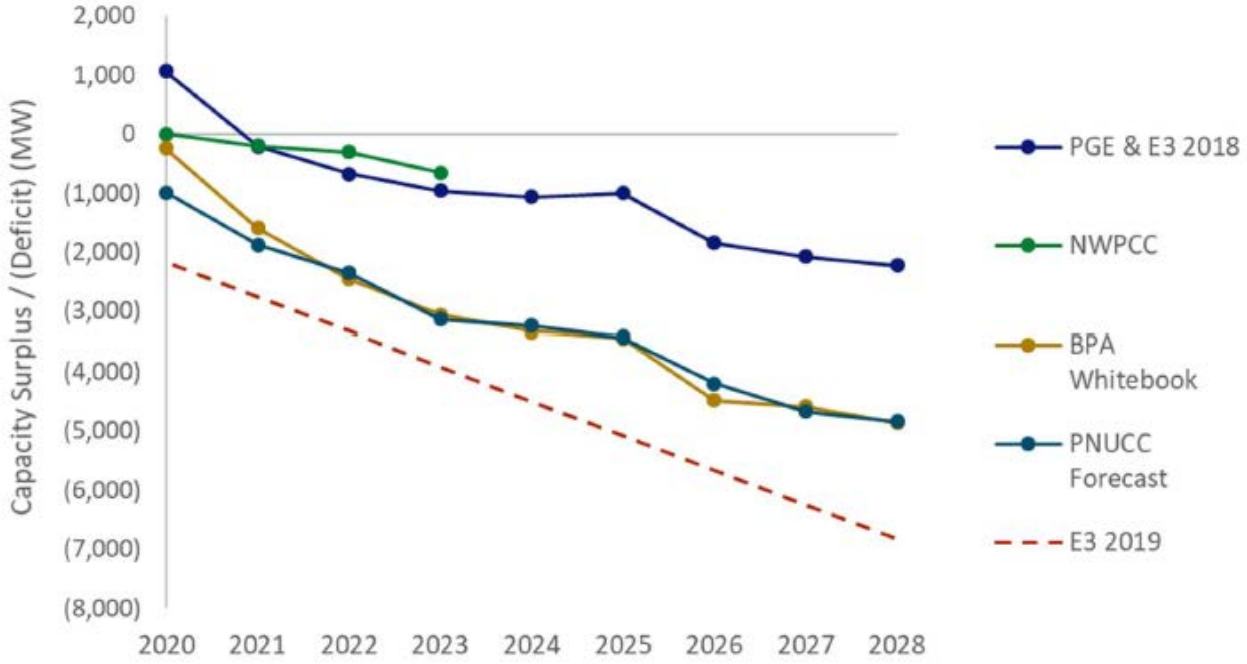
PSE market purchases are higher than other IOUs

Entity	Planned Summer Market Reliance Limit (MW)	Planned Winter Market Reliance Limit (MW)	Commentary
Avista	330	330	From the draft 2021 IRP. Market purchases are limited to 500 MW during 'unconstrained' hours, and 330 MW during 'constrained' hours
Idaho Power	N/A	N/A	The current IRP (2019) assumes market purchases of 500 MW in the summer and 425 MW in the winter. Specific market purchase limits are not defined in the IRP.
PacifiCorp	500 – Aggregate 150 – Mid-C Seasonal HLH	1000 – Aggregate 0 – Mid-C Seasonal HLH	Proposed Front Office Transaction Limits for the 2021 IRP cycle.
Portland General Electric	50	0	Estimates from recent PGE capacity studies.
Puget Sound Energy	1,500	1,500	From the draft 2021 IRP. PSE counts historical energy offers at the Mid-C hub as available capacity to meet peak demand needs in the winter and summer.

Predicted capacity deficits could reduce Mid-C bilateral transactions

- Recent studies have concluded that the PNW faces a capacity shortfall in the near term.
  - PGE (2018)
  - NWPCC (2020)
  - BPA (2020)
  - PNUCC (2020)
  - E3 (2019)
- Current investigations into August 2020 events point to material resource adequacy failures in the western interconnect.
  - CA Joint Committee (2021)
  - CAISO DMM (2020)
  - WECC (2020)
  - FERC (2020)

Several recent regional studies predict a capacity deficit

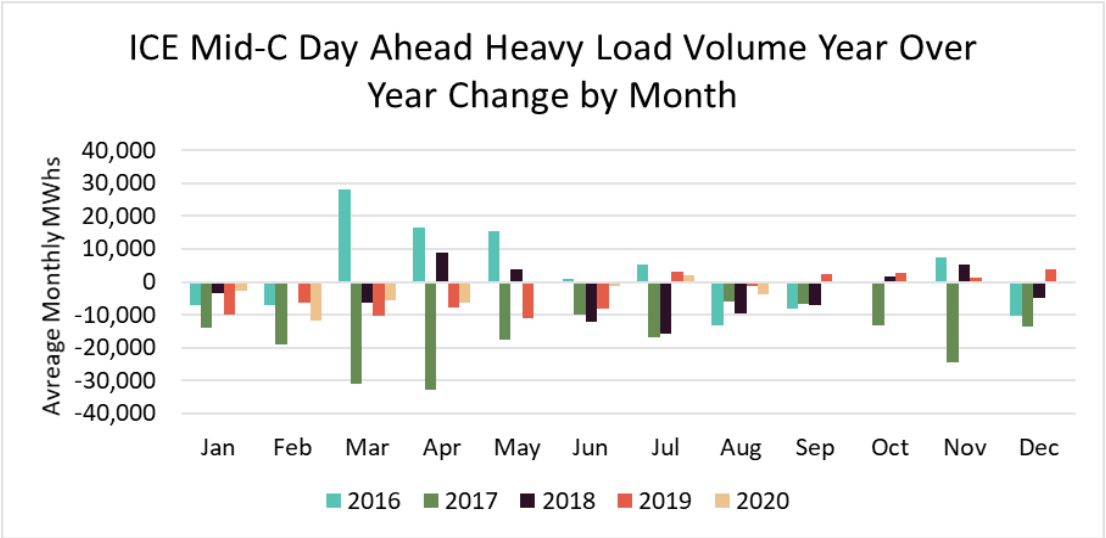


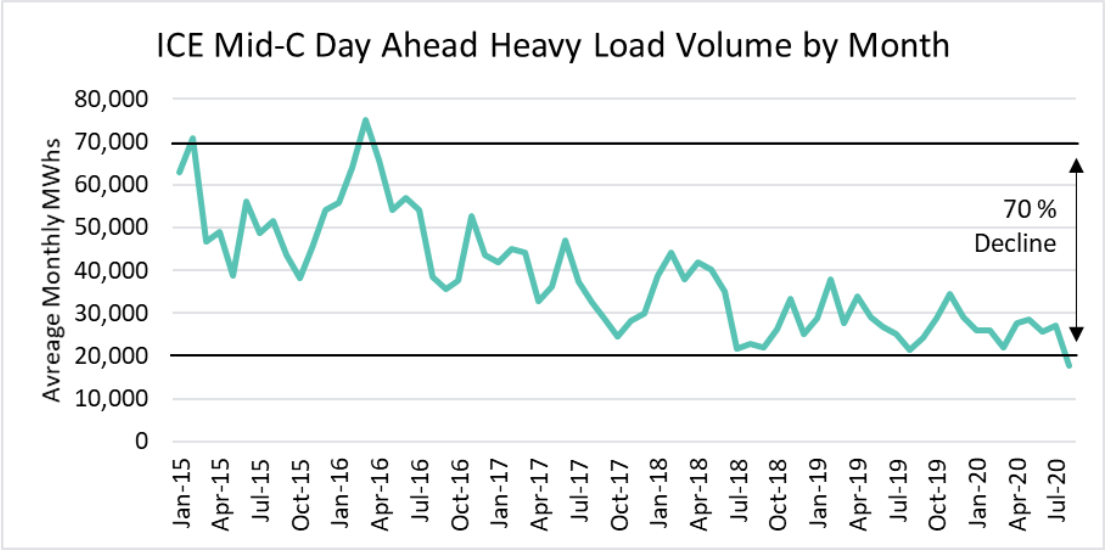
Source: NWPP Exploring a Resource Adequacy Program for the West, October 2019

Trading volumes are declining at the Mid-C bilateral hub

- Trading volumes of day ahead physical energy for delivery at the Mid-C market hub have trended downward.
  - Average monthly peak profile day ahead spot transactions have consistently decreased year over year.
  - Month over month volumes are also trending lower.

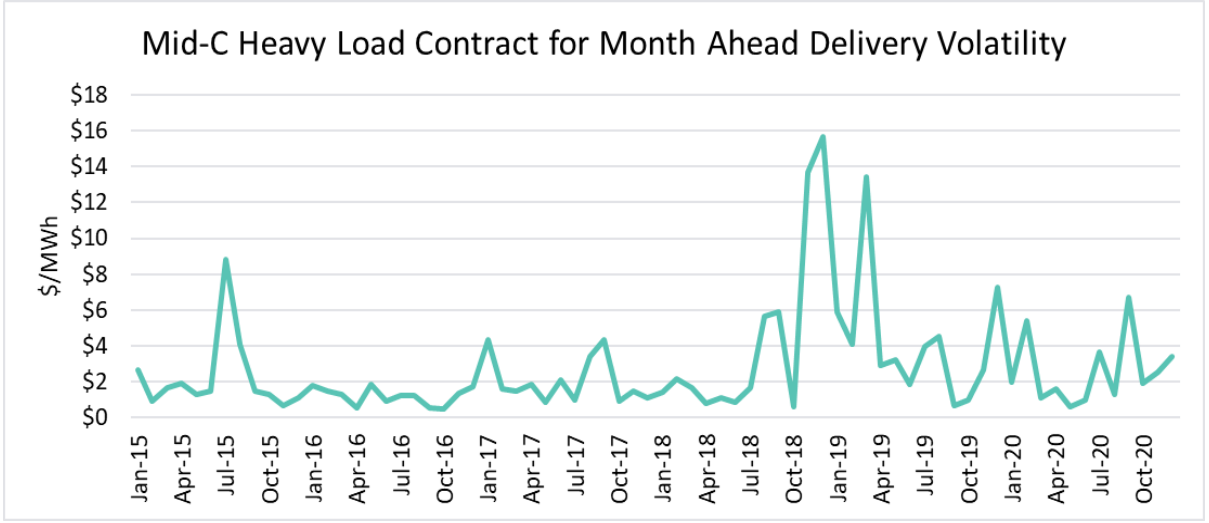
- Reduced spot market liquidity drives increases in spot price volatility.

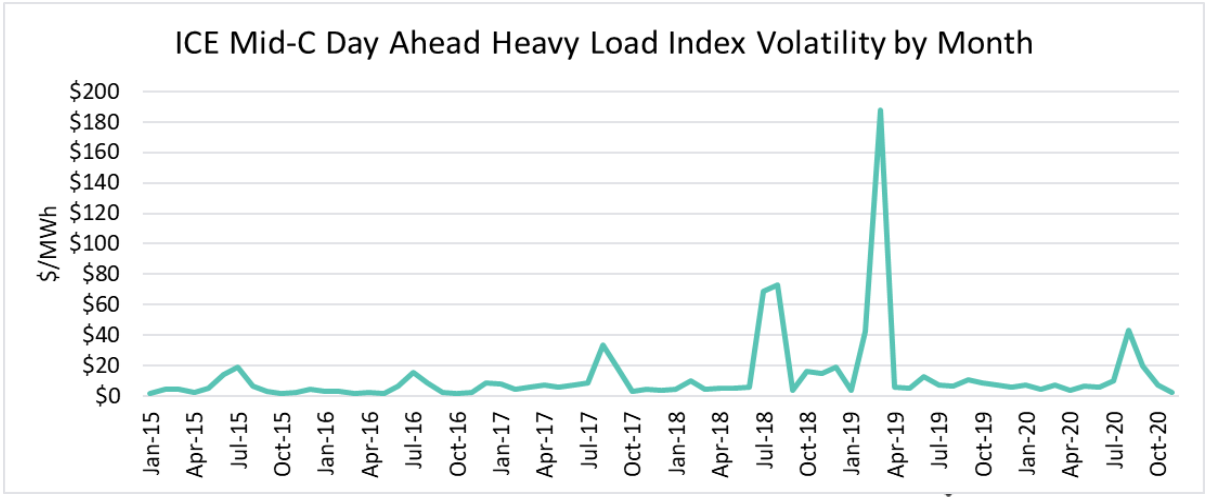




Short-term market volatility has increased

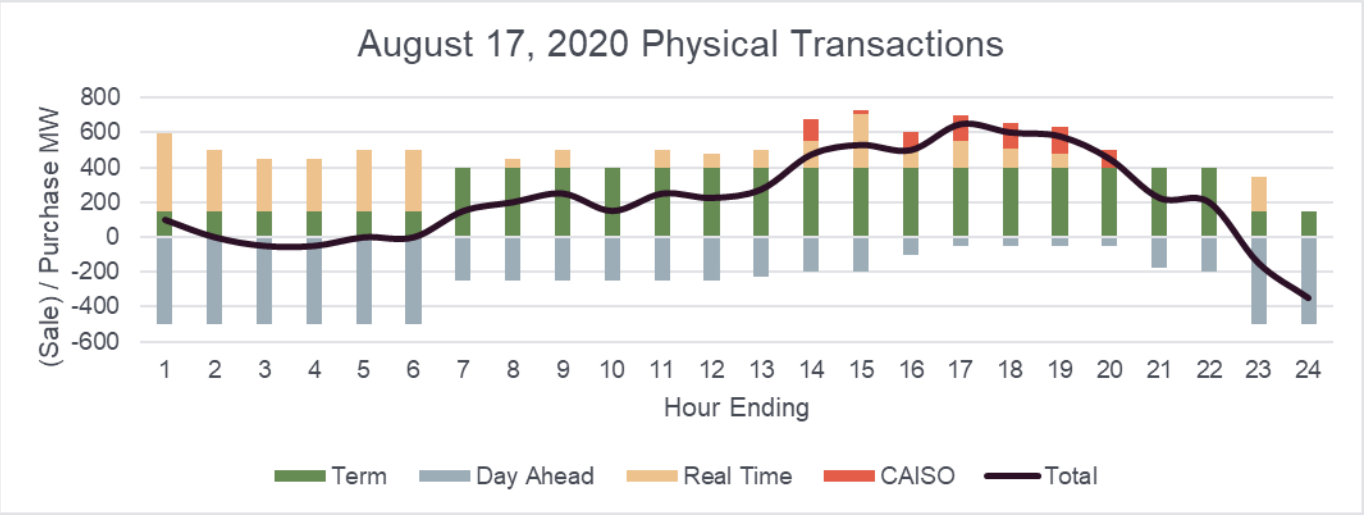
- Term volatility in the forward market has remained relatively stable and range bound, but has increased in the spot market.
- Price volatility has increased at the Mid-C in the spot market in response to tighter supply/demand fundamentals.
- High prices are indications of near misses
  - Summer 2018 – hot regional temperatures coinciding with Colstrip forced outages
  - March 2019 – cold regional temperatures coinciding with reduced Westcoast pipeline and Jackson Prairie storage availability
  - August 2020 – West-wide heat event





Mid-C bilateral liquidity evaporated in August 2020

- Several entities in the WECC declared energy emergencies during the west-wide heat wave of August 14th - 19th, 2020.
  - CAISO progressed to stage 3 on August 14th and 15th and was forced to cut firm load.
  - PSEI declared a stage 1 emergency on August 17th, as we anticipated that supplies required to meet demand could not be procured from resources or the market – PSE's total Mid-C market reliance was 400-505 MW during this time.



PSE would like stakeholder feedback on an anticipated IRP recommendation

- Draft IRP included a capacity need that will not change for the final IRP.
- PSE proposes to include a market risk adjusted capacity need in the final IRP with a gradually declining market purchase limit from 1500 MW to 500 MW by the year 2027.
- PSE's resource procurement strategy will include the market risk adjusted capacity need.

Electric and Natural Gas Stochastic Analyses

PUGET SOUND ENERGY

Participation Objectives

- PSE will review the Stochastic Analysis approach and preliminary results.

  IAP2 level of participation: INFORM

PUGET SOUND ENERGY

This session is being recorded by Puget Sound Energy. Third-party recording is not permitted.

Electric Stochastic Analysis

Purpose of the stochastic analysis:

The goal of the stochastic modeling process is to understand the risks of portfolios in terms of portfolio costs and resource needs.

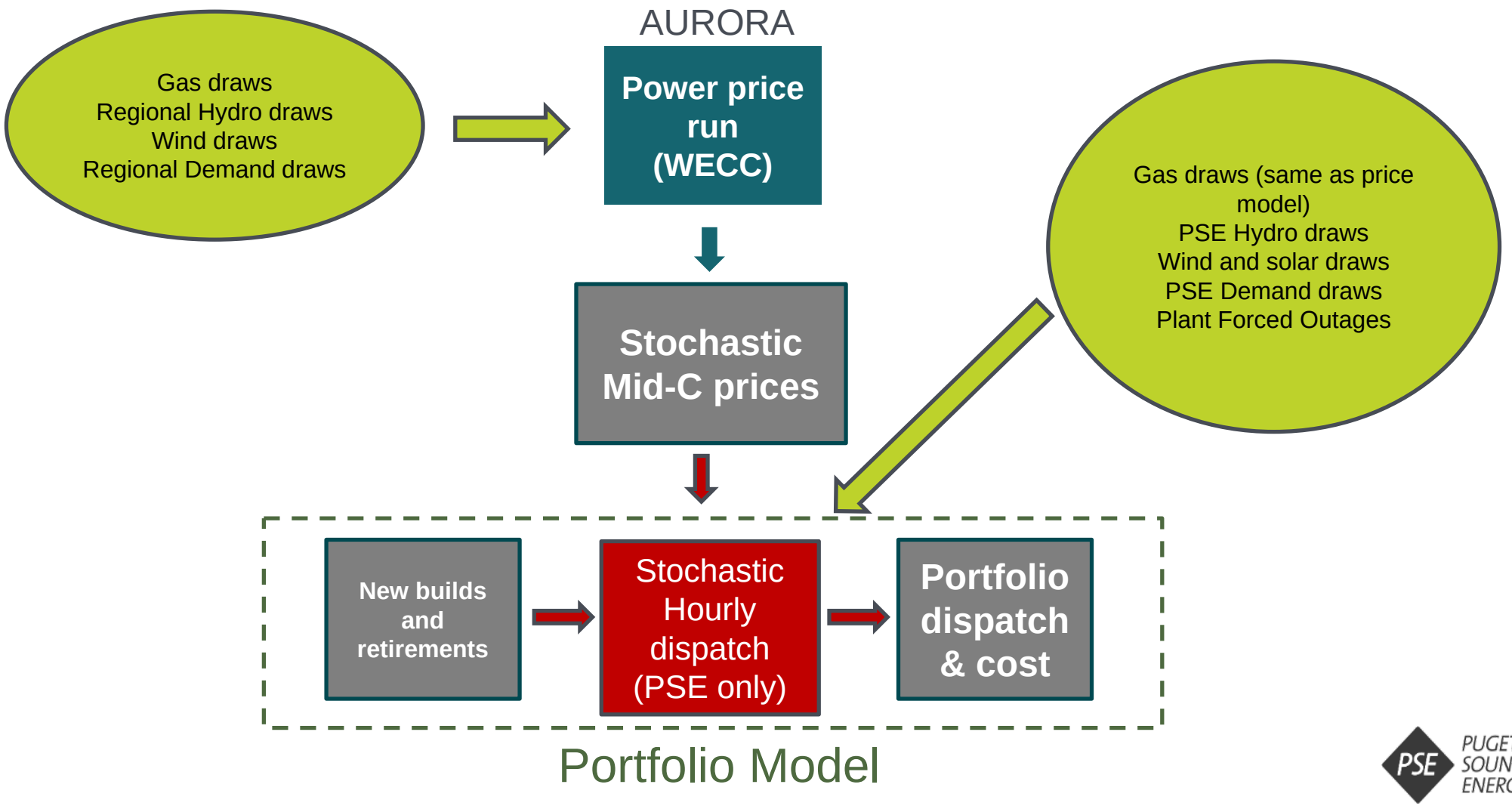
Stochastics	Stochastics: Mid-C Prices	Stochastics: PSE Portfolio
• Input	• Regional Demand • Natural gas prices • Hydro generation • Wind generation	• Natural gas prices • Mid-C power prices • PSE electric demand (energy and peak) • Hydro generation • Wind generation • Solar generation • Plant forced outages
• Output	• The different combination of inputs results in different power prices.	• The different combination of inputs results in different dispatch and revenue requirement.

Portfolios to be modeled in stochastic analysis

- Mid scenario (1)
- Preferred portfolio (W)
- Preferred Portfolio with market reduction (X)
- No DSR portfolio (Z)

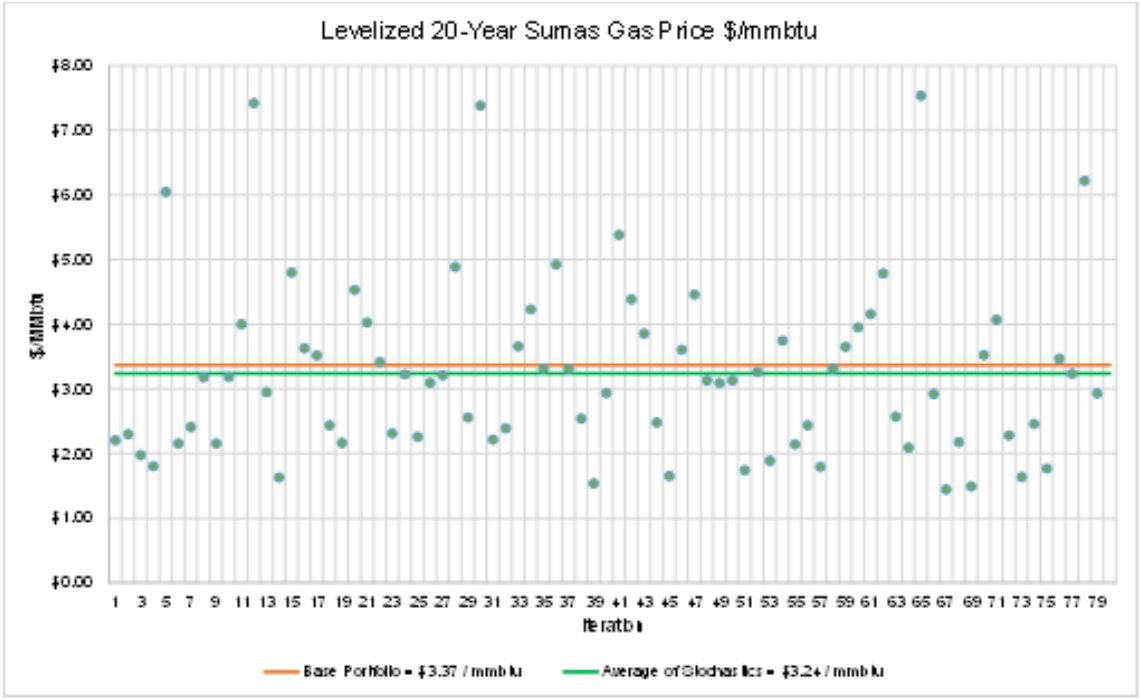
PUGET SOUND ENERGY

Electric Stochastic Modeling Process



Natural gas prices

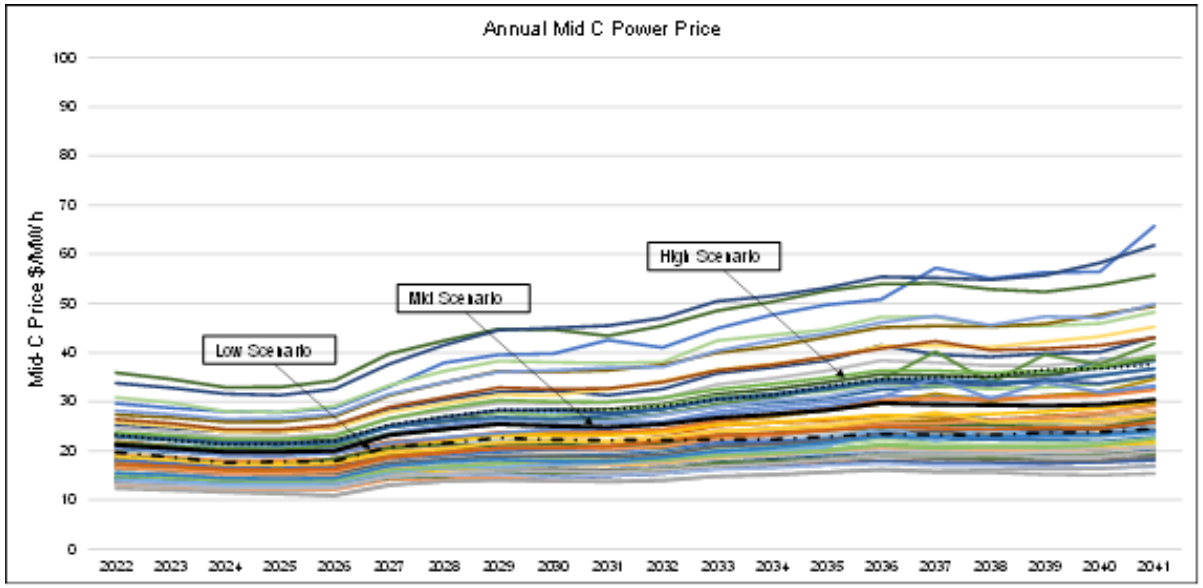
- The correlation of gas prices from Sumas, Rockies (Opal), AECO, San Juan, Malin, Topock, Stanfield and PGE City Gate to Henry Hub were calculated using data from Wood Mackenzie's Spring 2020 Long Term View Price Update.
- Low, Medium, and High gas prices were evaluated for each hub to determine the average and standard deviation for each calendar month.
- The correlation and standard deviation are used as input to Aurora Risk Functionality logic to generate 80 draws of gas prices for the fuel hubs.

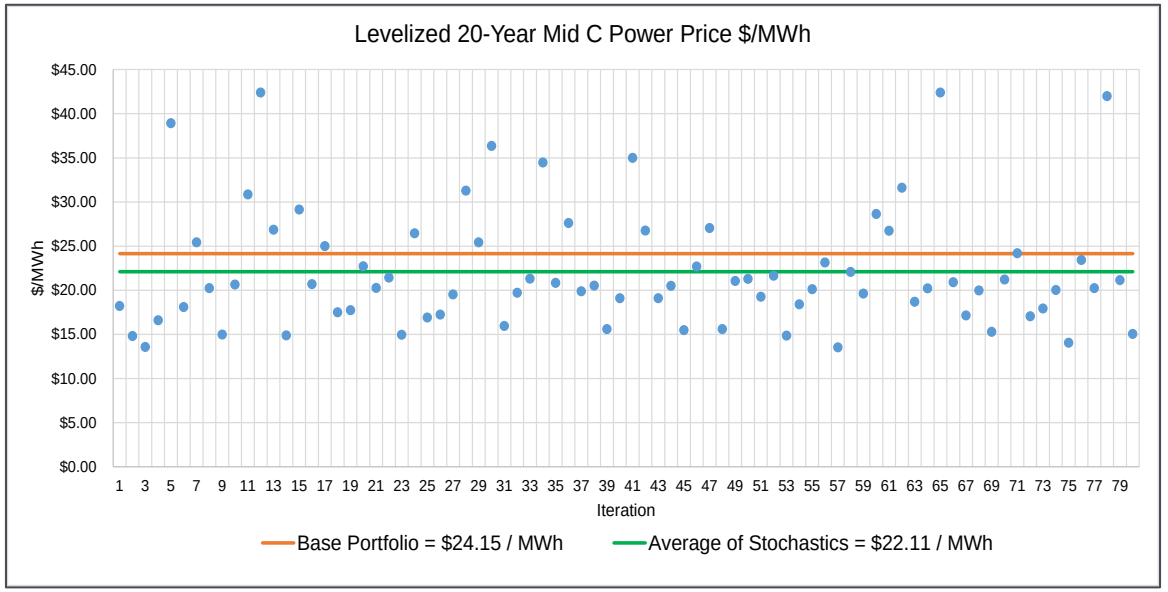


Electric price draws

- Using the pre-defined 80 iteration set for Demand, Fuel, Hydro and Wind, Aurora is able to generate 80 iterations of power price forecast.
  - Demand
    - The regional demand used in the 2021 IRP for the Low, Medium, and High scenarios were evaluated to get a spread of possible demand futures. This is applied to the WECC load and Aurora generated 80 possible load futures through its Risk Sampling functionality.
  - Natural gas price
  - Hydro generation
  - Wind generation
    - PSE sampled from hourly wind shapes developed by Energy Exemplar. Energy Exemplar utilized generation estimates from the National Renewable Energy Laboratory's (NREL) Wind Integration National Database (WIND) Toolkit.

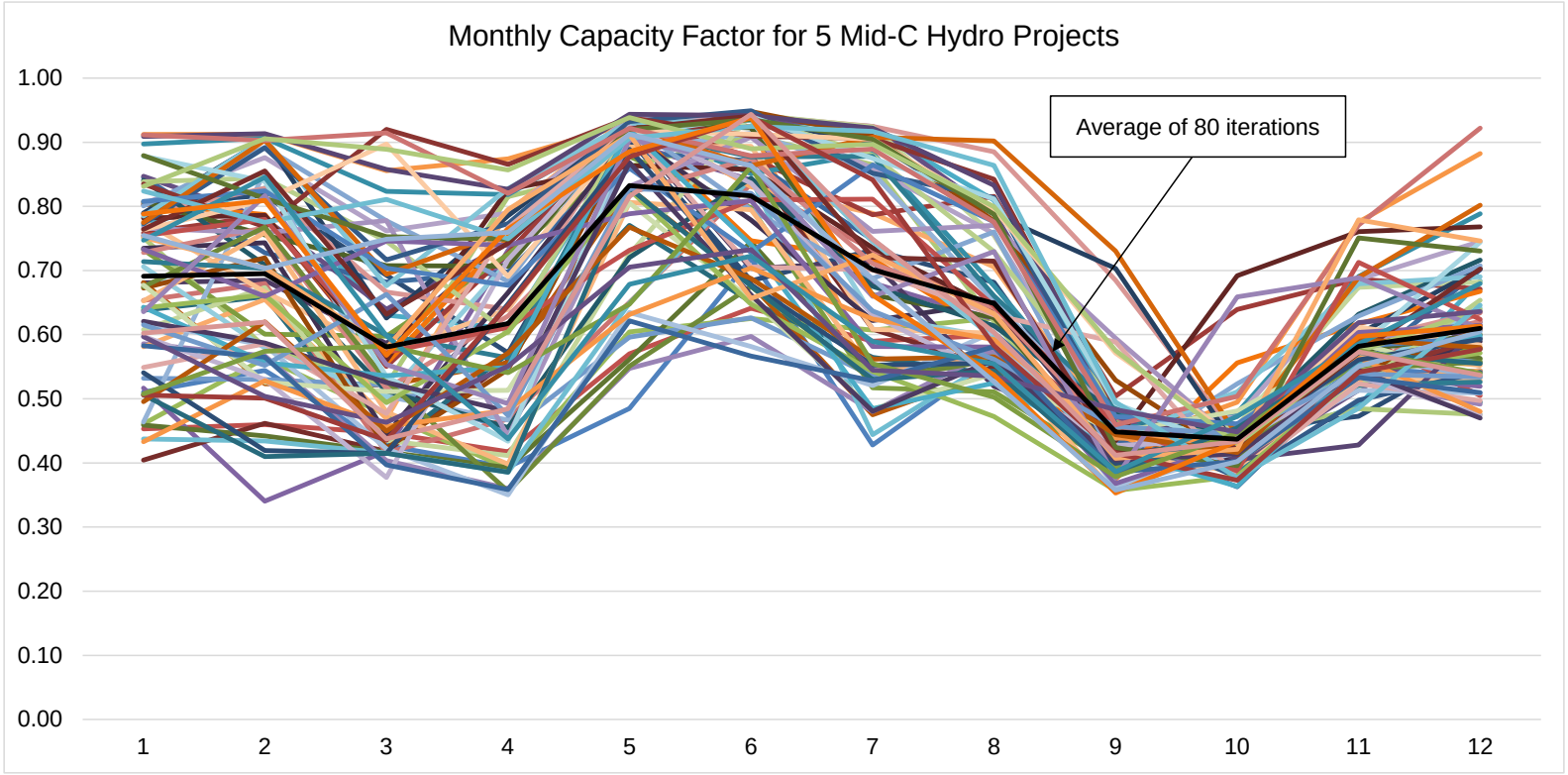
Electric price charts





Hydro draws

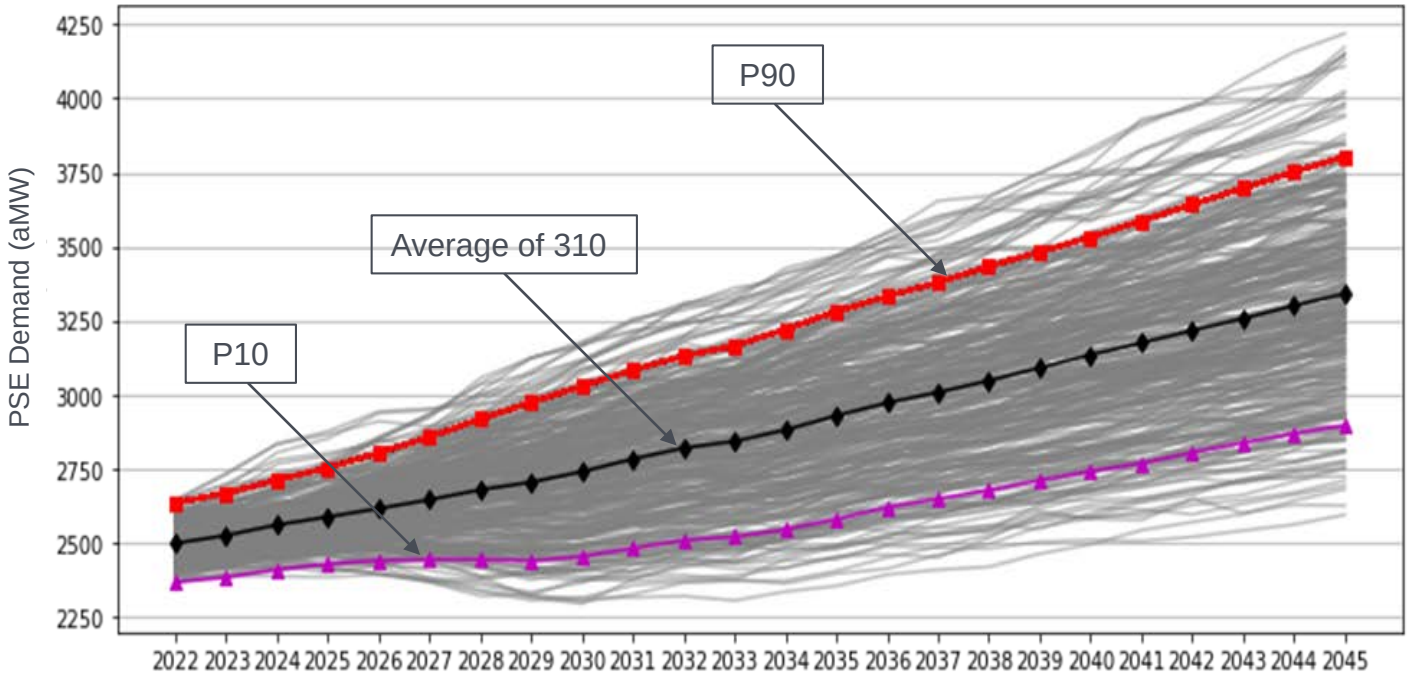
- Monte Carlo simulations for each of PSE's hydro projects were obtained using the 80-year historical Pacific Northwest Coordination Agreement Hydro Regulation data (1929-2008).
- 80 hydro years is equivalent to 80 iterations and repeated 4 times to generate 310 draws.



PSE demand draws

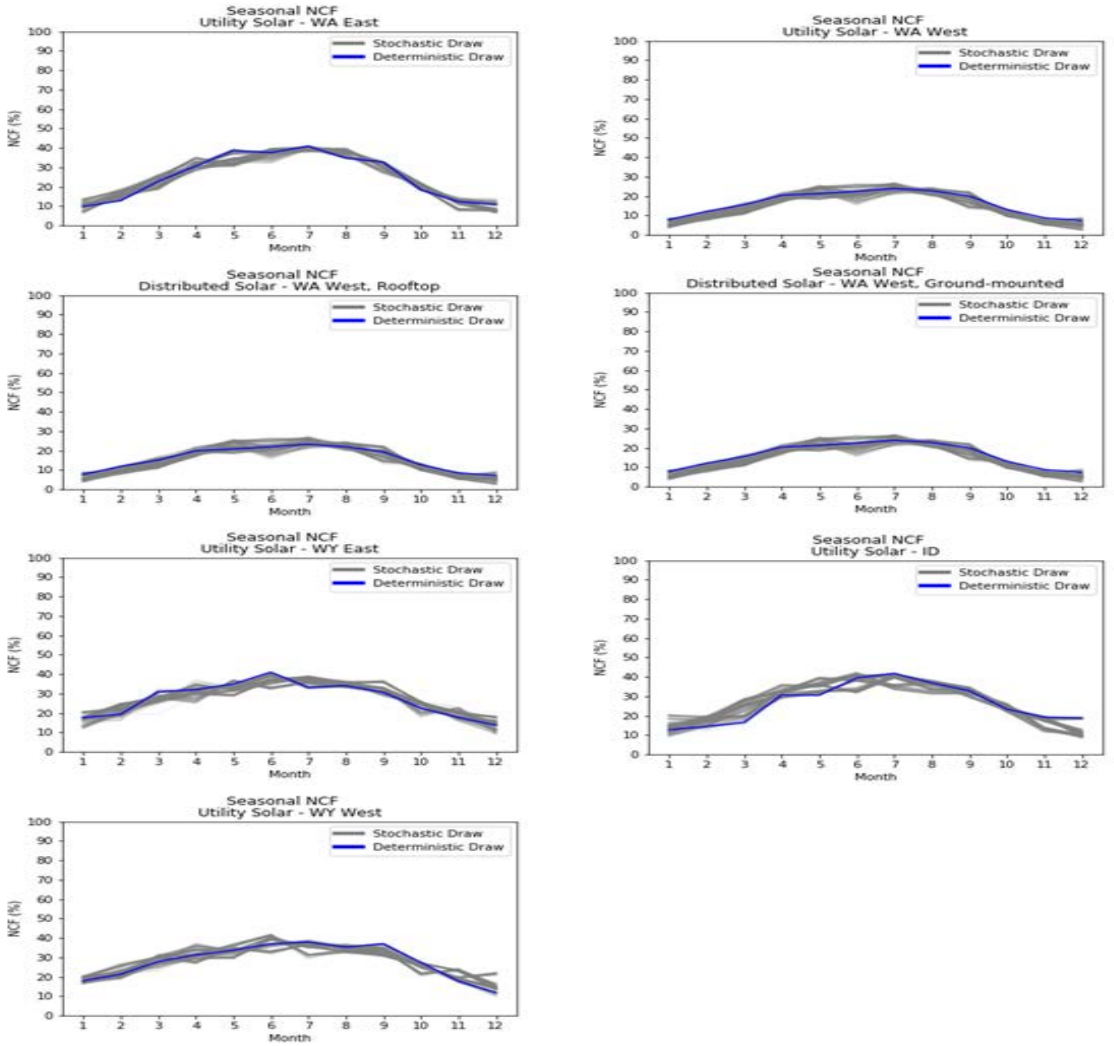
- To create the set of stochastic electric demand forecasts, the demand forecasts assume economic/demographic, temperature, electric vehicle and model uncertainties.
- The high and low demand forecasts are derived from the distribution of these stochastic forecasts at the monthly and annual levels.

Load Forecast Simulations – Annual Energy (aMW)



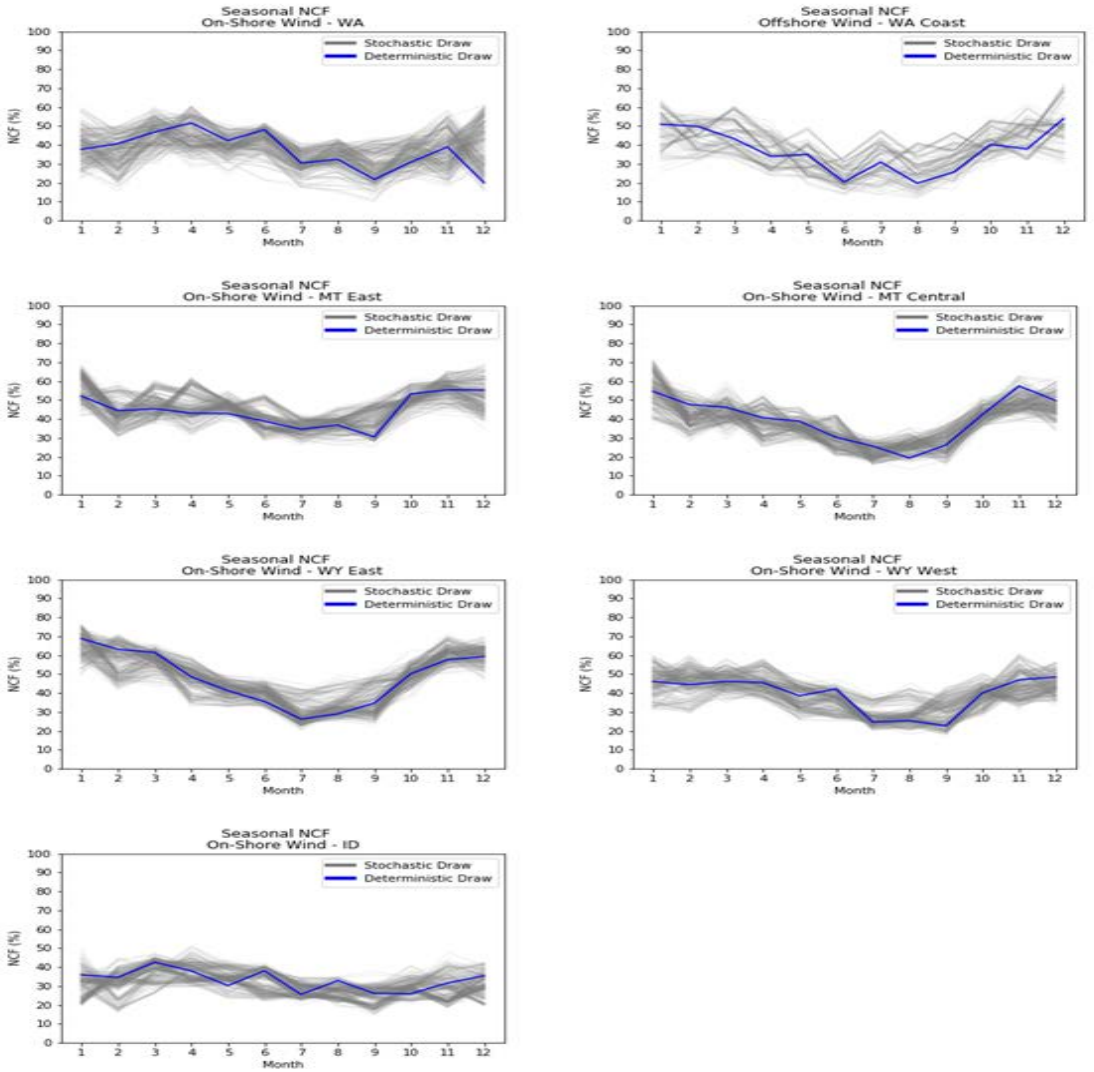
Solar draws

- PSE has evaluated six solar resources: utility-scale solar PV in eastern Washington, western Washington, eastern Wyoming, western Wyoming, Idaho and residential-scale rooftop-mounted PV solar in western Washington.
- PSE used NREL's National Solar Radiation Database (NSRDB) and System Advisory Model (SAM) to create realistic generation profiles for each location.
- 250 representative draws are selected from the complete list based on nearness to the annual average production of all the solar profiles sampled



Wind draws

- Wind was modeled in the following locations: eastern Washington, central and eastern Montana, western and eastern Wyoming, eastern Idaho and Washington offshore.
- Specific wind speed shapes were derived for each generic wind resource using NREL's Wind Toolkit database processed with a heuristic wind production model.
- 250 representative draws are selected based on a least-squares regression to the seasonal average production of all the wind profiles sampled.

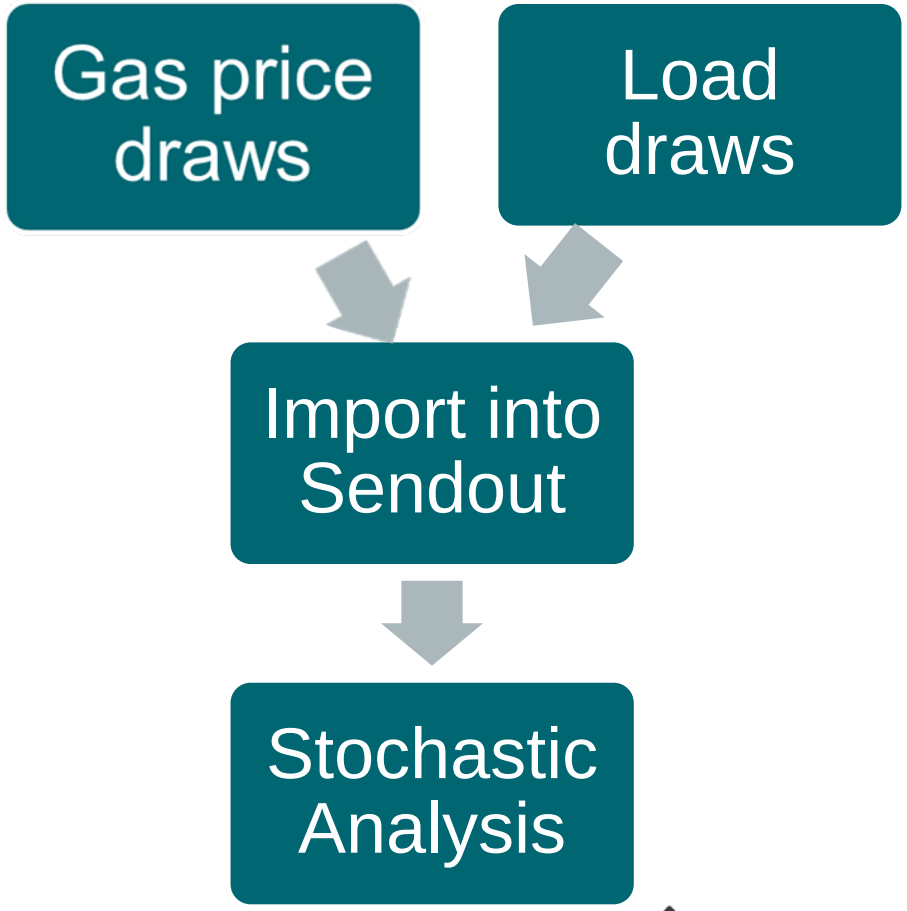


Plant forced outages

- PSE uses the “Frequency Duration” outage method in AURORA to model unplanned outages (forced outage) for thermal plants.
- The logic considers each unit’s forced outage rate and mean repair time.
- If a unit is on an outage, it is unavailable to dispatch until the repair time has elapsed.

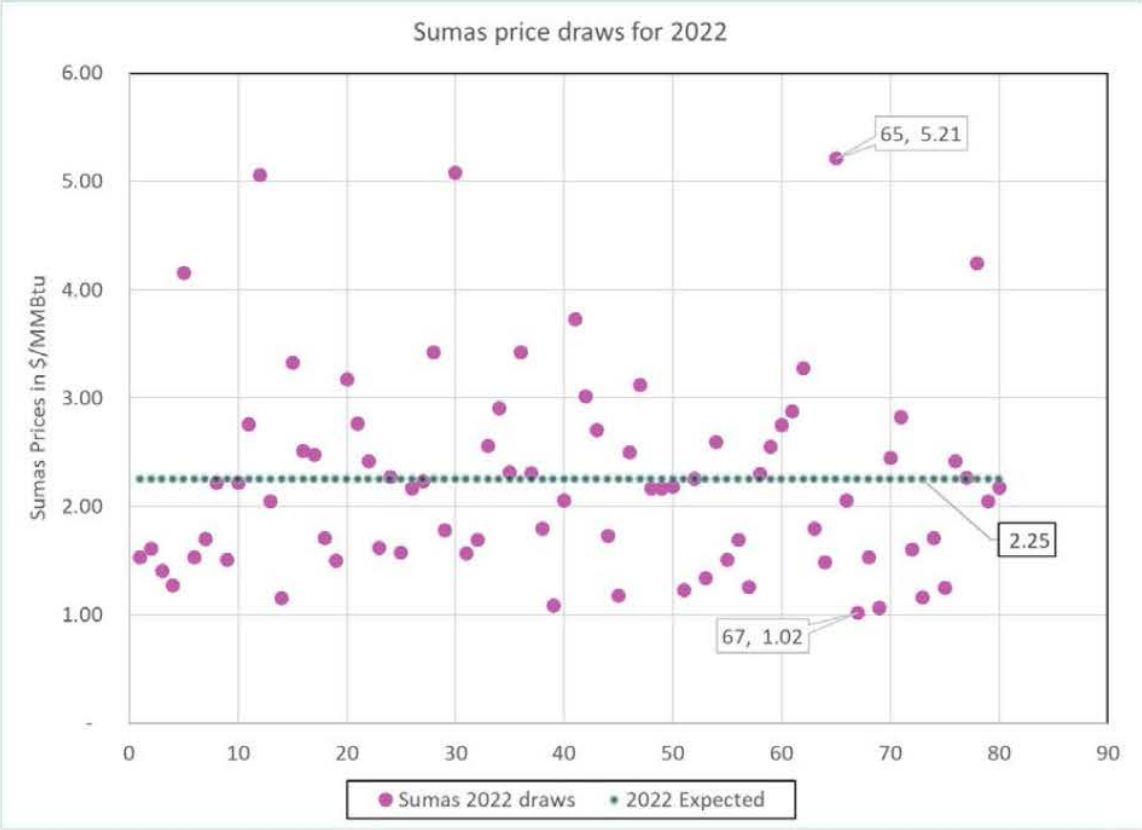
Natural Gas Stochastic Analysis

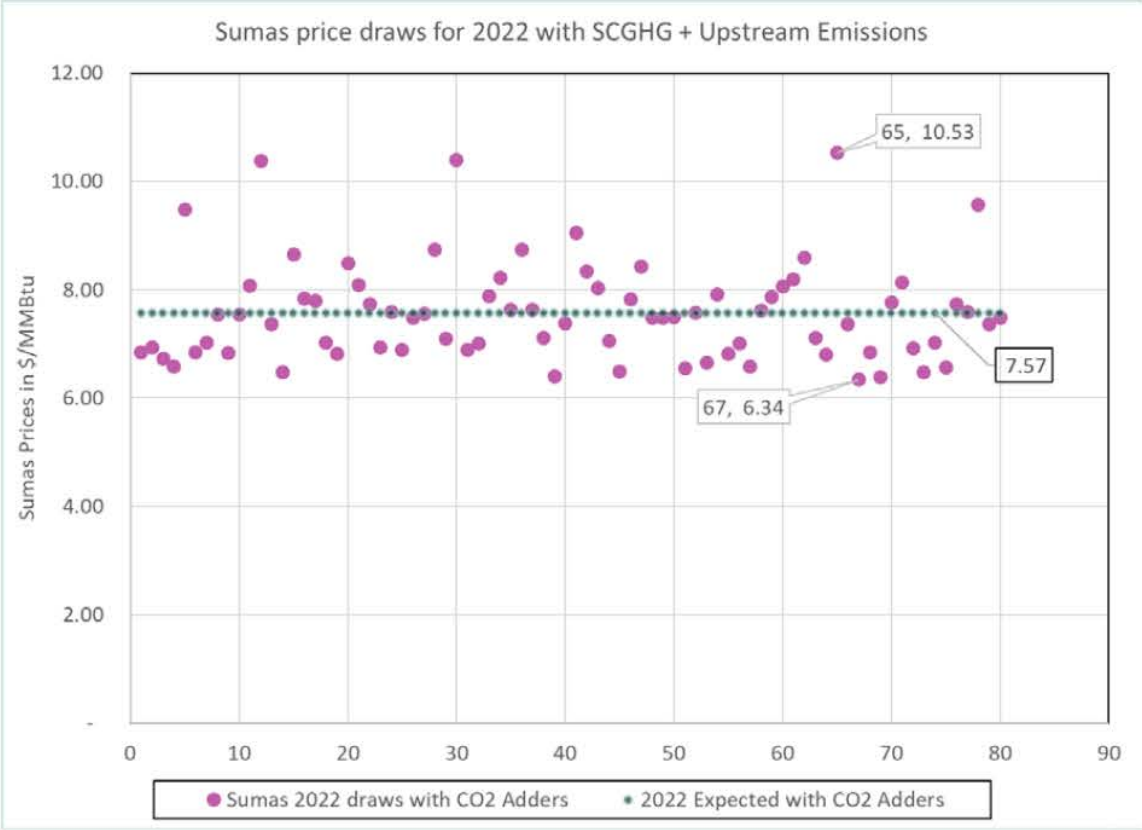
- 250 load forecast draws
- 80 gas price draws same as used in electric analysis modeling
  - Natural gas prices were repeated to create 250 draws
  - Added deterministic SCGHG and upstream emissions in each draw
- Three stochastic runs:
  1. Optimized: Let Sendout optimize the capacity expansion from all the load and price draws.
  2. No DSR: Let Sendout optimize the capacity expansion without DSR.
  3. Mid Fixed Portfolio: Test the Mid deterministic portfolio with natural gas and price draws.



PUGET SOUND ENERGY

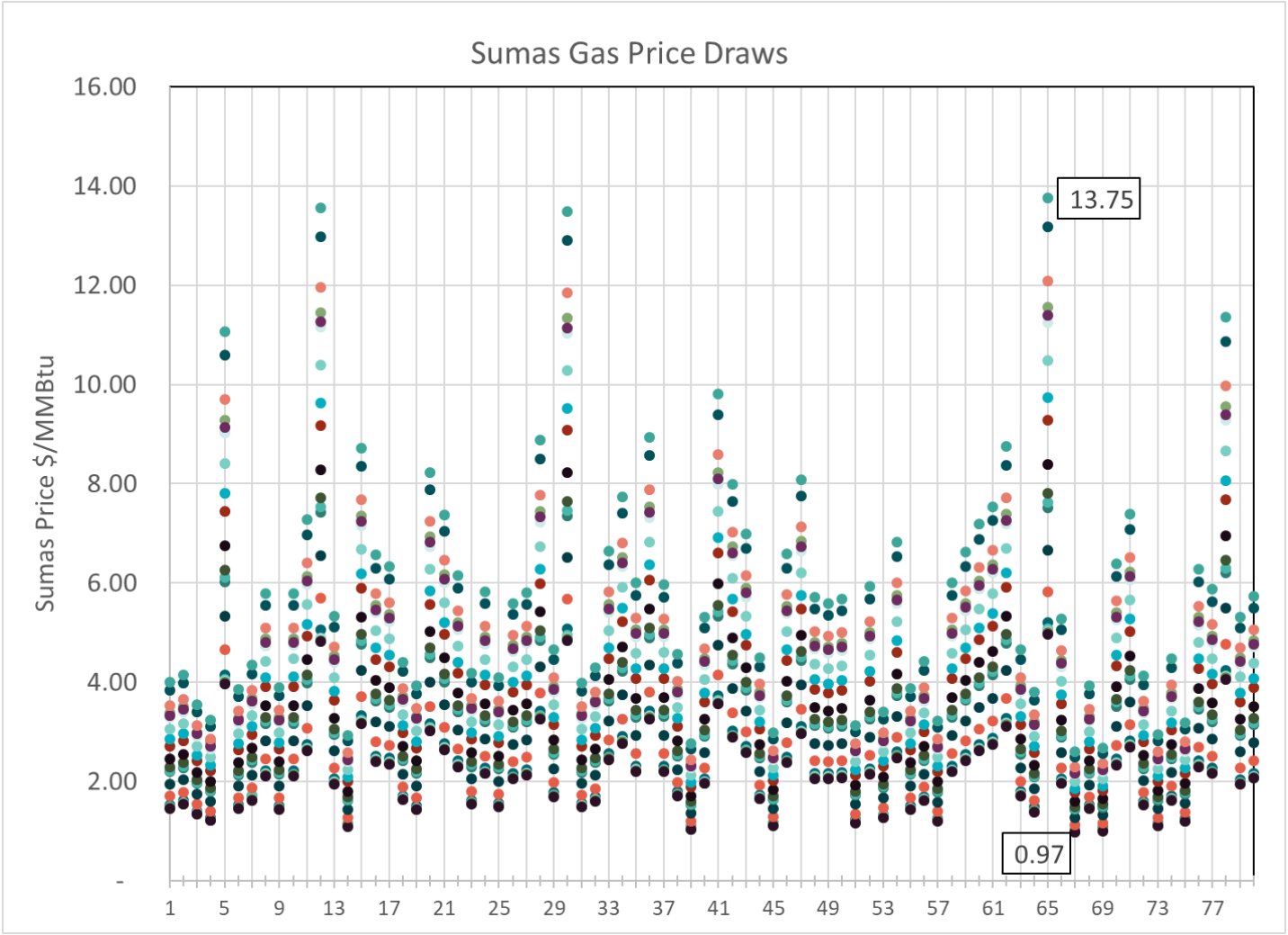
Natural Gas Price Draws – Sumas year 2022 draws





PUGET SOUND ENERGY

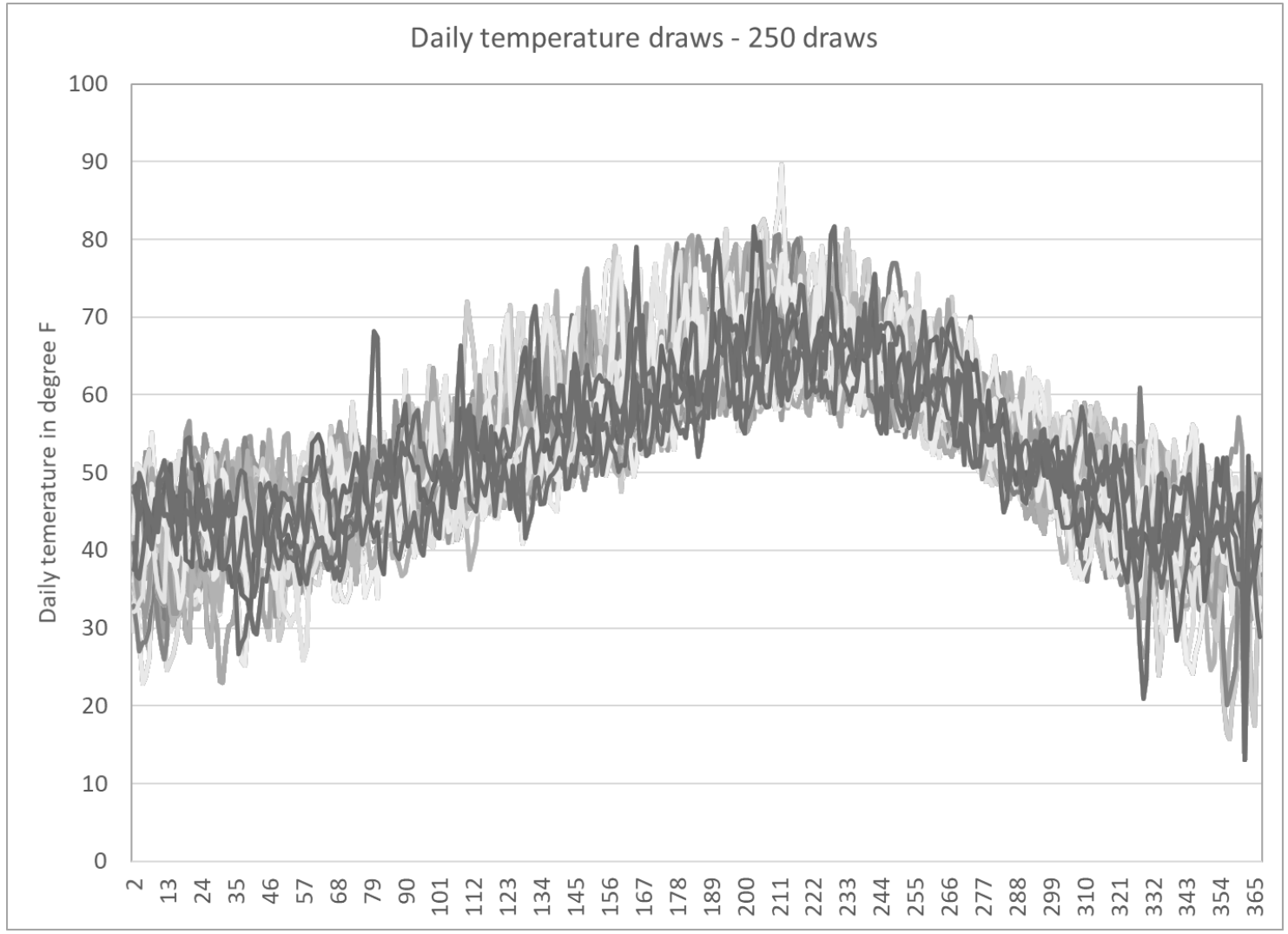
Natural Gas Price Draws – Sumas all draws



Similar draws for all the other gas hubs:
AECO, Malin, Stanfield, Station2, and Rockies

PUGET SOUND ENERGY

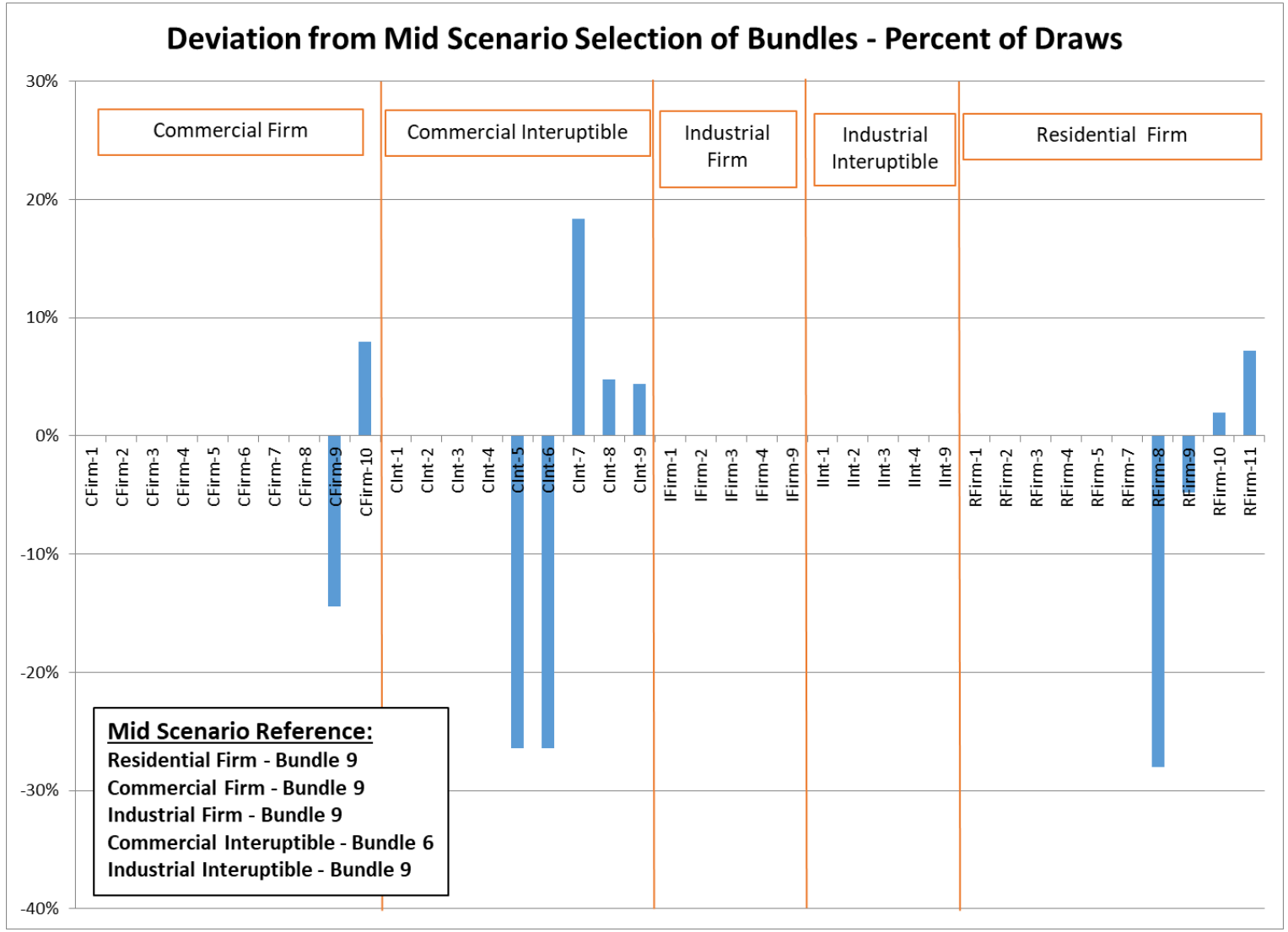
Demand draws



- 250 annual draws with daily temperatures.
- Same draws used to develop the low and high demand.
- Includes gas planning standard peak day in December.
- Demand in Sendout is a function of temperature.
- For each of the daily temperatures, Sendout will calculate the demand and resource need.

PUGET SOUND ENERGY

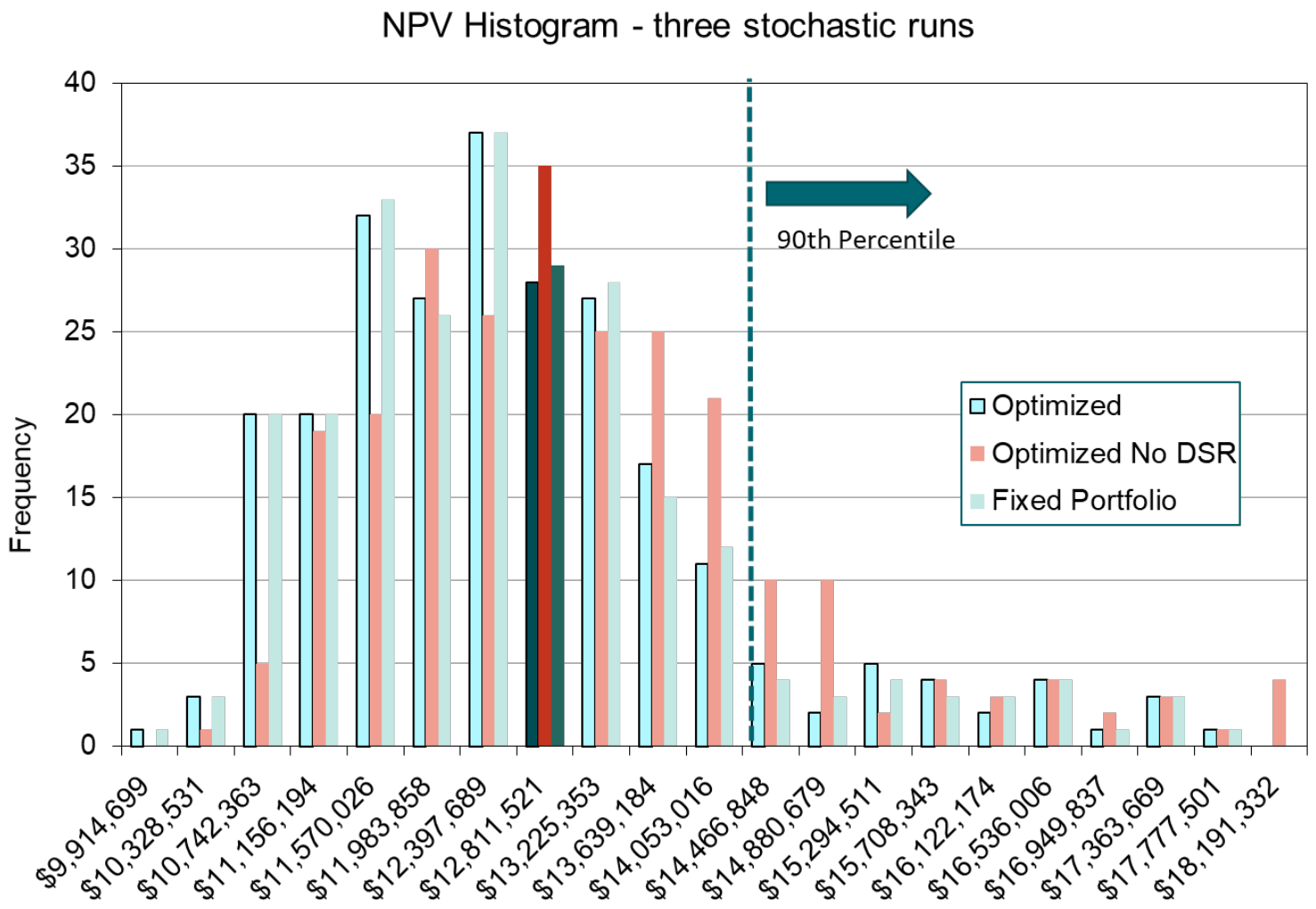
Results of natural gas stochastic portfolio analysis – DSR Optimized



- This shows the results of DSR selections in the 250 optimizations in the Optimized run when compared to the Mid Scenario deterministic run.
- Most of the DSR bundles optimized at the same level as in the Mid Scenario in deterministic.
- Conclusion: Mid scenario cost effective DSR is robust in all draws.

PUGET SOUND ENERGY

Results of gas stochastic portfolio analysis – Total System Costs



- The Expected NPV values are close.
- Optimized portfolio has lowest expected NPV.
- No DSR portfolio cost are higher and more draws in the tail - 90th percentile.
- Conclusion: DSR reduces costs and risk.

10-minute break

PUGET SOUND ENERGY

Preferred Portfolio and Clean Energy Action Plan

PUGET SOUND ENERGY

Participation Objectives

- PSE seeks stakeholder feedback on the preferred portfolio.

IAP2 level of participation:

INFORM & CONSULT

PUGET SOUND ENERGY

Updates since the February 10th webinar

- ✓ Almost all portfolio sensitivities have been modeled in Aurora.
  - ✓ Excel file with the portfolio results is available at pse.com/irp.
  - ✓ Sensitivities not yet complete: temperature sensitivity, gas to electric conversion sensitivity and market risk sensitivity.

- ✓ Customer benefit indicator rankings have been updated with the completed portfolio sensitivities.
  - ✓ Not all sensitivities are included in the customer benefit indicator rankings. More discussion later in the presentation.

Preferred Portfolio

Distributed energy resources are a significant component of the draft preferred portfolio, but additional flexible capacity is needed to maintain resource adequacy.

Resource Additions (MW)	2022-2025	2026-2030	2031-2045	Total
Distributed Energy Resources				
Demand-side Resources	256 MW	360 MW	1,168 MW	1,784 MW
Battery Energy Storage	25 MW	150 MW	275 MW	450 MW
Solar - ground and rooftop	80 MW	150 MW	450 MW	680 MW
Demand Response	29 MW	154 MW	34 MW	217 MW
DSP Non-Wire Alternatives	22 MW	24 MW	72 MW	118 MW
Total DERs	412 MW	838 MW	1,999 MW	3,249 MW
Renewable Resources				
Wind	400	1,000	1,850	3,250
Solar	-	400	297	696
Biomass	-	-	105	105
Renewable + Storage hybrid	-	-	375	375
Total Renewable Resources	400 MW	1,400 MW	2,627 MW	4,426 MW
Flexible Capacity	-	255 MW	711 MW	966 MW

- Delivery System Planning (DSP) Non-wire alternative solutions provide a DER forecast to the IRP.
- Further DER feasibility assessment will be required in the CEIP and ongoing learning through implementation.
- Over 2,000 MW of new renewable resources added by 2030 to meet CETA requirements

Findings

- ✓ DERs have lower peak capacity contributions and increased cost but improve customer benefits such as resiliency, air quality and environment.
- ✓ Energy efficiency is a low cost way to decrease renewable requirements and resulted in a 71% increase when compared to no CETA portfolios.

PUGET SOUND ENERGY

How did the final preferred portfolio change from the draft?

What is the same?

- ✓ Demand side resources
- ✓ Distributed solar
- ✓ Flexible capacity

What has changed?

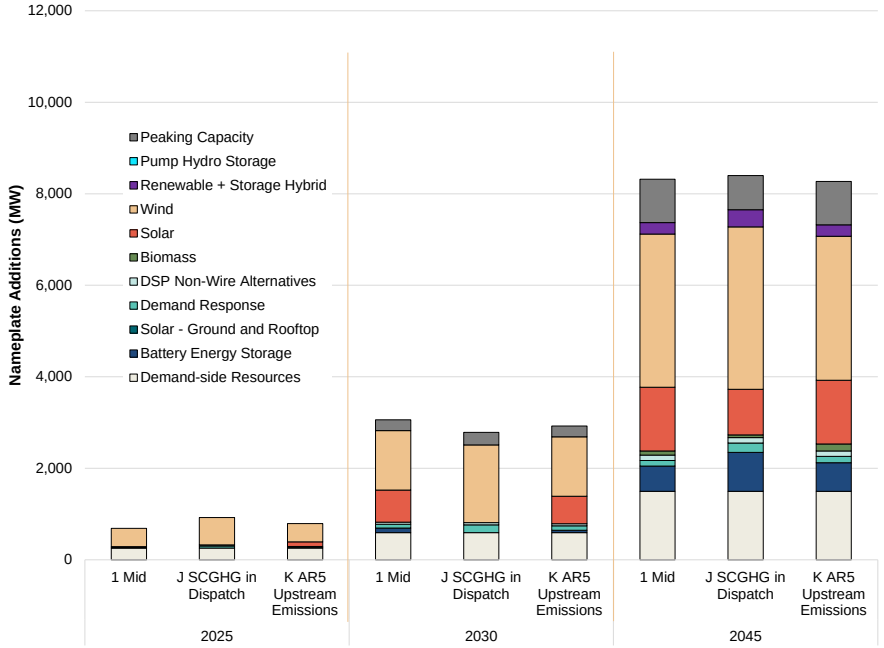
- ⇧ Demand response increased: 29 MW by 2025 instead of 10 MW by 2025
- ⇩ Battery Energy storage decreased: With the updated assumptions there is 25 MW less by 2030 and 300 MW less by 2045
- ⇨ Renewable resources: with updated assumptions around transmission costs, wind resources in Wyoming and Montana delayed by a few years, but the same amount of renewable is still added by 2045

PSE PUGET SOUND ENERGY

Social cost of greenhouse gases and upstream emissions

SCGHG is applied as a cost adder when evaluating conservation and resource additions. Upstream emissions AR4 methodology is used.

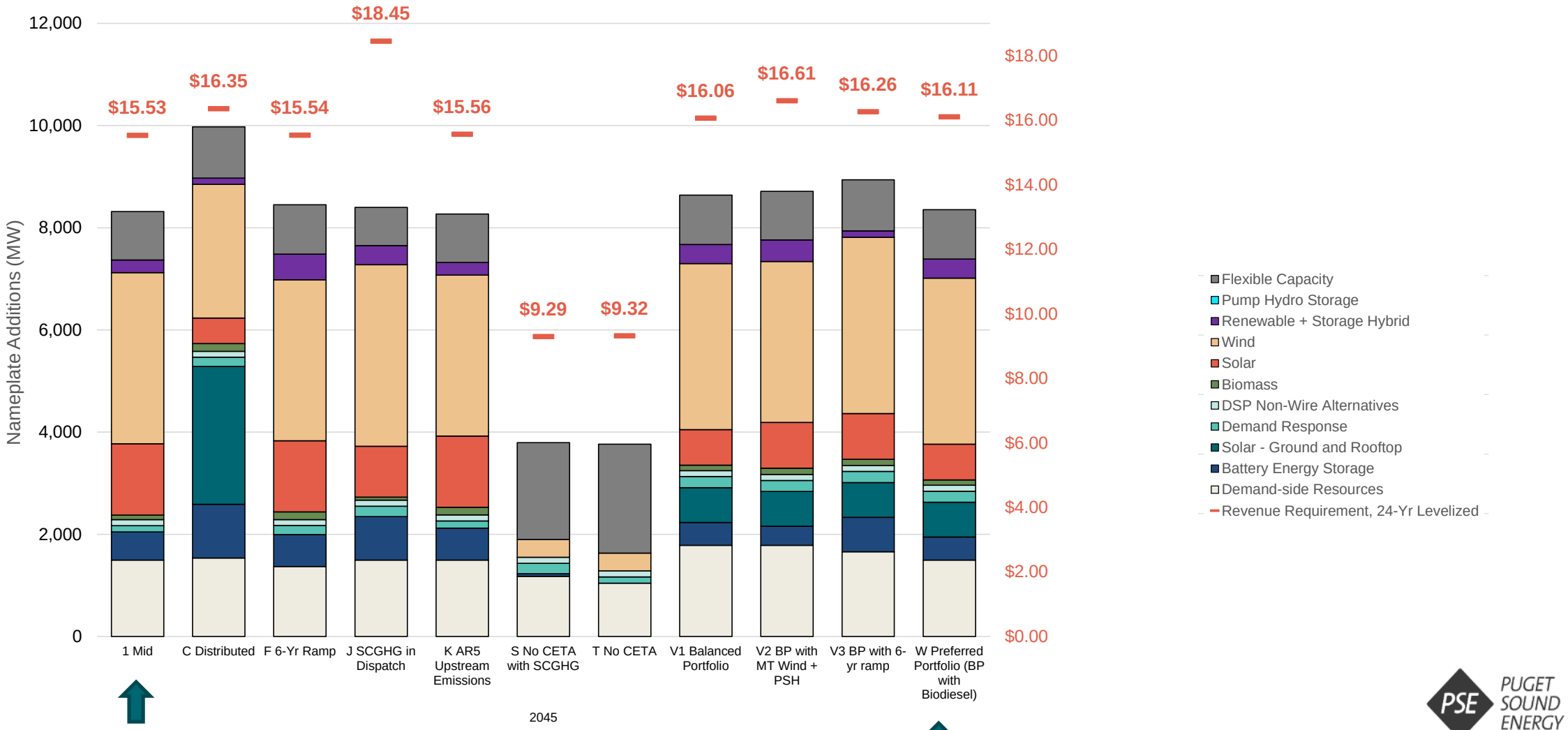
- Both 2019 and 2021 IRPs analyzed multiple modeling approaches for social costs of greenhouse gases.
- Renewable resources required to comply with CETA is the key constraint driving portfolio resource additions and costs.
- PSE assumes upstream emissions consistent with AR4 and evaluated AR5 in response to stakeholder requests.



Findings

- ✓ Different social cost of greenhouse gases modeling approaches do not have an impact on the cost-effective amount of conservation, demand response and other resource additions or retirements.
- ✓ Using upstream emissions consistent with AR5 does not change resource builds and portfolio costs in comparison to utilizing AR4.

Resource Additions and Costs



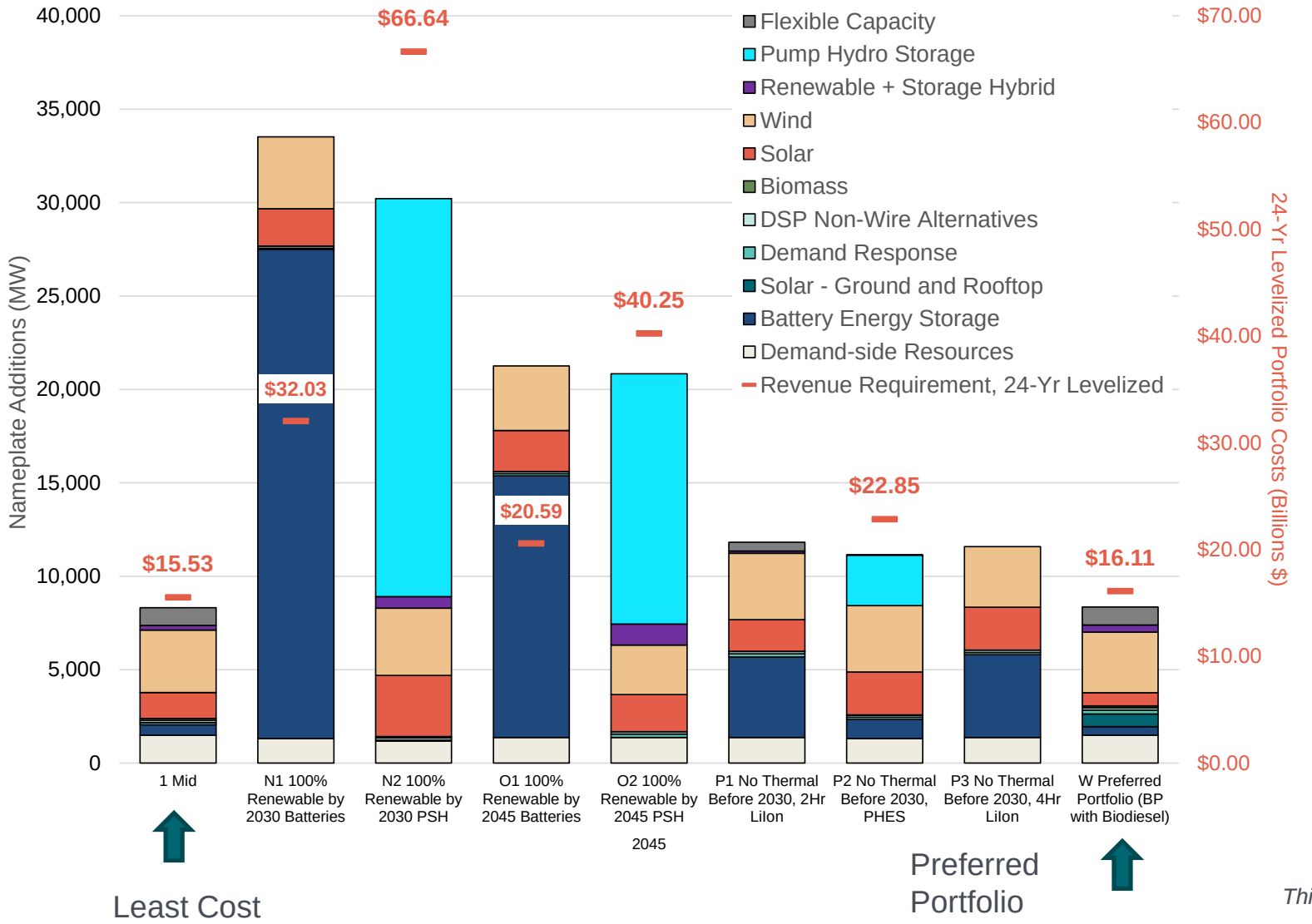
Least Cost

Preferred Portfolio

PUGET SOUND ENERGY

This session is being recorded by Puget Sound Energy. Third-party recording is not permitted.

Resource Additions and Costs



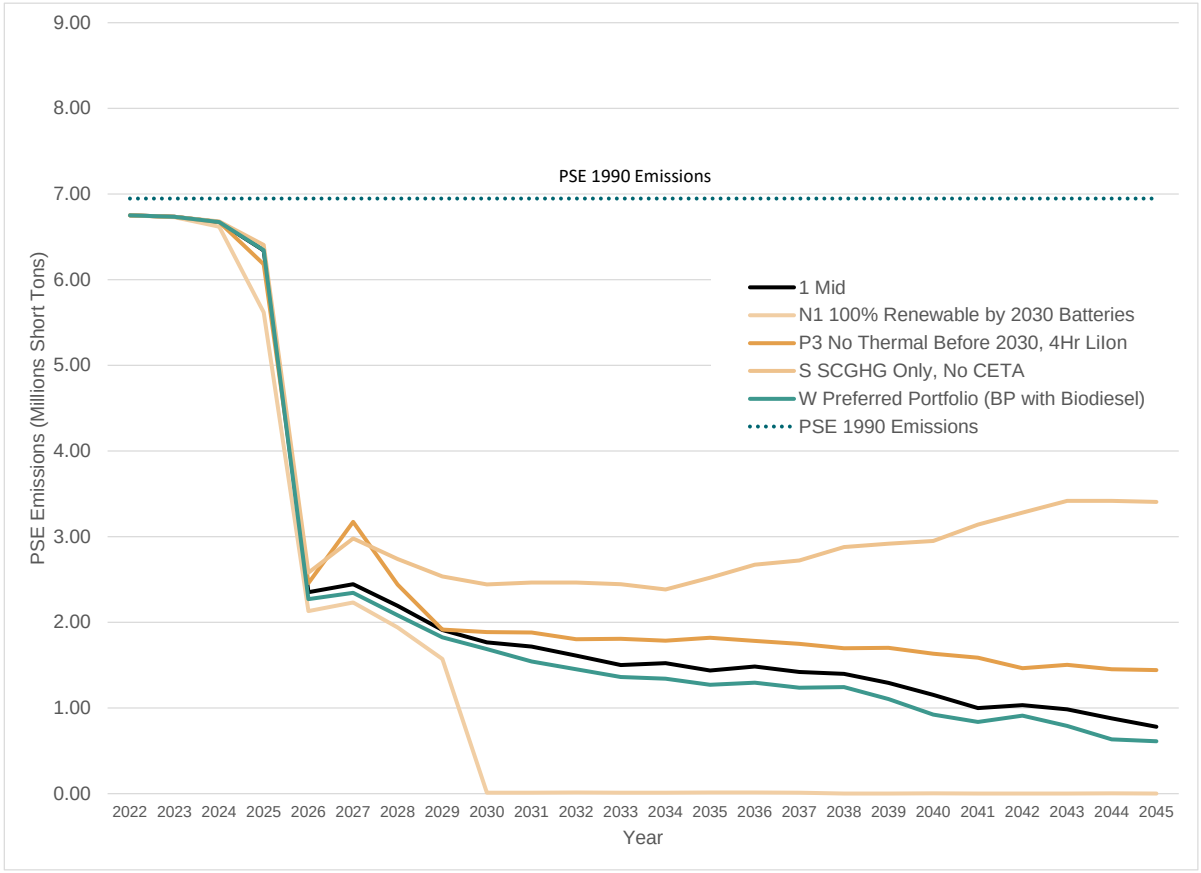
- Portfolio sensitivity modeling evaluates tradeoffs between different resource additions and portfolio costs.
- The procurement process will drive the acquisition of clean resources and will evaluate costs, permitting and other challenges and benefits.

PUGET SOUND ENERGY

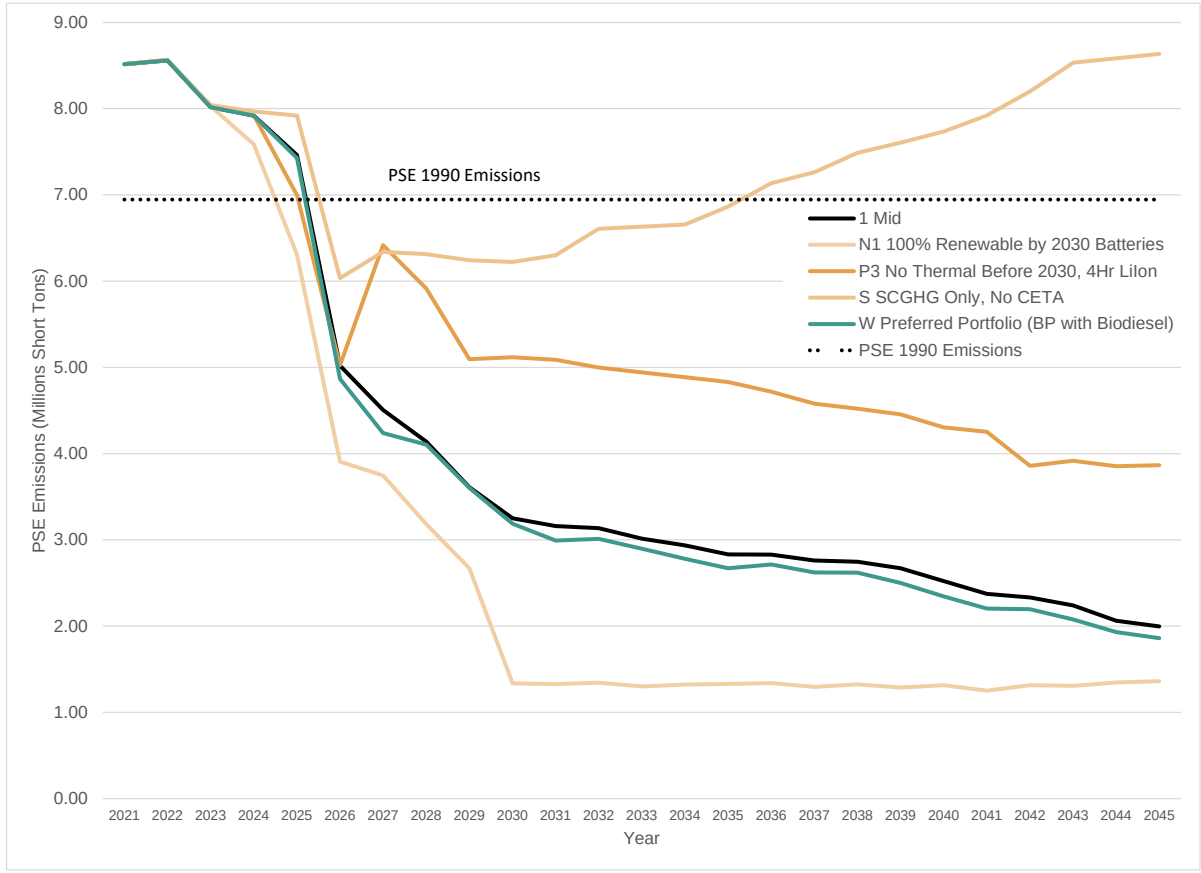
Portfolio Emissions

Significant emission reductions are achieved with the additions of non-emitting resources, retirement of coal resources and lower dispatch of existing resources.

Comparison of Direct CO2 Emissions & Upstream Emissions



Comparison of Direct CO2 Emissions, Upstream Emissions, & Market

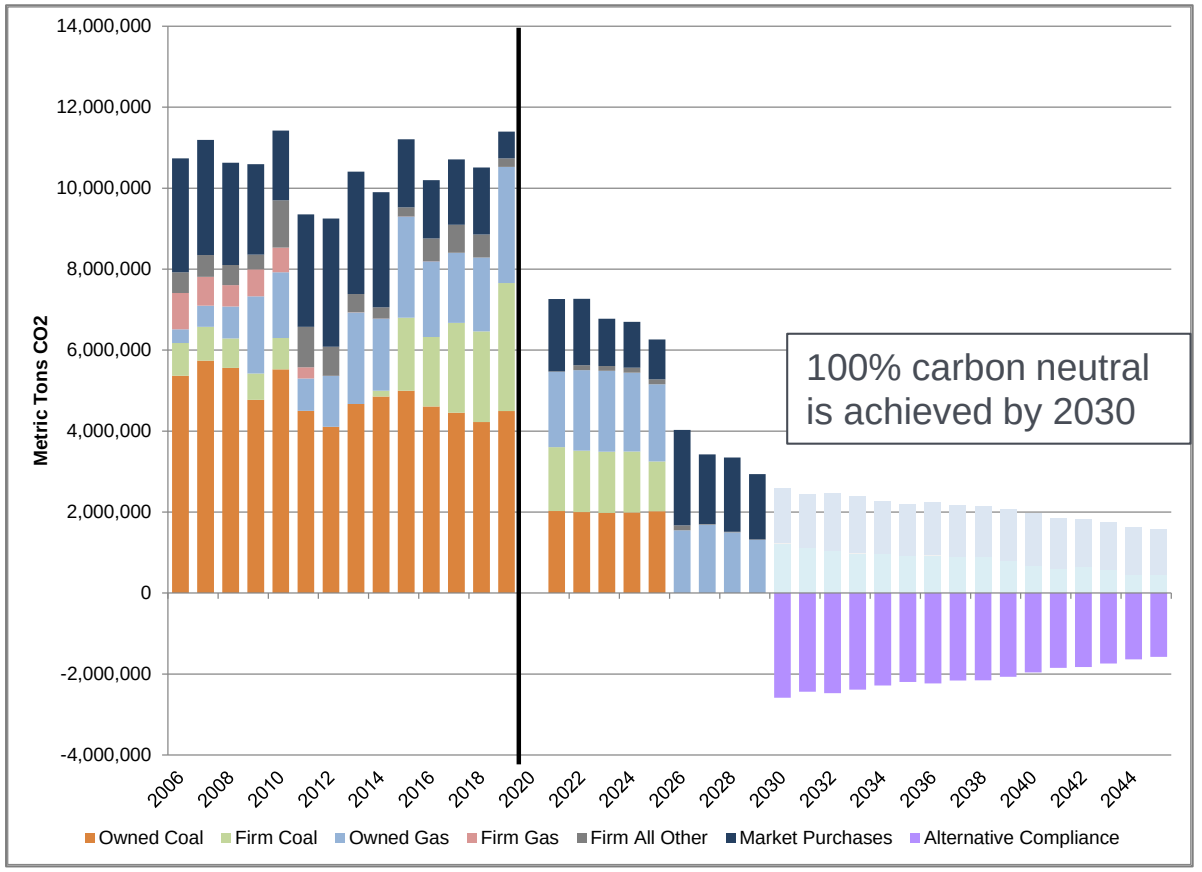


Projected emissions for the preferred portfolio

- The preferred portfolio achieves 100% carbon neutral by 2030 with a combination of
  - Coal plant retirement
  - Lower dispatch of natural gas resources
  - Alternative compliance

- Over 70% reduction in emissions from 2019 to 2029.

Historical Emissions and Projected Emissions for Draft Preferred Portfolio



PUGET SOUND ENERGY

Customer Benefit Indicators

Sensitivity	Cost	Climate Change	Air Quality	Market Position	Environment	Resource Adequacy	Resiliency	Overall Rank
1 Mid	3	13	13	4	10	18	16	8
A Renewable Overgeneration	15	4	10	20	18	6	5	11
C Distributed Transmission	13	20	20	17	8	13	6	20
D Transmission/build constraints - time delayed (option 2)	5	12	8	15	10	12	13	7
F 6-Yr DSR Ramp	4	15	15	7	11	15	14	16
G NEI DSR	8	14	16	12	12	7	10	12
H Social Discount DSR	9	16	13	18	12	5	8	15
I SCGHG Dispatch Cost - LTCE Model	1	10	11	11	10	8	9	3
K AR5 Upstream Emissions	6	16	13	2	9	16	14	8
M Alternative Fuel for Peakers - Biodiesel	2	7	4	8	8	9	11	1
N1 100% Renewable by 2030 Batteries	19	2	1	16	8	21	1	5
N2 100% Renewable by 2030 PSH	22	1	1	1	13	21	21	13
O1 100% Renewable by 2045 Batteries	16	8	6	19	12	20	2	17
O2 100% Renewable by 2045 PSH	21	11	8	14	7	10	21	19
P1 No Thermal Before 2030, 2Hr LiIon	18	21	21	21	18	14	4	21
P2 No Thermal Before 2030, PHES	17	5	7	13	9	19	7	10
P3 No Thermal Before 2030, 4Hr LiIon	20	22	22	22	18	17	3	22
V1 Balanced portfolio	10	11	13	5	8	1	17	4
V2 Balanced portfolio + MT Wind and PSH	14	17	17	3	9	1	19	14
V3 Balanced portfolio + 6 Year DSR	12	13	18	6	9	1	12	6
W Preferred Portfolio (BP with Biodiesel)	11	5	5	9	8	1	17	2
AA MT Wind + PHSE	7	14	10	10	11	11	20	18

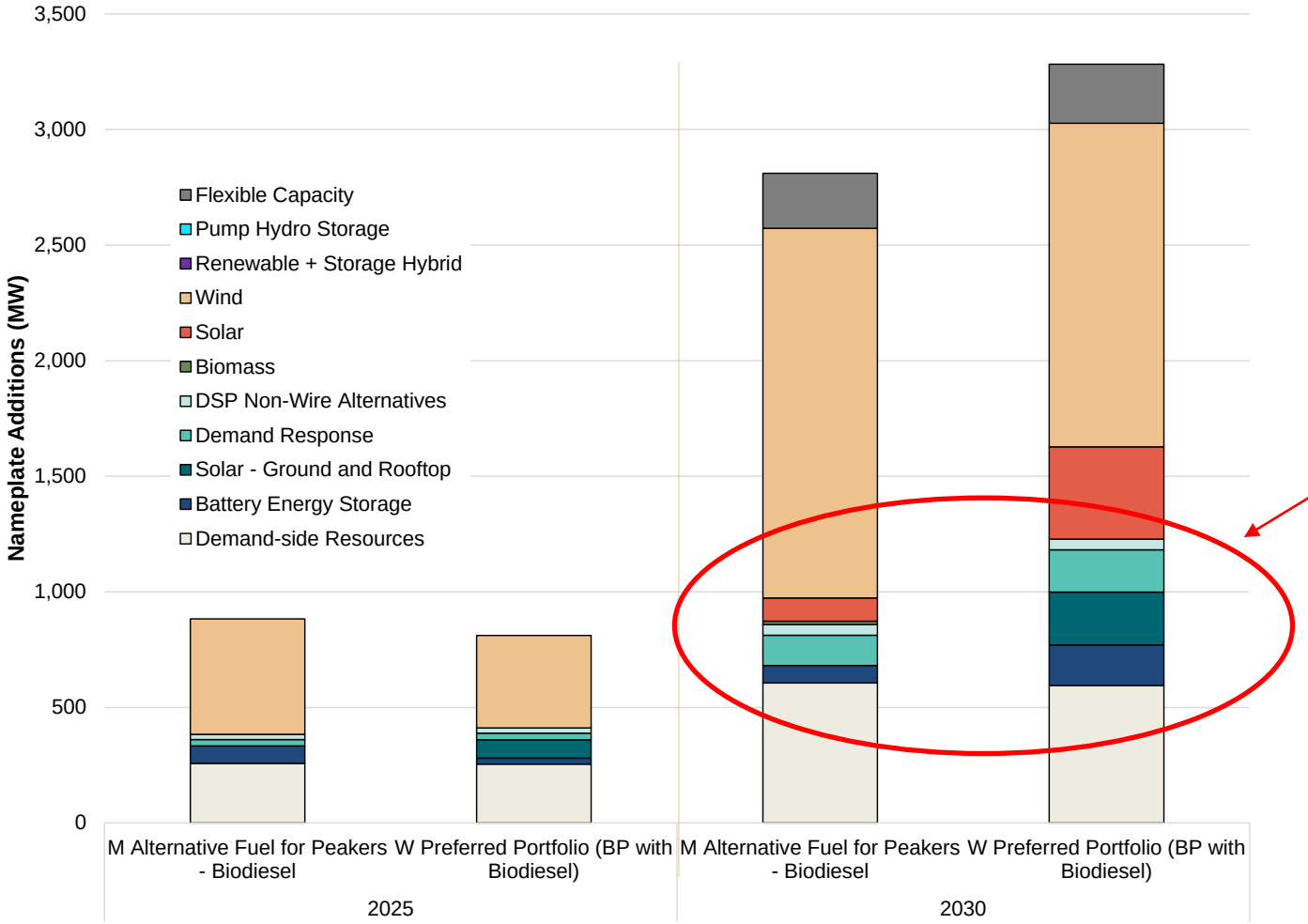
Sensitivities included in the CBI ranking:

- Ensure consistency across demand and electric price forecast
- Must meet CETA requirements
- Represent current carbon regulation

Portfolio W was selected as the preferred portfolio and is discussed on following slides.

PUGET SOUND ENERGY

Decisions driving the preferred portfolio



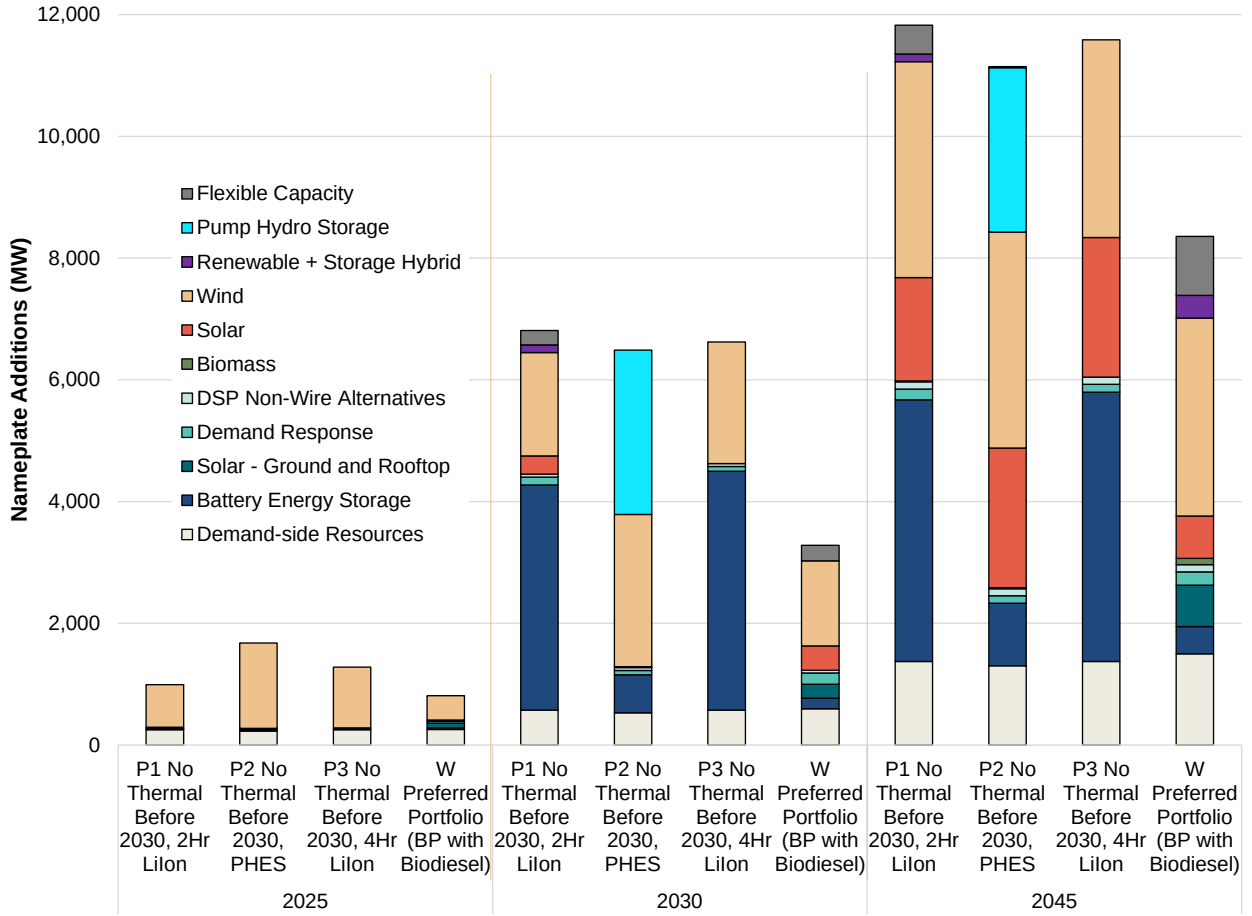
- Portfolio M: Alternative fuel for peakers was ranked #1 in the CBIs, but was not chosen as the preferred portfolio.
- Portfolio W, is a balanced portfolio that takes earlier action on DERs and includes more distributed solar and battery energy storage in the first 10 years of the plan.

Decisions driving the preferred portfolio

Why does the preferred portfolio have flexible capacity instead of more energy storage?

- Portfolios P1, P2, and P3 optimize the portfolio builds with no peaker builds allowed before 2030.
- These portfolios are significantly higher cost that the preferred portfolio

Portfolio	Cost (NPV $Billions)	CBI rank
Preferred Portfolio	$16.11	2
P1: 2-hr Li-Ion	$30.84	21
P2: Pumped storage hydro	$22.85	10
P3: 4-hr Li-Ion	$39.01	22



Clean Energy Action Plan

Clean Energy Transformation Standards are met in the Draft Preferred Portfolio.
Draft Preferred Portfolio achieves: 100% carbon neutral by 2030 and 100% carbon free by 2045

Incremental Resource Additions (Nameplate MW)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Distributed Energy Resources											
Demand-side Resources	74	64	61	57	63	66	82	75	75	81	696
Battery Energy Storage	-	-	-	25	25	25	25	25	50	25	200
Solar - ground and rooftop	-	-	-	80	30	30	30	30	30	30	260
Demand Response	-	5	6	18	27	34	41	27	26	13	195
DSP Non-Wire Alternatives	3	6	9	4	3	5	6	5	4	4	50
Total DERs	77	75	76	184	148	160	184	162	185	153	1,401
Renewable Resources											
Wind	-	-	-	400	200	400	-	200	200	100	1,500
Solar	-	-	-	-	-	100	-	100	199	-	398
Total Renewable Resources	-	-	-	400	200	500	-	300	399	100	1,898
Flexible Capacity	-	-	-	-	255	-	-	-	-	-	255

PUGET SOUND ENERGY

Overview of the Clean Energy Implementation Plan and Public Participation

PUGET SOUND ENERGY

Participation Objectives

- PSE will review elements of the Clean Energy Implementation Plan
- PSE will consult with stakeholders on the public participation plan for the CEIP
- IAP2 level of participation:
- INFORM & CONSULT

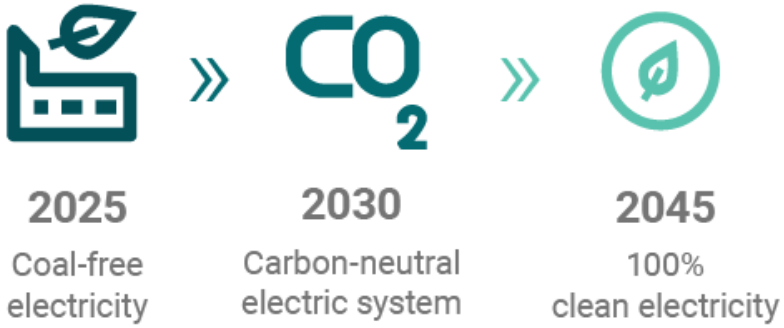
PSE PUGET SOUND ENERGY

This session is being recorded by Puget Sound Energy.
Third-party recording is not permitted.

CETA and a better clean energy future

Washington's Clean Energy Transformation Act (CETA) focuses on:

Clean energy standards



Ensuring all customers benefit

- Equitable distribution of energy and non-energy benefits and reduction of burdens to vulnerable populations and highly impacted communities
- Public health and environmental benefits and reduction of costs and risk
- Energy security and resiliency

PUGET SOUND ENERGY

The new planning cycle

Identifies specific actions to phase out coal, meet GHG neutral standard by 2030 and clean energy standard by 2045.

The IRP identifies PSE's energy, capacity, and renewable energy need ***through 2045***, potential options to meet those needs, and models the energy, capacity, and cost of meeting those needs.

The CEAP identifies the lowest reasonable cost resource plan PSE will pursue over the next ***10 years*** to meet the energy capacity, and renewable energy needs, considering risk and equity.

The CEIP identifies the specific and interim targets consistent with the CEAP, and the actions the company will take over the next ***4 years*** to achieve those targets and ensure equitable distribution of benefits.

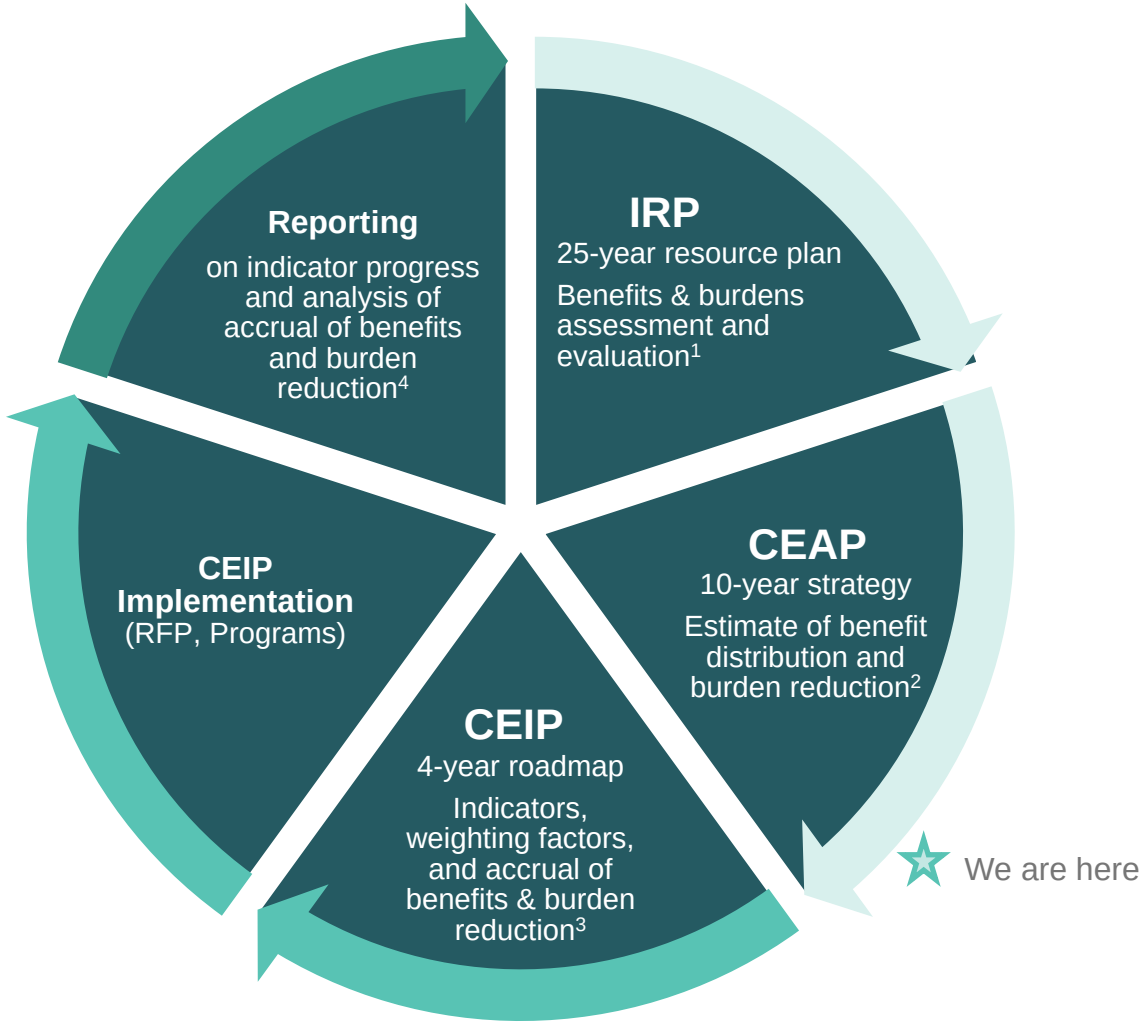
Reporting identifies the actual progress the company makes and the cost incurred over the past year.

What is the **Clean Energy Implementation Plan**?

- Roadmap of targets, actions and programs for a 4-year period
- First plan covers calendar years 2022-2025
  - Draft CEIP due Aug. 15, 2021
  - Final CEIP due Oct. 1, 2021
- Clean Energy Implementation Plans establish:
  1. Interim targets for the 4-year period: percentage of retail sales of electricity supplied by non-emitting and renewable resources
  2. Specific targets for the 4-year period:
     - Demand response
     - Energy efficiency
     - Renewable energy
  3. Specific actions for the 4-year period, ***based on the Clean Energy Action Plan*** and interim and specific targets
- Embeds equity through: customer benefit indicators and weightings; understanding around highly impacted communities and vulnerable populations; barrier reductions; and public participation
- CEIP filed with the UTC, and the UTC will approve, deny, or can modify the plans

PUGET SOUND ENERGY

IRP, CEAP and CEIP lifecycle



- Continuous focus on:
  - Clean energy standards
  - Equitable distribution of benefits and burden reduction
- IRP and CEAP set a baseline carried through by CEIP
- Progress made with CEIP feeds next IRP

[1] IRP assessment and evaluation: WAC 480-100-620(9) and (11)(g)
[2] CEAP estimates: WAC 480-100-620(12)(c)(ii)
[3] CEIP indicators and weighting factors: WAC 480-100-640(4) and (5)(a)
[4] Reporting on indicator progress: WAC 480-100-650(1)(d)

PUGET SOUND ENERGY

Developing the CEIP: engaging advisory groups & customers

Equity Advisory Group – new!

WAC 480-100-655 (1)(b)

"The utility must maintain and regularly engage an **external equity advisory group to advise the utility on equity issues** including, but not limited to, vulnerable population designation, equity customer benefit indicator development, data support and development, and recommended approaches for the utility's compliance with WAC 480-100-610 (4)(c)(i). The utility must encourage and include the participation of environmental justice and public health advocates, tribes, and representatives from highly impacted communities and vulnerable populations in addition to other relevant groups;"

PSE's existing advisory groups

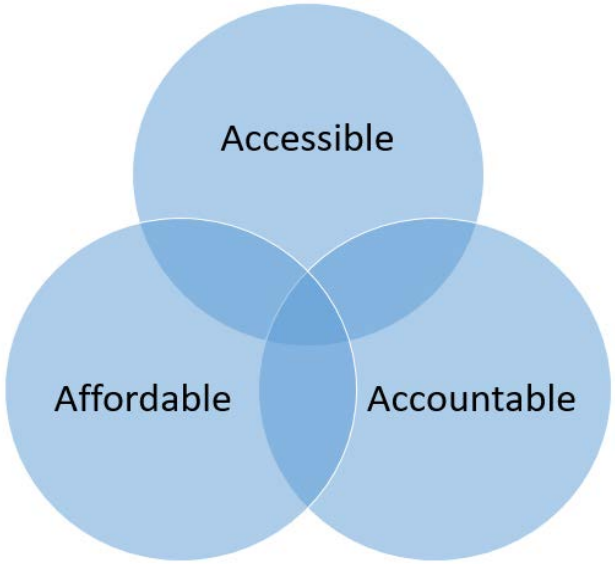
- Low Income Advisory Committee
- Conservation Resources Advisory Group
- IRP participants

Customers, including:

- Residential, commercial and industrial

EAG mission and framework

Mission: Provide advice to PSE on equity issues and broaden our engagement with frontline customers as we work to deliver a just and equitable clean energy future



2021 inaugural EAG will:

- Engage in developing metrics that help us measure equity in electric energy planning and decision-making for PSE's Clean Energy Implementation Plan
- Focus on paths to expanding equity, so our efforts are accessible, affordable and accountable
- Highlight and mitigate barriers to customer participation
- Provide advice on PSE's public participation plan
- Shape process for future EAG membership

Inaugural EAG sessions – draft

Mar. 2021

1 Orientation & clean energy
Relationship building
Orientation on energy planning
Discussion on clean energy

2 Burdens, barriers & opportunities
Discuss barriers and burdens
Discuss practices to address, mitigate

3 Measuring equity
Refine HIC/VP definitions
Begin customer benefit indicators discussions

Jun. 2021: Modeling begins

4 Customer benefit indicators
Small groups co-develop CBIs

5 Putting it all together
Update on customer outreach
Finalize CBIs
Develop weightings
Portfolio discussion

6 Equity forum
Invited speakers to share insights on equity issues

7 Progress update
Discuss model outputs on draft targets and actions

Aug. 15: Draft CEIP

Input on Draft CEIP
Comments to UTC

Oct. 1: Final CEIP

Oct. 2021 – Mar. 2022

8-10 Implementation focus
Establish membership selection process
Explore equity topics (TBD)

This session is being recorded by Puget Sound Energy.
Third-party recording is not permitted.

CEIP and public participation: goals

For the 2021 CEIP, we will:

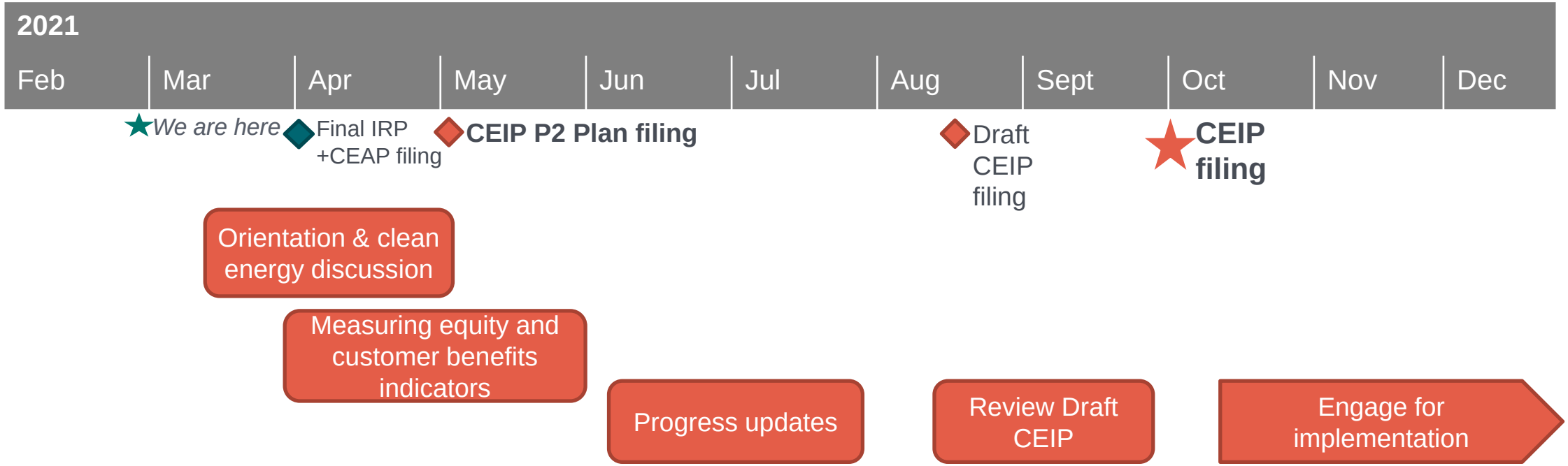
- Engage with the new Equity Advisory Group
- Inform and consult PSE's existing advisory groups (IRP, CRAG and LIAC)
- Inform and consult our customers, specifically highly impacted communities and vulnerable populations

Outcomes we're seeking for 2021:

- Durable CEIP
- Diverse, meaningful, and equitable engagement
- Accountable, repeatable process
- Create a foundation of community relationships and approaches for future engagement

PUGET SOUND ENERGY

CEIP and public participation schedule – draft



To stay up to date on the CEIP, sign up for our email list at ceip@pse.com

PUGET SOUND ENERGY

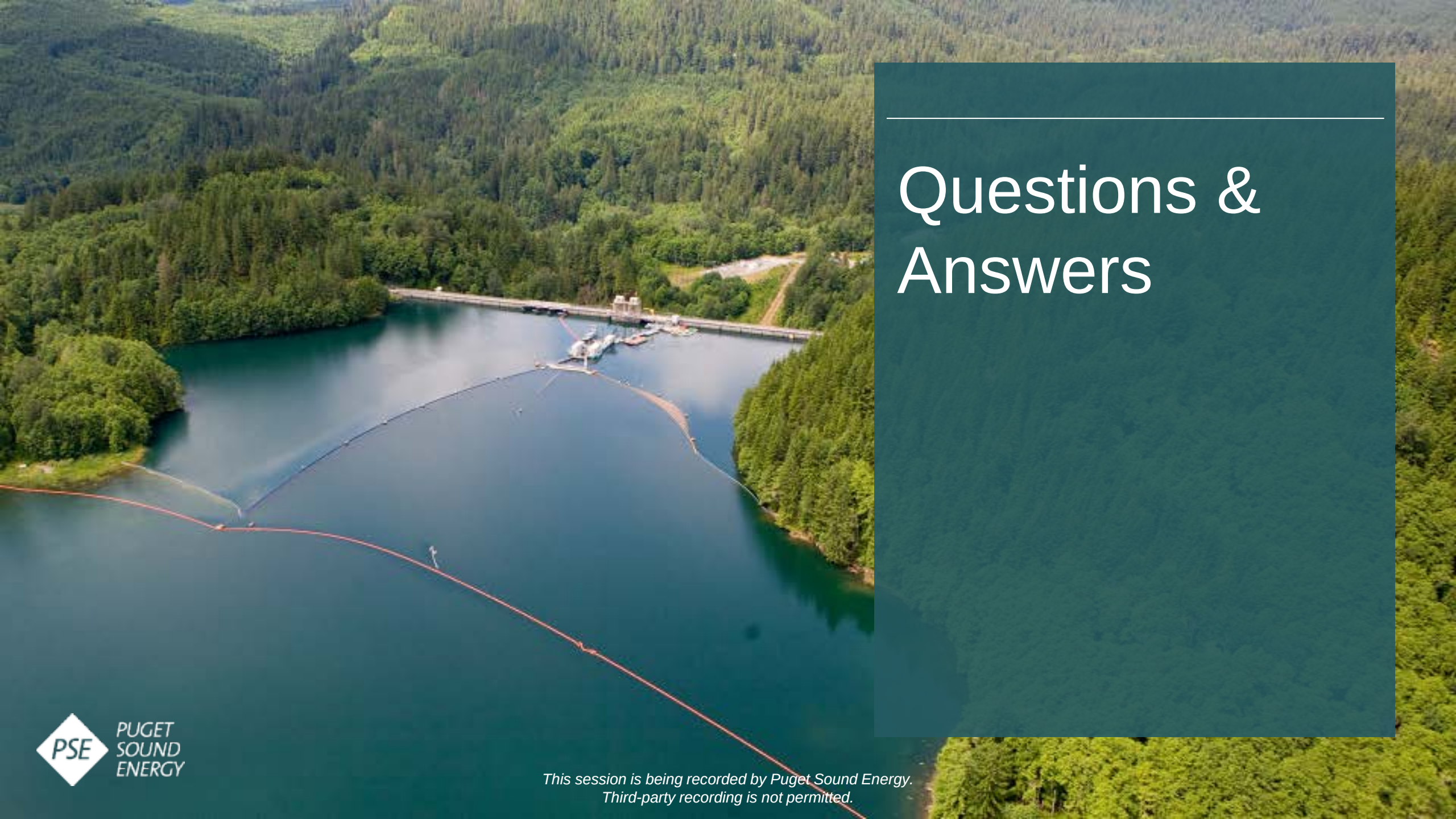
Questions and next steps

Public participation

- What methods do you suggest for engaging customers on developing the CEIP?
- What partnerships might help PSE connect with highly impacted communities and vulnerable populations?
- How do you suggest we engage customers through the CEIP's implementation phase?

Equity Advisory Group

- As you've gone through this year's IRP process, are there equity questions related to clean energy that we could share with the EAG?
- Are there any energy justice resources that could support the EAG's work?



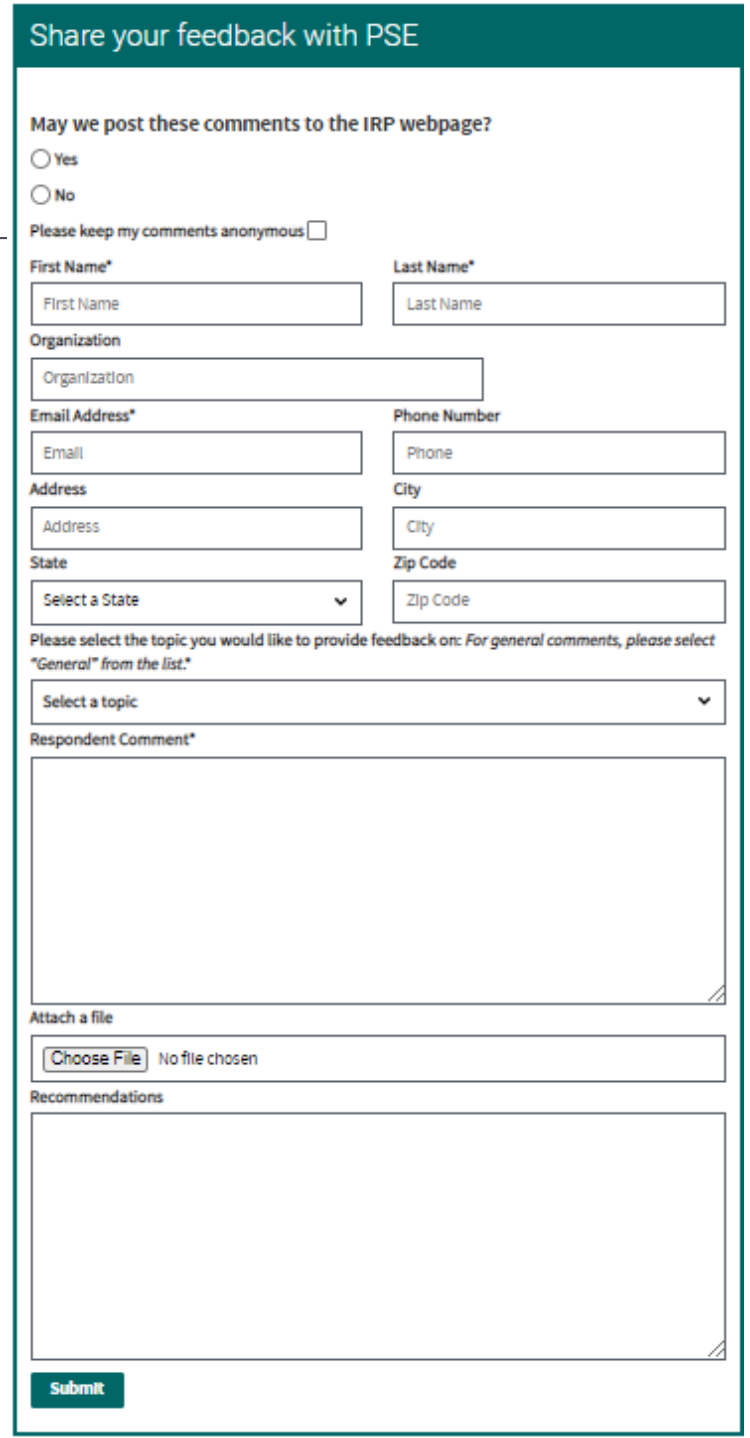
Questions & Answers

PUGET SOUND ENERGY

This session is being recorded by Puget Sound Energy.
Third-party recording is not permitted.

Feedback Form

- An important way to share your input
- Available on the website 24/7
- Comments, questions and data can be submitted throughout the year, but timely feedback supports the technical process
- Please submit your Feedback Form within a week of the meeting topic

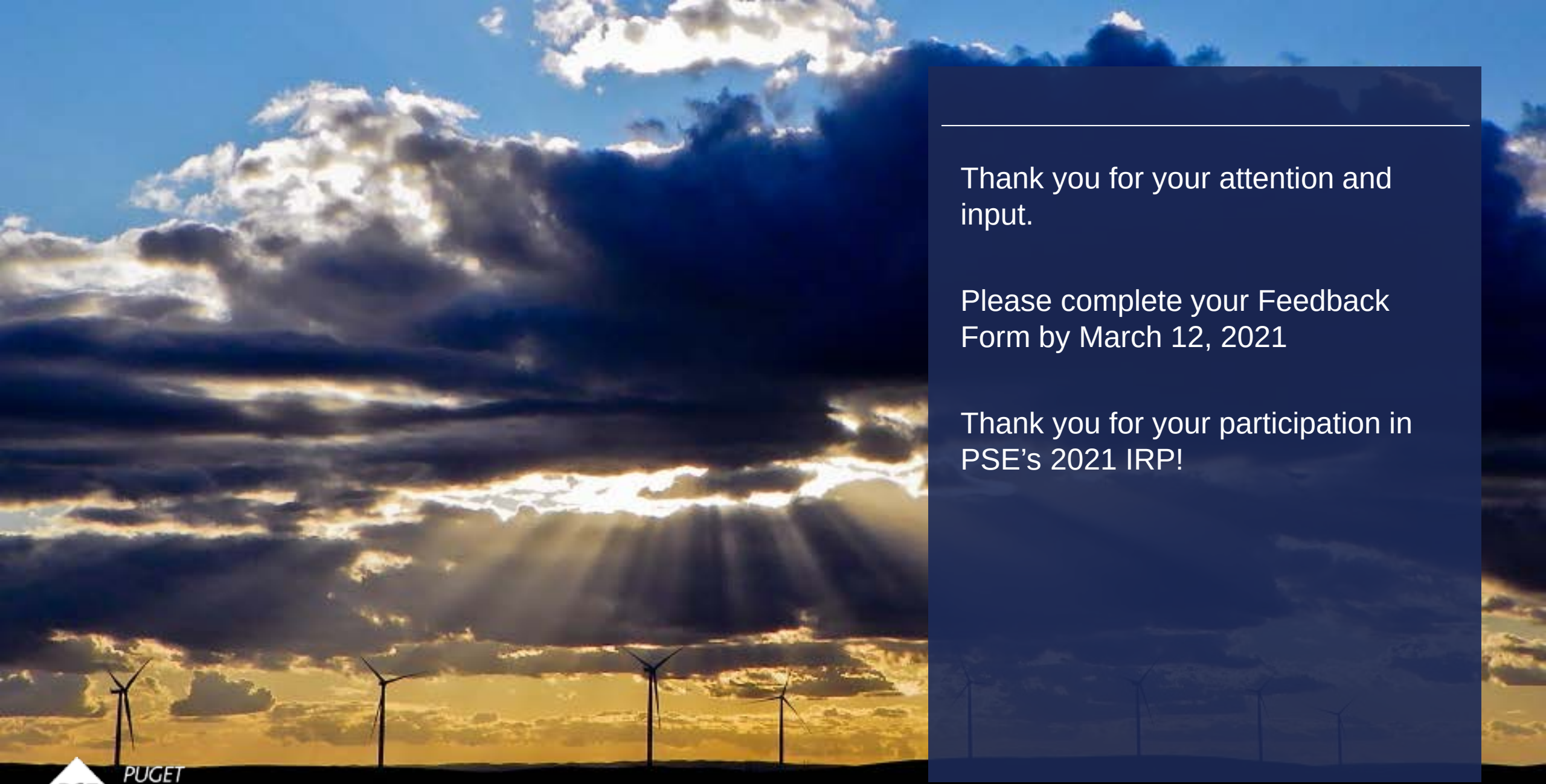


Feedback Form → **Feedback Report** → **Consultation Update**

This session is being recorded by Puget Sound Energy.
Third-party recording is not permitted.

Next steps

- Submit Feedback Form to PSE by **March 12, 2021.**
- A recording and the chat from today's webinar will be posted to the website on **Monday, March 8, 2021.**
- PSE will include feedback from this webinar in the Final IRP scheduled to be filed on **April 1, 2021**.



Thank you for your attention and input.

Please complete your Feedback Form by March 12, 2021

Thank you for your participation in PSE's 2021 IRP!

PUGET SOUND ENERGY