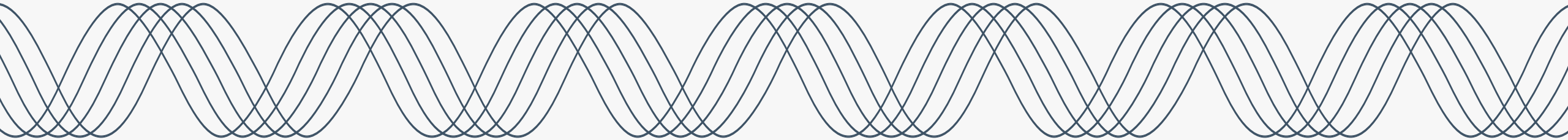
PGE CEP & IRP Roundtable 26-7

August 27, 2026



Meeting Logistics

Focus on Learning & Understanding

- 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 & chat to ask questions

Follow Up

If we don’t have time to cover all questions, we will rely on the CEP/IRP feedback form

Meeting Details

Wednesdays from 9 to 12 pm, Online Via Zoom

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/84372774388?pwd=WGdNfwfAFGcWgHxYjX0Mk2QbhDDaa7.1
- Meeting ID: 843 7277 4388
- Passcode: 108198

3

Participation

- Use the raise the hand feature to let us know you have a question
- Put questions into the chat
- Unmute with microphone icon or *6

CEP/IRP Roundtables For 2026 Filing

Date	Roundtable Topics
September 3, 2025	IRP 101, 2026 CEP/IRP Analysis Refinements, 2026 CEP/IRP Timeline & Q&A
October 22, 2025	Corporate Load Forecast – Methodology & Trends, Draft AdopDER Forecast, Existing Resources & Resource Topology, Future/Markets
December 10, 2025	Supply-Side Resource Options, Capacity Need & Its Drivers, Transmission Options, Role of VPP in the IRP, EE integration into IRP
January 14, 2026	PGE Longer Term Local Transmission Plan For the 2024-2025 Planning Cycle, Resource Contract Extension - Update, Flexibility study - Overview, Clean Energy Plan – Overview, Community Benefit Indicators, PGE'S Community Engagement Approach for 2026 CEP, Portfolio/Scenarios- Designs
February 24, 2026	PGE Announcement To Acquire WA Utility, Clean Energy Plan & Integrated Resource Plan Community Engagement Updates, Flexibility Study Draft Results, CBRE Update, IRP Emissions Forecasting, Diverse Market Transmission Framework, Portfolio Scoring, ELCCs, RFP Update and Proxy
April 8, 2026	Community Engagement, Transmission Constraints: Methodology & Approach, Price Futures Update, Energy Value for Resources, Generic Resource Cost Update, Market Emission Factor Scenarios

CEP/IRP Roundtables For 2026 Filing

Date	Roundtable Topics
May 20, 2026	Stakeholder Feedback Responses, Community Benefit Indicators (CBIs), Portfolio Analysis Scenarios, Cost Cap (now Continued Progress) Scenario Update, Transmission Constraint: Results and Analysis, VPP Integration & ELCC Review
June 10, 2026	Community Impacts Metrics, Report Outline, Draft Portfolio Analysis Results, Corporate Load Forecast Update
July 22, 2026	Updated Transmission Analysis, Energy Strategies Transmission Analysis, Capacity Need & ELCCs Update, Updated Draft Portfolio Results, Draft Portfolio Resource Adequacy Assessment, & Backcast Review
August 2026	Resource CBIs (rCBIs), Tax Credit Extensions, Portfolio Scoring, Preferred Portfolio & Continued Progress Portfolio, & Draft Action Plan
October 2026	Post-filing office hours

Stakeholder Feedback Update

Please send feedback for the August 27, 2026 roundtable using the feedback form by September 4, 2026.

We will post all feedback responses to the public websites prior to the September 30, 2026 filing.

August 27, 2026 – Agenda

9:00 | Welcome & Stakeholder Feedback Responses

9:05 | Resource CBIs (rCBIs)

9:35 | Tax Credit Extensions

9:50 | Portfolio Scoring

10:50 | Preferred Portfolio & Continued Progress Portfolio

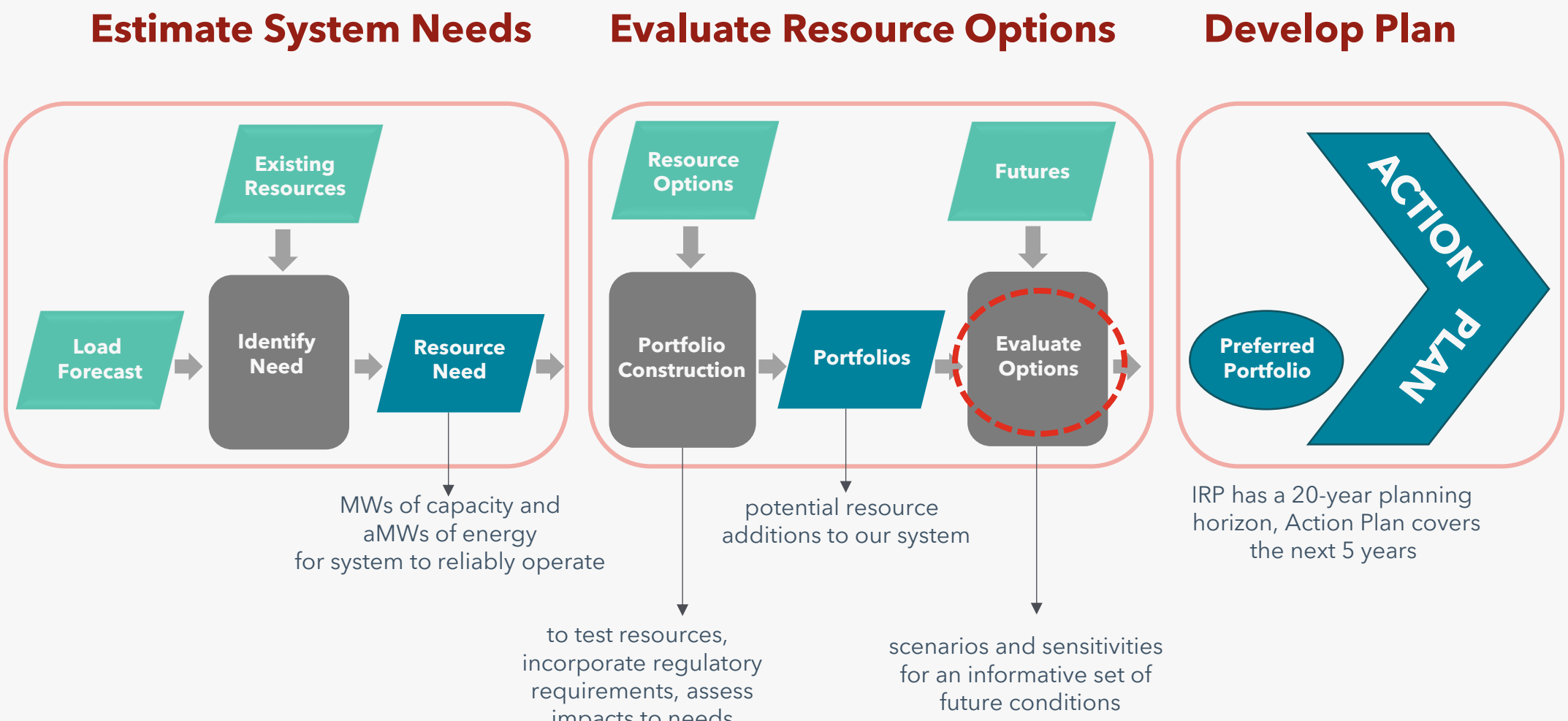
11:20 | Draft Action Plan

11: 55 | Next Steps and Close

Resource CBIs (rCBIs)

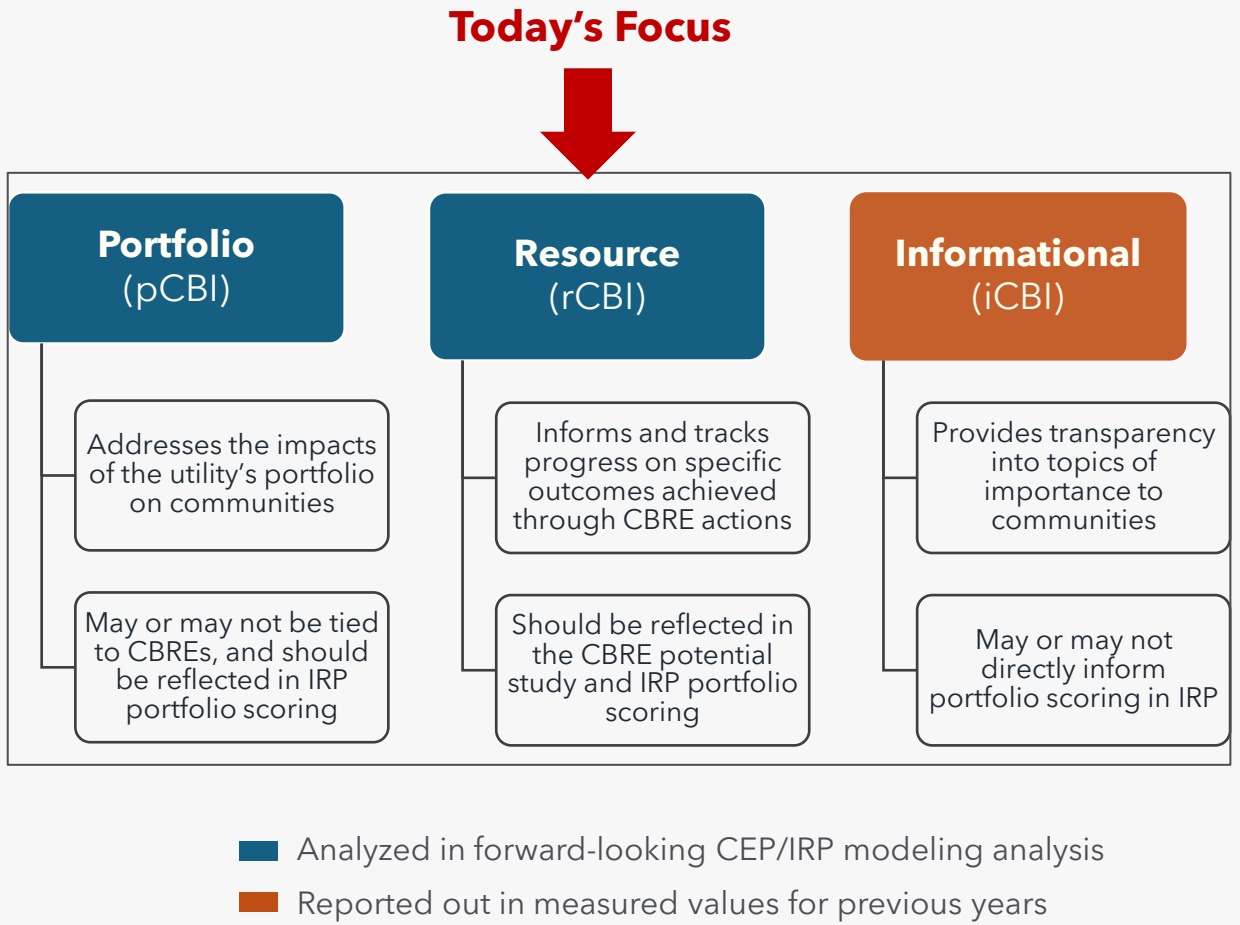
Rob Campbell

High-Level IRP Analysis Process



2026 CEP/IRP Approach to CBIs

- Overviewed in previous 2026 roundtables
- Today's Agenda: Resource CBIs
  - Changes since 2023 CEP/IRP
  - Approach
  - Draft Results



Notes:
- CBRE = community based renewable energy

rCBI Methodology Refinements

2023 CEP/IRP
(filed 2023)

- Initial approach to meet UM 2225 requirements
  - Applied to: only CBREs
- **rCBI**: 10% cost reduction

2023 CEP/IRP Update
(filed 2025)

- Expanded rCBIs; apply to other resources and portfolios
  - Applied to: EE, DR, CBREs
- **rCBI**: cost-adjusted by resources based on quantifiable benefits identified by Consultant
  - Primarily informed by literature; not Oregon-specific

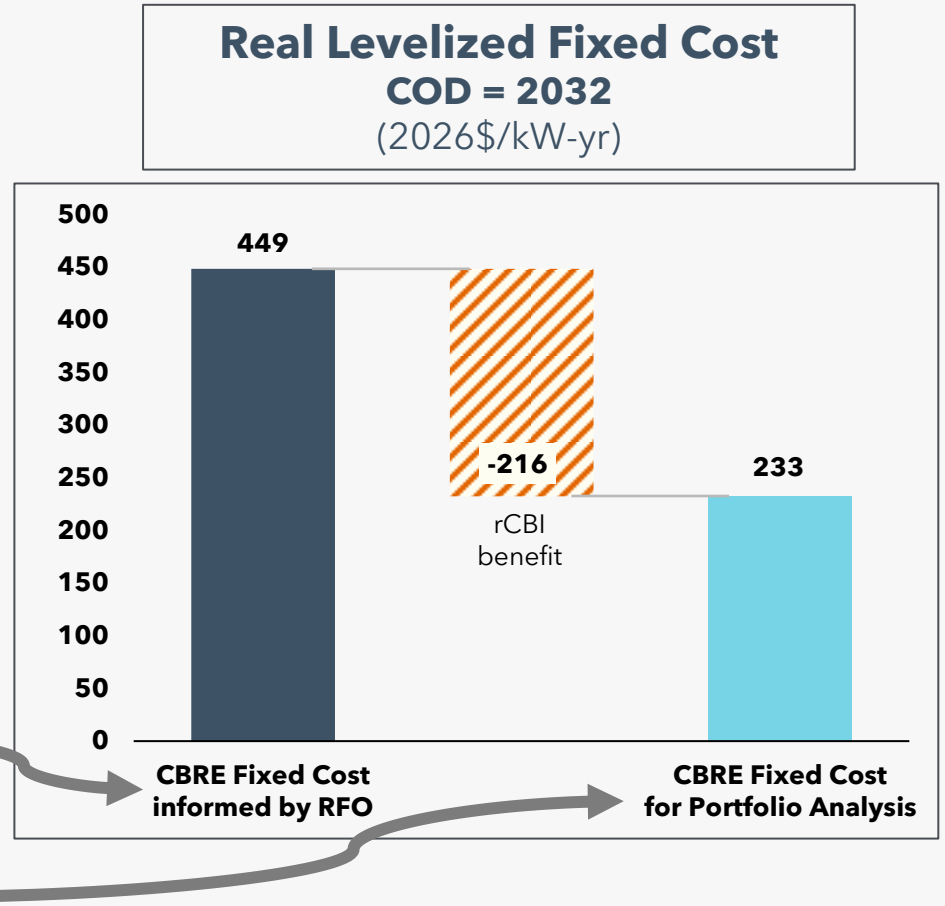
2026 CEP/IRP
(filing 2026)

- Incremental advancement to see community impacts across portfolios
  - Applied to: only CBREs
- **rCBI**: cost-adjusted based on needed 'benefits' to encourage selection
  - Applied at a level to bring CBRE costs (informed by RFO bids) down to proxy utility-scale options to make more cost-competitive in modeling

Notes:
- CBRE = community based renewable energy
- EE = energy efficiency
- DR = demand response
- RFO =request for offering

2026 CEP/IRP CBRE and rCBI Assumptions

- Overviewed in previous 2026 roundtables
  - Proxy resource informed by CBRE RFO
- Technology
  - one proxy CBRE resource option representing <20 MW (microgrid) solar plus storage hybrid for enhanced community resilience
- Potential
  - Viable bids informed available CBRE potential of ~65 MW deployable by 2031
  - Grown to ~109 MW deployable by 2036 to represent a future 'next phase' of development
- Cost
  - Viable bids informed average costs for CBREs: ~30-60% greater than utility-scale solar & hybrids
  - **rCBIs incorporated for 'next phase' at a level to bring costs down** similar to utility-scale solar (one of the cheapest resource options) **to encourage CBRE selection** across different scenarios

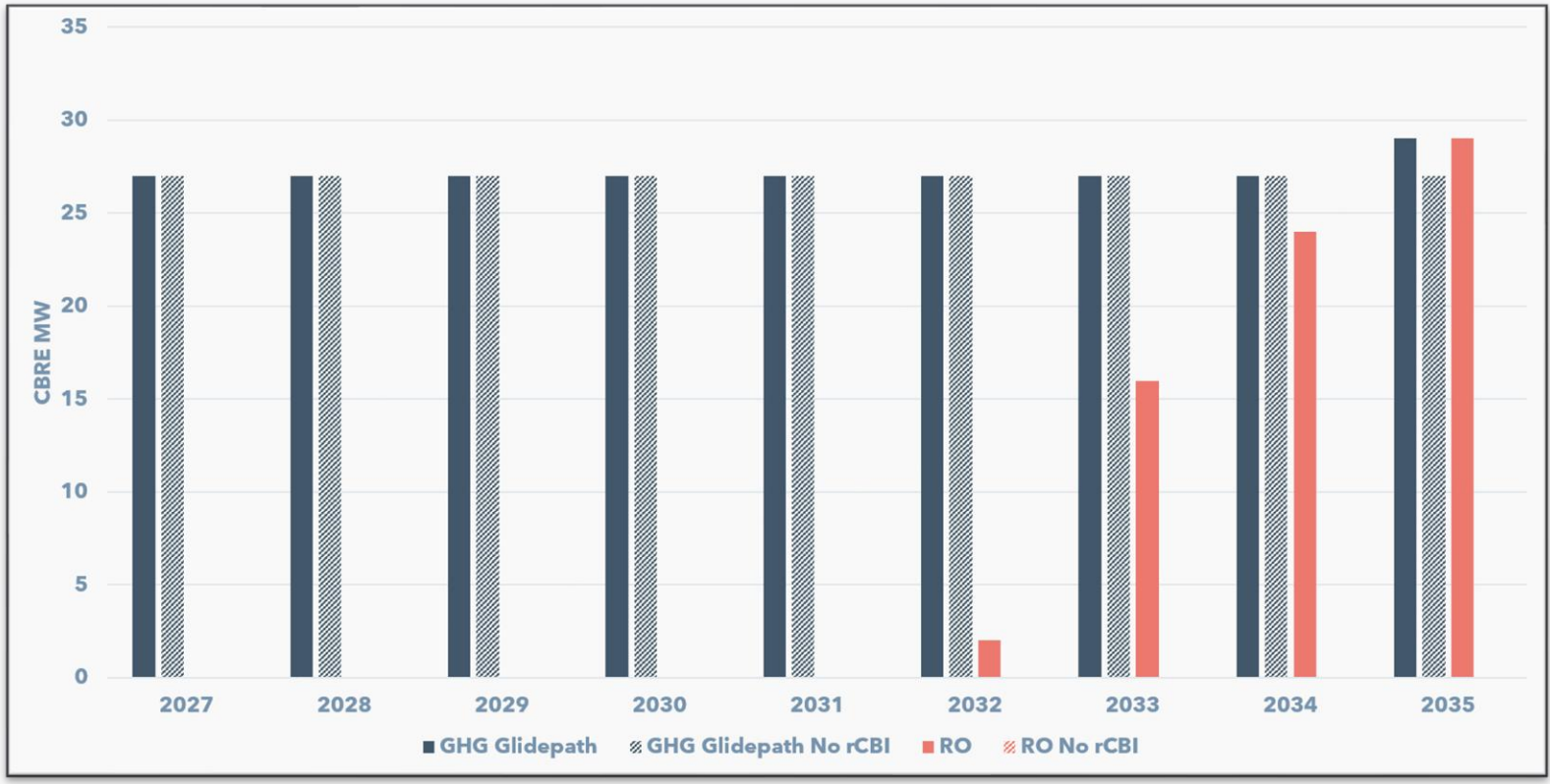


2026 CEP/IRP CBRE and rCBI Results

- **GHG Glidepath** adds CBREs as early as possible to meet 2027energy needs associated with emissions reductions
  - Removal of rCBIs results in 2 MW decrease in CBREs selection by 2035 (27 MW compared to 29 MW)

- **Reliability Only** scenarios do not find CBREs to be cost-effective without the rCBI support
  - 27 MW of CBREs added in RO scenario all occur after 2031, with benefit of rCBIs
  - 0 MW of CBREs are selected in 'No rCBI' sensitivity

Cumulative CBRE builds in portfolio analysis and 'No rCBI' sensitivity analysis



2026 CEP/IRP CBRE and rCBI Implications

- The rCBI analysis and cost delta provide a directional estimate of incremental procurement costs (i.e., needed 'benefits') associated with pursuing this type of resource strategy that would be aligned with targeted community benefit outcomes
  - The CBRE RFO identified projects with community benefits, but also identified they were more costly compared to traditional utility-scale
  - The cost difference is one way to estimate needed 'benefit' to encourage uptake

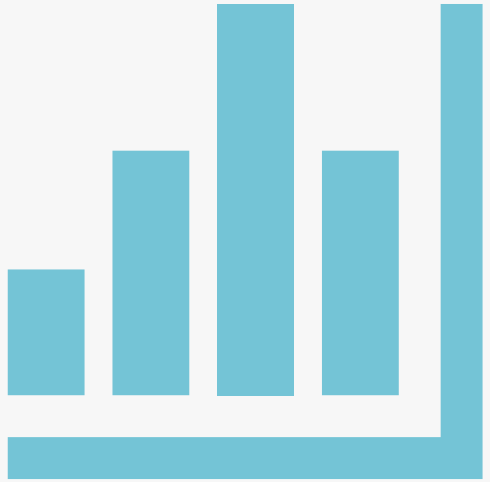
- Needed 'benefits' to reduce costs to the level of the rCBI assumption or otherwise may be:
  - Monetized community outcomes
    - Difficult to quantify
    - Accrue more to participant than community
  - Non-ratepayer funding mechanisms to potentially reduce upfront costs
    - Grants
    - Renewable Development Fund
  - Focus on other, more cost-competitive CBRE project types than analyzed in IRP

Stakeholder Engagement & Ongoing CBI Development

- Conducted stakeholder education and review of CBI framework concepts during three 2026 CEP/IRP Roundtables
- Reviewed CBI methodologies, applicability, and measurement pathways with the Community Benefits & Impacts Advisory Group (CBIAG) in April 2026
- Continued stakeholder engagement will help inform prioritization of future CBI measurement, tracking, and implementation approaches based on evolving community priorities and data availability
- Current discussions continue to highlight **affordability and customer cost impacts** as key considerations alongside community benefit objectives within the planning process

Continued Progress in Quantification & Application

- CBI methodologies continue to evolve from directional resource applicability frameworks toward more measurable community impact indicators
- Future CEP/IRP applications will prioritize defensible and trackable metrics supported by available historical data, customer participation trends, DER adoption forecasts, geospatial analysis, and reliability/resiliency indicators
    - pCBIs will continue supporting directional comparison of expected community impact characteristics across IRP portfolios
    - rCBIs will continue to inform CBRE potential
    - iCBIs will support tracking of realized community outcomes
- CBIs are intended to improve transparency around portfolio tradeoffs, affordability considerations, and targeted community benefit objectives within planning decision-making processes
    - Work continues outside planning processes, as well, as PGE's efforts to develop **CBIs via a planning framework may inform, but is not intended to limit community benefits** that PGE may seek to advance via specific projects or programs (e.g., individual CBRE deployment or customer programs)



Summary and Guided Feedback

Summary: PGE continues to develop and apply CBIs in the 2026 CEP/IRP through CBRE cost analysis, updated portfolio benefit scoring, and a tracking framework for informational CBIs.

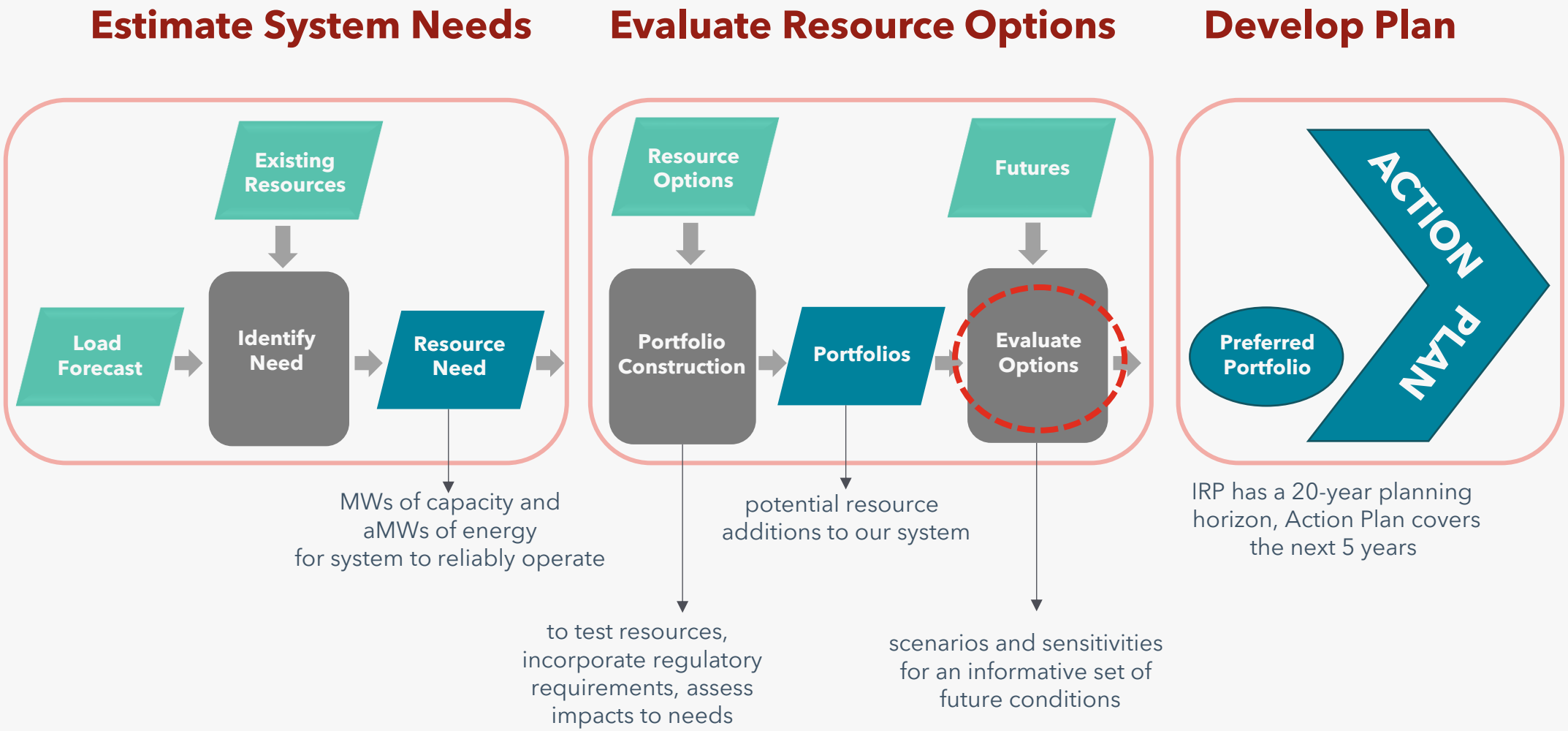
These updates are intended to better reflect community benefits in portfolio assessment and support continued evaluation in future planning cycles.

Content: Has PGE well explained how its rCBI method in the 2026 IRP differs from the 2023 IRP Update?

Tax Credit Extensions

Rob Campbell

High-Level IRP Analysis Process



Proposed Final Scenario List

24 main scenarios analyzed across a range of policy and utility considerations

Scenario Name	Regulatory Structure	Load Structure	Resource Structure			Transmission Expansion Structure	Tax Credit Structure
			Base Portfolio	New Gas Contracts	Additional DSG		
GHG Glidepath	80% Emissions Glidepath	Base Case	Base Case	No	Yes	Base Case	Base Case
RO	Reliability Only	Base Case	Base Case	Yes	Yes	Base Case	Base Case
Continued Progress	Continued Progress	Base Case	Base Case	Yes	Yes	Base Case	Base Case
GHG Glidepath - CGO	80% Emissions Glidepath	Core Growth Only	Base Case	No	No	Base Case	Base Case
RO - CGO	Reliability Only	Core Growth Only	Base Case	Yes	No	Base Case	Base Case
Continued Progress - CGO	Continued Progress	Core Growth Only	Base Case	Yes	No	Base Case	Base Case
GHG Glidepath - Hydro	80% Emissions Glidepath	Base Case	Base + Hydro	No	Yes	Base Case	Base Case
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GHG Glidepath – CGO - Hydro	80% Emissions Glidepath	Core Growth Only	Base + Hydro	No	No	Base Case	Base Case
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Continued Progress – CGO - Hydro	Continued Progress	Core Growth Only	Base + Hydro	Yes	No	Base Case	Base Case
RO - Colstrip	Reliability Only	Base Case	Base + Colstrip	Yes	Yes	Base Case	Base Case
RO – CGO - Colstrip	Reliability Only	Core Growth Only	Base + Colstrip	Yes	No	Base Case	Base Case
RO – Colstrip - Hydro	Reliability Only	Base Case	Base + Colstrip + Hydro	Yes	Yes	Base Case	Base Case
RO – CGO – Colstrip - Hydro	Reliability Only	Core Growth Only	Base + Colstrip + Hydro	Yes	No	Base Case	Base Case
No Tx	Continued Progress	Base Case	Base Case	Yes	Yes	Unavailable	Base Case
No WSPP	Continued Progress	Base Case	Base Case	Yes	Yes	No WSPP	Base Case
No NPC	Continued Progress	Base Case	Base Case	Yes	Yes	No NPC	Base Case
No T-H	Continued Progress	Base Case	Base Case	Yes	Yes	No T-H	Base Case
State RA*	Reliability Only	Base Case	Base Case	Yes	Yes	Base Case	Base Case
GHG Glidepath - Tax Credits	80% Emissions Glidepath	Base Case	Base Case	No	Yes	Base Case	Extended
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- "Base Case" load forecast = high, reference, low
- State RA scenario utilizes alternative resource adequacy methodology
- Core Growth Only (CGO) load scenarios do not include DSG growth

Tax Credit Assumptions

Wind & Solar: Federal tax credits for wind and solar resources are sunsetting for projects that do not begin construction by July 2026.

PGE's IRP models approximately 2300 MW of resources available for selection with tax credits through 2030: 1000 MW of wind, 670 MW of solar, and 670 MW of storage.

This assumption represents PGE's estimated outcome of the acknowledged 2025 RFP final shortlist.

PGE's capacity expansion model (ROSE-E) is free to select renewable quantities greater than 2300 MW in 2030, and beyond, and will do so consistent with resource need.

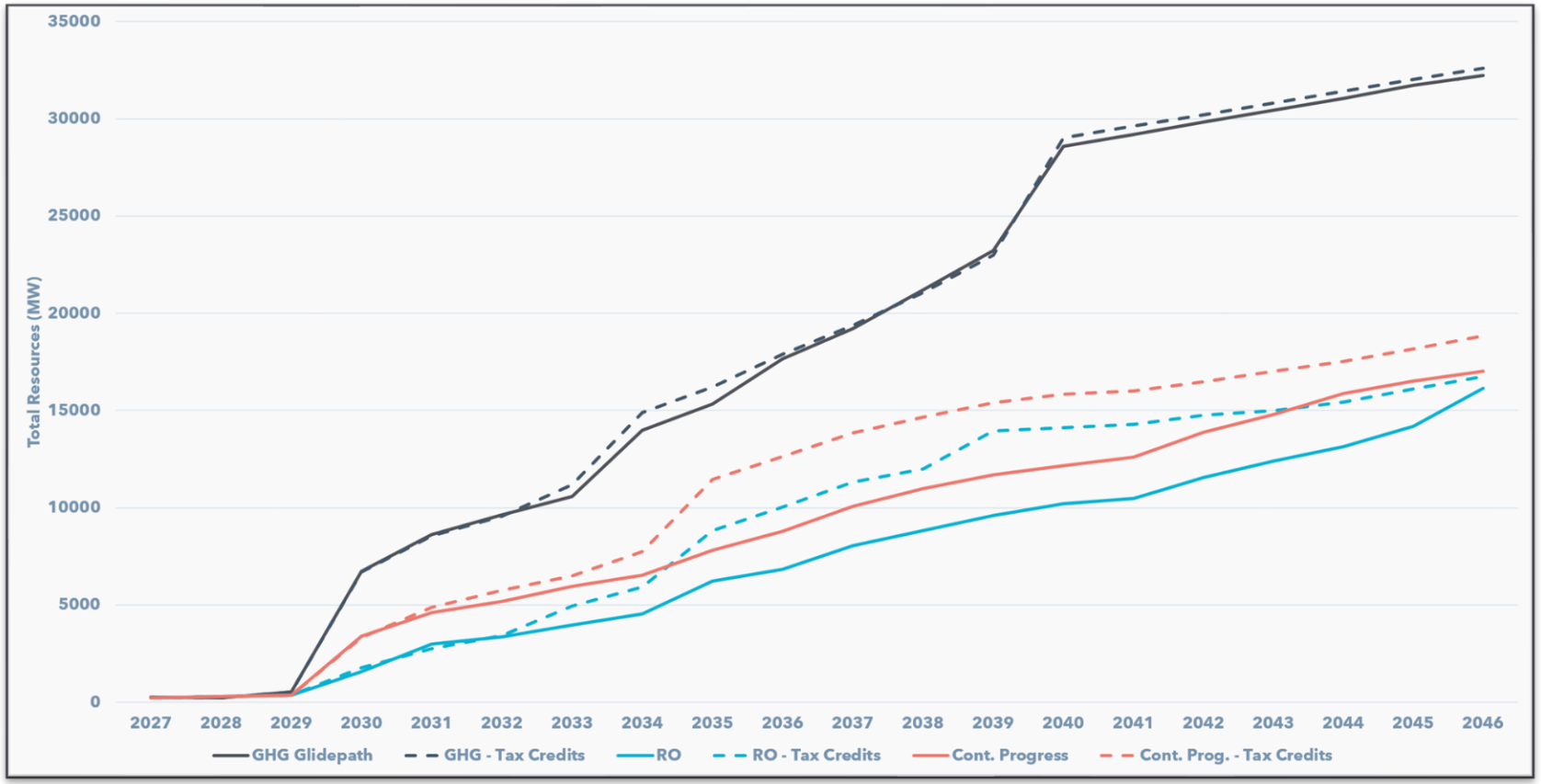
Wind and solar resources not representative of the 2025 RFP shortlist face increasing tax uncertainty due to development timelines, as such they are assumed ineligible for tax credits for modeling purposes.

Storage: Standalone and hybrid storage resources will receive the following tax credit treatment, aligned with current federal policies:

- 100% credit available if beginning of construction (BOC) occurs on or before December 31, 2033, and the resource is placed in service by December 31, 2037
- 75% credit available if BOC occurs on or before December 31, 2034, and the resource is placed in service by December 31, 2038
- 50% credit available if BOC occurs on or before December 31, 2035, and the resource is placed in service by December 31, 2039
- 0% credit available if BOC occurs after January 1, 2036

Tax Credit Impacts on Resource Additions

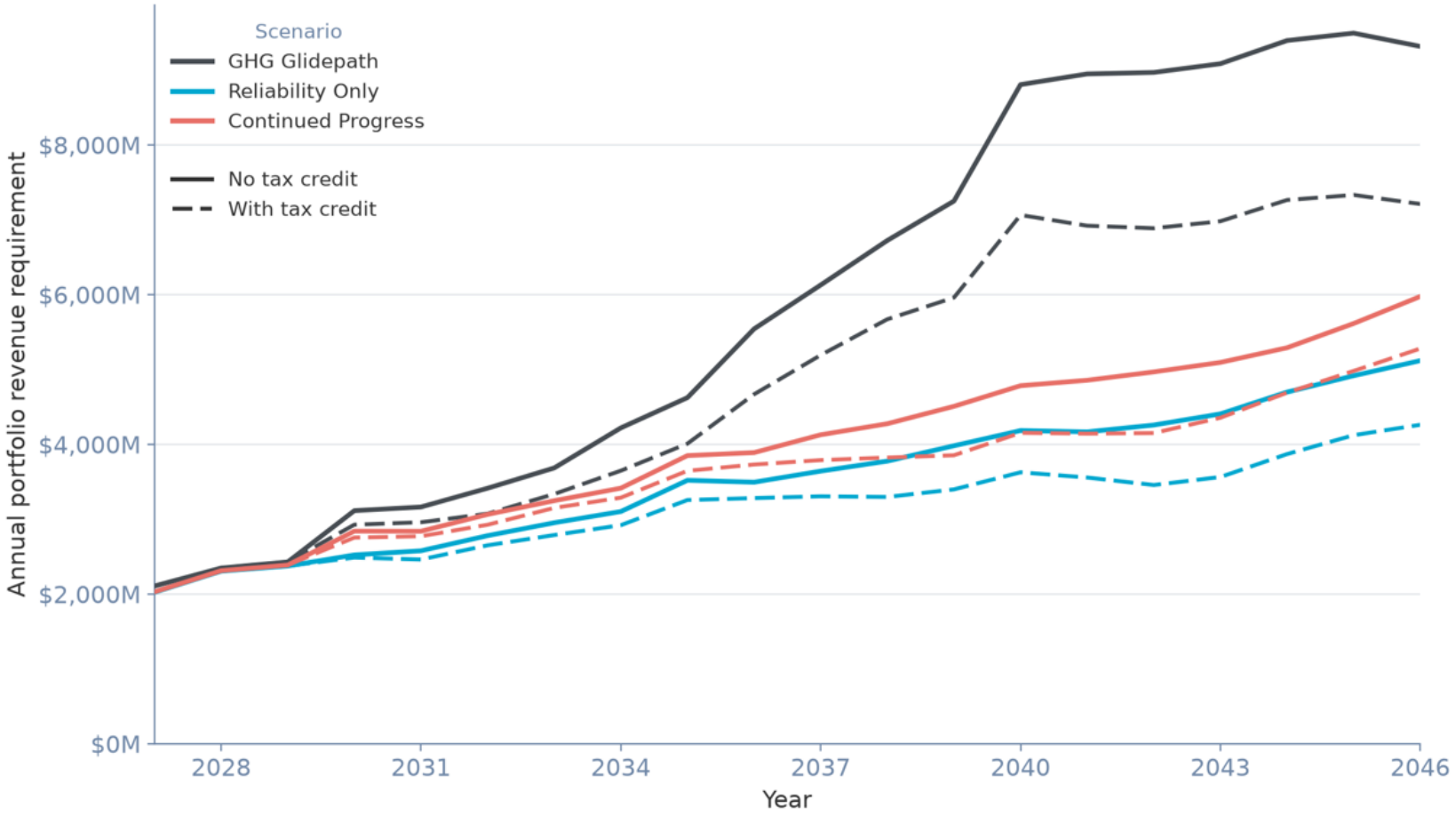
Under base case assumptions, tax credits in portfolio analysis expire in line with current federal laws.
To better understand the impact tax credits have on resource additions and costs, PGE designed a scenario for the GHG Glidepath, Continued Progress and Reliability Only cases where tax credits remain intact throughout the planning horizon.



Key Takeaways

- No significant impact on resource additions in GHG Glidepath scenario.
- Lower cost renewables lead to increased/earlier addition of renewables in Reliability Only and Continued Progress.
- Minimal impact on resources in the Action Plan window for all scenarios.

Tax Credit Impacts on Resource Costs



Key Takeaways

- While the volume of resources needed for GHG Glidepath portfolios remains consistent, the costs are significantly lower when tax credits remain throughout the planning horizon
- Tax credit extension brings GHG Glidepath resource costs closer to that of the Continued Progress costs, emphasizing that federal tax credits play a critical role in addressing affordability risks of the GHG Glidepath portfolio

Summary and Guided Feedback

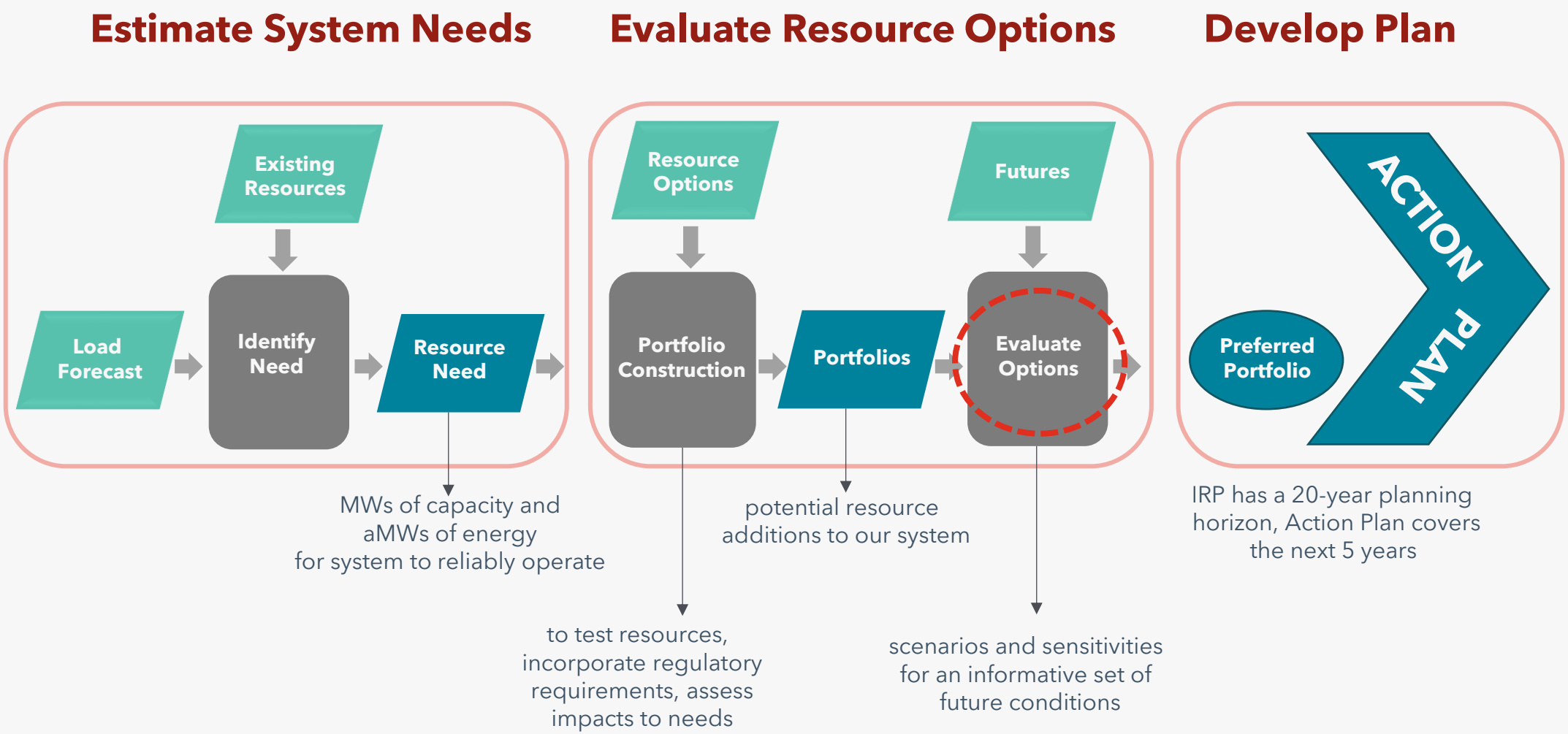
Summary: PGE designed a scenario for the GHG Glidepath, Continued Progress and Reliability Only cases where tax credits remain intact throughout the planning horizon to understand the impacts of federal support for renewables on near-term and long-term actions. Analysis concludes that, as expected, scenarios with tax credits extended throughout the planning horizon have significantly lower costs than those that don't.

Content: Do you have any questions about the analysis performed? Are the results in line with your expectations?

Portfolio Scoring

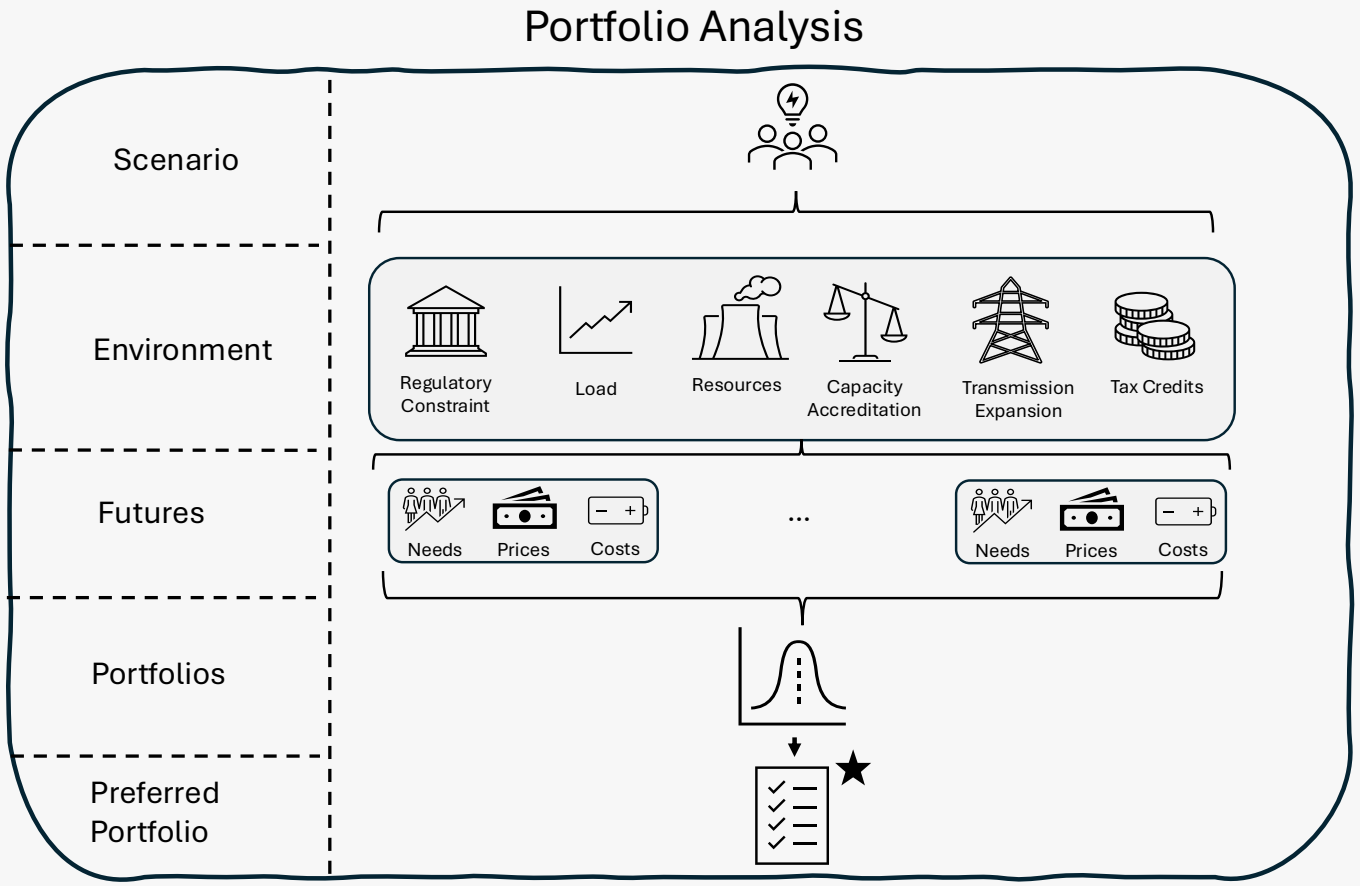
Jarek Oliver

High-Level IRP Analysis Process



Portfolio Analysis – Design Framework and Key Terms

Term	Description
Portfolio Analysis	The analytical framework used to identify the Preferred Portfolio.
Scenario	A planning paradigm defined by a fixed planning Environment, producing 333 associated Resource Buildouts.
Structure	Variables which represent discrete changes in planning assumptions. Structures varied are: Regulatory Constraint, Load, Resources, Capacity Accreditation Method, Transmission Expansion, and Tax Credits.
Environment	A distinct set of Structures used to define a planning Scenario.
Future	A simulation capturing deviations in system needs, price futures, and technology costs. Numerous Futures are used to capture uncertainties which influence the spread of Resource Buildouts for each Scenario.
Portfolio	Least-cost buildout of incremental resource additions; one for every Future analyzed for each Scenario.
Preferred Portfolio	The least-cost, least-risk resource buildout used to inform Near-term Action Plan.



Purpose of Portfolio Scoring

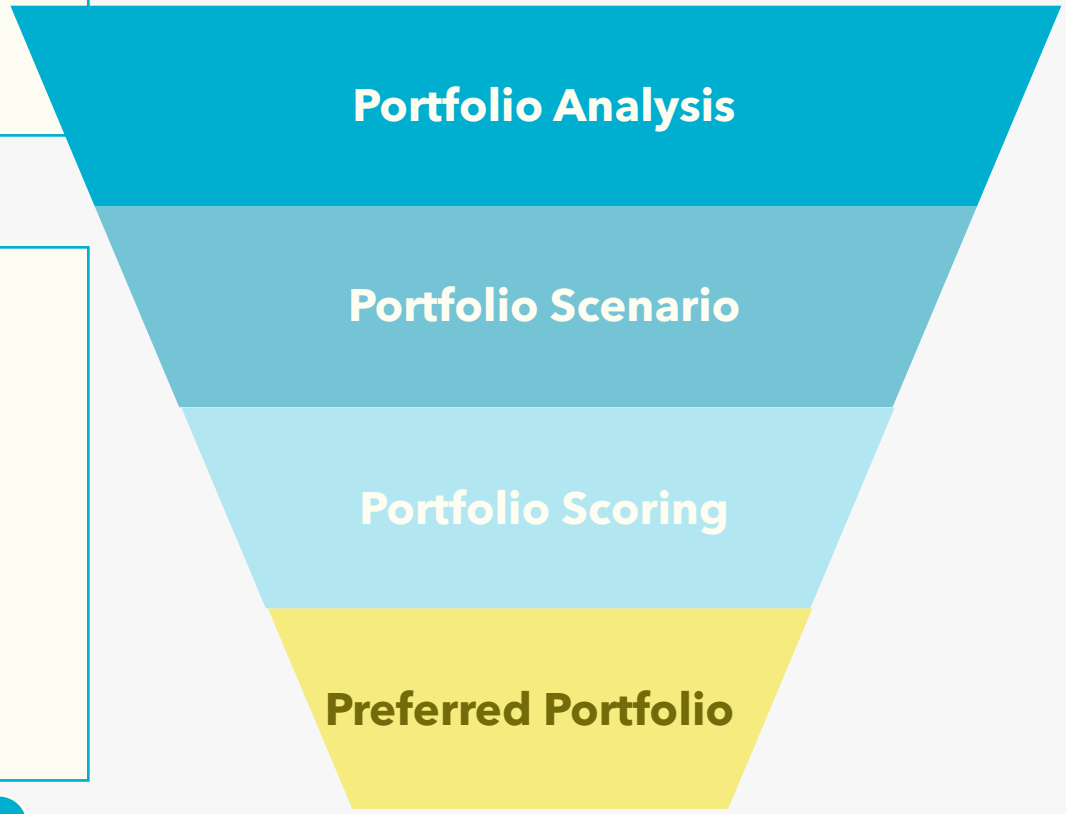
Traditional IRP Guidelines require a Preferred Portfolio to be identified that meets load and policy requirements, while balancing cost and risk for customers

Requires making tradeoffs that are valued by PGE, stakeholders, and customers

Portfolio scoring is designed to generate and display metrics that show tradeoffs across various attributes of scenarios

- Comparing across consistent metrics allows PGE to quantify the impact of changes in key assumptions on portfolio outcomes
- All scoring metrics are designed to capture **quantifiable costs, benefits, and considerations** for the variety of different ways that potential meanings of least-cost, least-risk planning may be conceptualized
- This scoring is **not comprehensive to all costs and risks** but like all aspects of IRP, is designed to directionally inform planning, next steps, and future action items

IRP has displayed a combination of traditional and non-traditional scoring metrics in the past. This IRP will also introduce new risk metrics that aim to address new proposed planning rules.



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Traditional Portfolio Scoring Metrics

Metric	Units	2023 IRP (ROSE-E Definition)	2026 IRP (ARIA Definition)
Cost[1]	Million 2026$	Net present value of revenue requirement (NPVRR), calculated for each of the future scenarios for the analysis timeline.	Mean Net Present Value Revenue Requirement (NPVRR) for the selected portfolio across all 111 load-constant futures.
Variability Portfolios with low variability scores tend to provide more cost certainty and lessen the customer's impacts of higher-than-expected cost conditions.	Million 2026$	Semi-deviation of NPVRR across all futures, relative to the Reference Case. This metric captures the potential variation in cost outcomes across futures, considering only futures in which NPVRR exceeds the Reference Case.	Standard Deviation of NPVRR values for the selected portfolio across the 111 load-constant futures.
Severity Portfolios with low severity scores tend to have less costly worst-case scenarios for customer cost impacts.	Million 2026$	The tail value at risk (TailVAR) at the 90th percentile of the NPVRR across futures. This metric measures the potential magnitude of very high-cost outcomes across all futures.	The NPVRR of the selected portfolio in the future which corresponds to the 90th percentile of cost.

PGE utilizes scoring metrics to compare portfolio results. These metrics help inform the selection of key portfolios that will support the near-term Action Plan.

Historically, Variability and Severity metrics capture the risk of cost outcomes compared to the Reference Case, while allowing resource portfolio buildout to vary

Risk analysis in ARIA provides additional insight by considering how a given resource portfolio buildout performs across the full range of potential economic futures allowing consideration of whether a non-reference case buildout may result in a better balance of cost and risk

1) IRP costs consist of only those associated with existing and incremental generating resources (including associated transmission costs) and do not include other PGE costs (e.g. administrative costs, wildfire costs, etc.).

Non-Traditional Portfolio Scoring Metrics: pCBIs

Metric	Description
pCBI 1: **Economic Impacts**	Economic development, increased access to jobs, economic well-being, increased productivity
pCBI 2: **Energy Equity**	Improved awareness and access to clean energy programs by environmental justice and tribal communities; increased affordability; increased efficiency of housing stock; reduced arrearages and disconnections
pCBI 3: **Health and Community Wellbeing**	Increased comfort; improved public health outcomes, particularly for environmental justice communities; reduced local emissions; improved home health and safety (including indoor air quality)
pCBI 4: **Resilience / Reliability**	Improved grid resiliency; increased resilience/reliability in environmental justice communities, including reduced recovery time and frequency of outages
pCBI 5: **Environmental Impacts**	Reduced air emissions, including CO_2 and criteria pollutants

pCBIs are a unitless measure of community benefits

pCBIs accrue on a per MW basis of eligible resources added to a portfolio

pCBIs do not influence resource selection in ROSE-E

pCBIs allow the relative level of different types of community benefits provided to be compared across portfolios

Note – rCBIs which are accounted for as reduced fixed costs of eligible resources and can influence resource selection are applied on in select scenarios and are not included as a portfolio scoring metric.

Other Non-Traditional Portfolio Scoring Metrics

Previous IRPs have included report-out of a range of other metrics for comparing across scenarios

PGE will also review other metrics for comparisons:

- **Emissions** – How much progress is being made toward emissions reduction targets of HB 2021
- **Clean Energy Additions** – The quantity of clean energy builds in each scenario
- **Near term costs** – the sum of annual costs for the first 5 years of the planning horizon for each portfolio

It is important to note that rules require the IRP Preferred Portfolio to achieve the emissions reductions targets set forth in ORS 469A.410[1]

1) 860-090-0100 (8)

ARIA Model

As discussed at the *February 2026 Roundtable*, the ARIA model is the ability to create a much richer comparison of portfolios and scenarios and consider how they each perform over the many different futures, allowing consideration of whether a **different buildout** (than the one constructed under reference case assumptions) may result in a better balance of cost and risk

- For each of the 25 planning scenarios, ROSE-E generated 333 **portfolios** for each of the **futures** analyzed in that IRP
- ARIA can then run *each* of those 333 portfolios through *each* of the 333 futures, generating 110,889 outcomes, allowing PGE to:
  - ✓Consider the range of possible outcomes for any given portfolio & planning scenario
  - ✓Assess the biggest drivers of risk (through a cost-based assessment)
  - ✓Potentially identify portfolios (resource buildouts) that better balance risk and cost*
  - ✓Fill in additional resources to meet the GHG glidepath requirements at an hourly level

For portfolio scoring and preferred portfolio selection, any buildout must be assessed for reliably meeting load expectations, therefore load comparisons will only be for reference

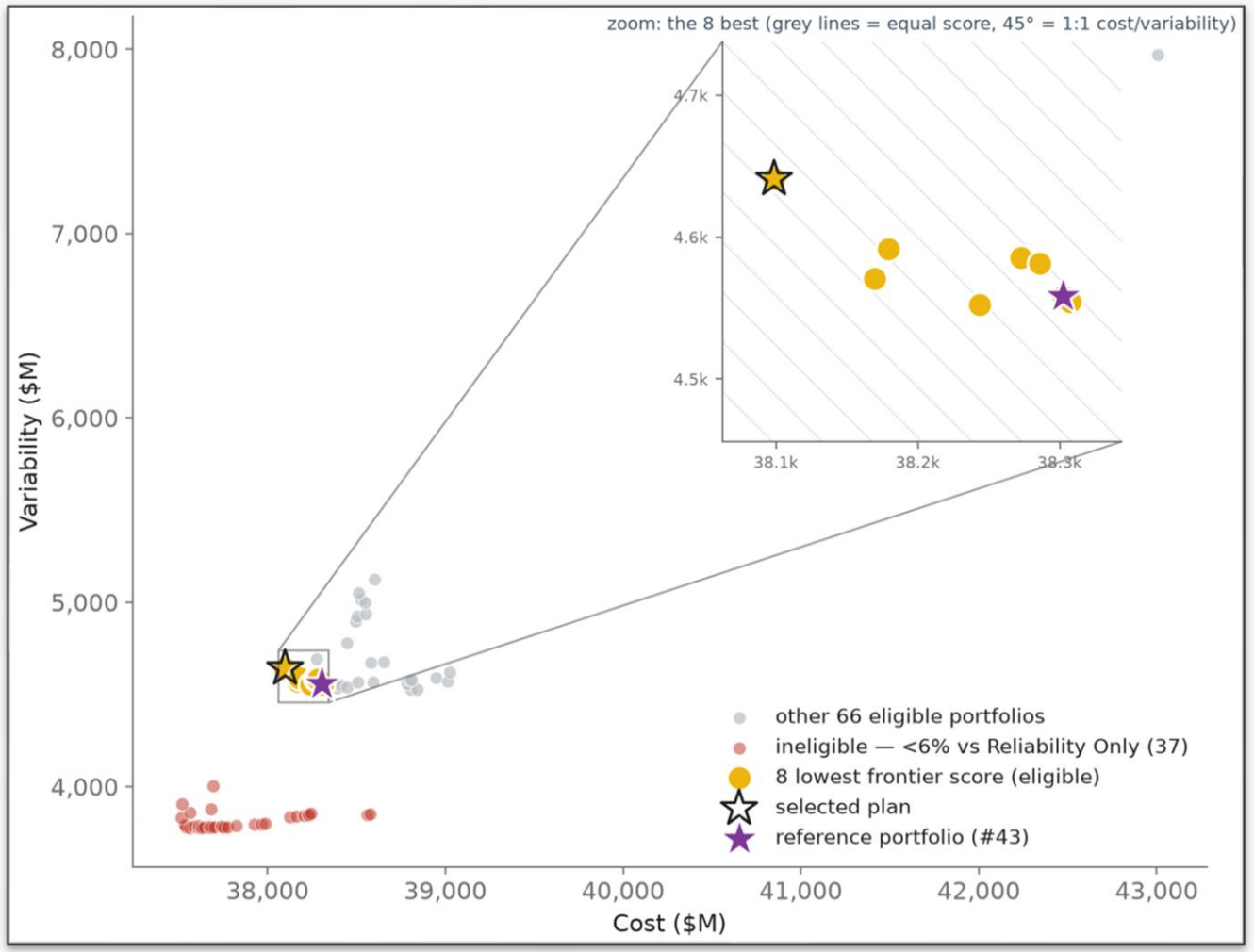
However, within the ARIA model, load is allowed to vary from high to low for more robust risk assessment

***Note:** this is a cost-based assessment informed by what's available in IRP, therefore does not capture all costs nor risks the company may consider in real-world decision-making

ARIA Analysis of Key Portfolios – Continued Progress & GHG Glidepath

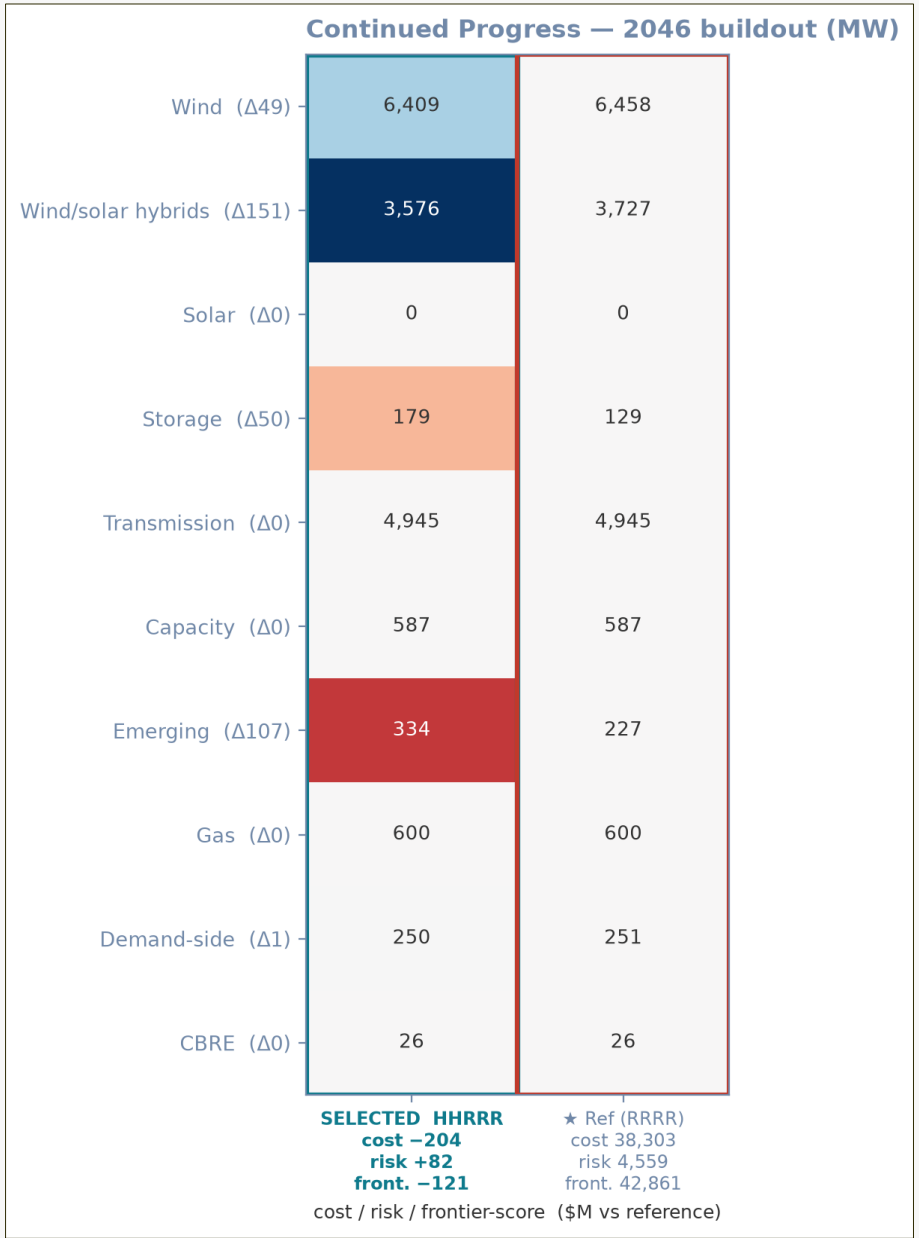
Continued Progress: Portfolio Comparison

- In the Continued Progress planning scenario, the portfolios that do not spend 6% more than the Reliability Only planning scenario are considered ineligible for selection, so they are the red dots.
- The lowest cost/risk portfolio that does spend 6% or more; is the gold star here. The purple star represents the reference case portfolio.
- **PGE's 2026 IRP Action Plan will be informed by the portfolio shown by the gold star**.



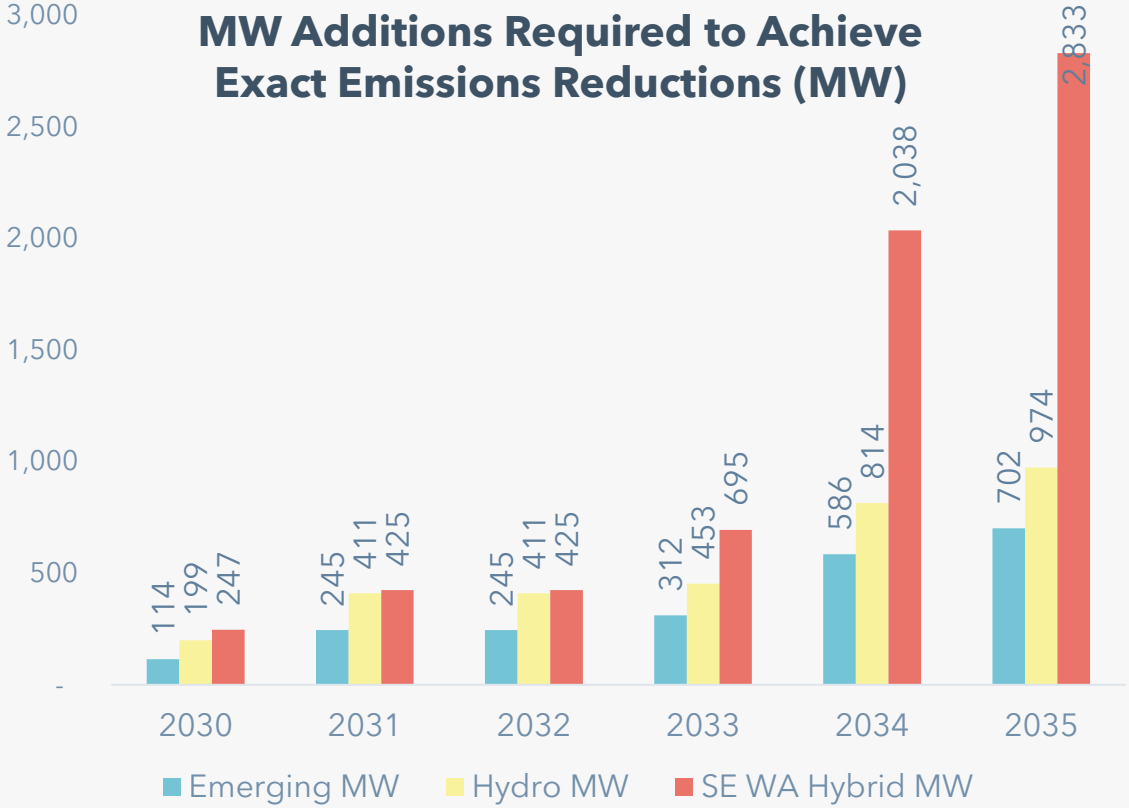
Continued Progress: Portfolio Comparison

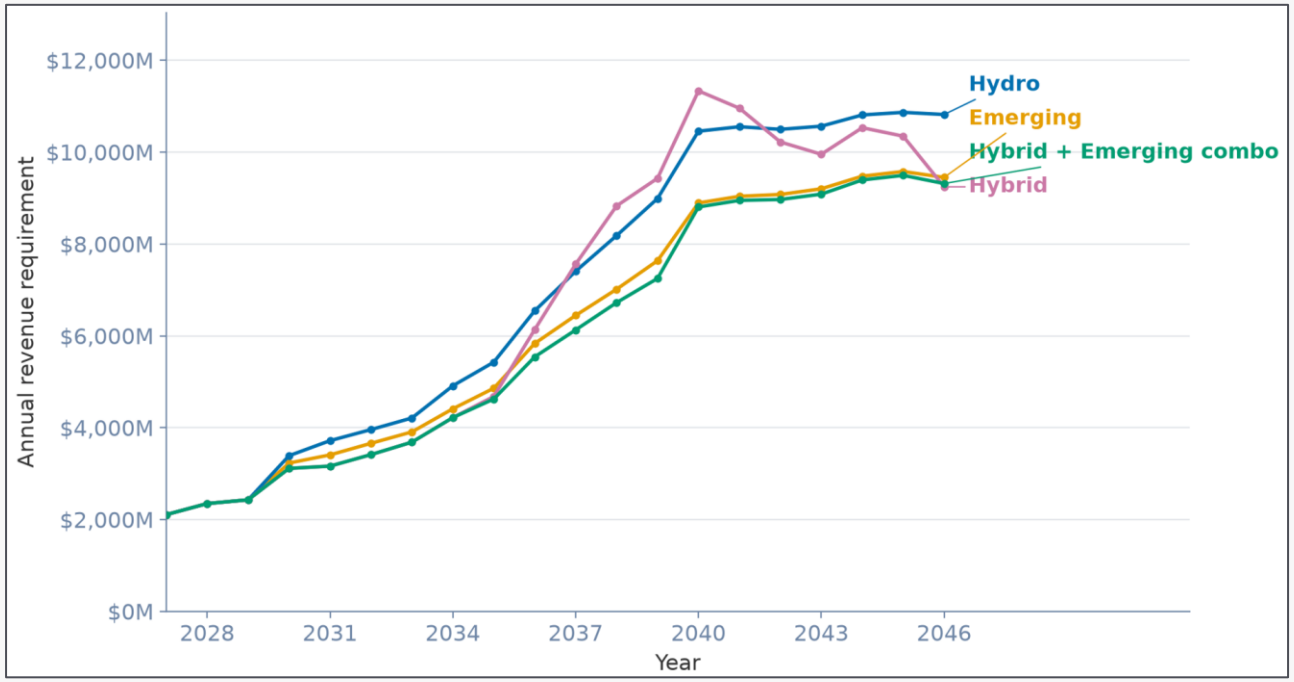
- In the Continued Progress planning scenario there are a few notable differences between the selected portfolio, and the one ROSE-E built under reference futures.
  - Less wind and less hybrids
  - More storage
  - More emerging
- ARIA is able to include in its calculation the risk certain resources add to the portfolio under different conditions. Wind is a lower cost option under reference conditions, but is relatively more expensive if tech costs end up higher than reference; and is more sensitive to different market price futures.
- The selected portfolio, while largely consistent with that of the reference case, scored slightly better on cost and risk metrics, discussed further in the presentation.



Selecting resources to close the emissions gap

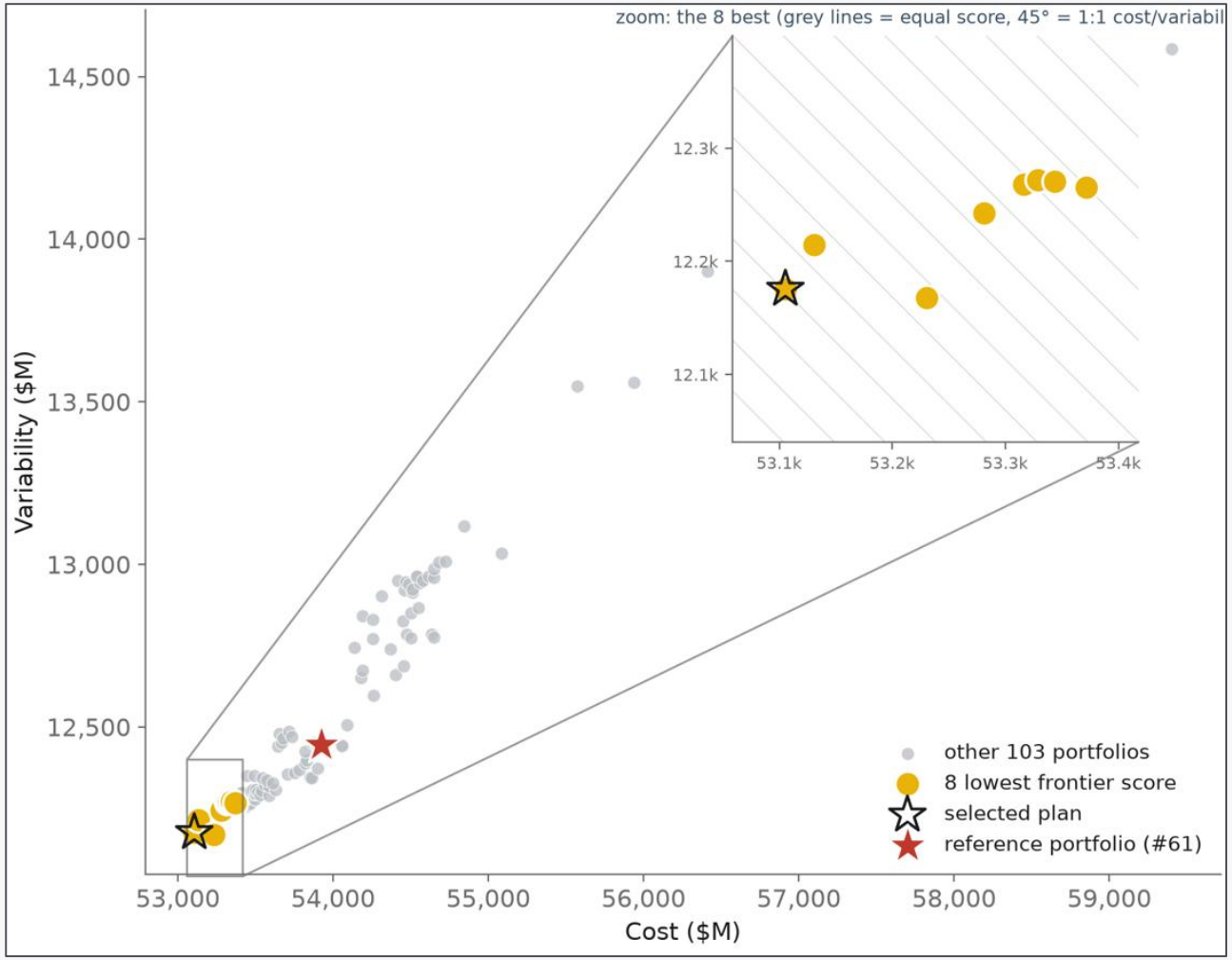
- As discussed at the July Roundtable, the quantity of additional resources required to close the hourly emissions gap was determined in **new AURORA PZM** for three different resource types.
- ARIA was then used to select the cheapest combination of resources.
- ARIA analysis revealed that hybrids from 2030-2034, and then emerging clean dispatchable from 2035-2046 is the most cost-efficient combination.
- **A combination of hybrid and emerging resources will be added to the Preferred Portfolio**.





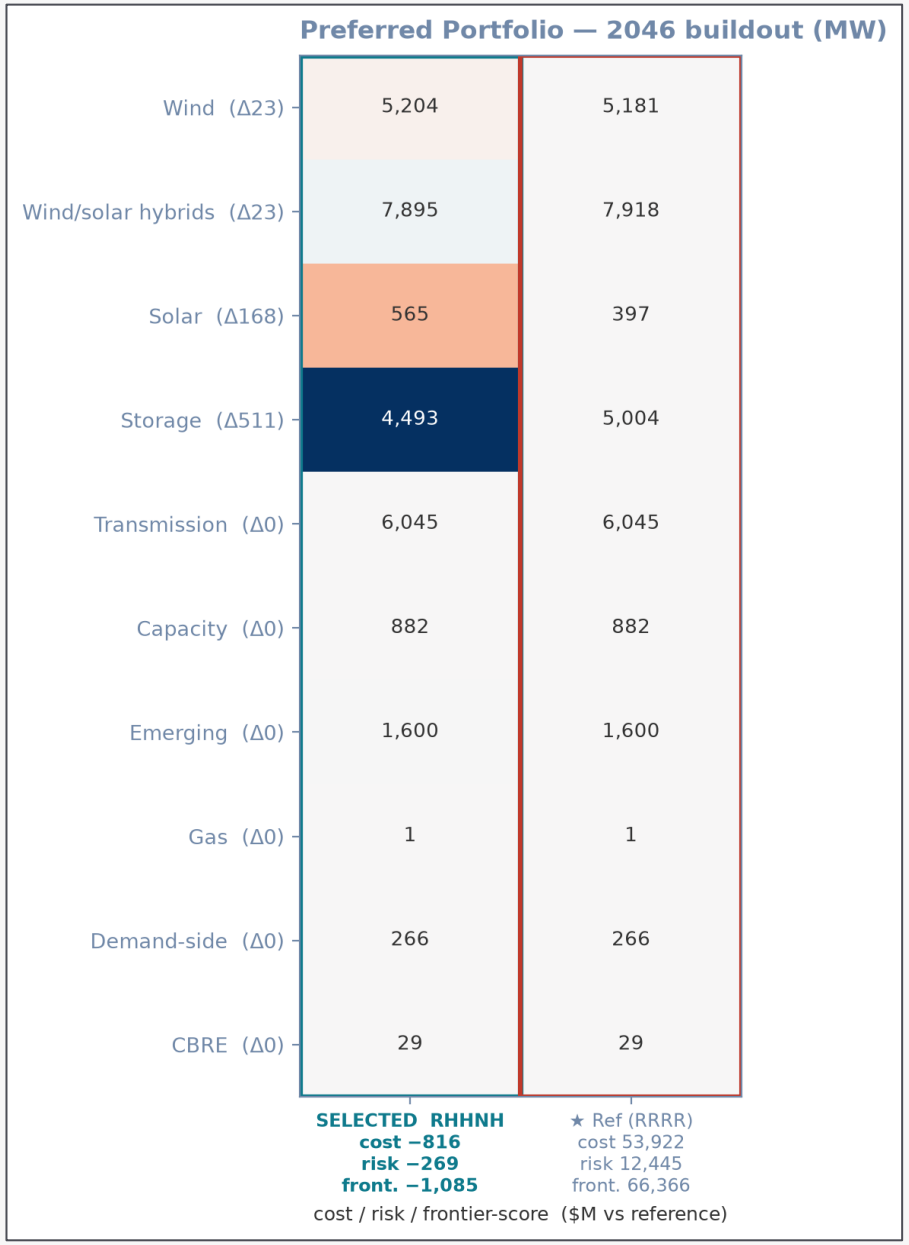
GHG Glidepath: Portfolio Comparison

- Each dot on the plot represents a particular portfolio under the GHG Glidepath regulatory environment.
- The position on the plot reflects the average cost and risk each portfolio has under the 111 reference-load futures
- The closer the portfolio is to the origin of the plot, the lower cost and lower risk it is.
- **Thus, the selected portfolio (the Preferred Portfolio), is the star on the very bottom left corner.**



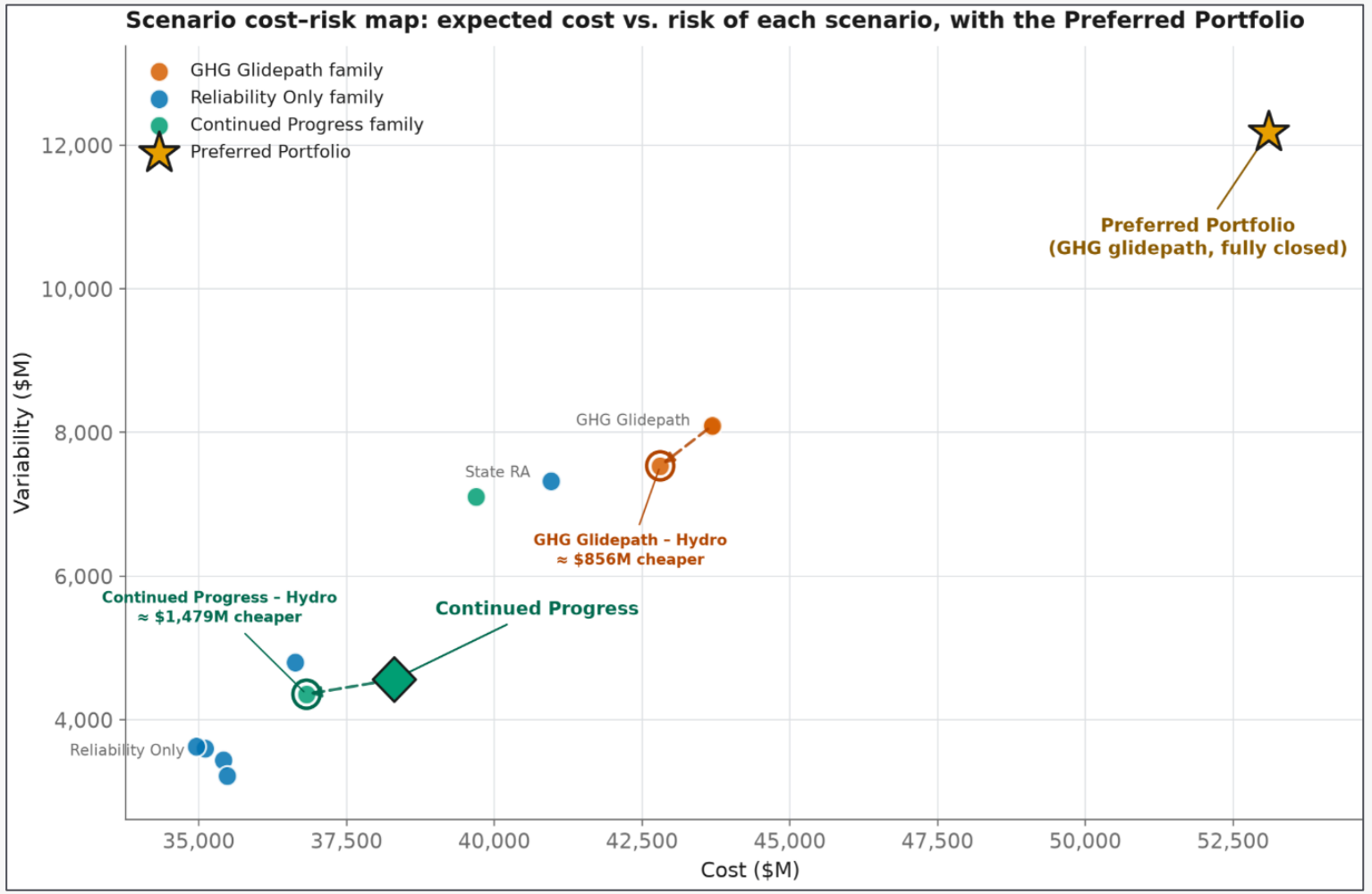
GHG Glidepath: Portfolio Comparison

- In the GHG Glidepath planning scenario there are a few notable differences between the selected portfolio (the Preferred Portfolio), and the one ROSE-E built under reference futures.
  - More Solar
  - Less Storage
- Solar is much more stable, lower risk, asset when considered across all our futures – which is why ARIA selects a portfolio with more solar than the reference build ROSE-E generated.
- The selected portfolio improves on the reference case portfolio, having lower cost and risk scores, discussed further in the presentation.

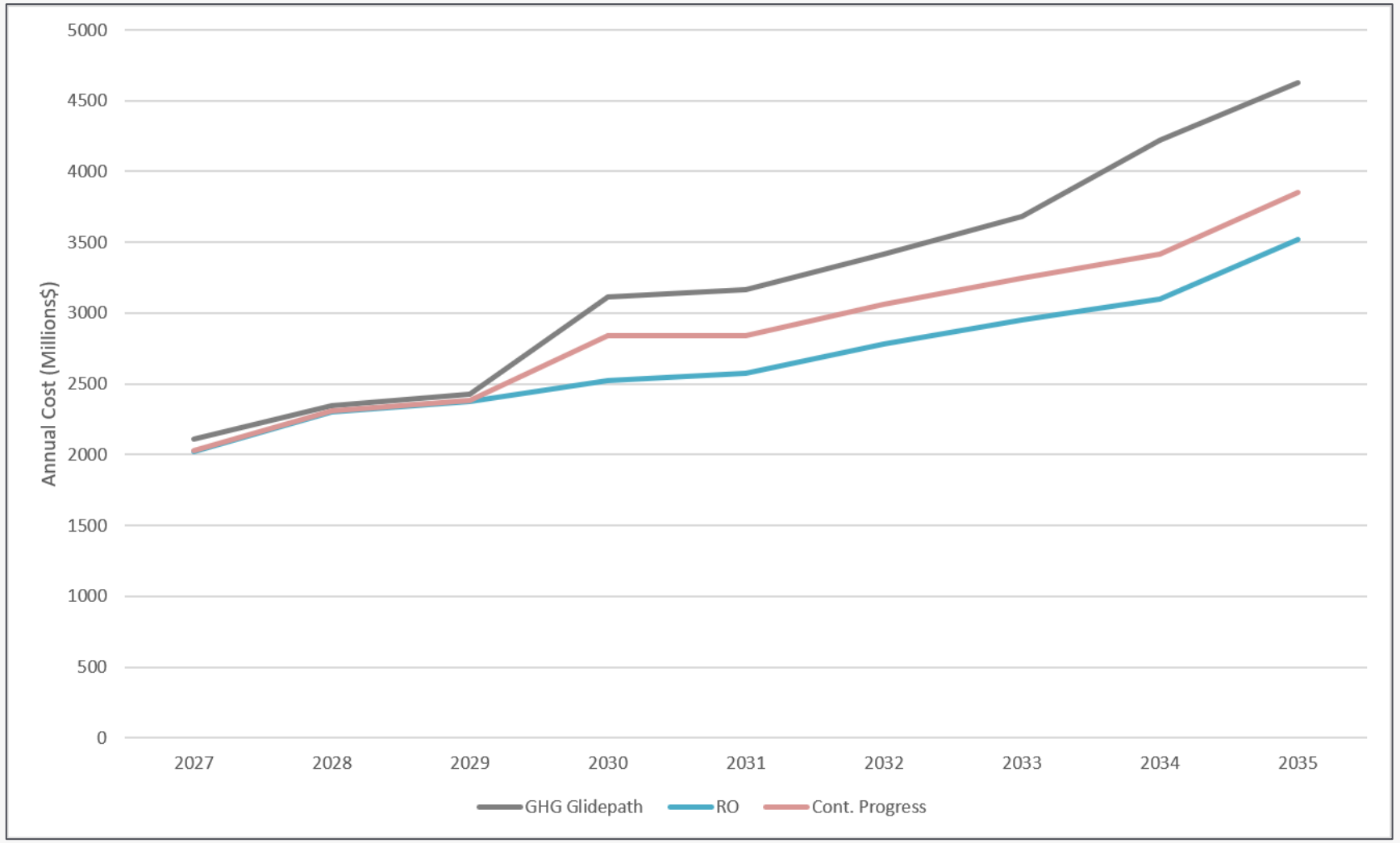


Cost and Risk of all Planning Scenarios

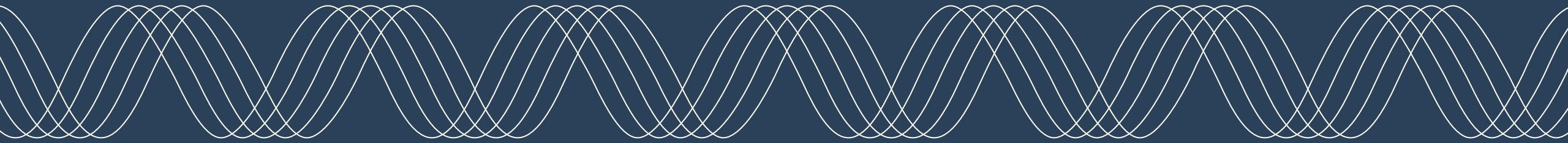
- This chart shows the impact to cost and risk based on the planning scenario considered.
- The selected portfolio from the GHG Glidepath environment has been identified as the **Preferred Portfolio** as it complies with exact emissions targets and performs the best on cost and risk metrics.
- The **Preferred Portfolio** star is much higher than the other GHG Glidepath scenarios, because it includes the additional resources needed to meet exact GHG limits at an hourly level.
- Results of analysis demonstrate the significant cost increases required to fully achieve HB21 emissions reduction targets
- Cost and risk roughly increase along a correlated trajectory; however, the continued progress selected portfolio is notably less risky than would be expected.



Annual Costs of the Selected Portfolio Under Each Planning Scenario 2027-2035



Portfolio Scoring Results



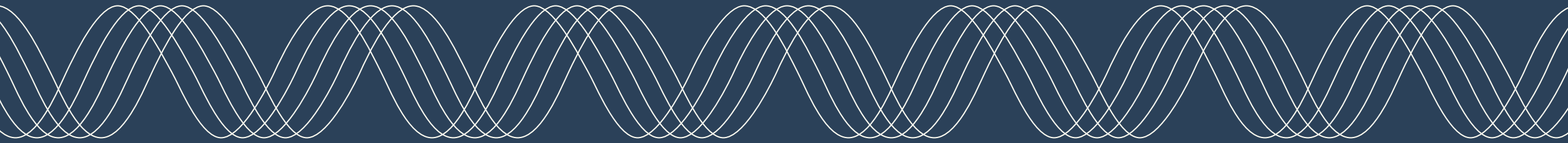
Draft Portfolio Scoring Results

			Traditional Metrics (20yr NPVRR)			Non-Traditional Metrics									
Future	Regulatory Environment	Scenario Name	Cost	Variability	Severity	Near-Term Costs sum of 2027-31	pCBI1	pCBI2	pCBI3	pCBI4	pCBI5	2030 Retail GHG Mill. MT CO2e	2032 Capacity Builds GW	2032 Wind & Solar GW diff from Pref. Port.	2046 Transmission GW diff from Pref. Port.
Reference Case Results			(costs in Millions 2026$)												
RRRR	**Reliability Only**	**RO**	**$ 35,110**	**$ 3,602**	**$ 39,658**	**$ 9,626**	**12,078**	**305**	**305**	**16,123**	**14,402**	**5.45**	**3.0**	**-67%**	**-18%**
RRRR	Reliability Only	RO - Hydro	$ 34,962	$ 3,630	$ 39,554	$ 9,707	12,747	275	275	14,920	13,474	5.28	2.8	-70%	-23%
RRRR	Reliability Only	RO - Colstrip	$ 35,413	$ 3,437	$ 39,733	$ 9,678	11,875	300	300	16,052	14,360	7.61	2.5	-74%	-18%
RRRR	Reliability Only	RO - Colstrip - Hydro	$ 35,484	$ 3,214	$ 39,500	$ 9,757	11,518	297	297	15,237	13,848	7.44	2.2	-77%	-18%
RRRR	Reliability Only	RO - Tax Credits	$ 32,239	$ 4,646	$ 38,340	$ 9,516	12,047	267	267	14,043	15,357	4.85	2.7	-68%	-18%
RRRR	**HB2021-ContProg**	**Cont. Progress**	**$ 38,303**	**$ 4,559**	**$ 44,327**	**$ 10,078**	**12,142**	**277**	**277**	**15,170**	**15,816**	**3.41**	**4.6**	**-46%**	**-18%**
RRRR	HB2021-ContProg	Cont. Prog. - Hydro	$ 36,823	$ 4,354	$ 42,653	$ 9,975	11,904	273	273	15,246	15,963	3.35	4.1	-50%	-18%
RRRR	HB2021-ContProg	Cont. Prog. - Tax Credits	$ 35,714	$ 5,949	$ 43,375	$ 9,964	13,866	249	249	15,568	17,841	3.17	4.9	-33%	0%
RRRR	HB2021-ContProg	No Transmission	$ 45,682	$ 7,325	$ 55,513	$ 10,070	14,948	355	355	19,077	19,117	3.58	4.7	-48%	-100%
RRRR	HB2021-ContProg	No WSPP	$ 40,062	$ 5,254	$ 47,077	$ 10,078	10,791	283	283	14,061	14,759	3.42	4.5	-47%	-68%
RRRR	HB2021-ContProg	No TH	$ 38,402	$ 4,595	$ 44,525	$ 10,077	10,952	249	249	14,081	14,801	3.42	4.5	-47%	-27%
RRRR	HB2021-ContProg	No NPC	$ 38,272	$ 4,747	$ 44,571	$ 10,077	12,744	275	275	15,397	16,016	3.42	4.5	-47%	-23%
RRRR	**HB2021-Glidepath**	**GHG Glidepath**	**$ 53,922**	**$ 12,445**	**$ 70,549**	**$ 10,657**	**20,207**	**296**	**296**	**31,750**	**30,837**	**1.62**	**8.6**	**6%**	**0%**
RRRR	HB2021-Glidepath	GHG Glidepath - Hydro	$ 51,938	$ 11,574	$ 67,428	$ 10,574	19,242	294	294	30,856	30,377	1.62	7.5	-4%	0%
RRRR	HB2021-Glidepath	GHG - Tax Credits	$ 45,915	$ 11,600	$ 61,557	$ 10,368	20,115	296	296	32,454	31,709	1.62	8.6	5%	0%
RRRR	HB2021-Glidepath	State RA	$ 40,956	$ 7,324	$ 50,525	$ 10,539	18,152	368	368	26,565	25,278	1.78	7.4	-13%	0%
Selected Portfolio Results															
HHRR	**HB2021-ContProg**	**Cont. Progress Portfolio**	**$ 38,099**	**$ 4,641**	**$ 44,230**	**$ 10,076**	**11,728**	**276**	**276**	**14,973**	**15,570**	**3.39**	**4.6**	**-46%**	**-18%**
RHHN	**HB2021-Glidepath**	**Preferred Portfolio**	**$ 53,105**	**$ 12,176**	**$ 69,396**	**$ 10,661**	**20,745**	**296**	**296**	**30,020**	**29,298**	**1.62**	**8.1**	**5.8**	**6.0**

Draft Portfolio Scoring Results – Core Growth Only

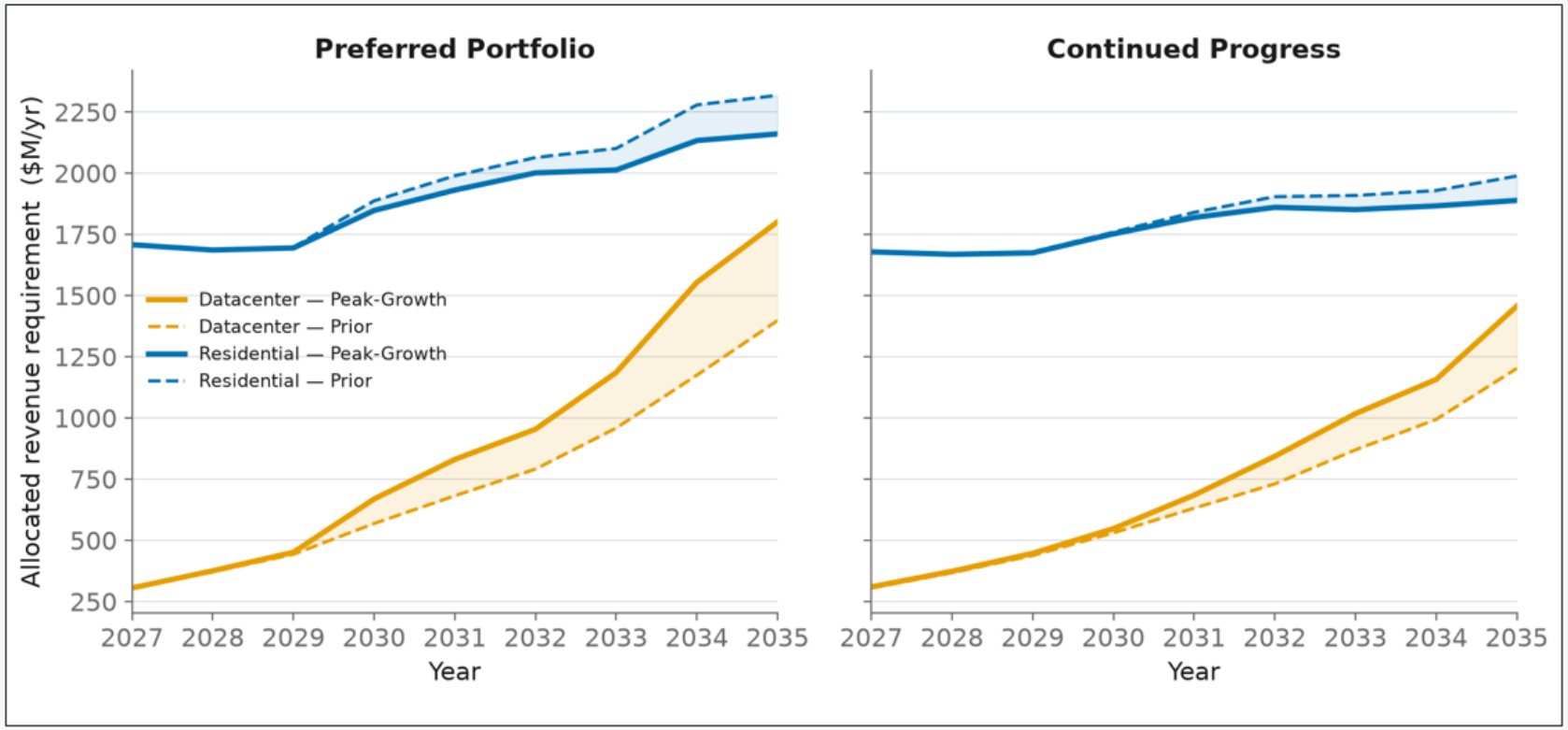
			Traditional Metrics (20yr NPVRR)			Non-Traditional Metrics								
Future	Regulatory Environment	Scenario Name	Cost	Variability	Severity	Near-Term Costs sum of 2027-31	pCBI1	pCBI2	pCBI3	pCBI4	pCBI5	2030 Retail GHG Mill. MT CO2e	2032 Capacity Builds GW	2032 Wind & Solar GW	2046 Transmission GW
Core Growth Only (CGO)			(costs in Millions 2026$)												
RRRR	Reliability Only	RO - CGO	$ 31,281	$ 2,626	$ 34,647	$ 9,514	4,032	55	55	4,752	4,953	4.82	1.7	1.1	0.5
RRRR	Reliability Only	RO - CGO - Colstrip	$ 31,736	$ 2,614	$ 35,102	$ 9,597	4,002	40	40	4,635	4,879	6.73	1.6	1.0	0.5
RRRR	Reliability Only	RO - CGO - Hydro	$ 31,517	$ 2,591	$ 35,104	$ 9,608	3,433	40	40	3,483	3,848	4.65	1.6	1.0	0.0
RRRR	Reliability Only	RO - CGO - Colstrip - Hydro	$ 31,854	$ 2,586	$ 35,435	$ 9,682	3,433	40	40	3,483	3,848	6.36	1.5	1.0	0.0
RRRR	HB2021-ContProg	Cont. Prog. - CGO	$ 32,829	$ 3,130	$ 36,843	$ 9,796	4,876	14	14	5,001	7,223	2.80	3.3	2.5	1.5
RRRR	HB2021-ContProg	Cont. Prog. CGO Hydro	$ 33,023	$ 2,996	$ 36,707	$ 9,885	3,968	29	29	4,530	6,264	2.78	3.1	2.3	0.5
RRRR	HB2021-Glidepath	GHG Glidepath - CGO	$ 42,939	$ 6,707	$ 51,576	$ 10,345	11,982	68	68	16,772	16,856	1.62	5.1	4.0	4.9
RRRR	HB2021-Glidepath	GHG CGO Hydro	$ 41,420	$ 5,859	$ 49,093	$ 10,263	11,253	68	68	15,461	15,451	1.62	4.6	3.6	4.9

Additional ARIA results – Customer Costs



Analysis of Costs Across Customer Classes – Peak Growth Modifier

- When modeling the mechanisms from UM 2377, residential costs decline and data center costs increase
- The modeling assigns generation and transmission assets being built to meet new load growth, to the growth causing customer classes according to their load growth factor.
- On average, residential peak loads are expected to account for ~21% of the growth allocation; whereas datacenters are expected to account for ~77%.
- This analysis shows that the Peak Growth Modifier supports affordability for residential customers, even when large resource additions are needed for emissions reduction.



Summary and Guided Feedback

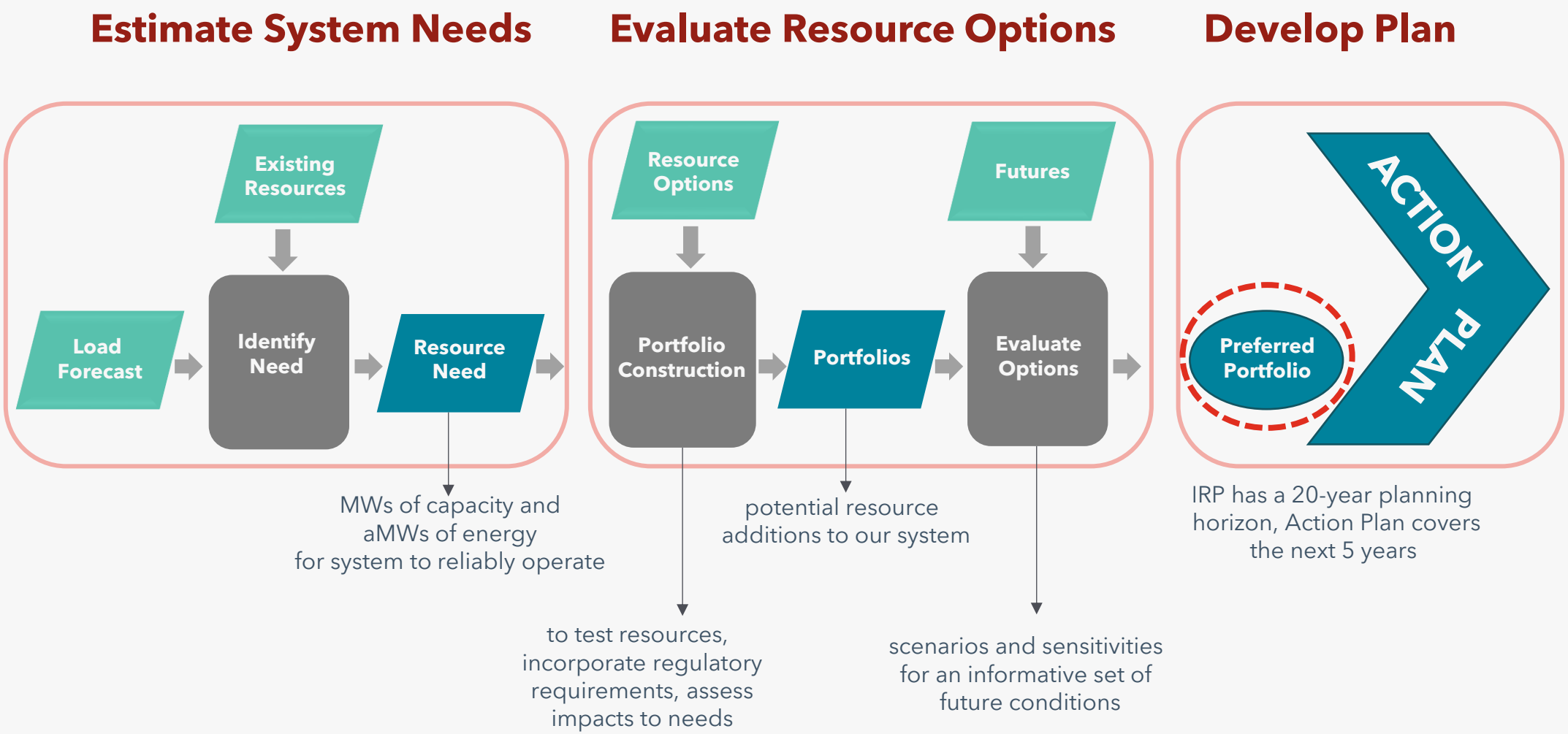
Summary: PGE reviewed key metrics for all portfolios and utilized the ARIA tool to identify exact portfolio buildouts that performed the best from a least-cost, least-risk perspective. The GHG Glidepath portfolio that performed the best has been selected as the Preferred Portfolio. The best performing Continued Progress portfolio will also support the 2026 IRP's near-term Action Plan.

Content: Do you understand how PGE evaluated portfolios in the portfolio scoring process?

Preferred Portfolio & Continued Progress Portfolio

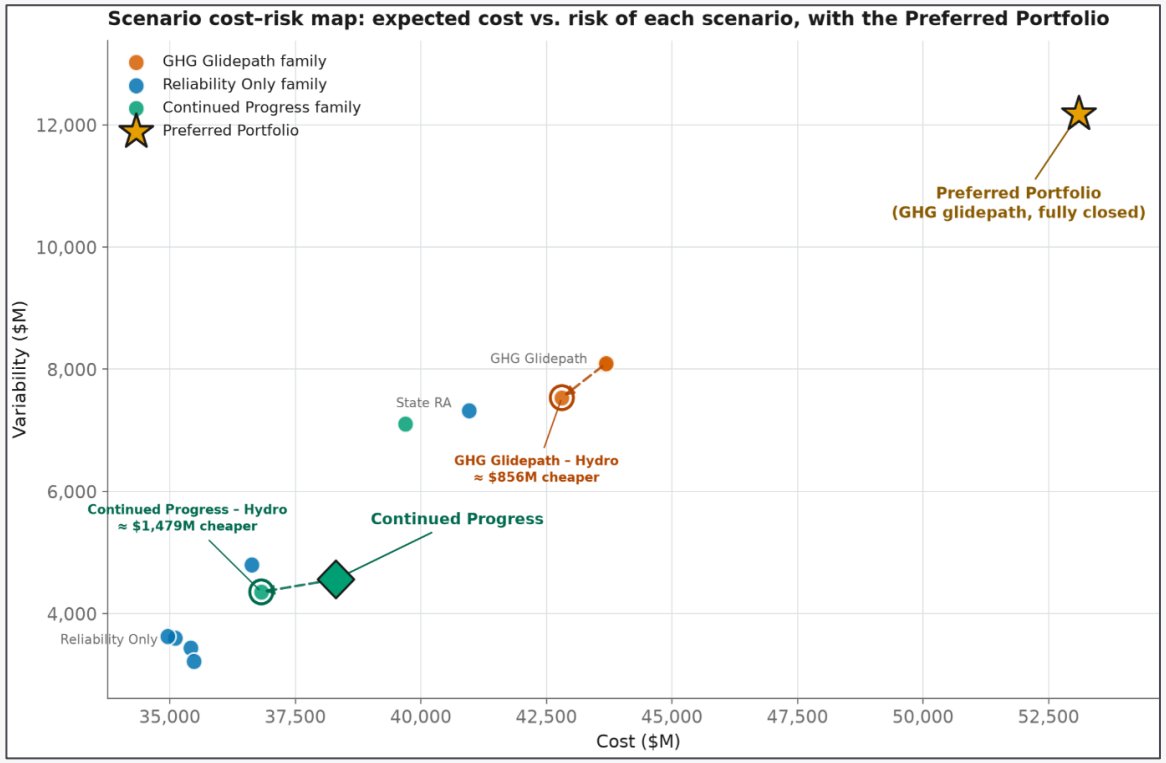
Rob Campbell

High-Level IRP Analysis Process



Preferred Portfolio

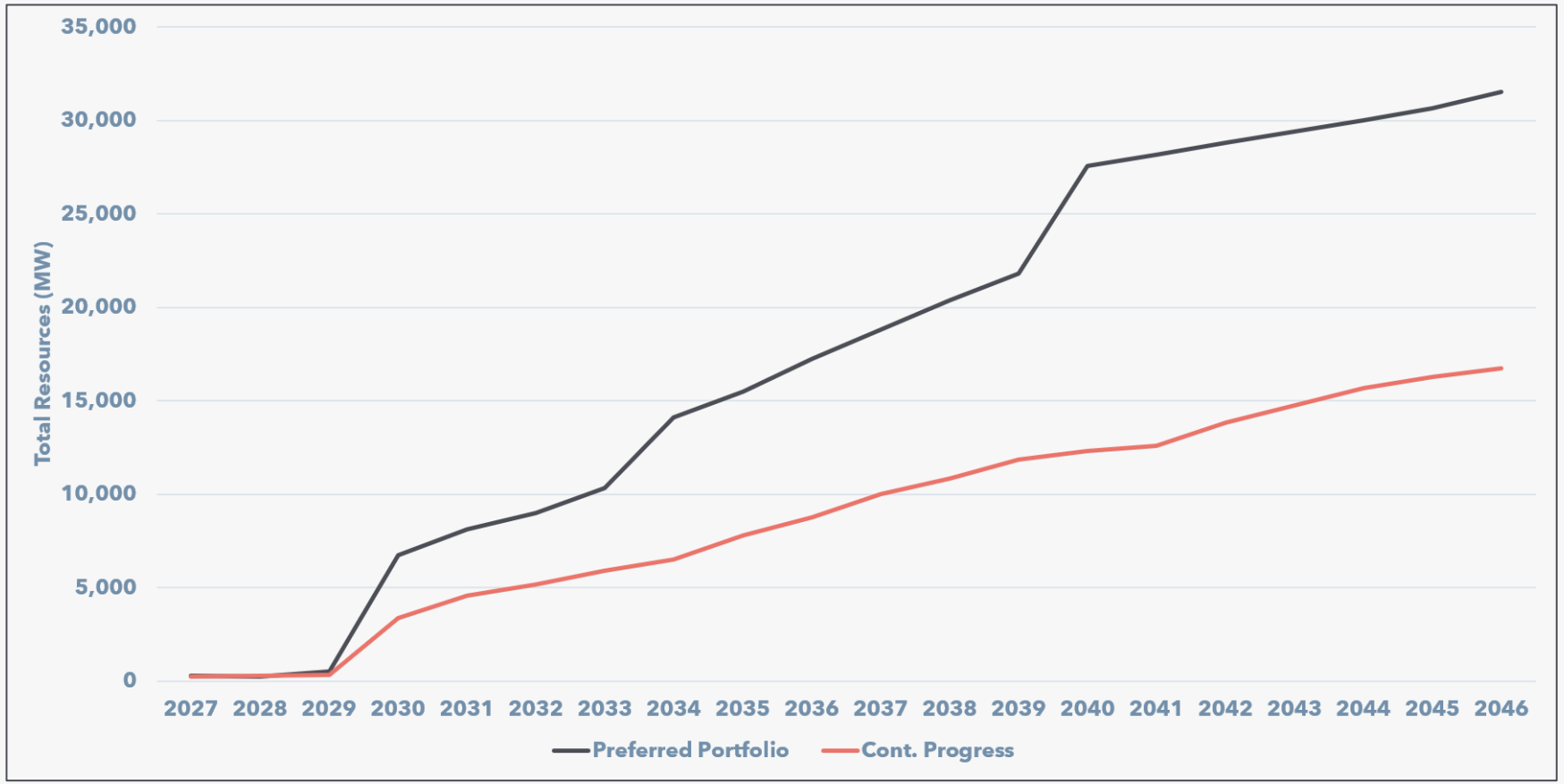
- **The IRP Preferred Portfolio should achieve the emissions reductions targets set forth in ORS 469A.410[1]**
- PGE has designed scenarios to achieve exact emissions reductions of HB21 under the GHG Glidepath regulatory environment structure.
- Portfolio scoring identified the resource buildout associated with the reference need, RHHN price, high tech cost future for the GHG Glidepath scenario as the **Preferred Portfolio**.
    - Consists of new resource additions made in ROSE-E plus additional non-emitting resources added through iterative analysis to meet targets at hourly modeling granularity.



- The costs and risks associated with the Preferred Portfolio are **significantly higher** than other portfolios, *suggesting that actual resource additions likely need to be tempered to a volume that is executable and can also address customer affordability concerns*.
- Balancing affordability, reliability, and clean energy in the current planning environment has further underscored the importance of approaching near-term decisions purposefully.
- Results from both the ★ **Preferred Portfolio &** the ◆ **Continued Progress** portfolio will directly inform the 2026 CEP/IRP Action Plan, which is further discussed in the next section.

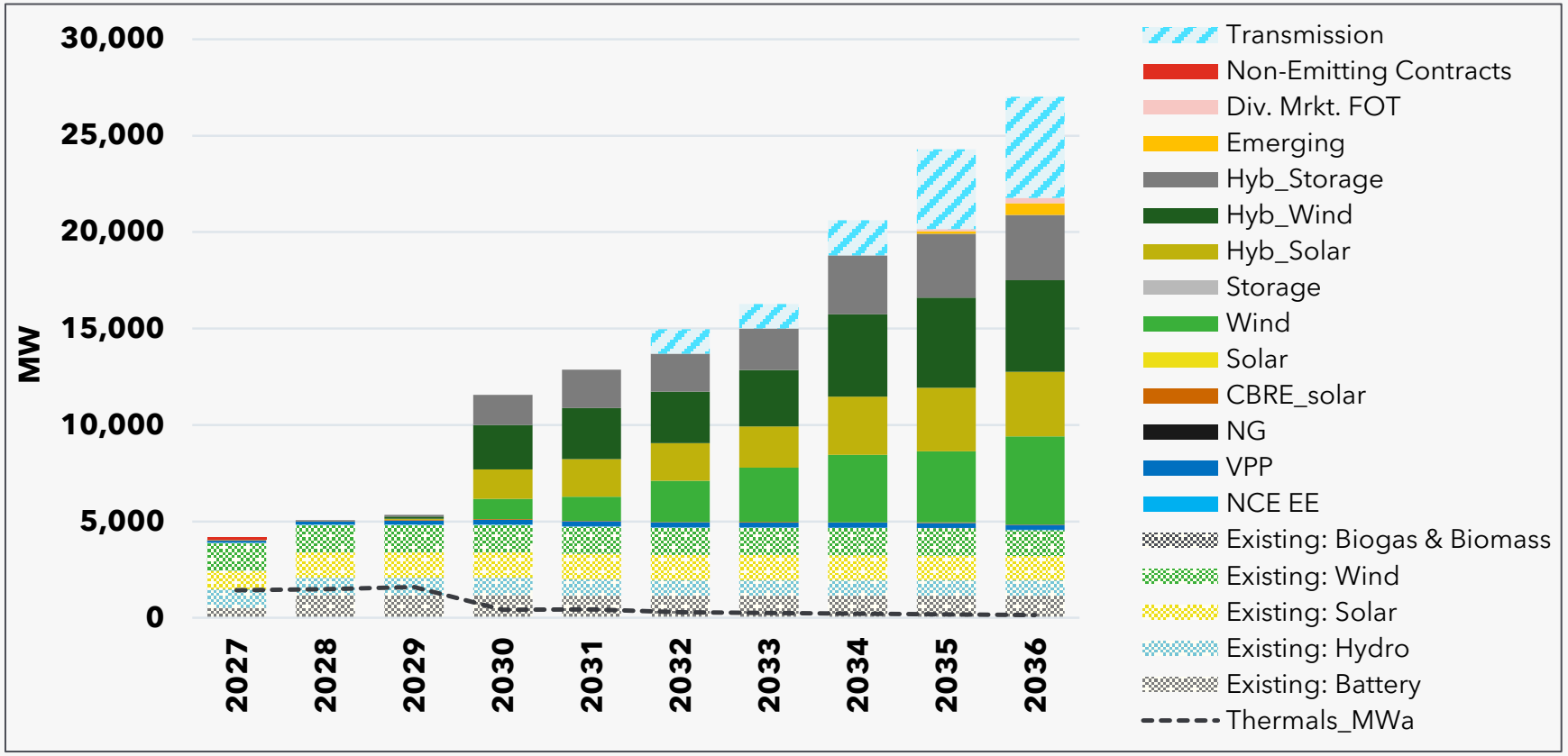
1) 860-090-0100 (8)

Preferred Portfolio and Continued Progress Portfolio



In order to achieve HB 2021 emissions reduction targets, including additional resources to meet hourly emissions, resource additions in the Preferred Portfolio are substantially larger than the Continued Progress portfolio.

Preferred Portfolio Resources



Highlights

Substantial additions are made to PGE's existing portfolio of non-emitting resources.

The portfolio relies heavily on hybrid resources (that optimize utilization of transmission) and standalone wind.

Preferred Portfolio Resource Additions in Action Plan Window (MW)

	2027	2028	2029	2030	2031	2032
Hybrid Battery	27	27	94	1560	1979	1979
Standalone Wind (Firm Tx)	0	0	0	42	42	940
Hybrid Wind (Firm Tx)	0	0	100	2051	2051	2051
Standalone Wind (NF Tx)	0	0	0	1009	1198	1198
Hybrid Wind (NF Tx)	0	0	0	247	607	607
Hybrid Solar (Firm Tx)	0	0	67	1368	1547	1547
Hybrid Solar (NF Tx)	0	0	0	165	404	404
NCE EE	11	11	12	12	12	13
VPP	99	165	213	249	252	253
CBRE	27	27	27	27	27	27
Total New Resources	**266**	**230**	**513**	**6730**	**8120**	**9020**
Transmission	0	0	0	0	0	1270

Highlights

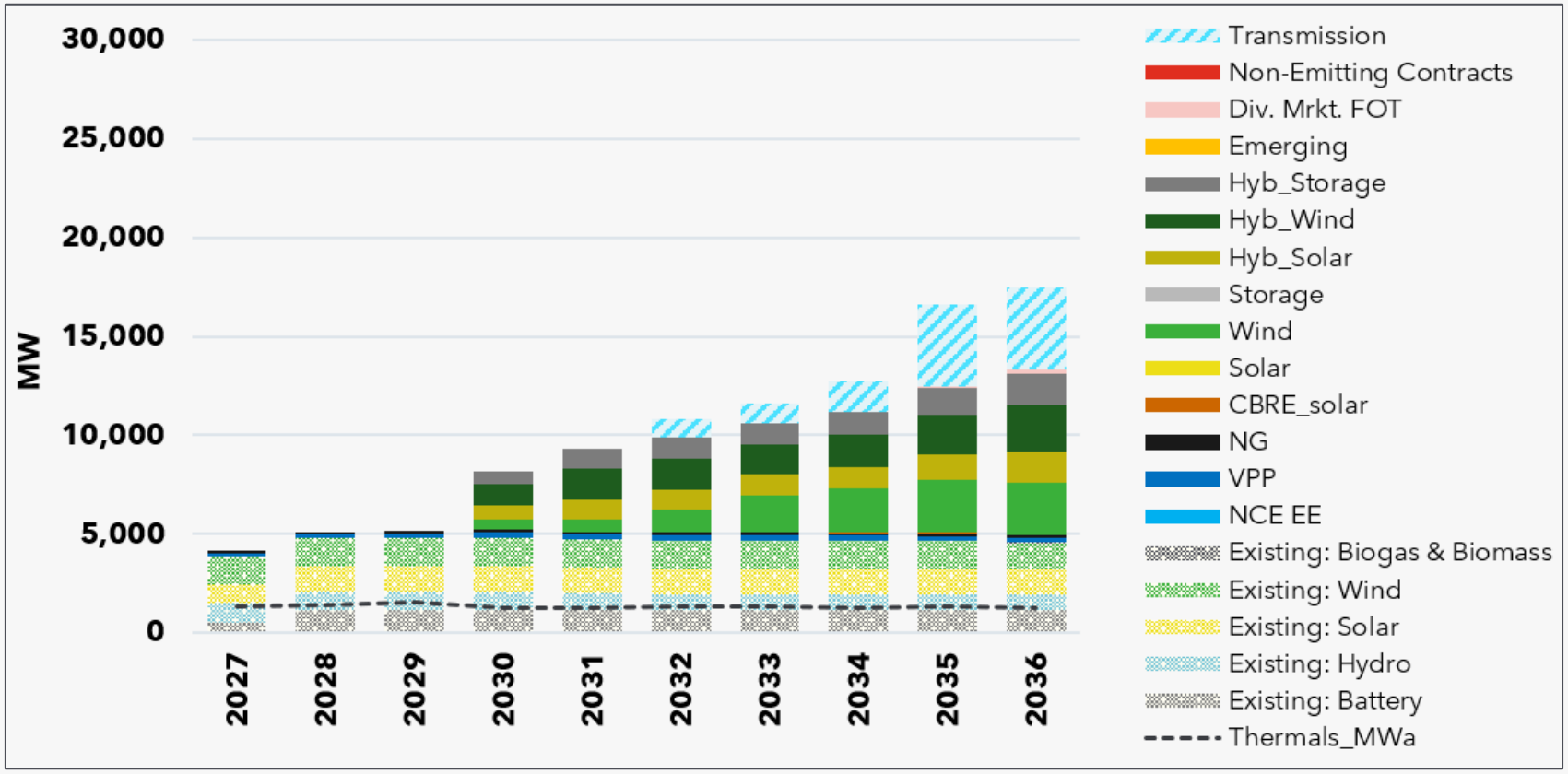
9020 MW of total resource additions through 2032.

6748 MW of renewables added with a mix of firm and non-firm transmission.

1979 MW of hybrid batteries.

11% (992 MW) of the 2032 resource additions are needed to ensure hourly attainment of HB 2021 emissions targets.

Continued Progress Resources



Highlights

Fewer additions of new resources than Preferred Portfolio.

Portfolio relies mostly on new non-emitting renewable resources and storage but also includes 137 MW of natural gas contracts.

Continued Progress Resource Additions in Action Plan Window (MW)

	2027	2028	2029	2030	2031	2032
Hybrid Battery	0	0	0	701	1034	1034
Standalone Wind (Firm Tx)	0	0	0	543	543	1132
Hybrid Wind (Firm Tx)	0	0	0	1051	1550	1550
Standalone Wind (NF Tx)	0	0	0	0	36	36
Hybrid Solar (Firm Tx)	0	0	0	701	1034	1034
EE (Mwa)	0	0	0	1	1	1
VPP	96	161	208	243	247	248
Natural Gas	137	137	137	137	137	137
Total New Resources	**233**	**298**	**345**	**3377**	**4582**	**5172**
Transmission	0	0	0	0	0	1000

Highlights

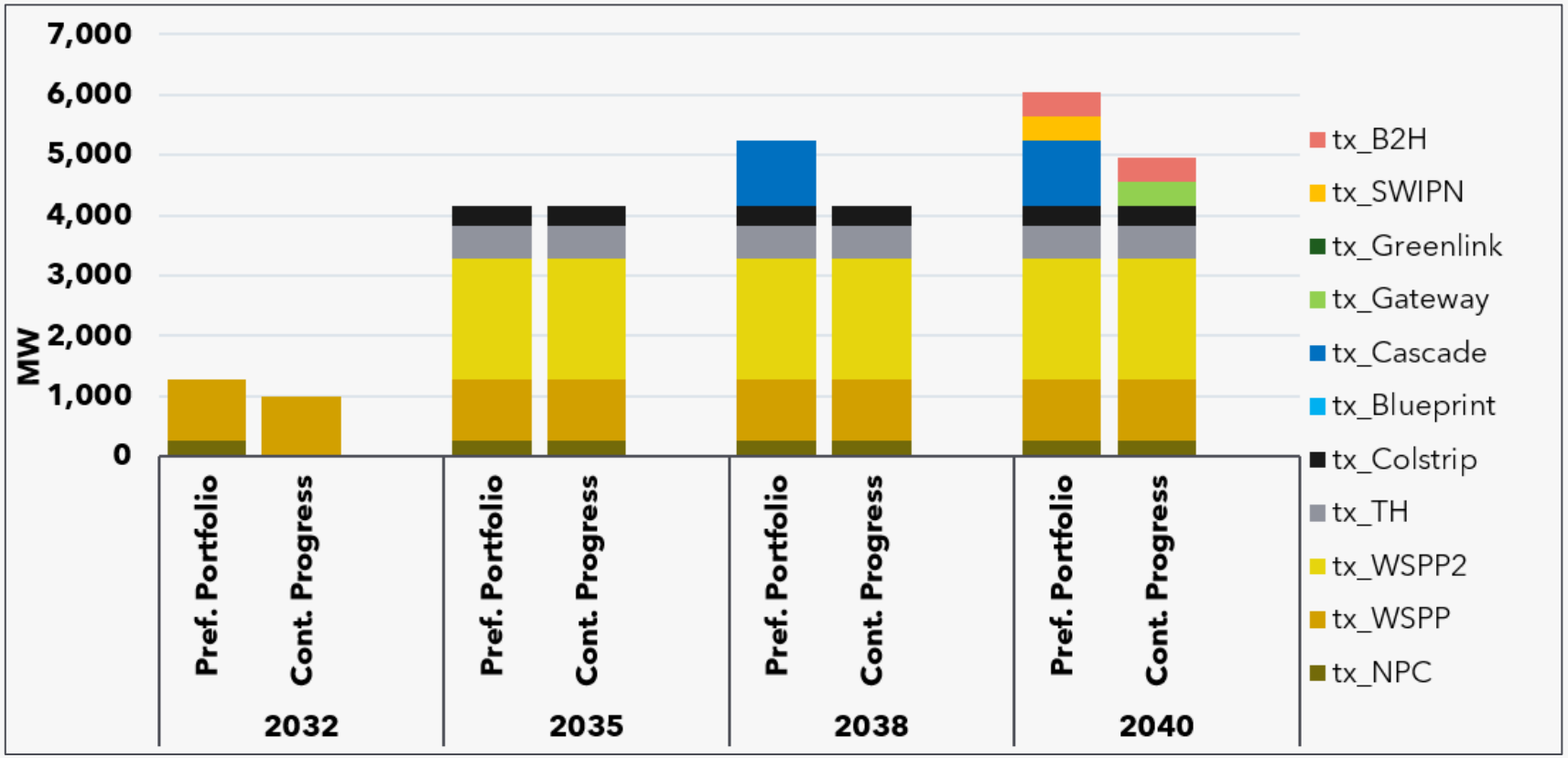
5172 MW of total resource additions through 2032.

3752 MW of wind and solar added with a combination of firm and non-firm transmission.

1034 MW of hybrid batteries.

137 MW of natural gas contracts.

Transmission Additions (MW)



Highlights

Transmission expansion and upgrades are a key component of both portfolios.

6045 MW of transmission add in the Preferred Portfolio.

4945 MW of transmission add in the Continued Progress Portfolio.

Tx unlocks access to multiple GWs of off-system renewables, hybrids, and front-office transactions for capacity.

Summary and Guided Feedback

Summary: PGE provided a detailed resource buildout of the Preferred Portfolio (defined by rules to be required to meet exact emissions reductions targets) and the selected Continued Progress portfolio. These details help inform certain actions in the 2026 IRP's near-term Action Plan.

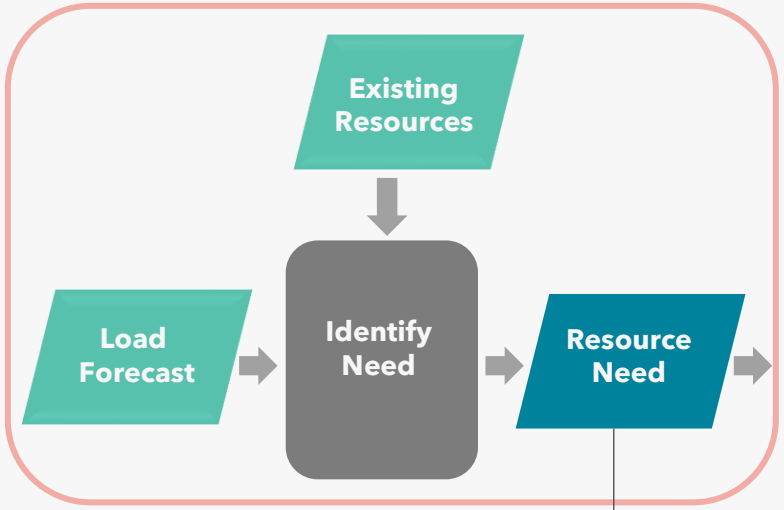
Content: What additional details would be helpful to understand the Preferred Portfolio and selected Continued Progress portfolio?

Draft Action Plan

Sam Newman

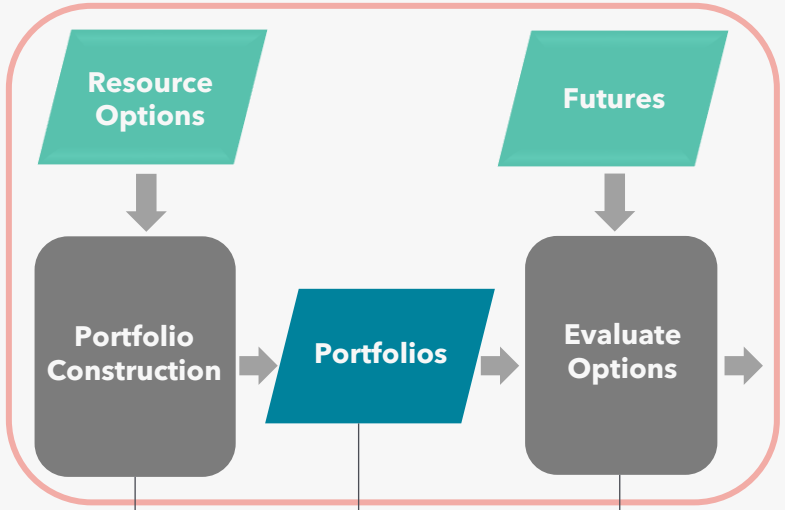
High-Level IRP Analysis Process

Estimate System Needs



MWs of capacity and aMWs of energy for system to reliably operate

Evaluate Resource Options



potential resource additions to our system

to test resources, incorporate regulatory requirements, assess impacts to needs

scenarios and sensitivities for an informative set of future conditions

Develop Plan

IRP has a 20-year planning horizon, Action Plan covers the next 5 years

Structure of the IRP/CEP Action Plan

Continued Progress Portfolio and Preferred Portfolio results directly informed the Action Plan, which considers total resource needs as a MW range for continuing resource acquisition activities.

Within the near-term, circumstances such as an extension of federal tax credits, may allow for additional procurement activities up to the amount identified in the Preferred Portfolio. In all cases, the Action Plan continues to emphasize the importance of cost-effective demand response, energy efficiency, and distributed resources which support addressing PGE's resource needs while mitigating cost impacts to customers.

The IRP/CEP Near-Term Action Plan addresses six high-level topics:

1. Resource Planning Action
2. Energy Efficiency Action
3. Virtual Power Plant Actions
4. CBRE and SSR Actions
5. Utility Scale Resource Actions
6. Transmission Actions

Within each topic, the IRP/CEP describes **objectives and actions by 2032**

1. Draft Resource Planning Action

- PGE's resource planning function will continue to revise analysis outputs and methodologies, including scheduling the next phase of engagement opportunities

No.	Objective	Action
1.1	Publish two annual CEP/IRP Updates to this 2026 CEP/IRP.	File 2026 CEP/IRP Updates, currently planned to be on or before Sept 30, 2027, and Sept 30, 2028.
1.2	Publish next CEP/IRP.	File 2029 CEP/IRP, currently planned to be on or before Sept 30, 2029.

2. Draft Energy Efficiency Action

- Energy efficiency is deployed through programs funded by PGE and administered by Energy Trust of Oregon.
- PGE's IRP incorporates Energy Trust's current forecast, which may evolve.
- According to ETO analysis, cost-effective EE implemented in 2027 through 2031 is currently forecast to provide cumulative savings of approximately 182 MWa, an average pace of incremental deployment of about 36 MWa per year

No.	Objective	Action
2.1	Acquire cost-effective energy efficiency.	Fund Energy Trust of Oregon (ETO) via Multi-Year Planning framework.

3. Draft Virtual Power Plant (VPP) Actions

- VPP actions include flex load programs, Distributed Standby Generation (DSG), large load flexibility, rooftop solar, and other innovative programs
- Acquisition volumes will be adjusted based on evolving cost-effectiveness and demonstration progress; modeled incremental resource additions through 2032 include 54 MW (summer) / 29 MW (winter) of flex load programs and pilots, 219 MW of DSG, and 82 MW of customer-sited solar

No.	Objective	Action
3.1	Pursue available cost-effective flexible load and dispatchable distributed resources that customers choose to provide.	• Pursue winter and summer capacity from existing cost-effective programs and pilots, as established in the VPP Multi-Year Plan. • Reevaluate non-cost-effective opportunities in future planning. • Integrate large load flexibility through plan of service requirements. • Explore opportunities to use Non-Wires Solution projects to address locational needs.
3.2	Maximize resource value of customer-sited solar, with emphasis on advancement from Stage 1 to Stage 2 VPP capabilities.	• Prioritize storage pairing, prioritize community benefits. • Investments to support customer-friendly application and enrollment process.

4. Draft Community-Based RE and Small-Scale RE Actions

- Community-Based Renewable Energy (CBRE) provides direct benefits to communities
- Small-Scale Renewables (SSR) are resources generally <20 MW eligible for Oregon's 10% SSR req.
- Acquisition volumes will be adjusted based on evolving cost-effectiveness and resource availability; demonstration progress; modeled resource additions include 0-27 MW CBRE through 2032 and 448-669 MW SSR-eligible for the 2030 compliance year

No.	Objective	Action
4.1	Seek projects with tangible community benefits across procurement pathways.	• Deploy CBRE through customer programs and resource procurement actions, where cost -competitive. • Develop pipeline of projects that provide tangible community benefits, with supplemental funding sources. • Build out rCBI framework to inform funding partnerships for projects that provide tangible community benefits and ownership opportunities for local governments, tribes, or nonprofit organizations.
4.2	Acquire SSR-eligible resources by 2030.	• Maintain SSR progress through contributions from QFs, CBREs, projects promoted by large load service plans, and if eligible, PGE-procured and VPP-integrated customer-sited resources. • Issue SSR RFP in 2027 seeking up to the 2030 target volume of SSR-eligible resources if cost-competitive.

5. Draft Utility Scale Resource Actions

- To meet reliability needs, as well as continue progress toward the 2030 GHG emissions target, PGE will pursue a multipronged procurement strategy to acquire available and cost-competitive resource options

No.	Objective	Action
5.1	Acquire firm and dispatchable capacity contracts.	Continue multipronged procurement strategy: ▪ 2025 RFP FSL transactions ▪ Bilateral actions ▪ Large load special contracts (where appropriate) Where appropriate, prioritize projects with firm transmission plans and tax credit eligibility
5.2	Acquire approximately 3,000 MW of wind, solar, and hybrid battery storage that maximize use of existing transmission service plans.	
5.3	Acquire an additional 1,800 to 5,700 MW of wind, solar, and hybrid battery storage, informed by resource acquisition progress, ongoing assessments of needs, and project costs.	Issue one or more all-source RFPs Large load special contracts (where appropriate)

6. Draft Transmission Actions

- Planning analysis demonstrates that expanding the transmission network and upgrading aging transmission infrastructure is needed in the near-term and long-term. Transmission projects are critical to access diverse renewable non-emitting resources, and support a safe, reliable and affordable grid.

No.	Objective	Action
6.1	Leverage Grid Enhancing Technologies (GETs) to enhance local transmission.	Execute GETs strategy.
6.2	Advance development of the Warm Springs Power Pathway project in collaboration with Confederated Tribes of the Warm Springs to assure reliability and access diverse renewables.	Continue development activities, by entering into agreements to support permitting, engineering design, procurement, construction, and community engagement actions.
6.3	Support development of North Plains Connector to access diverse renewables and markets.	Enter into definitive agreements with project developer for purchase of capacity and option to purchase interest in the line, subject to appropriate regulatory approval and other conditions precedent.
6.4	Advance development of the Harborton-Trojan #3 project to assure reliability and access diverse renewables.	Continue development activities, by entering into agreements to support permitting, engineering design, procurement, construction, and community engagement actions.
6.5	Maintain options for additional transmission informed by resource acquisition progress, ongoing assessments of needs, and project costs.	Explore additional regional transmission options to access diverse renewables and non-emitting resources.

Draft Long-Term Resource Strategy

PGE considers strategies necessary for long-term safe, reliable, affordable service that is compliant with state and federal laws. The analytical results of the CEP/IRP informs PGE's long-term strategy, which is ultimately anchored to PGE's strategic imperatives

Customer Affordability

1. Seek to acquire available and cost competitive on-system resources, including EE & VPP
2. Use VPP, GridCARE, GETs and NWS, where cost effective, to maximize existing infrastructure
3. Utilize established mechanisms and tools to allocate costs fairly, supporting "growth pays for growth"
4. Maintain reliance on existing gas fleet as an affordable reliability backbone

Clean Energy

1. Rely near-completely on clean energy resources to meet long-term load growth
2. Pursue transmission expansion projects that provide greater access to renewable resources in geographically diverse locations
3. Seek development of more precise mechanisms for tracking and reporting the emissions content of resourced dispatched and allocated through energy markets.
4. Continue to evaluate, with the CBIAG and other key stakeholders, CBRE procurement frameworks

Customer Growth

1. Execute resource acquisition strategy to procure appropriate volumes of dispatchable capacity, maintaining reliability
2. Integrate VPP expansion with customer growth while advancing long-term goal of VPP contributing 25% of peak system needs by 2030
3. Evaluate opportunities for special contracts with large load customers, incorporating flexibility where appropriate and ensuring costs are allocated fairly

Investable Energy Future for the Pacific Northwest

Risk Management

1. Pursue state and federal actions to address wildfire risk
2. Continue to collaborate with OPUC on important regulatory mechanisms related to the Power Cost Adjustment Mechanism (PCAM), long-lead utility infrastructure and resources, and others as relevant

VPP = Virtual Power Plan
GETs = Grid Enhancing Technologies
NWS = non-wire solutions

Summary and Guided Feedback

Summary: PGE presented draft actions for the near-term Action Plan and long-term resource strategy, supported by portfolio analysis results presented earlier. PGE's flexible Action Plan allows the Company to adapt to current planning conditions while prioritizing decarbonization, affordability, reliability, and management of execution risk. It also preserves flexibility within the Action Plan should market conditions evolve.

Content: Do you understand how the actions identified connect to the portfolio analysis results discussed earlier? Are there additional actions PGE should consider based on portfolio results?

NEXT STEPS

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

Upcoming Roundtable: October 2026

Thank you

Contact us at
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An

kind of energy

ACRONYMS

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