2022 Power Generation Plan Results Discussion

Rate Advisory Committee Meeting – November 17, 2022

CPS ENERGY

CRA Charles River Associates

Today's Focus

- Recap initial results for the Reference Scenario
- Review full portfolio results for all market scenarios
- Provide portfolio results for the sensitivities
- No decisions will be made today
- Not advocating for any portfolio until all information is reviewed and key questions are answered
- Our objective is to understand different trade-offs across the portfolios

Agenda

Recap of Interactions since October 20 RAC Meeting

Recap of Progress

Portfolio and Scorecard Review

Scenario and Sensitivity Parameters

Review of Portfolio Performance under Scenarios and Sensitivities

Integrated Scorecard Summary

Timeline and Next Steps

Responses to RAC Member Comments and Questions

- CPS Energy has compiled questions and comments from RAC members that were raised:
  - During the October 20th RAC meeting
  - During the November 3rd Q&A sessions with Burns and McDonnell
  - Via email or in follow-up conversations with individual RAC members
- A summary of detailed written responses has been provided to RAC members:
  - See Q&A Packet #2

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CRA Power Generation Resource Planning Approach

Since the October meeting, the focus has been on completing portfolio modeling and analysis.

Today's Update

Identify Planning Objectives

Agree on planning objectives and metrics to measure the performance of the plan against each objective

Develop Market Scenarios

Identify key sources of uncertainty and the potential range of future outcomes, and design internally consistent future scenarios

Develop Resource Portfolios

Design options for future resource plans, often based on different future scenarios and priorities

Portfolio Modeling and Analysis

Evaluate the performance of each resource portfolio against each future scenario, stochastic uncertainty, & extreme risk events

Select Preferred Plan

Identify trade-offs from each resource portfolio and select the preferred portfolio

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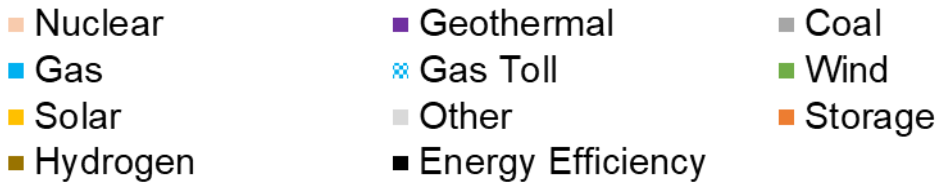
Portfolio Summary

Reference Case Generation Mix

Abbreviation	Allowed Technologies	Action on Existing Generating Fleet	2030 Generation Mix
P1 (Gas)	Gas	•Spruce 1 shut down in 2028 •Spruce 2 converted to gas in 2027	
P2 (Blend 1)	All	•Spruce 1 shut down in 2028 •Spruce 2 converted to gas in 2027	
P3 (Ren)	Renewables	•Spruce 1 shut down in 2028 •Spruce 2 shut down in 2027	
P4 (Blend 2)	All	•Both Spruce units run on coal beyond 2040	

Abbreviation	Allowed Technologies	Action on Existing Generating Fleet	2030 Generation Mix
P5 (Ren)	Renewables	•Spruce 1 shut down in 2025 •Spruce 2 shut down in 2028	
P6 (Ren)	Renewables	•Spruce 1 shut down in 2025 •Spruce 2 shut down in 2028 •All gas units shut down by 2035	
P7 (Ren)	Renewables	•Spruce 1 shut down in 2025 •Spruce 2 shut down in 2028 •All gas units shut down by 2040	
P8 (Ren)	Renewables	•Spruce 1 shut down in 2025 •Spruce 2 converted to gas in 2025 & shut down in 2035	
P9 (Ren)	Renewables	•Spruce 1 shut down in 2028 •Spruce 2 converted to gas in 2028 & shut down in 2035	



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Scorecard Updates Since October

- Emission Intensity:
  - Updated to also include emissions associated with market purchases
- Environmental Sustainability: % reduction in consumption due to energy efficiency
  - Revision to the calculation methodology to capture the full impact of the STEP program on consumption
- Affordability Metrics
  - Updated to show average energy cost on a $/MWh basis between now and 2030 for better comparability across scenarios and sensitivities
  - Additional financial results are summarized later in this presentation
  - RAC members are being provided with a supplemental pack of additional financial results (e.g., bill impacts)
- CPS Energy Workforce Impact
  - Previously reported the remaining *total* size of CPS Energy's generation workforce
  - Updated to report the number of employees impacted at CPS Energy plants

Scorecard Updates Since October

	System Reliability & Climate Resiliency				Environmental Sustainability			Affordability				System Flexibility		Workforce Impact	
	Diversity of Gen Mix	Capacity Headroom	Extreme Weather Exposure		Progress Towards City of SA CAAP Goals			Energy Cost ($/MWh)		Revenue Requirements		Market Purchases	Dispatchability	CPS Energy Workforce Impact	Local Economic Impact
	Generation Mix (MWh)	Expected Reserve Margin (%)	Rev. Req. Extreme Weather ($Billion)	% of CPS Energy consumption that is met through ERCOT market purchases	% CO2 Intensity Reduction Relative to 2016 (Ref Scenario)	Emission Intensity (lb CO2/MWh)	% reduction in consumption due to STEP	Reference Scenario Average Cost ($/MWh)	Range in Cost in *all* Scenarios ($/MWh)	Ref Scenario ($Billion)	Range Across *all* Scenarios ($Billion)	% of CPS Energy consumption that is met through ERCOT market purchases	% of CPS Energy Capacity that is Dispatchable	# of Impacted CPS Energy Generation Employees	Capital expenditures for new generation capacity built in greater San Antonio area ($Millions)
	2030	*2030*	*2030*	*2030*	*2030*	*2030 | 2040*		*2023 - 2030*		*2023 - 2030*		*2030*	*2030*	*2030*	*2023 – 2030*
P1		13.7%			37%	578	547	9.7%						1%	61%	155	$2,758
P2		15.7%			44%	518	350	9.7%						4%	57%	170	$2,004
P3		14.5%			65%	321	161	9.7%						13%	46%	345	$1,310
P4		15.3%			30%	641	361	9.7%						7%	63%	90	$1,787
P5		15.0%			65%	325	161	9.7%						13%	46%	355	$866
P6		13.2%			78%	200	31	9.7%						18%	39%	355	$4,041
P7		13.1%			78%	202	35	9.7%						18%	39%	355	$4,041
P8		15.4%			59%	378	160	9.7%						11%	48%	295	$548
P9		14.6%			60%	371	160	9.7%						9%	46%	295	$548

To be reviewed later today

To be reviewed later today

Nuclear · Geothermal · Coal · Gas · Gas Toll · Wind · Solar · Other · Storage · Hydrogen · Energy Efficiency

Legend: Less Favorable — More Favorable

Changes to the metrics

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Scenarios vs. CPS Energy Portfolios

Scenarios and portfolios are two distinct concepts. Scenarios are **external** factors, while **portfolios** are CPS Energy decisions

Focus of this section

Demand | Carbon Prices | Commodity Prices | Technology Costs

Scenarios

Future states of the world independent of CPS Energy resource decisions

- Reflect diverse, but possible, futures
- Include multiple linked and correlated key variables
- Independent of resources and resource plans

Level/type of new capacity | Capacity retirements | Timing of new capacity | Demand-side programs

Portfolios

CPS Energy plans to meet customer requirements in the future

- A combination of decisions taken by CPS Energy to meet the challenges posed by the scenario or address other objectives
- Typically include decisions on new resources and retirements

Summary of Scenario and Portfolio Sensitivities

Scenario or *Sensitivity	Portfolio	Year	ERCOT Prices	Gas Price	Carbon Price	Technology Cost	CPS Energy Demand	Generation Availability	Asset Ownership
Reference	1 – 9	All	2024-47 Range ($38-42/MWh)	2024-47 Range ($3.1-3.8/MMBtu)	($13-28/ton from 2030)	See Sep RAC Materials	2024-47 Range (26.2-42.2TWh)	Reference	PPA for Solar, Wind, & Storage
Carbon Based Economy	1 – 9	All	Lowest ($29-41/MWh)	Lowest ($2.3-3.2/MMBtu)	Zero	Reference	High due to low price (26.4-43.5 TWh)	Reference	Reference
Net Zero Economy	1 – 9	All	Low ($27-41/MWh)	Low ($3.0-3.7/MMBtu)	High ($13-124/ton from 2030)	Low for renewables & storage	Highest due to electrification (26.3-49.9 TWh)	Reference	Reference
Volatile Market	1 – 9	All	High ($35-46/MWh)	High ($4.7-6.2/MMBtu)	Zero	High for renewables and storage	Low due to high price (25.7-40.5 TWh)	Reference	Reference
*Extreme Weather	1 – 9	2030	Extremely High in Feb/Jul/Aug	Extremely High in Feb	Reference	Reference	Extremely High in Feb High in Jul/Aug	Lower in Feb	Reference
*Enhanced STEP	4 and 6	All	Reference	Reference	Reference	Reference	Low due to more STEP (26.2-40.6 TWh)	Reference	Reference
*Reduced STEP	4 and 6	All	Reference	Reference	Reference	Reference	High due to less STEP (26.2-44.1 TWh)	Reference	Reference
*Build vs Buy	4	All	Reference	Reference	Reference	Reference	Reference	Reference	PPA for all technologies

Notes: Monetary values are in real 2022 dollars. Ranges are shown from 2024 to isolate the fact that all scenarios incorporate current elevated commodity prices. Sensitivities are analyzed against the results from the Reference Scenario.

ERCOT Market Scenarios

CRA developed 4 ERCOT Market scenarios, which are designed to reflect diverse but possible future states of the world. Each scenario comprises a combination of five input variables whose levels vary across the scenarios, as shown below.

ERCOT Scenario	Natural Gas Prices	Carbon Policies	Technology Costs	Demand Growth	ERCOT Market Design Change
Reference Scenario (REF)	Baseline	Baseline carbon price	Baseline	Baseline	Confirmed changes only
Carbon-Based Economy (CBE)	Lowest due to production increases	No carbon price	Baseline	High demand driven by low fuel and carbon prices	Confirmed changes only
Net Zero Carbon Economy (NZE)	Low due to electrification drive	High carbon price	Faster decline + Inflation Reduction Act Tax Credits*	Highest demand driven by electrification	Capacity market launched & seasonal reserve margins
Volatile Market (VMA)	High	No carbon price to alleviate inflation pressure	Slower decline + Inflation Reduction Act Tax Credits*	Low demand due to high natural gas prices	Confirmed changes only

**Note that all CPS Energy portfolio analysis incorporates IRA tax credit provisions.*

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Extreme Weather Sensitivity Inputs

CRA and CPS Energy developed inputs designed to simulate two extreme weather events (Winter Storm Uri and an extended summer heat wave) under a single future year (2030) to assess the relative performance of the nine Reference Scenario portfolios.

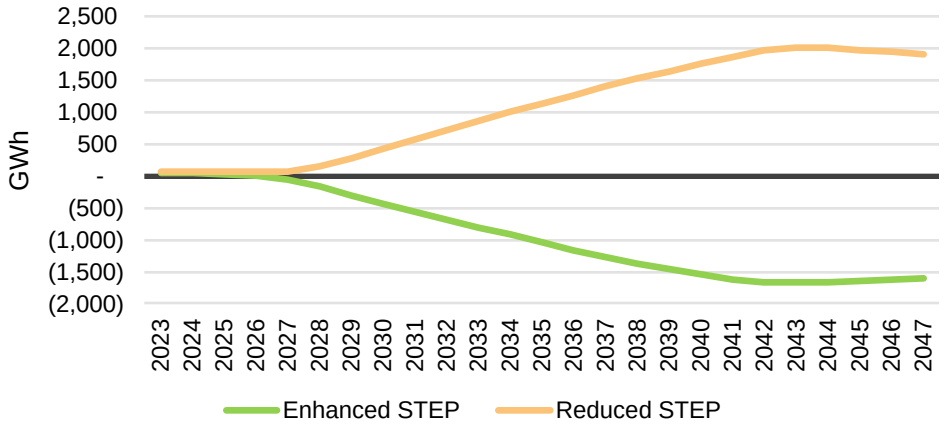
Season	Proxy Weather Event	Event Date in 2030	Gas Prices	Wind Outages	Solar Outages	Gas Outages	Demand/ Consumption
Winter	2021 Winter Storm Uri	February 7 – 16	Based on spot prices at natural gas hubs in Texas*	Based on actual outages, adjusted for the impact of Senate Bill 3	Based on actual outages	Based on actual outages, adjusted for improvement due to Senate Bill 3	Based on the demand pattern during the 2021 Winter Storm Uri
Summer	2011 Texas Summer Heat Wave	July – August	Reference Scenario				Based on the demand pattern during the 2011 Texas Heat Wave

** Note: Realized natural gas prices for CPS Energy account for expected hedging activities.*

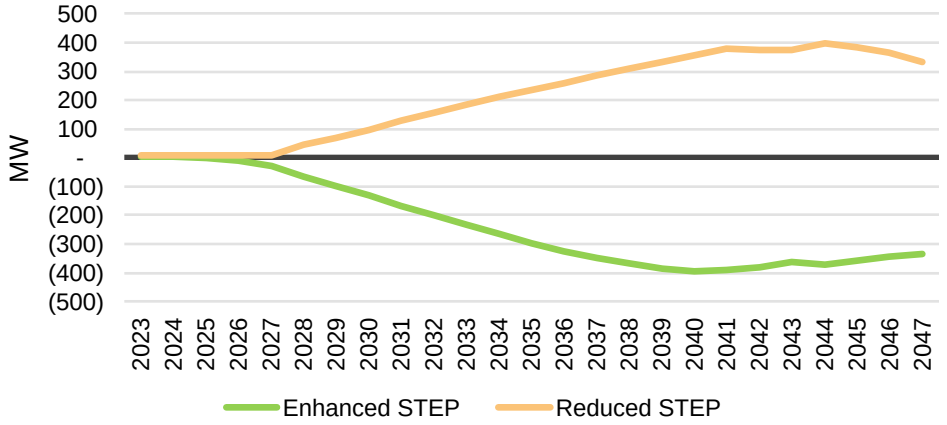
STEP Sensitivities

The STEP sensitivities test the impact of different levels of energy efficiency programs on portfolio costs.

Change in Energy Consumption (GWh) Relative to Reference Scenario



Change in Peak Demand (MW) Relative to Reference Scenario



- The charts show the annual changes in energy consumption (GWh) and peak demand (MW) under enhanced and reduce STEP sensitivities relative to the Reference Scenario
- An enhanced STEP program could reduce electricity generation costs as well as potentially defer the costs of new capacity additions to later years (or obviate the need for new capacity additions altogether).
- A reduced STEP program could increase generation costs and result in incremental capacity additions.
- CRA applied the enhanced STEP and reduced STEP sensitivities to portfolios 4 and 6. These portfolios represent two “bookend” portfolio themes:
  - Both Spruce units run on coal beyond 2040 in Portfolio 4.
  - All fossil units retire by 2035 in Portfolio 6.

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Build vs Buy Sensitivity

The Build vs Buy sensitivity tests the impact of different capacity procurement strategies on portfolio costs

Comparison of Procurement Strategies

Technology	Reference Scenario	Build Vs Buy Sensitivity
Gas	Ownership	PPA
Hydrogen	Ownership	PPA
Geothermal	Ownership	PPA
Wind	PPA	PPA
Solar	PPA	PPA
Storage	PPA	PPA

- The Reference Scenario assumption is that CPS Energy would own new gas, hydrogen, and geothermal capacity additions. Any wind, solar, and storage capacity would be procured through power purchase agreements ("PPA").
- The Build vs Buy sensitivity tests the impact of an alternative capacity procurement strategy, whereby CPS Energy would procure all new capacity through PPAs, including gas, hydrogen, and geothermal.
- This sensitivity is only applied to Portfolio 4. However, the directional impact is likely to be the same across all portfolios.

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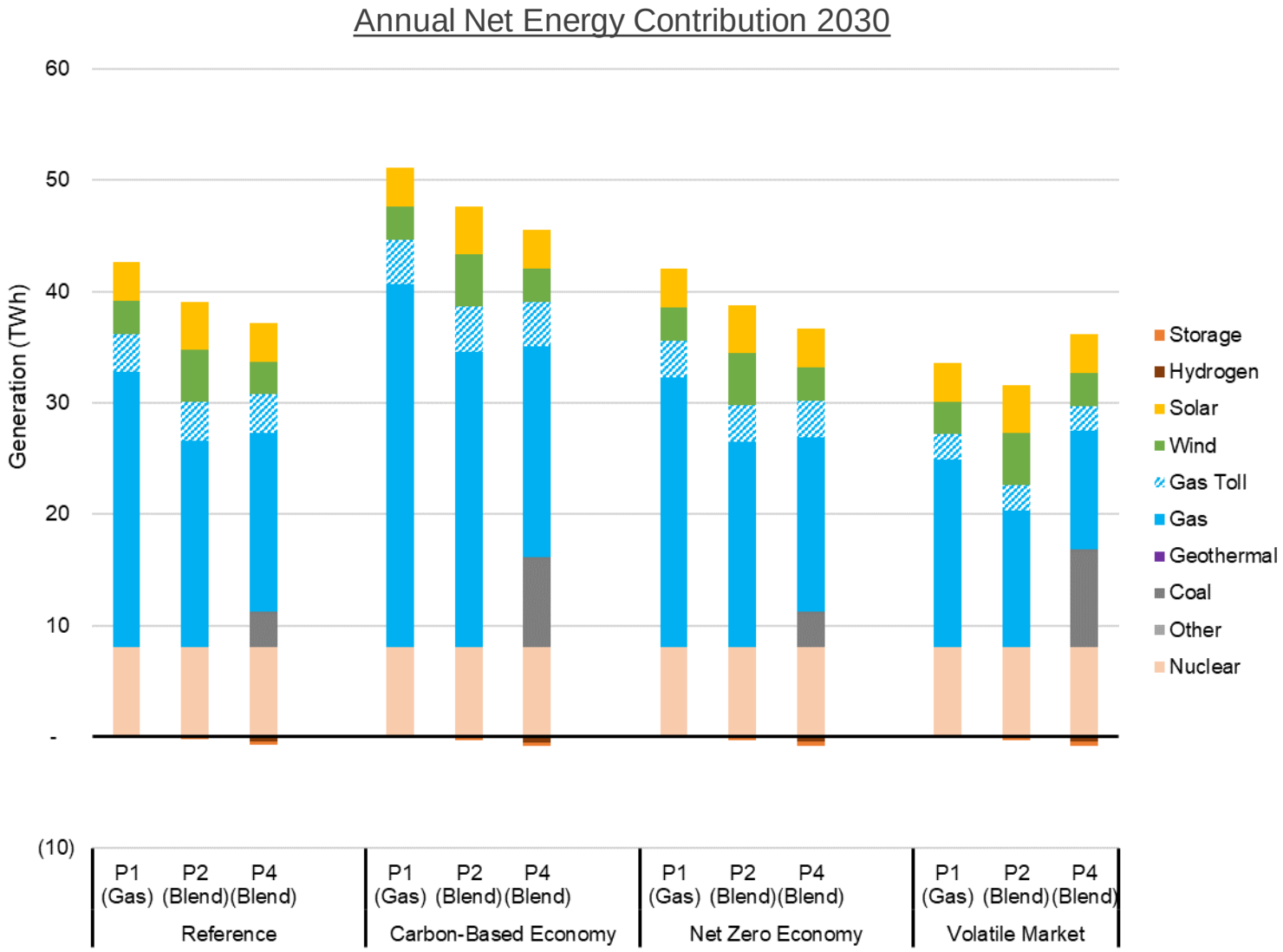
2030 Generation Mix (TWh) – Gas and Blend Portfolios

Key Observations

- Gas generation is highest in the CBE scenario. This is due to low natural gas and zero carbon prices, making gas generation attractive. Conversely, gas generation is lowest in VMA due to higher natural gas prices.
- P4's coal generation is highest in the VMA scenario, followed by the CBE scenario. High natural gas prices combined with no carbon price make coal most attractive in VMA, while the lack of a carbon price in CBE improves coal dispatch relative to the Reference Case.



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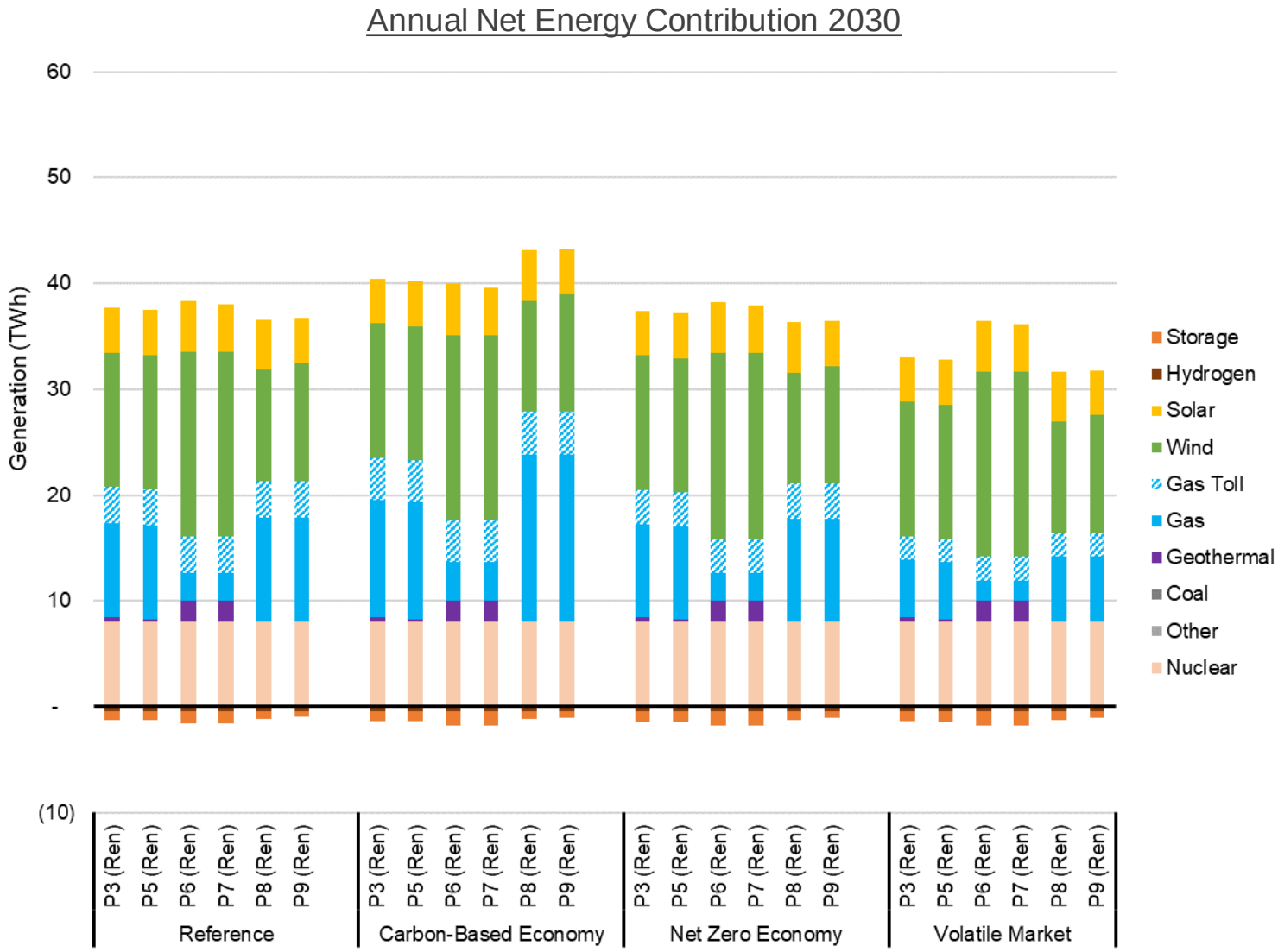
2030 Generation Mix (TWh) – Renewable Portfolios

Key Observations

- The overall generation levels are more stable for the renewable portfolios across scenarios, as the portfolios contain fewer resources that are subject to market dispatch uncertainty.
- As with the gas and blend portfolios, natural gas generation is lowest in the VMA scenario due to a combination of lower CPS Energy load and high natural gas prices. Conversely, gas generation is highest in the CBE scenario due to low natural gas prices.



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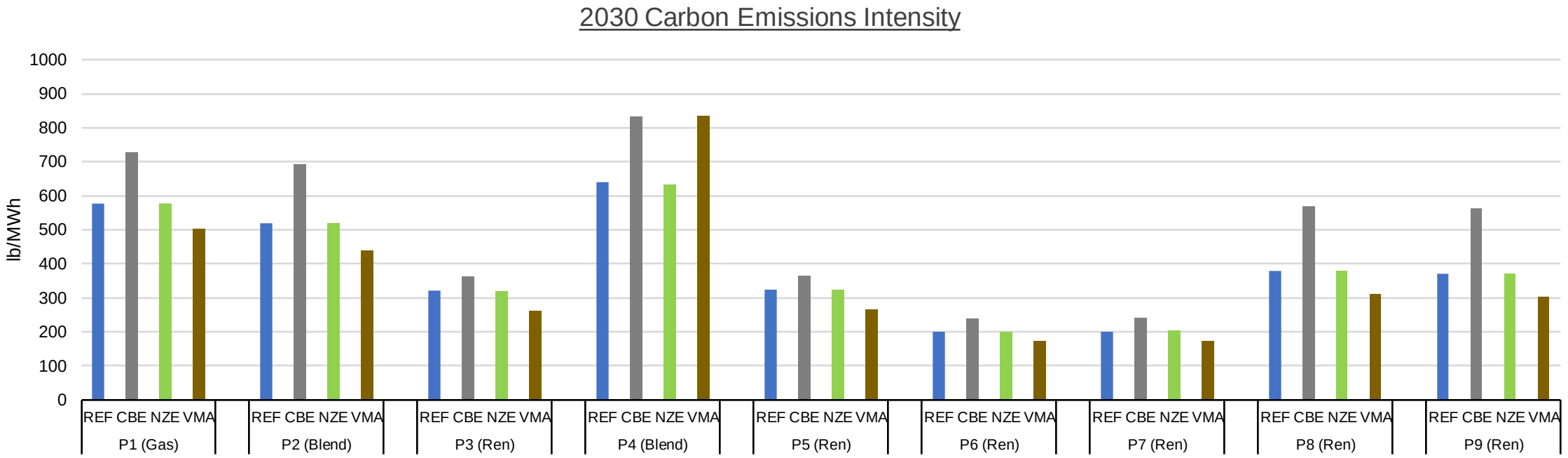
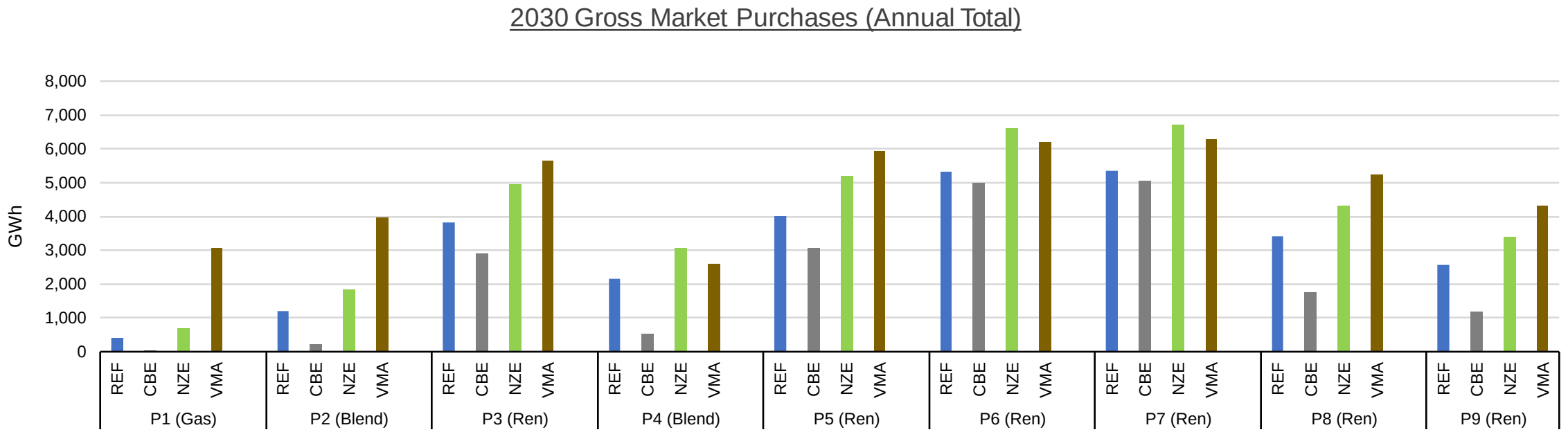
2030 Carbon Emissions Intensity – By Scenario and Portfolio



- The CBE scenario generally results in the highest emission intensity for all portfolios (except P4). This is because low natural gas prices and no carbon prices lead to higher gas plant capacity factors.
- The VMA scenario generally has the lowest emission intensity across all portfolios (except P4). This is because high natural gas prices lead to lower gas generation and more market purchases. In P4, emission intensity is high because of higher coal generation from the two Spruce units, as coal is more competitive relative to natural gas.

Note: ERCOT-average CO2 emissions intensity in 2030 is projected to be 557 lb/MWh in REF, 650 in CBE, 504 in NZE, and 532 in VMA

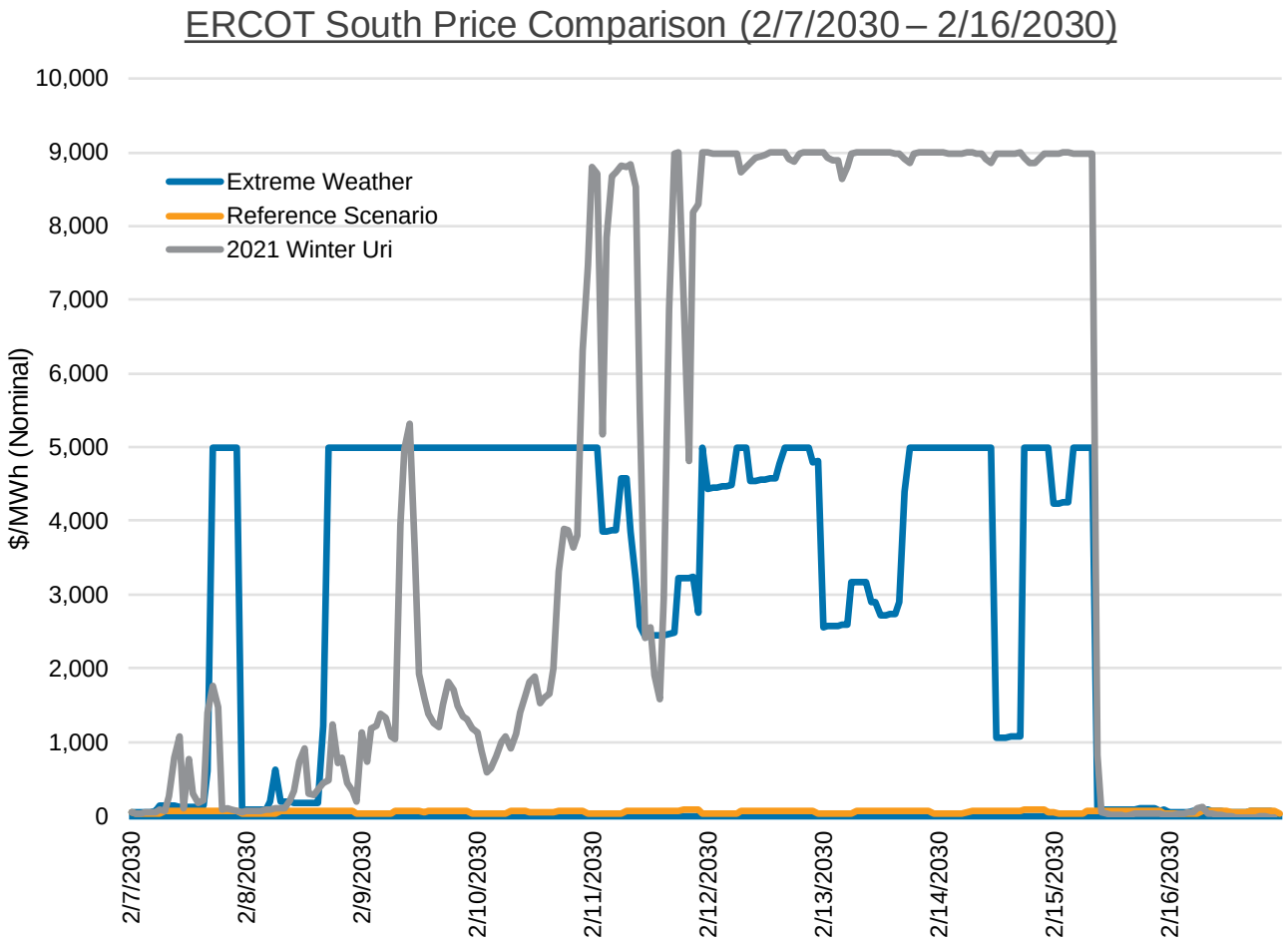
2030 Market Purchases – By Scenario and Portfolio



- Natural gas prices have a significant impact on market purchases:
  - Market purchases are generally lower in the CBE scenario because CPS Energy's natural gas plants are expected to dispatch more, reducing purchases from the market. The impact is more muted in P6 and P7 due to the closures of two combined cycle plants by 2030.
  - Conversely, market purchases are generally higher in the VMA scenario where natural gas prices are high. This is despite lower electricity consumption in the scenario. High natural gas prices put gas-heavy portfolios at a disadvantage relative to ERCOT market prices.
- The NZE scenario generally leads to higher market purchases in all scenarios. This is due to lower ERCOT market prices combined with higher electricity consumption resulting from significant electrification growth.

Extreme Weather - ERCOT Price Impact for Winter Storm 2030

- The chart compares hourly ERCOT South prices for the Reference Scenario, Extreme Weather sensitivity, and actual real-time prices during the 2021 Winter Storm Uri
- In the Extreme Weather sensitivity, prices are projected to hit the $5,000/MWh cap in most hours starting from 2/7/2030 (equivalent to 2/11/2021).
- Prices in the Extreme Weather sensitivity hit the cap more frequently than during the 2021 Winter Storm Uri in the simulation because of:
  - Load growth since 2021; and
  - A changing capacity mix in ERCOT with higher wind and solar capacity but lower gas and coal capacity in 2030 relative to 2021



Note: The 2021 winter event occurred from 2/11/2021 until 2/20/2021. The calendar dates for the 2030 simulation are shifted to account for consistent days of the week for modeling purposes.

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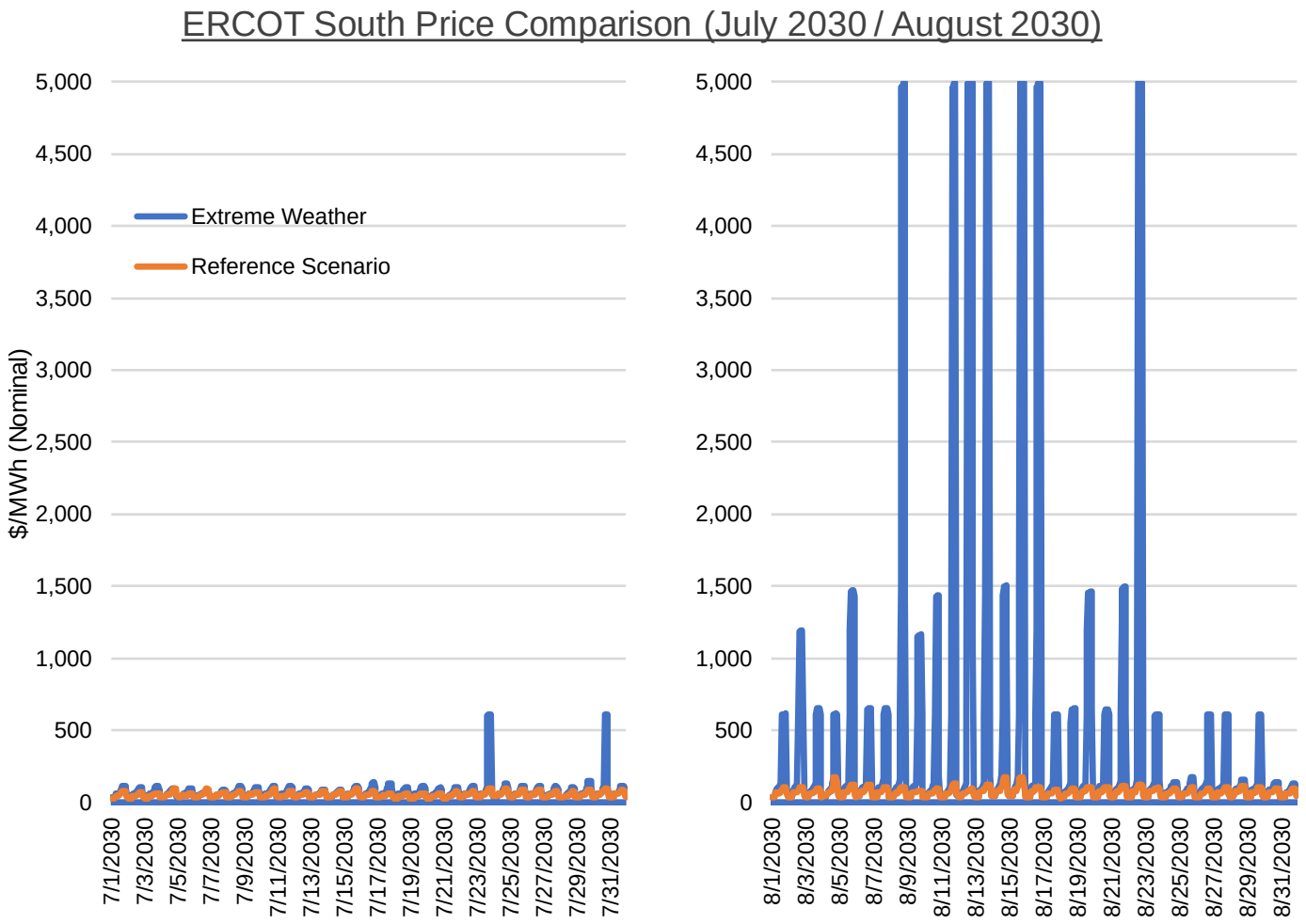
Extreme Weather - ERCOT Price Impact for Summer 2030

- The chart compares hourly ERCOT South prices for the Reference Scenario and the Extreme Weather sensitivity for the 2030 extreme summer event (lasting over two months between July and August 2030).
- The extreme summer weather results in more frequent price spikes. These spikes usually occur later in the evening as air conditioning load remains high and solar generation declines.



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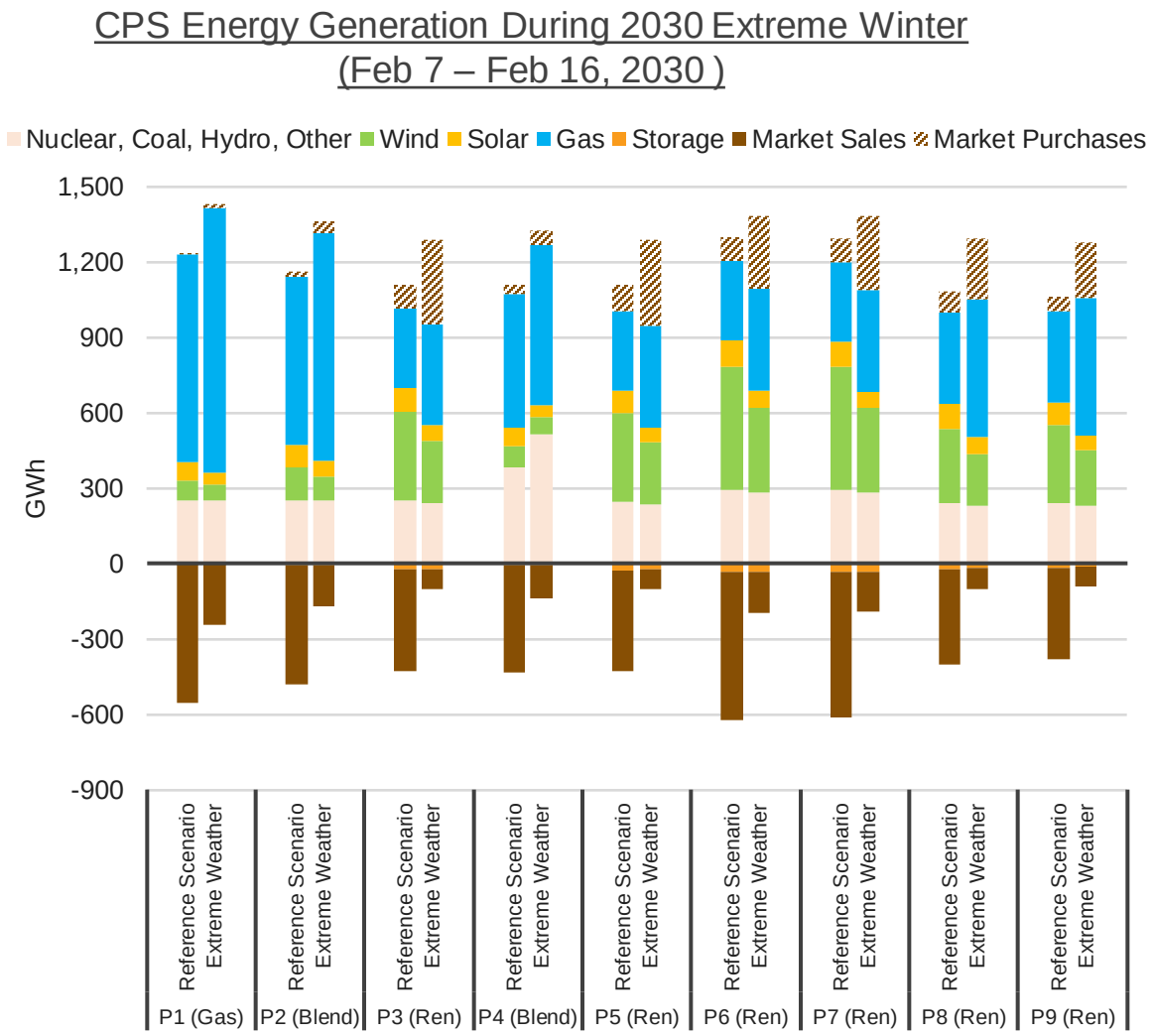
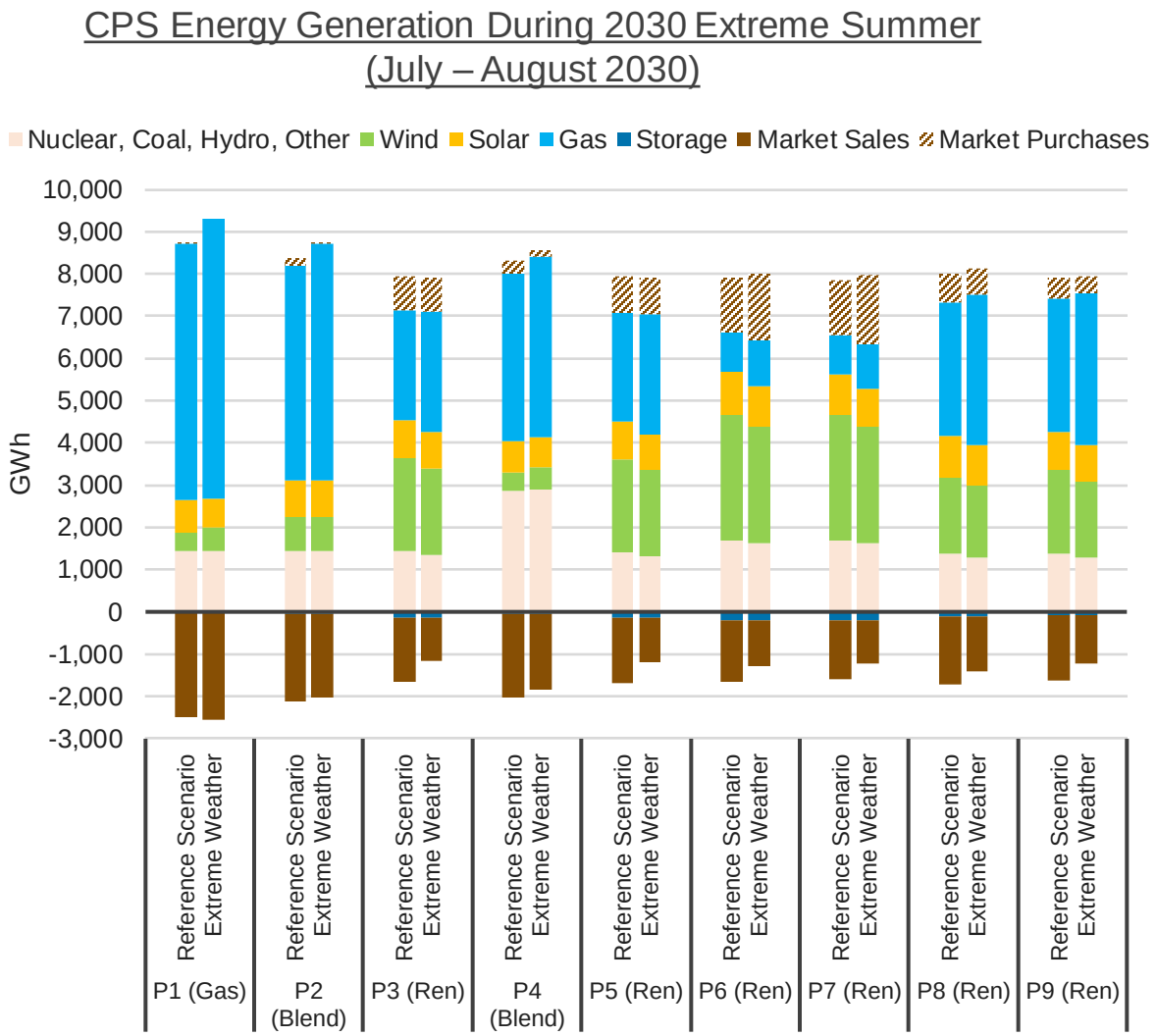
Extreme Weather – Impact on CPS Energy Generation for Winter Storm 2030



- Natural gas generation increases in all portfolios to meet higher consumption and compensate for lower renewable generation.
- Market sales exceed market purchases in P1, P2, and P4 , i.e., the portfolios remain net long energy during the winter storm week. This reflects higher utilization of gas capacity in response to high ERCOT market prices (and offsets the expected increases in gas plant outages). P4 also benefits from coal capacity at the two Spruce units.
- Market purchases exceed market sales in renewable-only portfolios (P3, P5 – P9), i.e., the portfolios are energy short. They rely on increased market purchases to meet consumption during the extreme winter due to a combination of lower renewable generation lower dispatchable capacity, and short duration storage.

Extreme Weather – Impact on CPS Energy Generation for Summer 2030



- Portfolios with relatively higher natural gas capacity (P1 and P2) see increases in market sales despite higher electricity consumption, as gas capacity utilization increases in response to higher ERCOT market prices. This allows CPS Energy to benefit from higher wholesale revenues during periods of extremely high prices.
- In other portfolios (except P6 and P7), market sales are reduced as more of the generation from CPS Energy's fleet is allocated to serve higher electricity consumption from customers instead of market sales.
- With two gas combined cycles shutting down in March 2030, P6 and P7 have less natural gas-fired capacity for the summer. As a result, the portfolios rely on market purchases to meet increased consumption.

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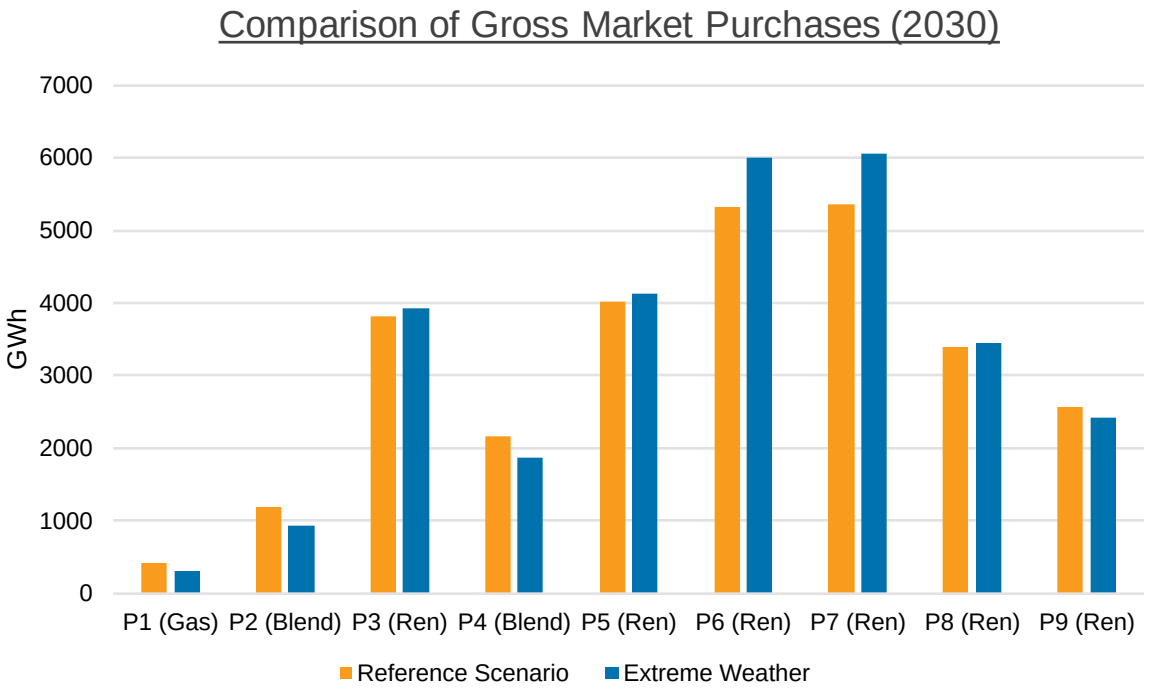
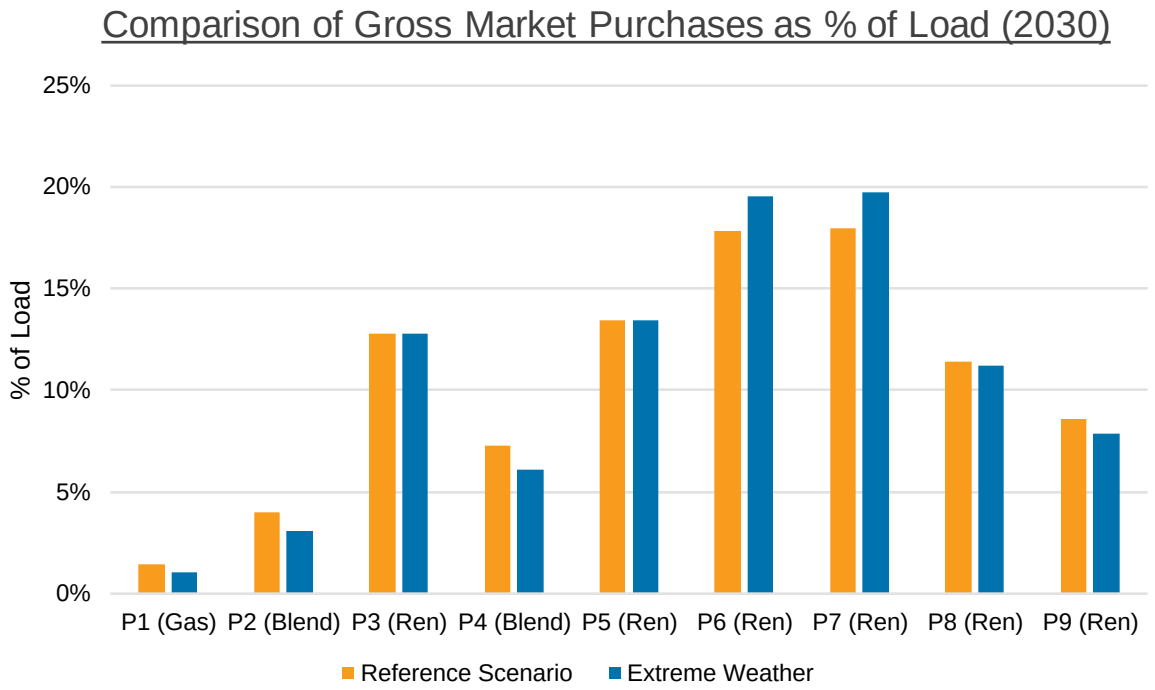
Extreme Weather – Impact on CPS Energy Market Purchases to Meet Load



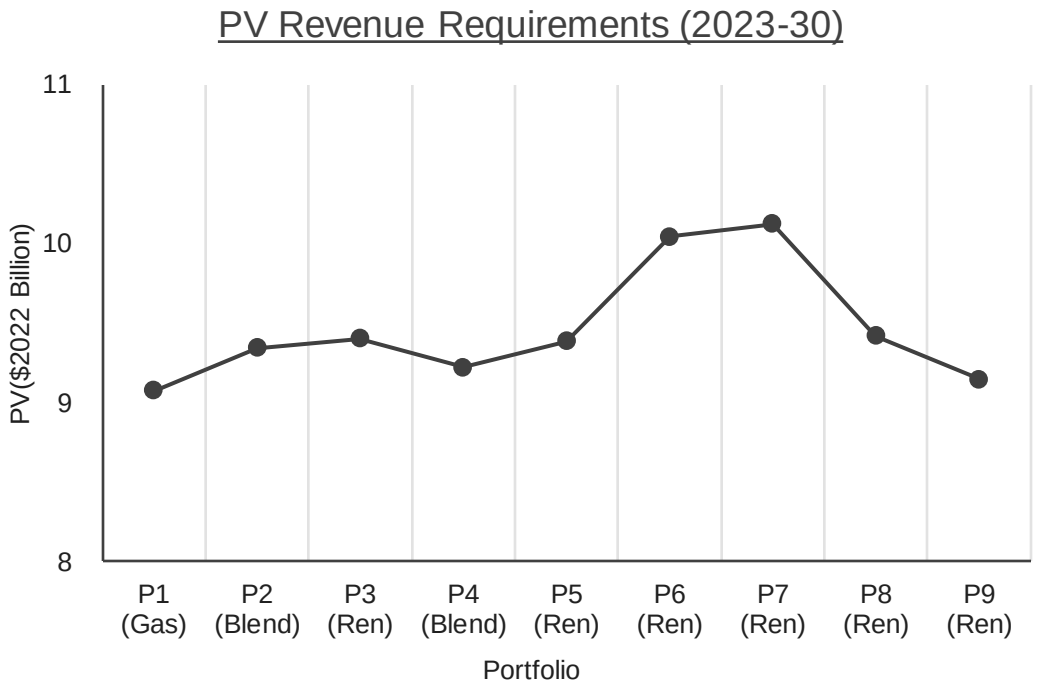


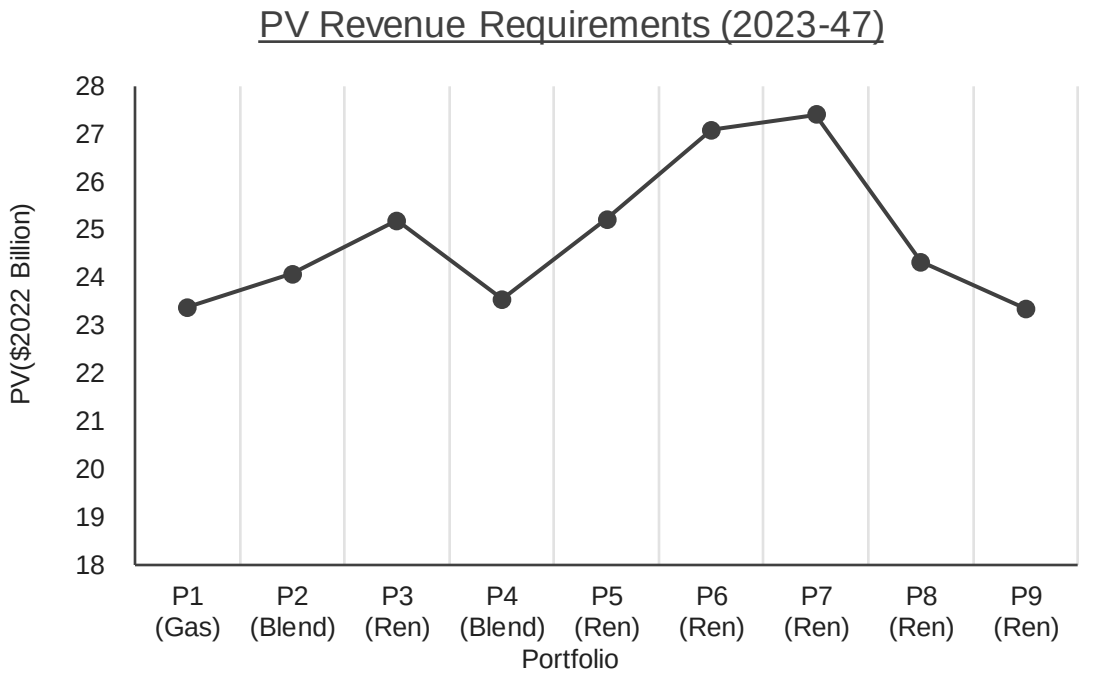
- Gas and blend portfolios (P1, P2, P4) see reductions in market purchases, as gas generation increases during periods of high ERCOT market prices.
- P6 and P7 have the largest increase in market purchases due to their relatively renewable-heavy capacity mix and reliance on short duration storage.

Foundational Financial Assumptions

ASSUMPTIONS	RISKS / CONSIDERATIONS
All rate groups & rate structures remain as they are today	New rates structures & groups may be implemented as a result of the rate redesign effort.
We are able to buy all needed energy from the ERCOT market	Market pricing could escalate as a function of demand & availability, raising the cost of market purchases.
We are able to sell excess energy to the ERCOT market	The effective price varies between scenarios depending on the hours in which the excess is available. Market pricing could decrease as a function of demand & availability, reducing the benefit of market sales.
Non-energy markets remain close to current markets (cost to borrow, cost of labor, etc.)	Global recession could occur. A significant change in interest rates could increase the cost of capital.
Transmission system impacts	Retirement of local generation may increase congestion costs and may require transmission reliability upgrades beyond current assumptions. Required transmission upgrades may delay unit retirement dates.

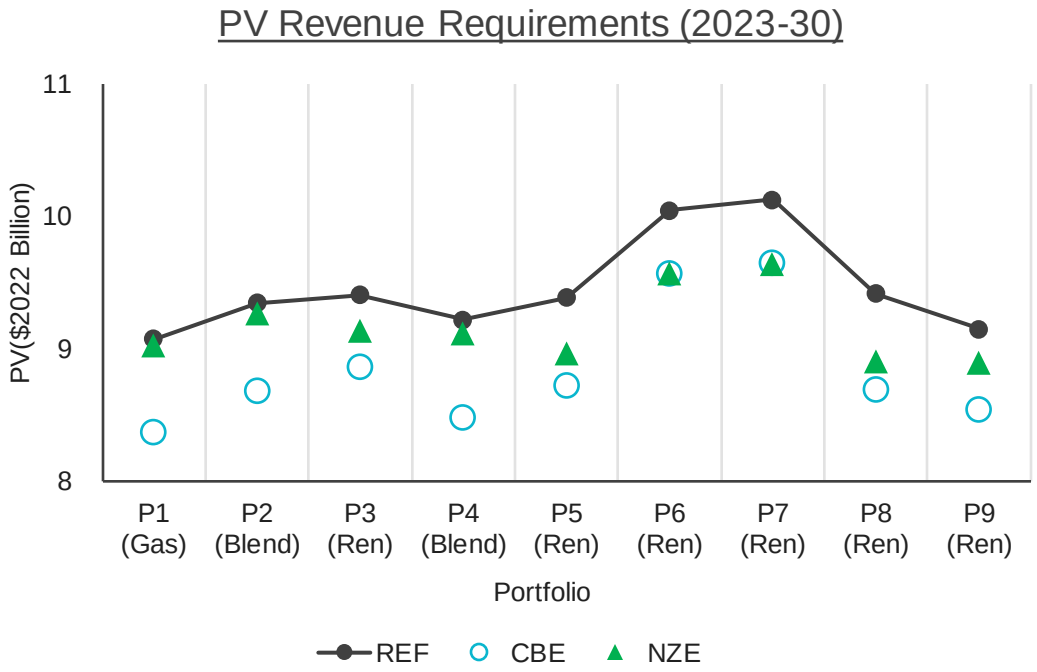
Present Value (PV) of Revenue Requirements – Reference Scenario

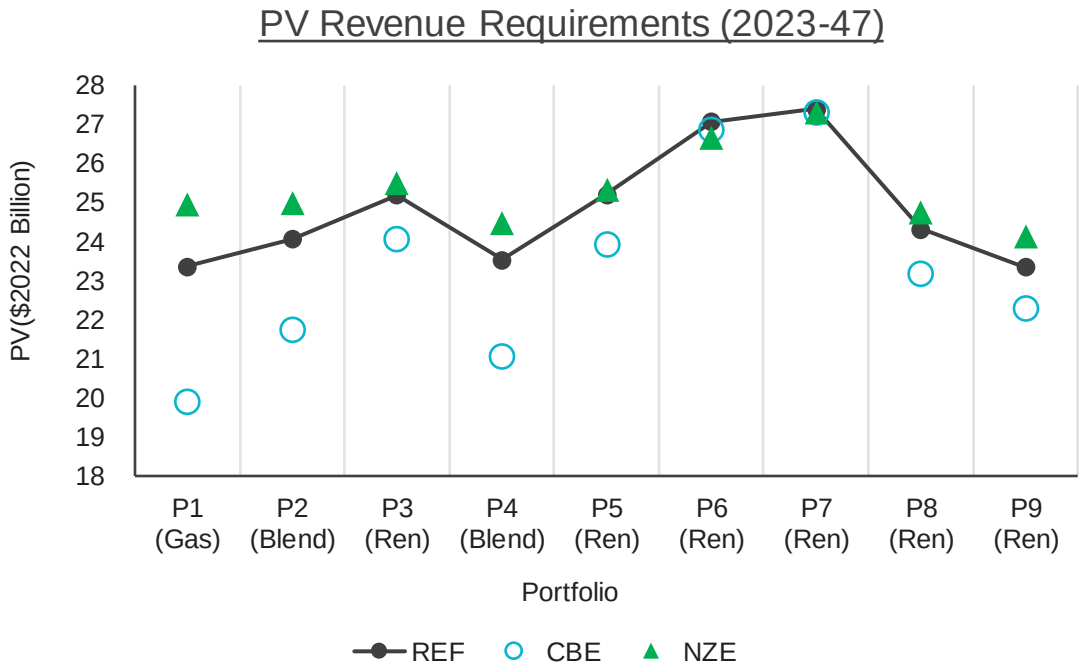




- P6 and P7 have the highest revenue requirements due to the addition of high-cost geothermal capacity to replace retired gas combined cycle capacity.
- P1, P4, and P9 have lower revenue requirements. P1 relies on new lower-cost gas capacity to meet future demand, but would be exposed to future gas and carbon prices. P4 has lower future capacity additions as both Spruce units are retained beyond 2040, but would be exposed to future carbon prices. P9 benefits from Spruce 2 conversion to gas, deferring new capacity additions.
- Some portfolios may be more sensitive to changing market conditions than others; this cannot be observed when viewing the Reference scenario results in isolation.

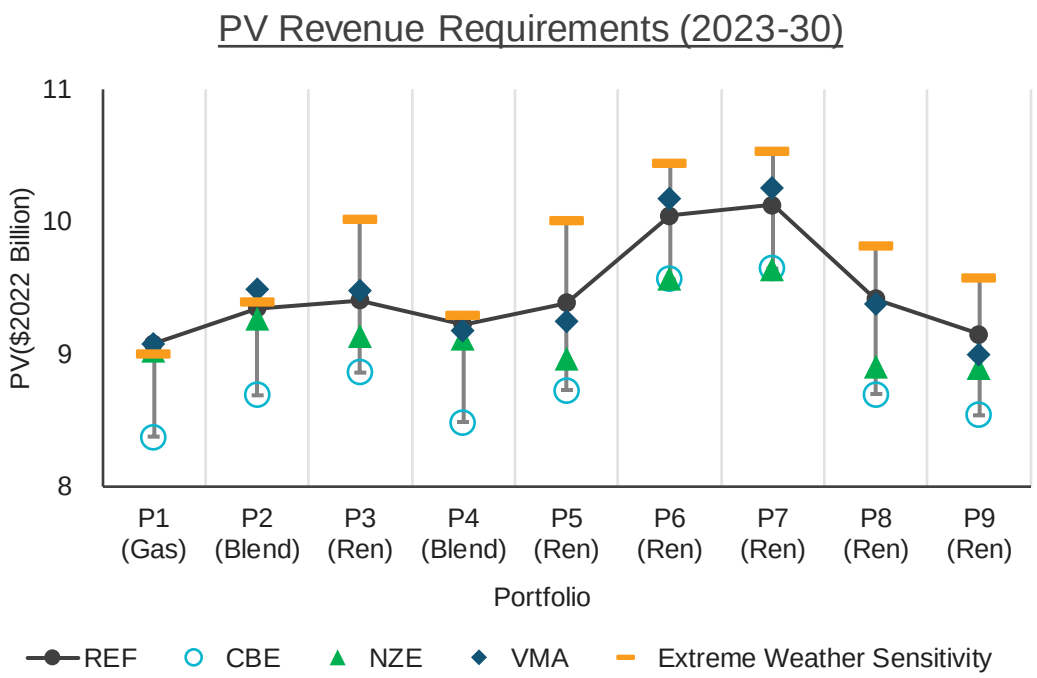
Present Value (PV) of Revenue Requirements Reference vs Carbon-Related Scenarios

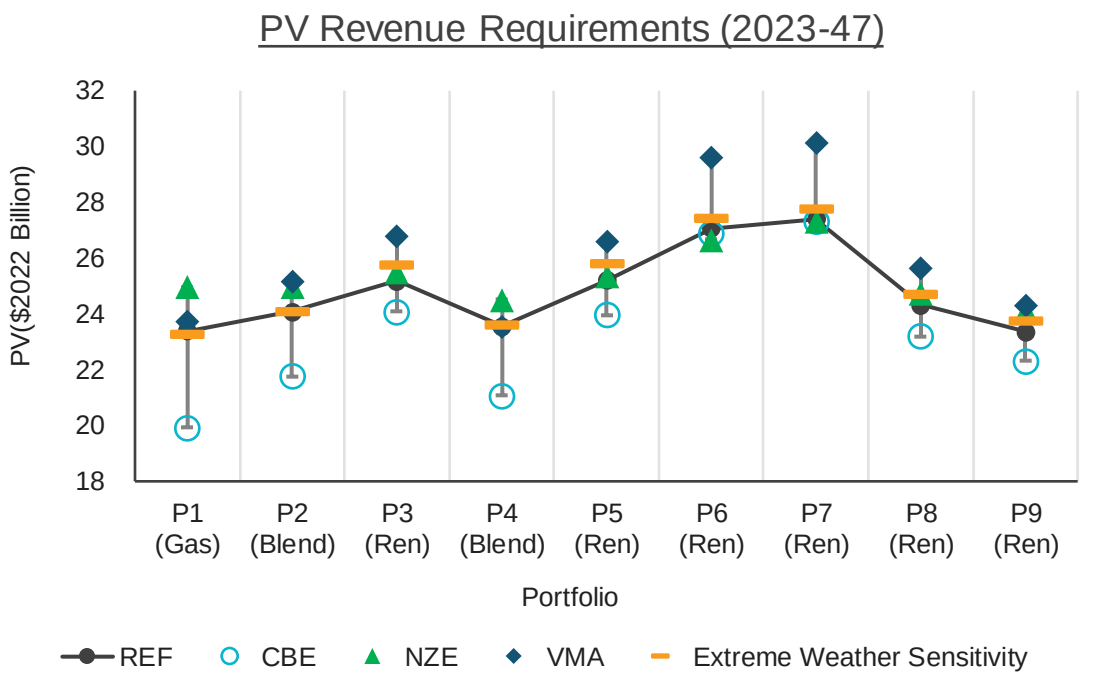




- Gas and carbon prices drive the ranges of revenue requirements. Portfolios with more gas capacity benefit more from low gas prices in CBE. Portfolios with more renewable capacity benefit from the faster decline in renewable costs in NZE.
- Over the long term, P1 and P4 face the greatest increase in costs in NZE due to the escalating carbon price.

Present Value (PV) of Revenue Requirements – All Scenarios + Extreme Weather





- In the short term, gas and carbon prices drive the ranges of revenue requirements. Portfolios with more gas capacity benefit more from low gas prices in CBE. Portfolios with more renewable capacity benefit from the faster decline in renewable costs in NZE.
- Over the long term, the risks to revenue requirements are skewed higher for P6 and P7. This is driven by a slower-than-expected decline in renewable costs in VMA, and lower revenues from market sales as ERCOT market prices are suppressed by high renewable penetration in NZE. The risks are skewed lower for P1, P2, and P4 as these portfolios benefit from low gas prices in CBE.
- Both P1 and P4 face the highest cost increases in NZE due to the escalating carbon price, but P4 is hedged against high natural gas prices in VMA because it retains coal.

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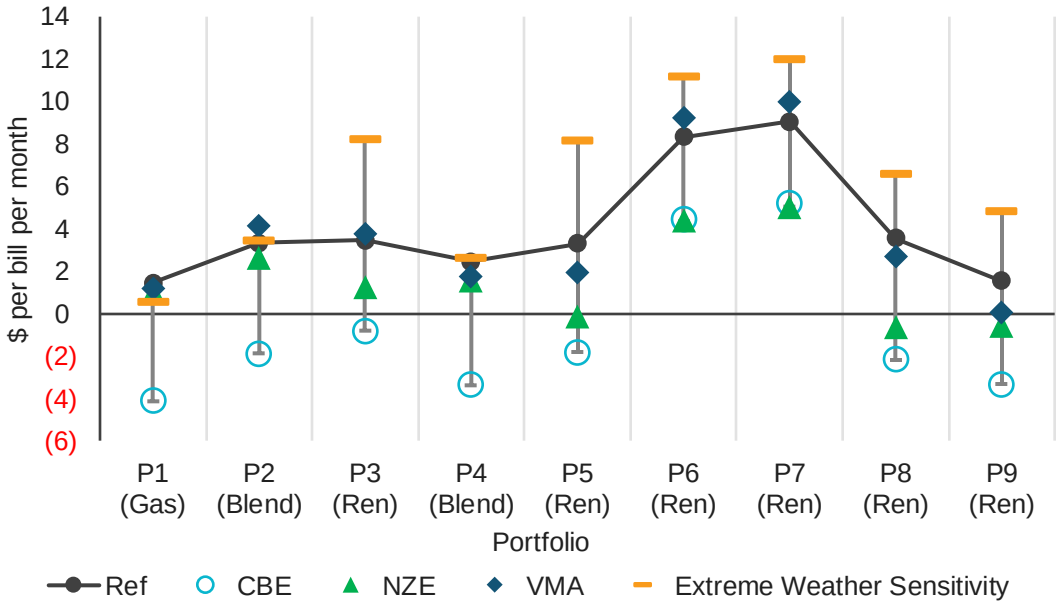
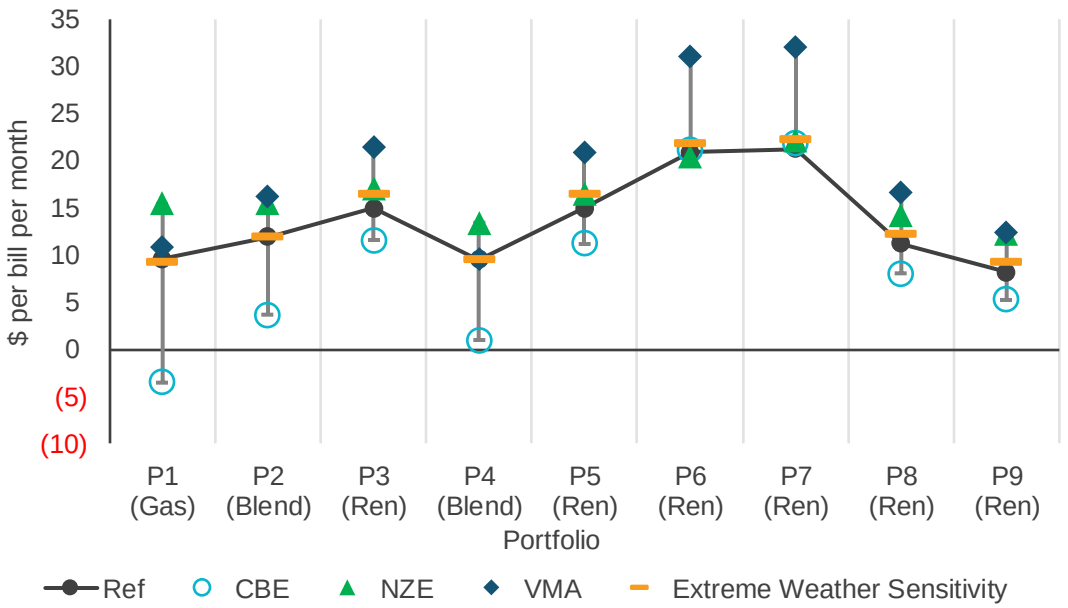
Residential Bill Impact Across Scenarios
Incremental Average Monthly Cost vs. Rate Model Forecast

Residential Bill Impact (2023-30)



Residential Bill Impact (2023-47)



- The range of bill impacts follows the pattern of the revenue requirements.
- Bill impacts to other customer groups follow the same pattern and have been provided as supplemental data.

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Key Observations on Affordability – Average Cost of Energy ($/MWh)

	Affordability				
	Average Energy Cost ($/MWh)				
	Reference Scenario ($/MWh)	Carbon Based Economy ($/MWh)	Net Zero Economy ($/MWh)	Volatile Market ($/MWh)	Extreme Weather ($/MWh)
	2023 -2030	*2023 -2030*	*2023 -2030*	*2023 – 2030*	*2023 – 2030*
P1	$58.07	$52.33	$56.89	$59.85	$57.30
P2	$60.04	$54.57	$58.54	$62.92	$60.21
P3	$60.58	$55.95	$57.71	$63.08	$65.07
P4	$59.16	$53.15	$57.51	$60.60	$59.48
P5	$60.47	$55.09	$56.57	$61.53	$65.03
P6	$65.34	$61.12	$60.85	$68.59	$68.13
P7	$65.96	$61.71	$61.40	$69.23	$68.81
P8	$60.67	$54.82	$56.17	$62.15	$63.56
P9	$58.64	$53.58	$55.94	$59.38	$61.70

Legend

Less Favorable — More Favorable

- In the Reference scenario, portfolios with earlier retirements of fossil capacity are less affordable.
- In the Carbon Based Economy scenario, all portfolios benefit from lower market energy and natural gas prices.
- In the Net Zero Economy scenario, all portfolios perform better than in the Reference scenario (through 2030), though renewable portfolios see a greater benefit.
- In the Volatile Market scenario, all portfolios are impacted by higher prices, though some portfolios provide better price protection than others.
- In the Extreme Weather sensitivity, most portfolios are impacted by higher prices, though some portfolios provide better price protection than others.

Key Observations from Portfolio Metric Results – Extreme Weather Sensitivity

	System Reliability & Climate Resiliency			
	Diversity of Generation Mix	Capacity Headroom	Extreme Weather Exposure	
	Generation Mix (MWh)	Expected Reserve Margin (%)	Rev. Req. Extreme Weather ($Billion)	% of CPS Energy consumption that is met through ERCOT market purchases
	2030	*2030*	*2030*	*2030*
P1		13.7%	1.7	1.4% ➔ 1.0%
P2		15.7%	2.0	4.0% ➔ 3.1%
P3		14.5%	3.3	12.8% ➔ 12.8%
P4		15.3%	2.0	7.2% ➔ 6.1%
P5		15.0%	3.3	13.5% ➔ 13.5%
P6		13.2%	3.3	17.8% ➔ 19.6%
P7		13.1%	3.3	18.0% ➔ 19.7%
P8		15.4%	2.8	11.4% ➔ 11.2%
P9		14.6%	2.7	8.6% ➔ 7.9%

Legend: Nuclear, Geothermal, Coal, Gas, Gas Toll, Wind, Solar, Other, Storage, Hydrogen, Energy Efficiency

Extreme Weather Exposure

- Revenue Requirements
  - P1, P2, & P4 are able to offset the higher fuel costs in the extreme weather sensitivity by selling excess power when ERCOT prices are high.
  - P3, P5, P6 & P7 are the most exposed to the higher market purchase costs in the extreme weather sensitivity, and this shows in the revenue requirements.
- Market Purchases
  - P1 and P2 benefit from relatively larger amounts of natural gas peaking capacity, allowing CPS Energy to dispatch more gas instead of increasing market purchases to serve customer consumption during periods of extreme weather.
  - P6 and P7 have the lowest gas capacity due to the closure of two gas combined cycle plants in March 2030. With lower available dispatchable capacity, CPS Energy would have to rely on more market purchases during periods of extreme weather to meet consumption.
  - The impact of extreme weather on market reliance in P3, P5, P8, and P9 is more limited, as these portfolio still maintain most of the existing gas capacity past 2030. However, overall purchase numbers are higher than P1, P2, & P4.

Notes:
1. *Lighter shade means "more favorable.*

Affordability – Supplemental Financial Information Provided to RAC

- Revenue Requirements; Summary and by year, scenario, portfolio
- MWh Retail Sales by year and scenario
- $ per MWh of Retail Sales by year, scenario, portfolio
- Residential Total $ per Bill by year, scenario, portfolio
- Residential Bill Impact; Summary and by year, scenario, portfolio
- Commercial Bill Impact by year, scenario, portfolio

Summary of Scenarios and Sensitivities

Scenario or *Sensitivity	Portfolio	Year	ERCOT Prices	Gas Price	Carbon Price	Technology Cost	CPS Energy Demand	Generation Availability	Asset Ownership
Reference	1 – 9	All	2024-47 Range ($38-42/MWh)	2024-47 Range ($3.1-3.8/MMBtu)	($13-28/ton from 2030)	See Sep RAC Materials	2024-47 Range (26.2-42.2TWh)	Reference	PPA for Solar, Wind, & Storage
Carbon Based Economy	1 – 9	All	Lowest ($29-41/MWh)	Lowest ($2.3-3.2/MMBtu)	Zero	Reference	High due to low price (26.4-43.5 TWh)	Reference	Reference
Net Zero Economy	1 – 9	All	Low ($27-41/MWh)	Low ($3.0-3.7/MMBtu)	High ($13-124/ton from 2030)	Low for renewables & storage	Highest due to electrification (26.3-49.9 TWh)	Reference	Reference
Volatile Market	1 – 9	All	High ($35-46/MWh)	High ($4.7-6.2/MMBtu)	Zero	High for renewables and storage	Low due to high price (25.7-40.5 TWh)	Reference	Reference
*Extreme Weather	1 – 9	2030	Extremely High in Feb/Jul/Aug	Extremely High in Feb	Reference	Reference	Extremely High in Feb High in Jul/Aug	Lower in Feb	Reference
*Enhanced STEP	4 and 6	All	Reference	Reference	Reference	Reference	Low due to more STEP (26.2-40.6 TWh)	Reference	Reference
*Reduced STEP	4 and 6	All	Reference	Reference	Reference	Reference	High due to less STEP (26.2-44.1 TWh)	Reference	Reference
*Build vs Buy	4	All	Reference	Reference	Reference	Reference	Reference	Reference	PPA for all technologies

Notes: Monetary values are in real 2022 dollars. Ranges are shown from 2024 to isolate the fact that all scenarios incorporate current elevated commodity prices. Sensitivities are analyzed against the results from the Reference Scenario.

STEP Sensitivities – Impact on Capacity Additions

STEP sensitivities affect CPS Energy's peak demand and the required capacity to maintain the reserve margin.

Change in Portfolio Capacity Additions Relative to Reference Scenario

		RICE Unit	H_2 Unit	8-Hour Storage	20-Hr Storage
Enhanced STEP	P4	-404 MW (2029/37)	N/A	N/A	N/A
	P6	N/A	-240 MW (2034)	-100 MW (2028)	-100 MW (2038)
Reduced STEP	P4	+404 MW (2029/37)	N/A	N/A	N/A
	P6	N/A	N/A	N/A	+430 MW (2030/33/39)

- The Enhanced STEP sensitivity reduces peak capacity requirements. Thus, fewer capacity additions are required to meet peak demand and maintain the reserve margin. Two RICE units are removed from P4, and a combination of hydrogen, 8-hour storage and 20-hour storage are removed from P6.
- The Reduced STEP sensitivity increases peak capacity requirements. Two RICE units are added in P4, and 430 MW of 20-hour storage are added in P6 to meet higher peak demand and maintain the reserve margin.

STEP Sensitivities – Key Results

	Sensitivity	Emissions Intensity (lb CO_2/MWh)		% Change in CO2 Relative to Reference Scenario		% reduction in consumption due to STEP	Change in PV of Revenue Requirements Relative to Reference Scenario ($Million)
		2030	*2040*	*2030*	*2040*	*2030*	*2023 – 2047*
P4 (Blend 2)	Enhanced	640.4	350.8	-0.8%	-3.6%	11.3%	-442
	Reference	645.7	364.0	N/A	N/A	9.7%	N/A
	Reduced	650.8	376.6	+0.8%	+3.5%	8.0%	+168
P6 (Renewables)	Enhanced	147.6	0	-0.1%	0.0%	11.3%	-526
	Reference	147.8	0	N/A	N/A	9.7%	N/A
	Reduced	148.1	0	+0.2%	0.0%	8.0%	-56

- Emissions are lower in Enhanced STEP for P4 because fewer natural gas plants result in less gas generation and lower carbon emissions. Conversely, Reduced STEP has higher emissions because two natural gas units are added to the portfolio to maintain the reserve margin, leading to higher gas generation and higher CO2 emissions.
- Carbon emissions in Enhanced STEP for P6 in 2040 are not sensitive to STEP because all fossil units are already retired by 2040.
- For both P4 & P6, Enhanced STEP spending beyond the current level provides net long-term benefits, as shown by lower revenue requirements over 25 years in Enhanced STEP relative to the Reference Scenario.
- Reducing STEP *increases* the revenue requirement for P4 but *reduces* it for P6. In P6, new energy from wind and solar is relatively cheaper compared to gas in P4 but new firm capacity from storage is relatively more expensive. Therefore, energy efficiency programs that focus on reducing peak demand will perform better than programs that focus on reducing energy consumption.

Summary of Scenarios and Sensitivities

Scenario or *Sensitivity	Portfolio	Year	ERCOT Prices	Gas Price	Carbon Price	Technology Cost	CPS Energy Demand	Generation Availability	Asset Ownership
Reference	1 – 9	All	2024-47 Range ($38-42/MWh)	2024-47 Range ($3.1-3.8/MMBtu)	($13-28/ton from 2030)	See Sep RAC Materials	2024-47 Range (26.2-42.2TWh)	Reference	PPA for Solar, Wind, & Storage
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Net Zero Economy	1 – 9	All	Low ($27-41/MWh)	Low ($3.0-3.7/MMBtu)	High ($13-124/ton from 2030)	Low for renewables & storage	Highest due to electrification (26.3-49.9 TWh)	Reference	Reference
Volatile Market	1 – 9	All	High ($35-46/MWh)	High ($4.7-6.2/MMBtu)	Zero	High for renewables and storage	Low due to high price (25.7-40.5 TWh)	Reference	Reference
*Extreme Weather	1 – 9	2030	Extremely High in Feb/Jul/Aug	Extremely High in Feb	Reference	Reference	Extremely High in Feb High in Jul/Aug	Lower in Feb	Reference
*Enhanced STEP	4 and 6	All	Reference	Reference	Reference	Reference	Low due to more STEP (26.2-40.6 TWh)	Reference	Reference
*Reduced STEP	4 and 6	All	Reference	Reference	Reference	Reference	High due to less STEP (26.2-44.1 TWh)	Reference	Reference
*Build vs Buy	4	All	Reference	Reference	Reference	Reference	Reference	Reference	PPA for all technologies

Notes: Monetary values are in real 2022 dollars. Ranges are shown from 2024 to isolate the fact that all scenarios incorporate current elevated commodity prices. Sensitivities are analyzed against the results from the Reference Scenario.

Portfolio Metric Results – Build Vs Buy Sensitivity

	Sensitivity	Affordability			Workforce Impact	
		Average Rate ($/MWh)	Revenue Requirements		CPS Energy Workforce Impact	Local Economic Impact
			PV Revenue Requirements ($Billion)		Change in CPS Energy Generation Employees	Capital expenditures for new generation capacity built in greater San Antonio area ($Millions)
		2023 - 2030	*2023 – 2030*	*2023 – 2047*	*2030*	*2023 – 2030*
P4	Reference	59.16	8.7	23.6	90	1,787
	Buy Sensitivity	60.27	8.9	24.6	160	0

- This sensitivity tests the impact of CPS Energy buying new natural gas and hydrogen capacity and energy from a private third party via PPAs instead of owning the capacity outright.
- A private third party would have a higher cost of capital than CPS Energy, the cost of which would be passed through to CPS Energy via higher capacity payments. As a result, revenue requirements and average rates are higher under the Buy Sensitivity.
- In addition, the Buy Sensitivity would lead to greater impact on the CPS Energy workforce. CPS Energy would have no control over the location of the power plants, and thus the new capacity could be located outside of Greater San Antonio, leading to reduced positive local economic impact.

Agenda

Recap of Interactions since October 20 RAC Meeting

Recap of Progress

Portfolio and Scorecard Review

Scenario and Sensitivity Parameters

Review of Portfolio Performance under Scenarios and Sensitivities

Integrated Scorecard Summary

Timeline and Next Steps

Objectives and Metrics

Planning Objectives	Metrics	Measures
System Reliability & Climate Resiliency	Diversity of Generation Capacity Mix	Pie chart of generation mix in CPS Energy portfolio by fuel type (e.g. wind, solar, gas, coal, etc.) in 2030
	Capacity Headroom	Reserve Margin in 2030
	Climate Resiliency	Revenue requirements in extreme weather in 2030
		% of CPS Energy electricity consumption that is met through ERCOT market purchases in 2030 under extreme weather
Environmental Sustainability	Progress Towards City of SA Climate Action & Adaptation Plan (CAAP) Goals	% reduction in CO_2 intensity from CPS Energy generation in 2030, relative to 2016 baseline
		The carbon intensity (CO_2 per MWh) of electricity generated by CPS Energy fleet in 2030 and 2040
		% reduction in electricity consumption due to STEP in 2030
Affordability	$/MWh Energy Cost	Estimated energy cost between 2023 and 2030 (Ref Scenario)
		Estimated scenario range between 2023 - 2030
	Revenue Requirements	PV of revenue requirements between 2023 and 2030 (Ref Scenario)
		Range of PV of revenue requirements between 2023 and 2030

Objectives and Metrics

Objectives	Metrics	Measures
System Flexibility	Market Purchases	% of CPS Energy electricity consumption that is met through ERCOT market purchases in 2030
	Dispatchability	% of generating capacity in CPS Energy fleet that can have its output adjusted on demand in 2030
Workforce Impact	CPS Energy Workforce Impact	# of Impacted CPS Energy Generation Employees in 2030
	Local Economic Impact	Total $ in capital expenditures for new generation capacity built in greater San Antonio area

Portfolio Metric Results

	System Reliability & Climate Resiliency				Environmental Sustainability				Affordability				System Flexibility		Workforce Impact	
	Diversity of Generation Mix	Capacity Headroom	Extreme Weather Exposure		Progress Towards City of SA CAAP Goals				Energy Cost ($/MWh)		Present Value (PV) Revenue Requirements		Market Purchases	Dispatchability	CPS Energy Workforce Impact	Local Economic Impact
	Generation Mix (MWh)	Expected Reserve Margin (%)	Rev. Req. Extreme Weather ($Billion)	% of CPS Energy consumption that is met through ERCOT market purchases	% CO2 Intensity Reduction Relative to 2016 (Ref Scenario)	Emission Intensity (lb CO2/MWh)		% reduction in consumption due to STEP	Reference Scenario Average Cost ($/MWh)	Range in Cost in *all* Scenarios ($/MWh)	Ref Scenario ($Billion)	Range Across *all* Scenarios ($Billion)	% of CPS Energy consumption that is met through ERCOT market purchases	% of CPS Energy Capacity that is Dispatchable	# of Impacted CPS Energy Generation Employees	Capital expenditures for new generation capacity built in greater San Antonio area ($Millions)
	2030	*2030*	*2030*	*2030*	*2030*	*2030 | 2040*		*2030*	*2023 - 2030*		*2023 – 2030*	*2023 – 2030*	*2030*	*2030*	*2030*	*2023 – 2030*
P1		13.7%	$1.70	1.0%	37%	578	547	9.7%	$58.07	$52-60	$8.58	$7.87-8.58	1%	61%	155	$2,758
P2		15.7%	$2.04	3.1%	44%	518	350	9.7%	$60.04	$55-63	$8.85	$8.19-8.99	4%	57%	170	$2,004
P3		14.5%	$3.26	12.8%	65%	321	161	9.7%	$60.58	$56-63	$8.90	$8.36-8.98	13%	46%	345	$1,310
P4		15.3%	$2.02	6.1%	30%	641	361	9.7%	$59.16	$53-61	$8.72	$7.99-8.72	7%	63%	90	$1,787
P5		15.0%	$3.28	13.5%	65%	325	161	9.7%	$60.47	$55-62	$8.88	$8.23-8.88	13%	46%	355	$866
P6		13.2%	$3.27	19.6%	78%	200	31	9.7%	$65.34	$61-69	$9.54	$9.07-9.68	18%	39%	355	$4,041
P7		13.1%	$3.34	19.7%	78%	202	35	9.7%	$65.96	$61-69	$9.63	$9.14-9.76	18%	39%	355	$4,041
P8		15.4%	$2.79	11.2%	59%	378	160	9.7%	$60.67	$55-62	$8.92	$8.20-8.92	11%	48%	295	$548
P9		14.6%	$2.69	7.9%	60%	371	160	9.7%	$58.64	$54-59	$8.65	$8.04-8.65	9%	46%	295	$548

Nuclear, Geothermal, Coal, Gas, Gas Toll, Wind, Solar, Other, Storage, Hydrogen, Energy Efficiency

Legend: Less Favorable — More Favorable

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Key Observations from Portfolio Metric Results

	System Reliability & Climate Resiliency			
	Diversity of Generation Mix	Capacity Headroom	Extreme Weather Exposure	
	Generation Mix (MWh)	Expected Reserve Margin (%)	Rev. Req. Extreme Weather ($Billion)	% of CPS Energy consumption that is met through ERCOT market purchases
	2030	*2030*	*2030*	*2030*
P1		13.7%	$1.70	1.4% ➔ 1.0%
P2		15.7%	$2.04	4.0% ➔ 3.1%
P3		14.5%	$3.26	12.8% ➔ 12.8%
P4		15.3%	$2.02	7.2% ➔ 6.1%
P5		15.0%	$3.28	13.5% ➔ 13.5%
P6		13.2%	$3.27	17.8% ➔ 19.6%
P7		13.1%	$3.34	18.0% ➔ 19.7%
P8		15.4%	$2.79	11.4% ➔ 11.2%
P9		14.6%	$2.69	8.6% ➔ 7.9%

Legend
- Nuclear
- Geothermal
- Coal
- Gas
- Gas Toll
- Wind
- Solar
- Other
- Storage
- Hydrogen
- Energy Efficiency

System Reliability & Climate Resiliency

- Generation Mix
  - P8 and P9 have the most diverse generation mix, with no single fuel source accounting for more than half of total generation.
  - P2, P4, P6 and P7 all perform similarly, with P2 and P4 being more gas-heavy and P6 and P7 more wind-heavy.
  - P1 has the least diverse generation mix, dominated by gas.
- Reserve Margin
  - All portfolios have an expected reserve margin range around 13 – 15%.
  - P6 and P7 have the lowest reserve margin due to early retirements of Rosenberg and Rio Nogales, as well as potential limit on the market's ability to deliver sufficient new wind and storage additions to replace the retired capacity.
- Extreme Weather Exposure
  - P1 and P2 have least exposure to extreme weather due to their high levels of firm dispatchable capacity.
  - P6 and P7 have most exposure to extreme weather due to their low levels of firm dispatchable capacity.

Notes:
1. *Lighter shade means "more favorable."*

Key Observations from Portfolio Metric Results

	Environmental Sustainability			
	Progress Towards City of SA CAAP Goals			
	% Emission Intensity Reduction Relative to 2016 (Ref Scenario)	Emission Intensity (lb CO2/MWh)		% reduction in consumption due to STEP
	2030	*2030*	*2040*	*2030*
P1	37%	578	547	9.7%
P2	44%	518	350	9.7%
P3	65%	321	161	9.7%
P4	30%	641	361	9.7%
P5	65%	325	161	9.7%
P6	78%	200	31	9.7%
P7	78%	202	35	9.7%
P8	59%	378	160	9.7%
P9	60%	371	160	9.7%

Note:
1. *Lighter shade means "more favorable."*

Environmental Sustainability

- CO2 Emission Intensity
  - By 2030, P2, P3, & P5 - P9 **out-perform the 2030 CAAP target** of 41% emission reduction (below 543 lb/MWh).
  - By 2030, P1 & P4 **do not meet the 2030 CAAP target** of 41% emission reduction (below 543 lb/MWh) without additional mitigation.
  - By 2040, P3, & P5 - P9 **out-perform the 2040 CAAP target** of 71% emission reduction (below 267 lb/MWh).
  - By 2040, P1, P2, & P4 **do not meet the 2040 CAAP target** of 71% emission reduction (below 267 lb/MWh) without additional mitigation.
- Energy Efficiency Contribution
  - The contribution of energy efficiency is the same across all portfolios and is based on the baseline Sustainable Tomorrow Energy Plan (STEP).
  - See applicable slides on the sensitivity analysis that analyzed the impact of an expanded STEP program and a scaled back STEP program

Key Observations from Portfolio Metric Results

	Affordability			
	Energy Cost ($/MWh)		Present Value (PV) Revenue Requirements	
	Reference Scenario Average Cost ($/MWh)	Range in Cost in *all* Scenarios ($/MWh)	Ref Scenario ($Billion)	Range Across *all* Scenarios ($Billion)
	2023 - 2030		*2023 – 2030*	
P1	$58.07	$52-60	$8.58	$7.87-8.58
P2	$60.04	$55-63	$8.85	$8.19-8.99
P3	$60.58	$56-63	$8.90	$8.36-8.98
P4	$59.16	$53-61	$8.72	$7.99-8.72
P5	$60.47	$55-62	$8.88	$8.23-8.88
P6	$65.34	$61-69	$9.54	$9.07-9.68
P7	$65.96	$61-69	$9.63	$9.14-9.76
P8	$60.67	$55-62	$8.92	$8.20-8.92
P9	$58.64	$54-59	$8.65	$8.04-8.65

Note:
1. *Lighter shade means "more favorable."*

Affordability

- $/MWh Energy Cost
  - In the Reference scenario, portfolios with earlier retirements of fossil capacity are less affordable.
  - In the Carbon Based Economy scenario, all portfolios benefit from lower market energy and natural gas prices.
  - In the Net Zero Economy scenario, all portfolios perform better than in the Reference scenario (through 2030), though renewable portfolios see a greater benefit.
  - In the Volatile Market scenario, all portfolios are impacted by higher prices, though some portfolios provide better price protection than others.
  - In the Extreme Weather sensitivity, most portfolios are impacted by higher prices, though some portfolios provide better price protection than others.
- PV Revenue Requirements
  - Some portfolios have a tighter range for PV of Revenue Requirements across the scenarios in both timeframes.
  - Some portfolios that have a narrow range of revenue requirements 2023-2030 timeframe get materially wider in the 2023-2047 timeframe.
  - Accelerated retirements of gas and coal generation raises revenue requirements (especially P6 and P7).

Key Observations from Portfolio Metric Results

	System Flexibility	
	Market Purchases	Dispatchability
	% of CPS Energy consumption that is met through ERCOT market purchases	% of CPS Energy Capacity that is Dispatchable
	2030	*2030*
P1	1%	61%
P2	4%	57%
P3	13%	46%
P4	7%	63%
P5	13%	46%
P6	18%	39%
P7	18%	39%
P8	11%	48%
P9	9%	46%

Note:
1. *Lighter shade means "more favorable."*

System Flexibility

- Market Purchases (the degree we rely on ERCOT)
  - P1, P2, P4, and P9 have the lowest market purchases due to the reliance on controllable (dispatchable) generation.
  - P6 and P7 have the greatest reliance on market purchases due to the retirements of all coal and gas units by 2030 and the increased deployment of intermittent resources, resulting in in reliance on ERCOT during certain times of the year and day when wind and solar are not fully available.
- Dispatchability (the degree we control generation output)
  - P1, P2 and P4 have the highest share of capacity that is dispatchable, due largely to the additions of new gas units in the late 2020s.
  - P3, P5, P8 and P9 have existing gas and new storage and hydrogen additions that provide dispatchable capacity.
  - P6 and P7 have the lowest share of dispatchable capacity, as they rely heavily on wind and solar for energy contributions.

Key Observations from Portfolio Metric Results

	Workforce Impact	
	CPS Energy Workforce Impact	Local Economic Impact
	# of Impacted CPS Energy Generation Employees	Capital expenditures for new generation capacity built in greater San Antonio area ($Millions)
	2030	*2023 – 2030*
P1	155	2,758
P2	170	2,004
P3	345	1,310
P4	90	1,787
P5	355	866
P6	355	4,041
P7	355	4,041
P8	295	548
P9	295	548

Note:
1. *Lighter shade means "more favorable."*

Workforce Impact

- CPS Energy Workforce Impact
  - P4 has the lowest impact on CPS Energy jobs, due to continued operations of both Spruce units and fewer capacity retirements by 2030. New gas plants allow CPS Energy to re-deploy employees from retired plants.
  - P3, P5, P6, and P7 have the largest impact on CPS Energy jobs due to earlier retirements of CPS Energy-owned power plants.
- Local Economic Impact
  - P6 and P7 have the highest capital expenditures in the local area, driven largely by new geothermal capacity.
  - P1 and P2 include the most near-term gas additions, which are expected to be constructed in the local region.
  - Although P5, P8 and P9 add significant renewable capacity, it is expected that most wind and solar would be sited outside of the greater San Antonio area.

Key Portfolio Risk Characteristics

Portfolio	Short Term Bill Volatility	Long Term Bill Volatility	Reliance on ERCOT	Extreme Weather Cost
P1 (Gas)	Medium	High	Low	Low
P2 (Blend)	Medium	Medium	Low	Low
P3 (Ren)	Low	Low	Medium	High
P4 (Blend)	Medium	Medium	Low	Low
P5 (Ren)	Medium	Low	Medium	High
P6 (Ren)	Low	Medium	High	High
P7 (Ren)	Low	Medium	High	High
P8 (Ren)	Medium	Low	Medium	Medium
P9 (Ren)	Low	Low	Low	Medium

Agenda

Recap of Interactions since October 20 RAC Meeting

Recap of Progress

Portfolio and Scorecard Review

Scenario and Sensitivity Parameters

Review of Portfolio Performance under Scenarios and Sensitivities

Integrated Scorecard Summary

Timeline and Next Steps

Timeline – Generation Plan Update

	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RAC Agenda	Market & modeling intro (6/16)	CRA Process intro (7/21)	Dot plot / Scenario inputs / Process detail (8/18)	Scenario outputs / Portfolios (9/15)	Metrics – REF scenario (10/20)	RAC Q&A Mtg (11/3) Metrics – All scenarios/ ~~Preferred Plan~~ (11/17)	RAC Q&A Mtg (12/2) RAC Portfolios (12/6) RAC Mtg (12/15)
Public Input	RAC meeting date	RAC meeting date	RAC meeting date	Launch online survey & Press conference Employee Townhall (9/13) RAC meeting date	1st Public Open House (a.m. & p.m.) (10/6) RAC meeting date	RAC meeting date	2nd Public Open House (a.m. & p.m.) (12/1) Public Virtual Town Hall (12/8) RAC meeting date
RAC & RAC Peer Review				Review inputs & ERCOT scenario outputs	Review portfolio REF results	RAC developing report to BOT	RAC reports to BOT (12/19)
CPS Energy Preferred Plan						CRA incorporates feedback	BOT/RAC process
Metrics		Draft Metrics		Final Metrics			
Scenario Development		Scenario narratives	Scenario parameters	Sensitivity parameters			
Portfolio Construction			Portfolio definition				
Portfolio and Financial Analysis				Populated Metrics – REF scenario	Populated Metrics – All scenarios		

Note: Updates from Oct RAC meeting highlighted in yellow.

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Next Steps

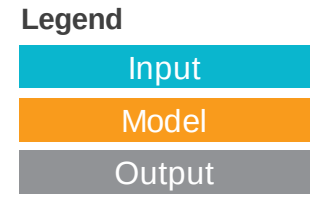
- RAC members continue discussion on results and work toward Board recommendation

Appendix: Extreme Weather Parameters

Process for Modeling Extreme Weather Scenarios

Winter Event

- Winter event is defined by higher gas prices, lower renewable capacity factors, higher gas outages, and higher demand over 1 week
- ERCOT market prices are expected to be high due to a combination of high outages, high gas prices, and high demand
- Portfolio costs are also expected to be high as more energy purchases at high costs may be required to meet higher consumption



Summer Event

- Summer event is defined by sustained increase in demand over several months
- ERCOT market prices are expected to be high as peaking plants set prices in more hours and as scarcity events occur
- Portfolio costs are expected to be high as more energy purchases may be required to meet higher consumption

Note: CPS Energy provided CPS Energy extreme weather load forecasts. ERCOT load for the Winter Event is based on CRA's analysis of actual ERCOT load for the 2021 Winter Storm Uri. CRA assumes that ERCOT load during the extreme summer event increases by the same percentages as CPS Energy Load.

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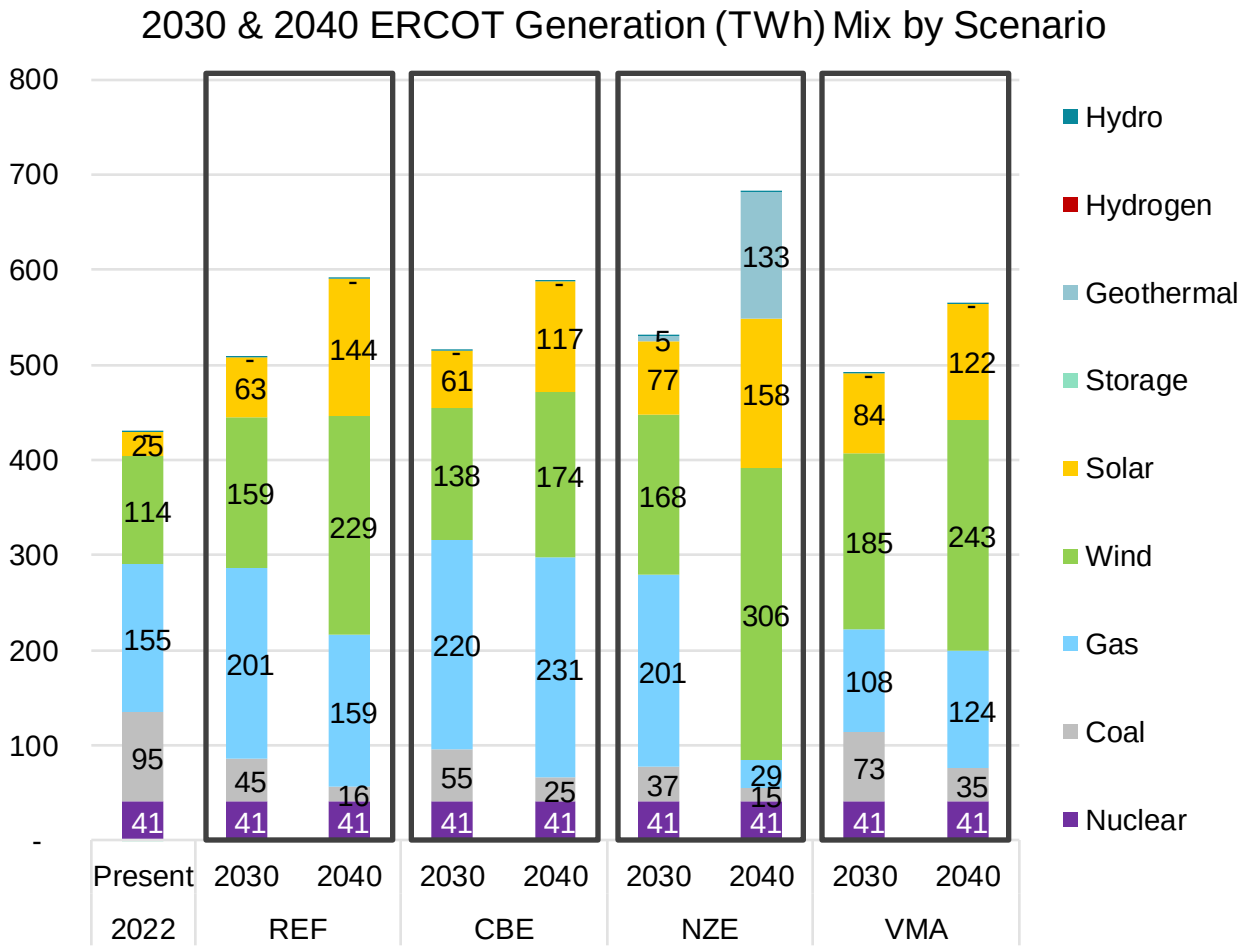
Appendix: Scenario Parameter Reminder

ERCOT Market Scenario Generation (TWh) Mix

The share of renewable generation is expected to increase in all scenarios. Gas is projected to continue to play a significant role in the CBE scenario, while clean energy makes up the largest generation share in NZE.

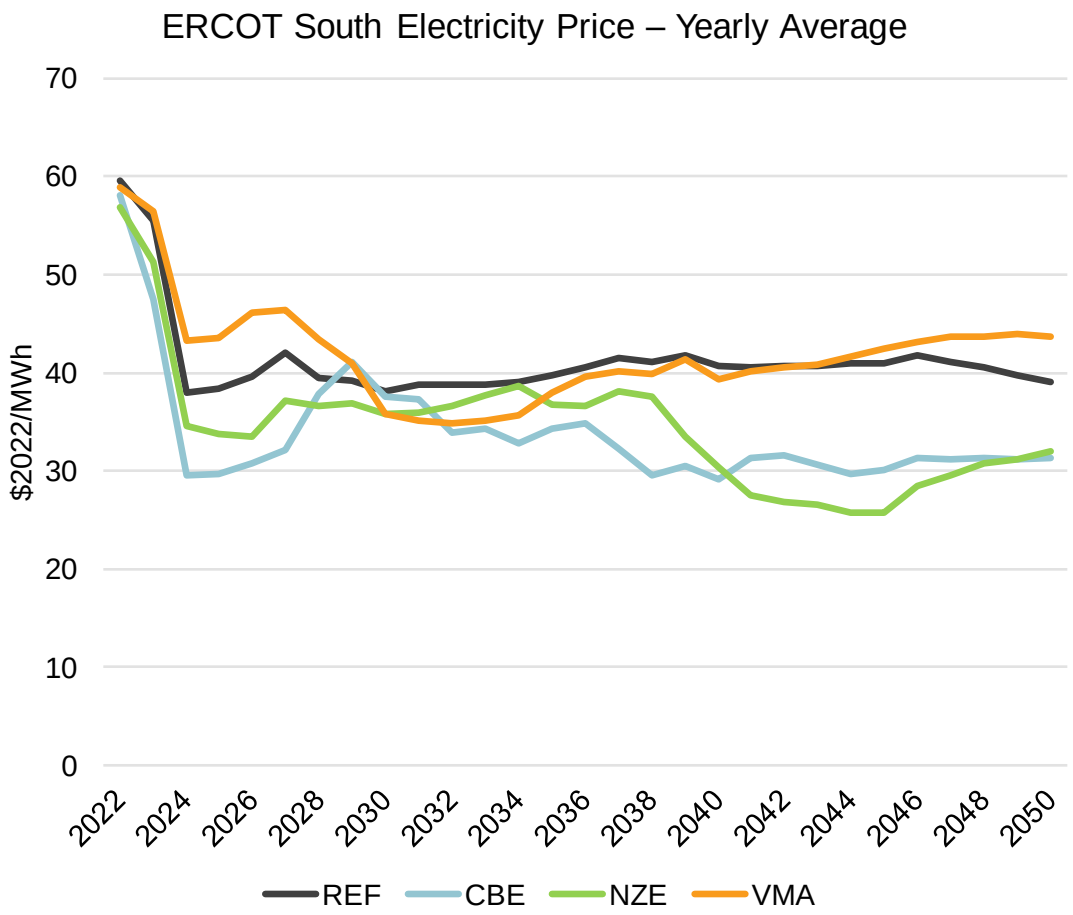


ERCOT Scenario	Commentary
Reference Scenario (REF)	• Further retirements of aging coal fleet • Continued growth in renewables, as well as storage to support renewables • Gas remains to balance intermittency
Carbon-Based Economy (CBE)	• Low gas prices keep gas generation competitive, leading to higher gas generation relative to REF
Net Zero Carbon Economy (NZE)	• High carbon prices make coal and gas uncompetitive against renewables, reducing capacity factors • Renewables have the largest generation share
Volatile Market (VMA)	• Higher coal generation than REF due to favorable coal prices relative to gas

Notes:
1. There is limited hydro and hydrogen generation.
2. Geothermal is the low-cost resource option from a long-term capacity expansion perspective in NZE but could be representative of other "baseload" zero-emitting technologies.
3. Storage capacity does not contribute positive net energy to the system and is thus not shown.

ERCOT South Electricity Price Projections

Power prices are driven by natural gas prices, carbon prices, and the level of renewable penetration in the market



ERCOT Scenario	Commentary
Reference Scenario (REF)	• Electricity prices track the price expectations for natural gas, which fall over the next few years
Carbon-Based Economy (CBE)	• Electricity prices fall further than the Reference Scenario due to sustained low commodity prices
Net Zero Carbon Economy (NZE)	• High carbon prices lead to faster renewable growth, suppressing long-term power prices • Beyond 2040, geothermal displaces coal and gas generation, further offsetting the impact of high carbon prices
Volatile Market (VMA)	• Higher prices in the 2020s than REF due to high gas prices • Price suppressed in early 2030s due to IRA-induced wind and solar growth • Prices track high gas prices in 2040s as coal is retired and renewable growth slows

ERCOT Market Scenario Emissions

The NZE scenario is projected to reach near zero emissions as high carbon prices lead to fossil-fired plant retirements, while emissions in the CBE scenario are highest, as gas utilization remains high due to low natural gas prices.