

Southwestern Electric Power Company

# 2024 ARKANSAS IRP STAKEHOLDER MEETING

## IRP Modeling Analysis & Results

December 13, 2024



An **AEP** Company

# Welcome & Introductions

## **SWEPCO Leadership Team**

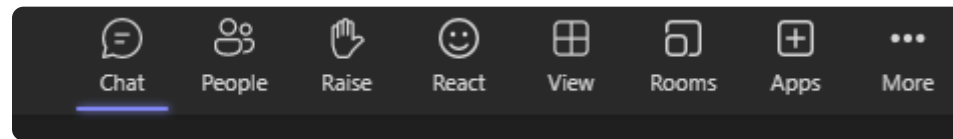
Melissa Gage | Vice President, Regulatory and Finance  
Lynn Ferry-Nelson | Director, Regulatory Services  
Chris Martel | Regulatory Manager  
Sarah Tacker | Outside Counsel

## **SWEPCO Planning Team**

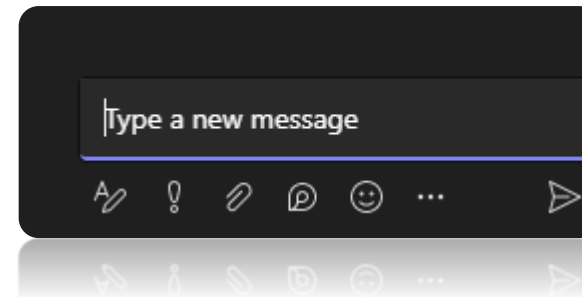
Josh Burkholder | Managing Director, Resource Planning & Strategy  
Mohamed Abukaram | Director, Resource Planning & Operations Analysis  
Kayla Zellers | Director, Resource Planning Strategy  
Wayman Smith | Director, Transmission Planning  
Jason Baker | Manager, Resource Planning  
Anita Sharma | Manager, Resource Planning

# Engagement Guidelines

1. Participants joining today's meeting will be in a "listen-only" mode.
2. During the presentation, please enter questions at any time into the Teams Q&A feature. Questions will be addressed after each section.
3. Time will be taken to answer questions related to the materials presented after each section.



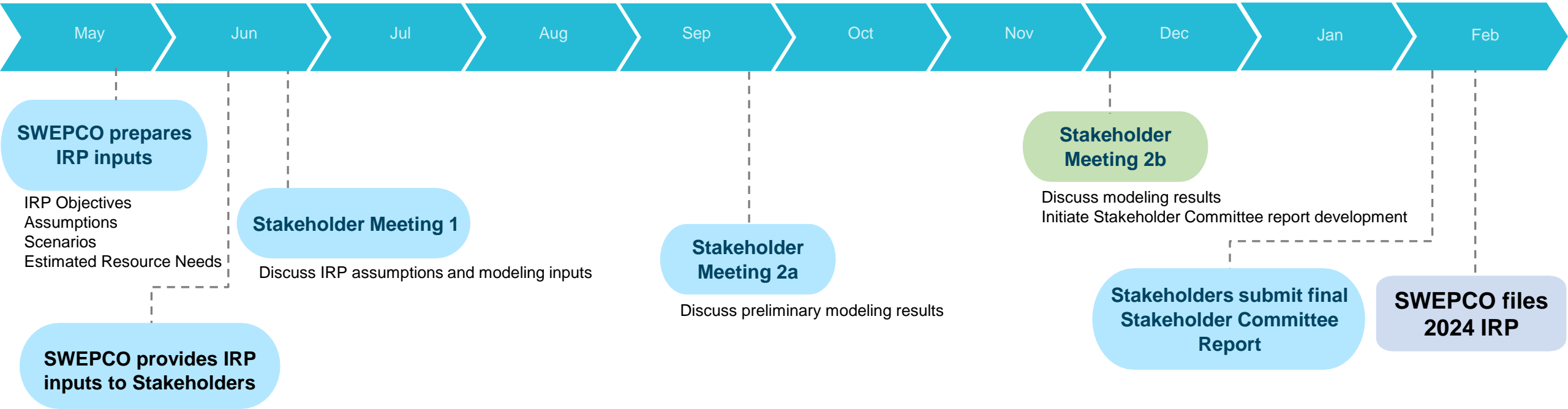
Click the Chat feature at the top of the Teams screen



# Agenda

Time (AM CT)	Agenda Topic	Presenter
9:30 – 9:35	Welcome and Introductions	Josh Burkholder, Melissa Gage
9:35 – 9:55	IRP Planning and Assumptions Review <ul style="list-style-type: none"> <li>• Timeline &amp; Stakeholder Comments Summary</li> <li>• 2024 IRP Objectives &amp; Metrics</li> <li>• Capacity Needs (Going-In Position)</li> </ul>	Jason Baker, Kayla Zellers
9:55 – 10:05	IRP Inputs Review <ul style="list-style-type: none"> <li>• Technology Assumptions</li> <li>• Load Forecast</li> <li>• Portfolios &amp; Sensitivities Evaluated</li> </ul>	Jason Baker, Kayla Zellers
10:05 – 10:45	Portfolios Results <ul style="list-style-type: none"> <li>• Selection of Preferred Plan</li> <li>• Base, High, Low Review &amp; EER</li> <li>• Informative Sensitivities</li> </ul>	Jason Baker, Anita Sharma
10:45 – 11:00	<i>Break</i>	
11:00 – 11:30	Performance Indicators, Supplemental Analysis & Preferred Plan <ul style="list-style-type: none"> <li>• Proposed Action Plan Overview</li> </ul>	Kayla Zellers, Josh Burkholder
11:30 – 12:00	Closing Comments, Discussion & Adjourn	Josh Burkholder, Melissa Gage

# Stakeholder Engagement Timeline



Note: Draft timeline is provided for preliminary planning purposes. All dates and activities are subject to change. SWEPCO may update this information as new information becomes available.

# Stakeholder Comments Summary

Modeling Requests and Assumption Inquiries	SWEPCO Summarized Response <sup>1</sup>
<b>Market Scenario Analysis</b>	
<ul style="list-style-type: none"> <li>EPA Final Rules (including under Base, High and Low regional environments)</li> </ul>	EPA Proposed Rules provide insight to strict control on existing gas units, serve as proxy for resources to comply. Final Rule excludes specifics for existing gas resources.
<ul style="list-style-type: none"> <li>Forced Coal Retirements</li> </ul>	Scenario analysis does not assume specific resource replacements.
<b>Technology Costs</b>	
<ul style="list-style-type: none"> <li>Include IRA Bonus Credits</li> </ul>	Bonus credits are applicable to site specific resources that the IRP does not assume. The IRP will yield a portfolio of resources to guide the selection of new resources.
<b>NW Arkansas Load Pocket</b>	
<ul style="list-style-type: none"> <li>Transmission alternative to serve load pocket</li> </ul>	A transmission alternative <b>was</b> included in the Company's EER Portfolio analysis.
<ul style="list-style-type: none"> <li>Generation alternatives within the Load Pocket other than Flint Creek</li> </ul>	The IRP does not include analysis of location-specific resources.
<b>Transmission Modeling</b>	
<ul style="list-style-type: none"> <li>Model transmission upgrades incorporating AEPs clean energy strategy and corporate clean energy commitments</li> </ul>	Transmission planning is a process separate from the IRP process, conducted by an independent entity, which in this case is SPP, and regional in scope.
<ul style="list-style-type: none"> <li>Incorporate grid enhancing technologies in regional and long-term transmission planning process</li> </ul>	
<b>Flint Creek Portfolio Analysis</b>	
<ul style="list-style-type: none"> <li><b>Include environmental costs for Flint Creek, early retirement and replacement of Flint Creek</b></li> </ul>	<b>EER case includes environmental costs, 111(d) and ELG compliant strategy for Flint Creek</b>

<sup>1</sup> Detailed feedback and Company responses can be found on SWEPCO IRP Website

# Stakeholder Comments Summary (cont'd.)

Modeling Requests and Assumption Inquiries	SWEPCO Summarized Response <sup>1</sup>
Update on RFPs by SWEPCO	Company conducting 2024 RFP, additional RFP not planned.
Load Forecast Clarifications	Update on inquiries related to datacenters, distributed generation, other factors.
Scenario Analysis clarifications	Feedback related to how EPA rule was considered and regional market analysis resource selections.
EPA 111d Rule Analysis with the IRP	
<ul style="list-style-type: none"> <li>Cost assumptions for Flint Creek and Turk plants to comply with the EPA rules</li> </ul>	Confirmation of costs related to alternatives considered for compliance with EPA 111(d) rule.
Technology Costs and Quantity Assumption Clarifications	
<ul style="list-style-type: none"> <li>Solar, wind, and battery storage costs and availability</li> </ul>	Confirmation of costs and associated quantities assumed in the IRP analysis.
RTO Reform Integration Inquiries	Confirmation of SWEPCO's continued engagement with SPP related to ongoing reforms.
Transmission Planning Inquiries	Confirmation that Transmission Planning is outside the scope of the IRP.
Resource Alternatives LCOE values, Charts and Metrics	Revised visuals presented and workpapers will be provided.
Renewable Congestion & Losses	Confirmed the congestion component prices for wind and solar resources.
Capacity Contingency Factors Development and Purpose	Represents an additional planning target above the minimum Planning Reserve Margin (PRM) set by SPP. SWEPCO believes it is not prudent to only plan to the minimum reserve margin obligation <b>and has historically maintained reserves above the minimum PRM.</b>

<sup>1</sup> Detailed feedback and Company responses can be found on SWEPCO IRP Website

# 2024 IRP Objectives

SWEPCO set four objectives for the 2024 IRP Portfolio to achieve its mission of providing safe, reliable, and affordable energy for customers while having a positive local impact on the communities it serves.

Objective	Purpose
Customer Affordability	Maintain focus on cost and risks to customers
Rate Stability	Maintain focus on cost volatility under varying future market conditions
Maintaining Reliability	Maintain reserve margin, diversity of portfolio, fleet resiliency to unexpected events
Local Impacts & Sustainability	Maintain focus on portfolio local impacts and environmental sustainability benefits

These objectives will guide the 2024 IRP analysis in the evaluation of resource alternatives and risks evaluated in each candidate portfolio.

These objectives will manifest in the IRP Portfolio Performance Indicators, used by SWEPCO to measure the performance of different resource plans and compare trade-offs between alternatives when identifying the Preferred Plan for the 2024 IRP.

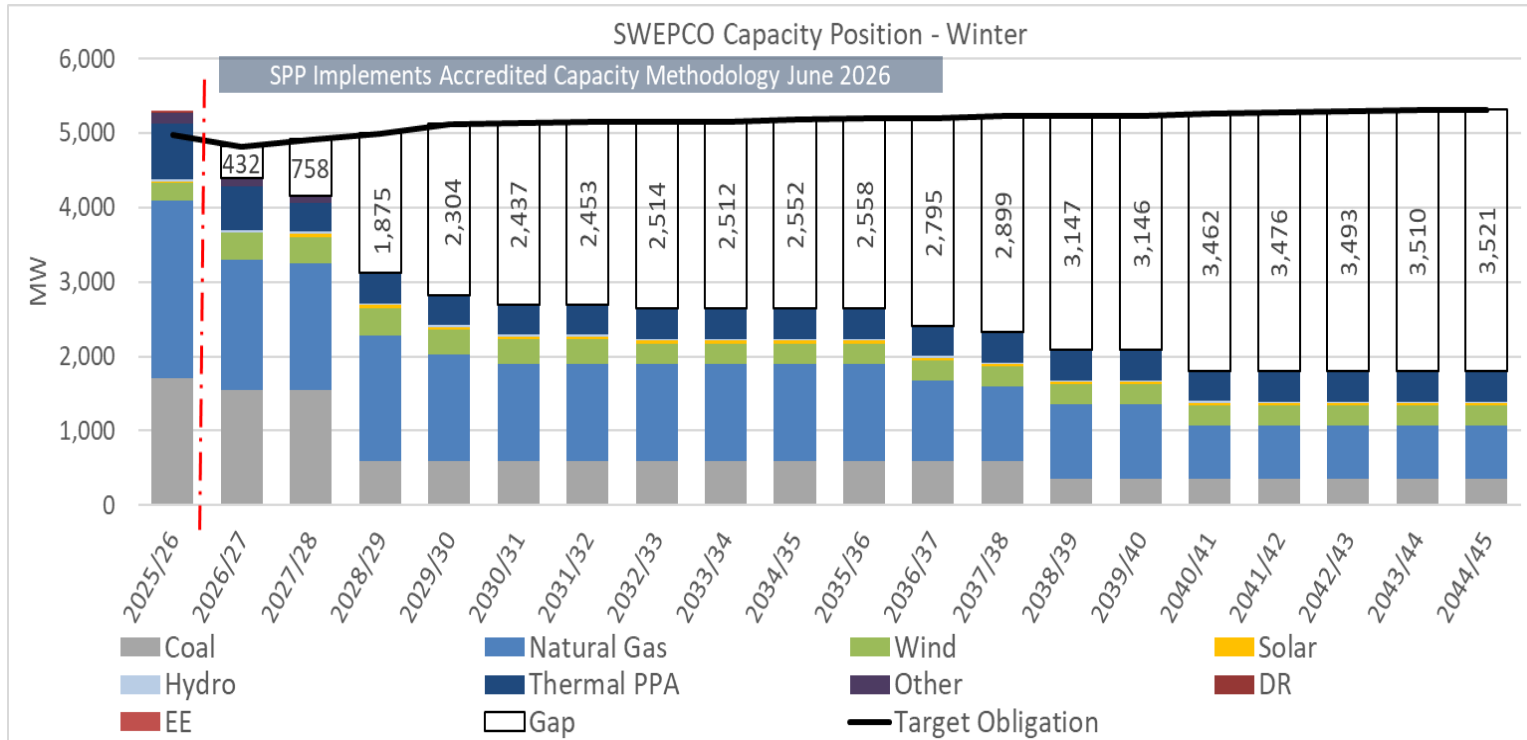


# Portfolio Performance Indicators

- Performance Indicators identify the methods to evaluate analysis results towards the Objectives.
- Metrics are the specific measurements to quantify results.

Objective	Performance Indicators	Metric Description
Customer Affordability	Net Present Value Revenue Requirement (NPVRR) Levelized Rate (\$/MWh)	30yr NPVRR and 30yr Levelized Rate (NPVRR/Levelized Energy)
	Near-Term Rate Impacts (CAGR)	7-year CAGR of Annual Rate
Rate Stability	Portfolio Resilience	Range of Portfolio NPVRR
	Energy Market Exposure - Sales	Average of market exposure sales NPVRR, MWh as % of internal Load
	Energy Market Exposure - Purchases	Average of market exposure purchases NPVRR, MWh as % of internal Load
Maintaining Reliability	Reserve Margin	Comparison to Target Reserve Margin
	Fleet Resiliency	% Dispatchable <b>Winter Accredited</b> Capacity of Company Peak Load
	Resource Diversity	Shannon-Weiner Diversity Index inclusive of Capacity and Energy Diversity
<b>Local Impacts &amp; Sustainability</b>	<b>Local Impacts</b>	<b>New Nameplate MW Installed Inside SWEPCO as % of Total New Nameplate MW</b>
	Emissions Reductions	CO <sub>2</sub> , NO <sub>x</sub> , SO <sub>2</sub> reductions compared to 2005 levels

# Going-In Position - Winter



## SWEPCO Capacity Need

- 2023 RFP Resources included.
- Welsh units cease burning coal in 2028, removed from Going-In position pending economic selection of gas conversion.

### ICAP:

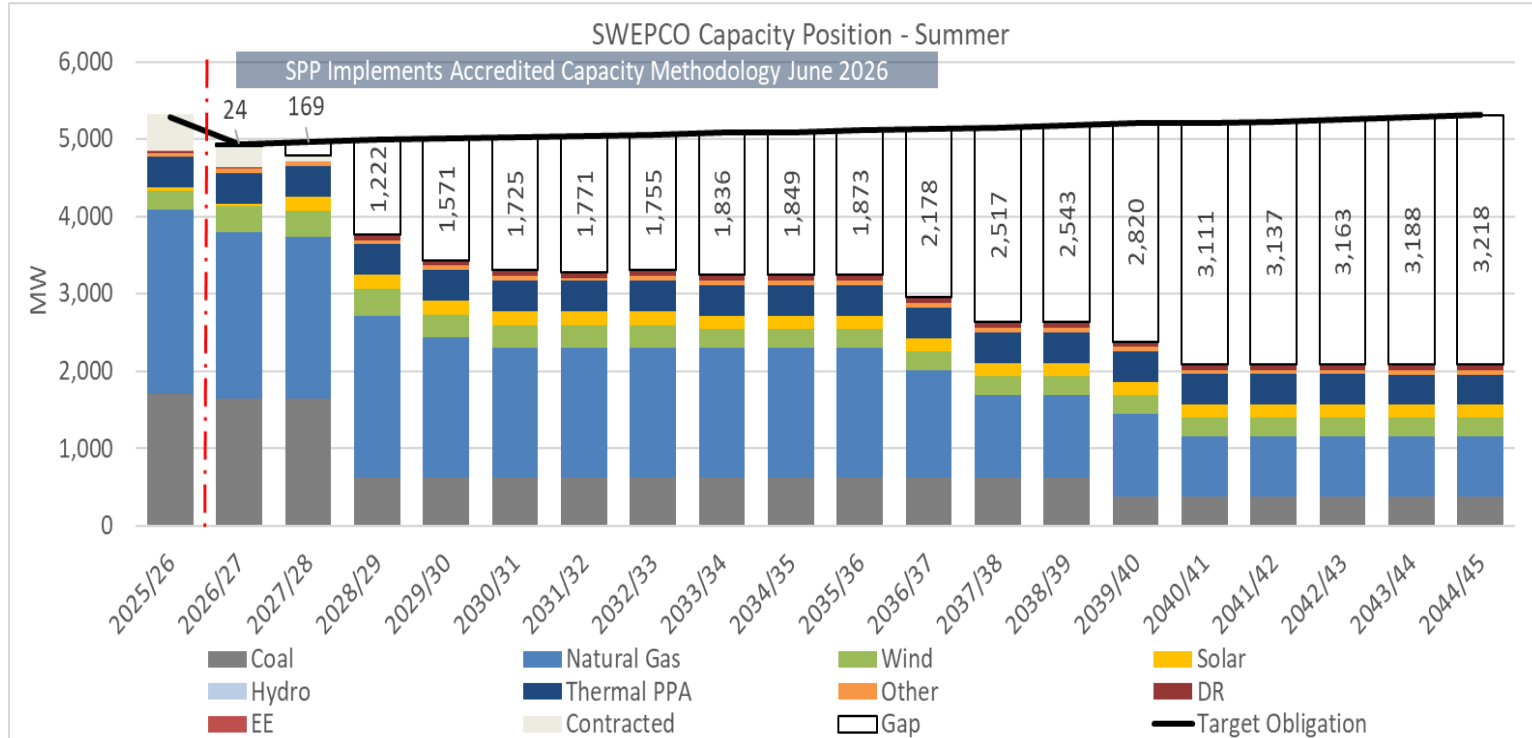
- PRM 15% in 2025/26, then 36% in 2026/27.
- Target Obligation includes an additional 7% target contingency (~290MW) in 2025/26.

### ACAP:

- ACAP PRM 12% starting in 2026/27.
- Thermal Resource Accredited Capacity reduction: ~790MW.
- Target Obligation Includes an additional 6% target contingency (~250MW) starting in 2026/27.

*Note: SPP ACAP PRM is not finalized*

# Going-In Position - Summer



## SWEPCO Capacity Need

- 2023 RFP Resources included.
- Welsh units cease burning coal in 2028, removed from Going-In position pending economic selection of gas conversion.

### ICAP:

- PRM 15% in 2025/26, then 16% in 2026/27.
- Target Obligation includes an additional 7% target contingency (~305MW) in 2025/26.

### ACAP:

- ACAP PRM 5% starting in 2026/27.
- Thermal Resource Accredited Capacity reduction: ~300MW.
- Target Obligation includes an additional 6% target contingency (~260MW) starting in 2026/27.

*Note: SPP ACAP PRM is not finalized*

# Baseline Assumptions – New Resources

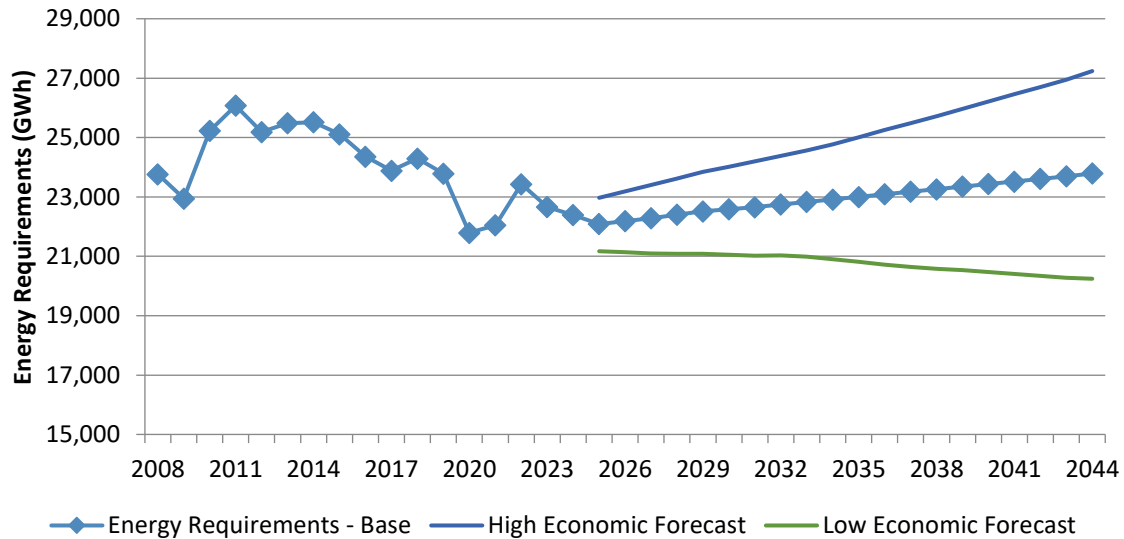
Technology	First Year	Capacity (MW)	Installed Cost (\$/kW)	Full Load Heat Rate (btu/kWh)	Variable O&M (\$/MWh)	Fixed O&M (\$/kW-yr)	Capacity Factor (%)	LCOE (\$/MWh)
<b>Base Load</b>								
SMALL MODULAR REACTOR NUCLEAR POWER PLANT, 600 MW	2036	600	9,300	10,440	4.46	141.00	90	109
COMBUSTION TURBINE F CLASS, COMBINED-CYCLE, F- Class	2032	760	1,130	6,600	2.76	23.89	60	76
COMBUSTION TURBINE H CLASS, 1100-MW COMBINED CYCLE (RFP)	2032	1,030	1,490	6,370	2.57	16.81	60	76
COMBUSTION TURBINE H CLASS, COMBINED-CYCLE SINGLE SHAFT, 430 MW (RFP)	2032	420	1,680	6,430	3.51	19.43	60	82
COMBUSTION TURBINE H CLASS, COMBINED-CYCLE SINGLE SHAFT W/90% CO2 CAPTURE, 430 MW (RFP)	2032	380	3750	7,120	8.04	38.03	60	110
<b>Peaking</b>								
COMBUSTION TURBINE F CLASS, 240-MW SIMPLE CYCLE (RFP)	2031	230	1,140	9,910	6.09	9.48	15	175
COMBUSTION TURBINES AERODERIVATIVE, 100-MW SIMPLE CYCLE (RFP)	2031	110	1,780	9,120	6.36	22.07	15	227
INTERNAL COMBUSTION ENGINES, 20 MW (RFP)	2031	20	2,800	8,300	7.70	47.59	15	308
<b>Intermittent</b>								
BATTERY ENERGY STORAGE SYSTEM, 50 MW / 200 MWH, 4hr (RFP)	2029	50	1,850		0.00	53.11	16	184
BATTERY ENERGY STORAGE SYSTEM, 50 MW / 300 MWH, 6hr (RFP)	2029	50	2,370		0.00	79.66	25	165
BATTERY ENERGY STORAGE SYSTEM, 50 MW / 400 MWH, 8hr (RFP)	2029	50	3,550		0.00	106.21	33	176
BATTERY ENERGY STORAGE SYSTEM, 50 MW / 500 MWH, 10hr (RFP)	2029	50	4,540		0.00	132.76	41	179
BATTERY ENERGY STORAGE SYSTEM, FORM, 20 MW / MWH, 100hr	2029	20	2,850		0.00	18.00	5	600
ONSHORE WIND, LARGE PLANT FOOTPRINT, 200 MW	2029	200	2,290		0.00	35.86	47	50
SOLAR PHOTOVOLTAIC, 150 MWAC	2029	150	2,080		0.00	15.86	28	55
SOLAR PHOTOVOLTAIC WITH BATTERY ENERGY STORAGE SYSTEM, 150 MWx200 MWh	2029	150	2,660		0.00	39.54	25	100

\*A 2029 gas-fired CT alternative for up to 480MW was offered assuming the re-use an existing company interconnection.

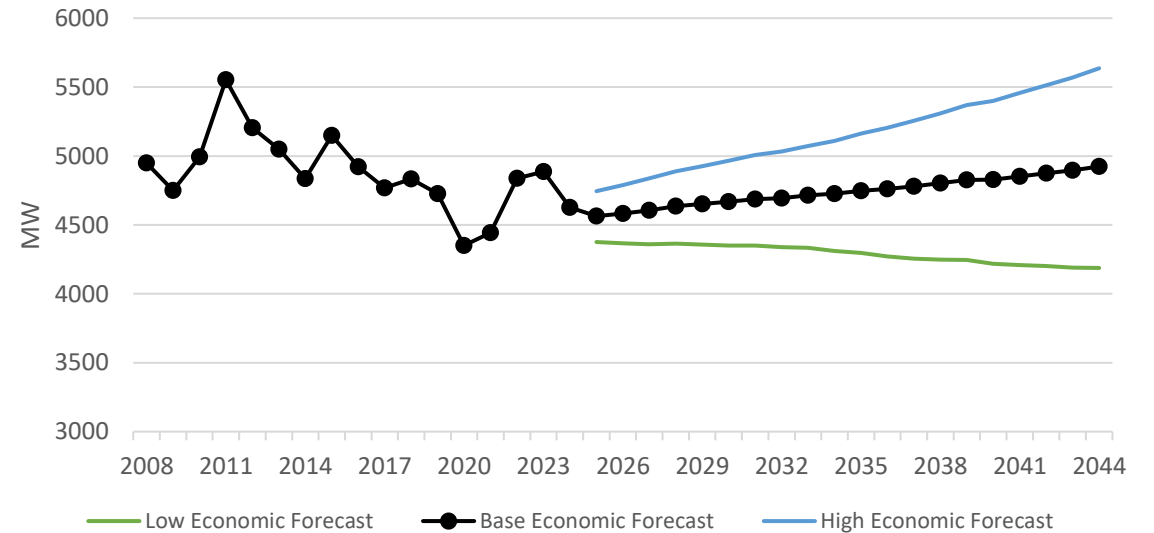
\*\* Levelized cost of energy (LCOE) values are indicative based on capacity factors shown in table.

# Load Scenarios

**SWEPCO  
Load Forecast Scenarios  
Energy Requirement (GWh)**



**SWEPCO Demand Forecast Scenarios**



# Portfolios Evaluated

Portfolio	SWEPCO Load	Commodity Prices	Environmental Regulations	Technology Cost
Base Case	Base	Base	Base	Base
High Case	High	High	Base	Base
Low Case	Low	Low	Base	Base
Enhanced Environmental Regulations (EER)	Base	EER	111(b)(d) Informed	Base

# EER Portfolio Key Inputs & Assumptions

	Cease Coal Operations: by 1/1/2032	Continued Coal Operations: Natural Gas 40% Co-Fire by 1/1/2030	Cease Coal Operations: 100% Gas Conversion by 1/1/2030
Flint Creek	<ul style="list-style-type: none"> <li>ELG Leachate Treatment Costs</li> <li>Transmission COD: 12/31/2031</li> <li>Cease Operations by 1/1/2032</li> </ul>	<ul style="list-style-type: none"> <li>ELG Leachate Treatment Costs</li> <li>Transmission COD: 12/31/2038</li> <li>Cease Operations by 1/1/2039</li> </ul>	<ul style="list-style-type: none"> <li>ELG Leachate Treatment Costs</li> <li>Transmission COD: 12/31/2044</li> <li>15-yr Useful Life</li> </ul>
Turk	<ul style="list-style-type: none"> <li>ELG Leachate Treatment Costs</li> <li>Cease Operations by 1/1/2032</li> </ul>	<ul style="list-style-type: none"> <li>ELG Leachate Treatment – Negligible</li> <li>Cease Operations by 1/1/2039</li> </ul>	<ul style="list-style-type: none"> <li>ELG Leachate Treatment Costs</li> <li>Remaining Useful Life</li> </ul>

Resource Type	Capacity Factor Limit	Starting Year Enforced	EPA 111(b)(d) Rule
Existing CC	50%	2030	Proposed
Existing CT	50%	2030	Proposed
New CC	40%	Immediate	Final
New CT	20%	Immediate	Final

\*Existing Gas Steam limits are based on routine O&M practices

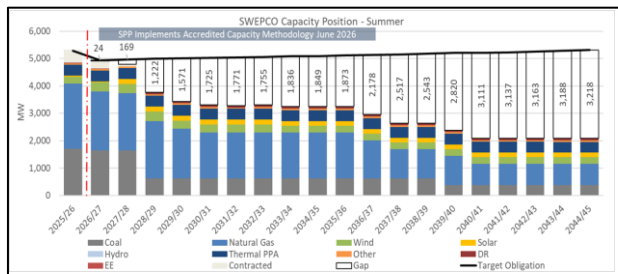
# Portfolio Sensitivities Evaluated

Portfolio Sensitivities	SWEPCO Load	Commodity Prices	Environmental Regulations	Technology Cost
High Commodity, Base Load	Base	High	Base	Base
Low Commodity, Base Load	Base	Low	Base	Base
High Technology Costs	Base	Base	Base	Base + 25%
Low Technology Costs	Base	Base	Base	Base - 25%



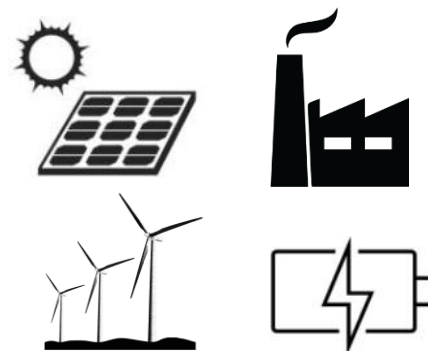
# Selection of the Preferred Plan

## Going-in Position



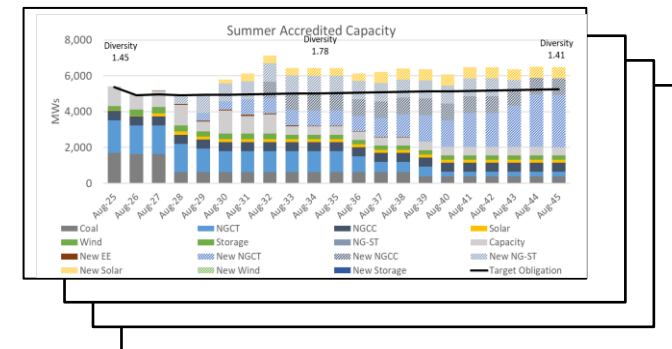
The going-in positions show a need for new capacity to meet SWEPCO's customer requirements

## Resource Options



SWEPCO used PLEXOS to evaluate resource portfolio options under different market conditions and test specific strategies

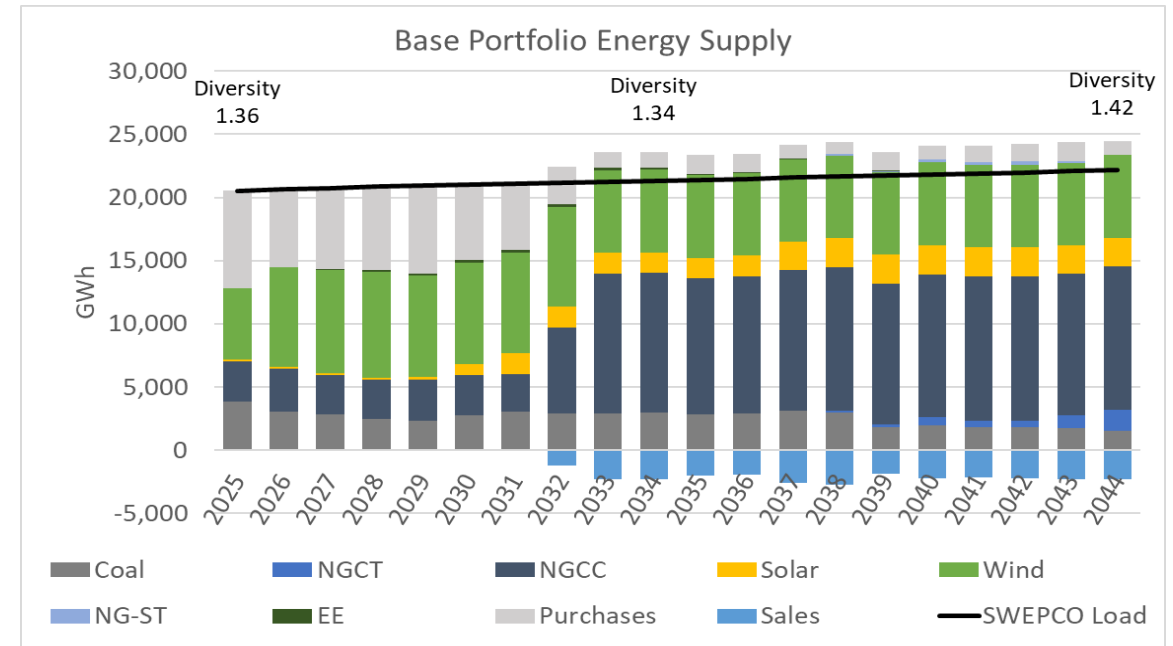
## Candidate Portfolios



The resulting set of portfolios will be evaluated against the IRP Performance Indicators to identify a Preferred Plan that maintains reliability and best maintains affordable and stable rates while also considering local impacts and sustainability

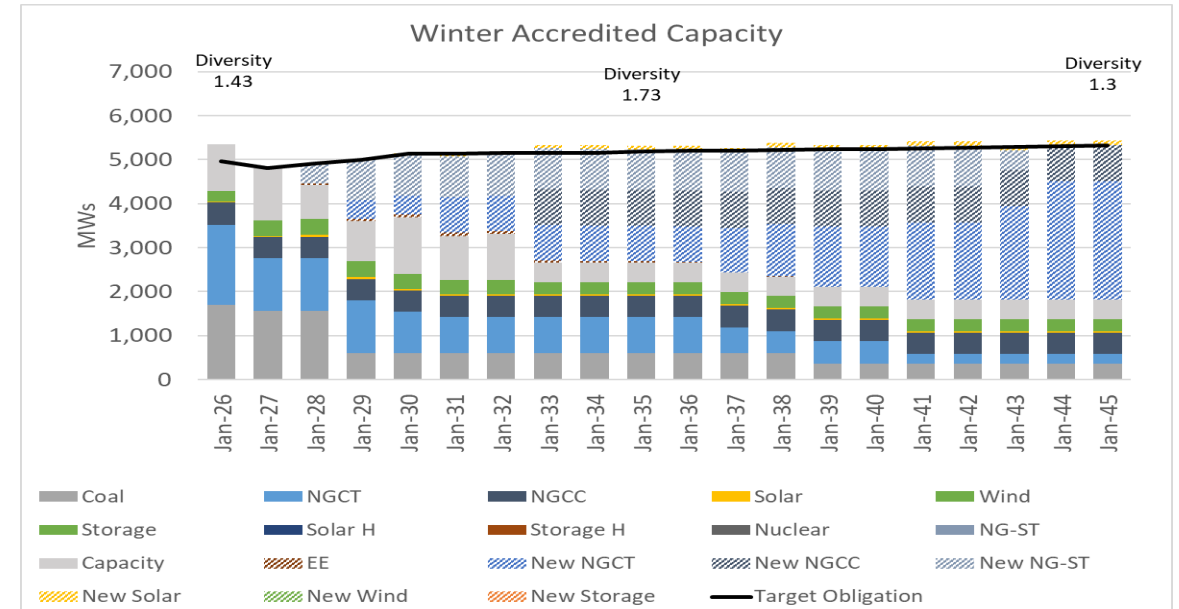
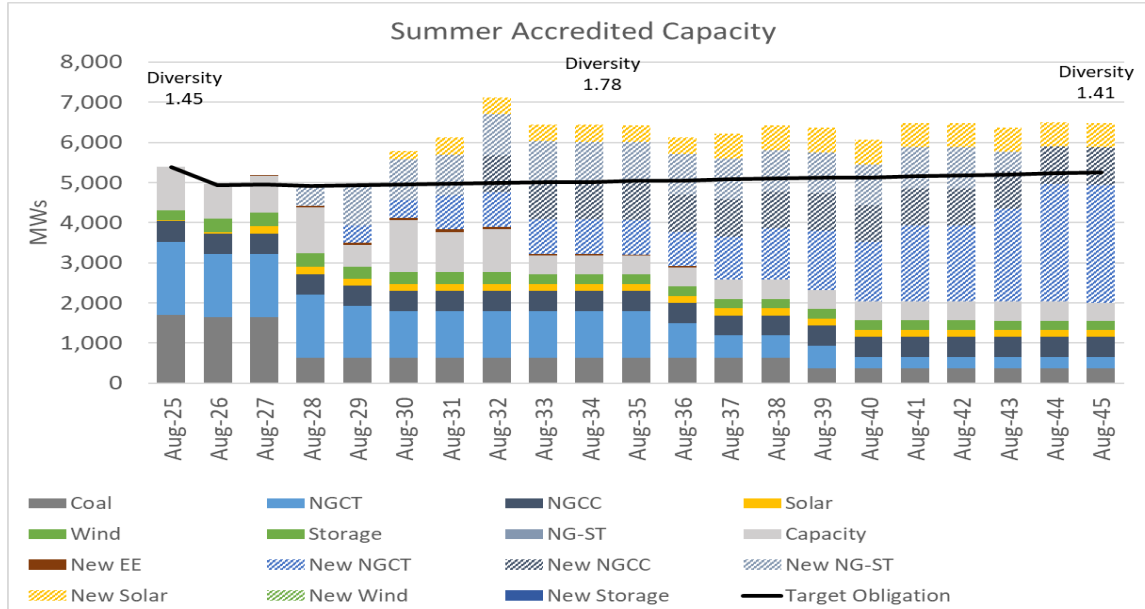
# Base Case Findings

Base Case Capacity Additions											
SPP Planning Year	Cum. New EE	New Solar	New Wind	New Storage	New CT	New CC	WSH Fuel Switch	S-T Capacity	Energy Exports (%)	Energy Imports (%)	
2025/26	0	0	0	0	0	0	0	75	0	38	
2026/27	0	0	0	0	0	0	0	50	0	30	
2027/28	19	0	0	0	0	0	0	600	0	31	
2028/29	36	0	0	0	0	0	1,053	500	0	32	
2029/30	53	0	0	0	480	0	0	500	0	33	
2030/31	73	300	0	0	0	0	0	500	0	29	
2031/32	96	300	0	0	480	0	0	500	0	25	
2032/33	97	0	0	0	0	1,100	0	500	6	14	
2033/34	97	0	0	0	0	0	0	0	11	6	
2034/35	97	0	0	0	0	0	0	0	11	6	
2035/36	97	0	0	0	0	0	0	0	9	7	
2036/37	97	0	0	0	240	0	0	0	9	7	
2037/38	94	300	0	0	240	0	0	0	12	5	
2038/39	91	0	0	0	240	0	0	0	13	4	
2039/40	89	0	0	0	0	0	0	0	8	7	
2040/41	86	0	0	0	480	0	0	0	10	5	
2041/42	82	0	0	0	0	0	0	0	10	6	
2042/43	65	0	0	0	480	0	0	0	10	6	
2043/44	52	0	0	0	720	0	0	0	10	7	
2044/45	37	0	0	0	0	0	0	0	10	5	
<b>Total</b>		<b>900</b>	<b>0</b>	<b>0</b>	<b>3,360</b>	<b>1,100</b>	<b>1,053</b>				



- Portfolio optimization considered seasonal capacity requirements and market energy risk mitigation.
- Resource additions leverage market capacity and early resource alternatives through 2029.
- Solar additions contribute towards energy position with some capacity benefit starting in 2030.
- Combined Cycle resource supports the large capacity needs by 2032 while also serving to mitigate market energy reliance.
- Market Energy Purchases decline with resource selections while still offering ability for some sales into the market.

# Base Case Findings

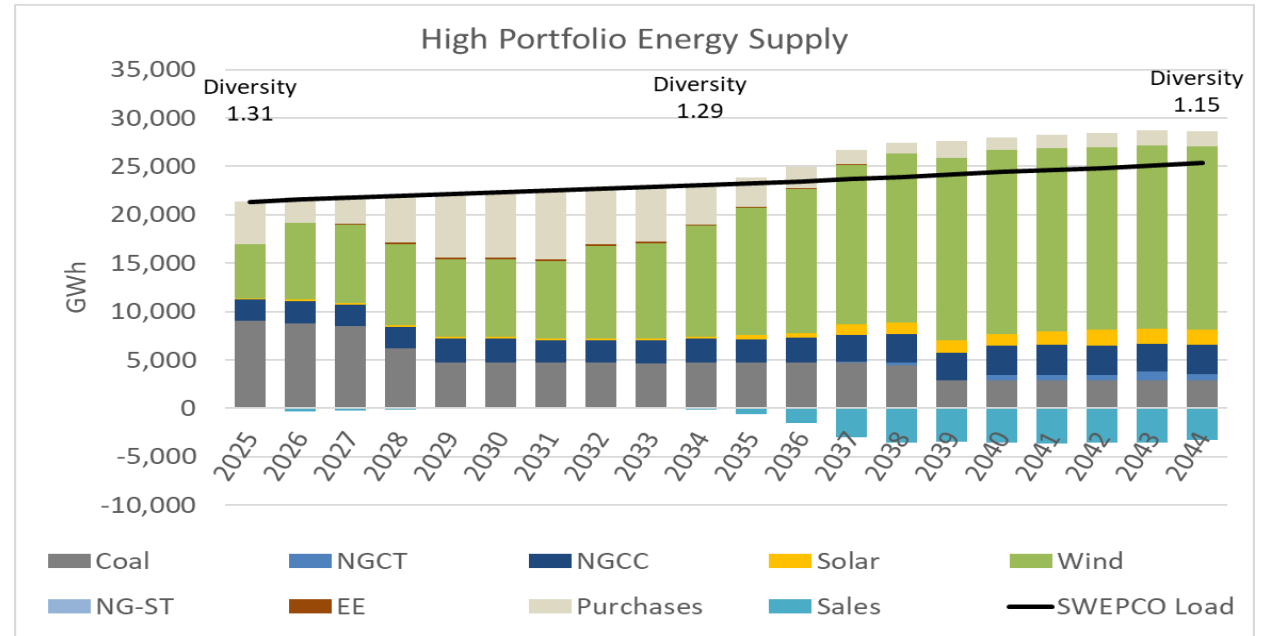


- Winter capacity needs are the controlling season to meet SPP capacity obligations.
- Renewable resources contribute towards capacity obligations but in limited amounts.
- Total portfolio includes dispatchable resources capable of serving company demand.

Reliability	
<b>Planning Reserves</b>	<b>Fleet Resiliency</b>
% Reserve Margin	Dispatchable Capacity
2034	2034
Summer %   Winter % (ACAP)	Dispatchable Winter Accredited MW
	% of Company Peak Demand
42.4%   26.9%	4,455 107.1%

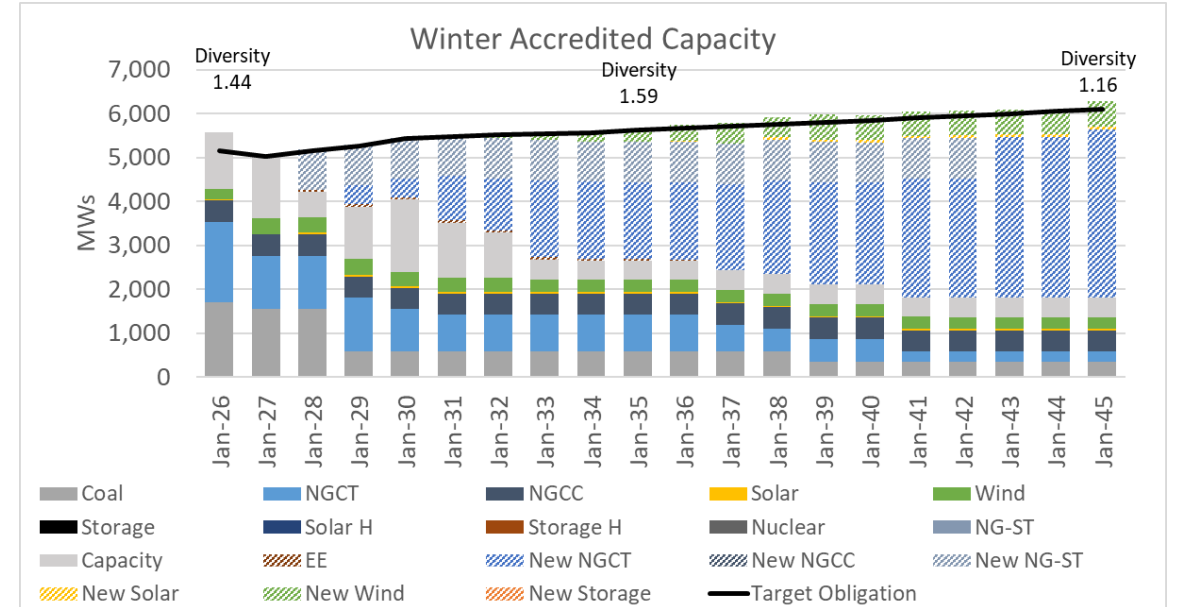
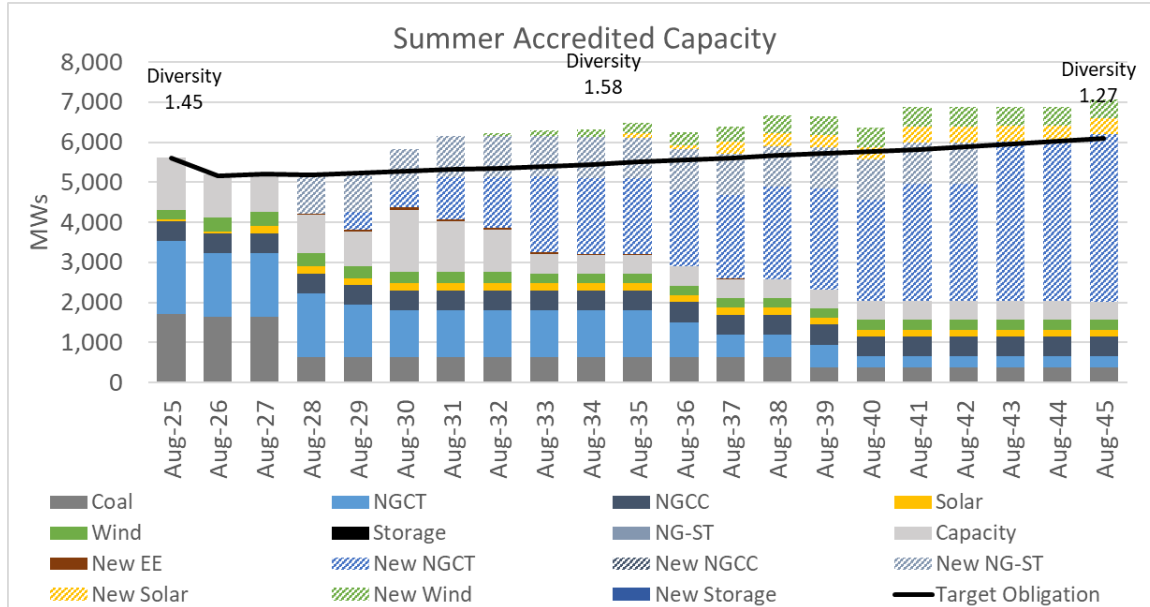
# High Case Findings

High Case Capacity Additions										
SPP Planning Year	Cum. New EE	New Solar	New Wind	New Storage	New CT	New CC	WSH Fuel Switch	S-T Capacity	Energy Exports (%)	Energy Imports (%)
2025/26	0	0	0	0	0	0	0	300	0	21
2026/27	0	0	0	0	0	0	0	275	1	13
2027/28	20	0	0	0	0	0	0	425	1	13
2028/29	36	0	0	0	0	0	1,053	475	1	23
2029/30	52	0	0	0	480	0	0	775	0	30
2030/31	70	0	0	0	0	0	0	800	0	30
2031/32	85	0	0	0	720	0	0	800	0	32
2032/33	86	0	400	0	720	0	0	500	0	25
2033/34	87	0	400	0	240	0	0	0	0	25
2034/35	87	0	400	0	0	0	0	0	1	18
2035/36	87	150	400	0	0	0	0	0	3	13
2036/37	87	0	400	0	240	0	0	0	6	10
2037/38	85	300	400	0	240	0	0	0	12	6
2038/39	83	0	400	0	240	0	0	0	15	5
2039/40	81	0	200	0	0	0	0	0	14	7
2040/41	78	0	0	0	480	0	0	0	15	5
2041/42	74	150	0	0	0	0	0	0	15	6
2042/43	56	0	0	0	720	0	0	0	14	6
2043/44	43	0	0	0	480	0	0	0	14	6
2044/45	29	0	0	0	240	0	0	0	13	6
<b>Total</b>		<b>600</b>	<b>3,000</b>	<b>0</b>	<b>4,800</b>	<b>0</b>	<b>1,053</b>			



- Portfolio optimization considered seasonal capacity requirements and market energy risk mitigation.
- Resource additions leverage market capacity and early resource alternatives through 2029.
- Wind additions contribute towards energy position with some capacity benefit.
- Combustion Turbine resources support the large capacity needs by 2032 while also serving to mitigate market energy reliance.
- Market Energy Purchases increase with resource selections while still offering ability for some sales into the market.

# High Case Findings

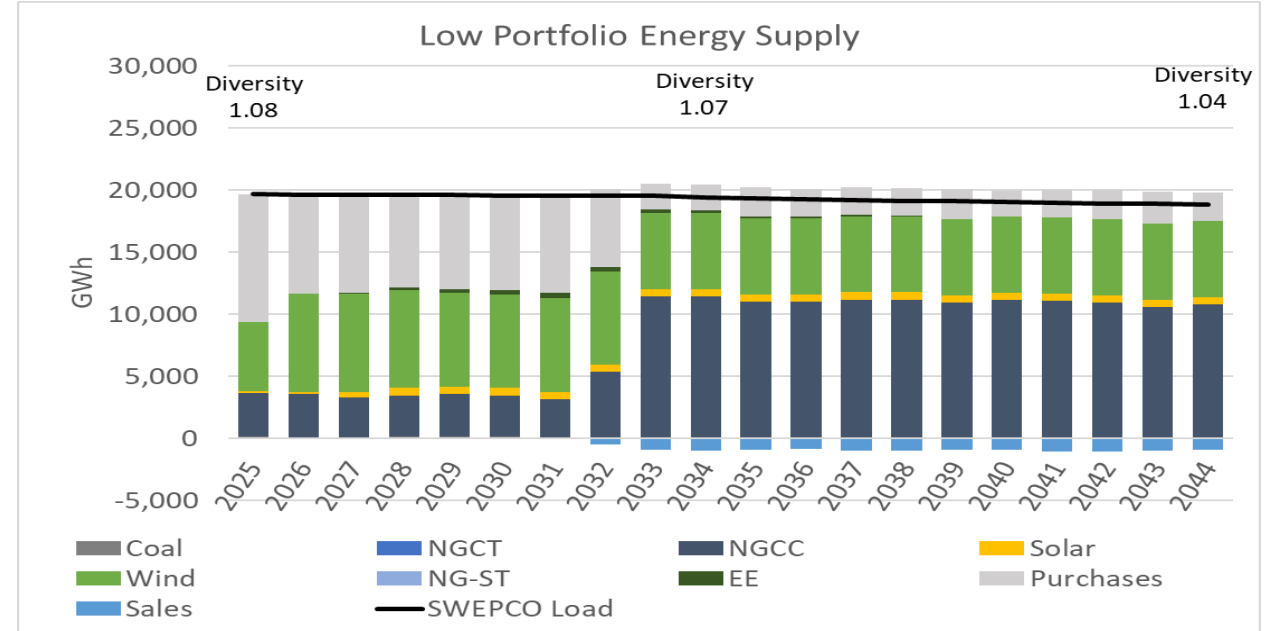


- Winter capacity needs are the controlling season to meet SPP capacity obligations.
- Higher energy needs results in wind resource selection over the CC in the near term.
- Total portfolio includes dispatchable resources capable of serving company demand.

Reliability	
<b>Planning Reserves</b>	<b>Fleet Resiliency</b>
% Reserve Margin	Dispatchable Capacity
2034	2034
Summer %   Winter % (ACAP)	Dispatchable Winter Accredited MW % of Company Peak Demand
28.9%   24.7%	4,577 102.1%

# Low Case Findings

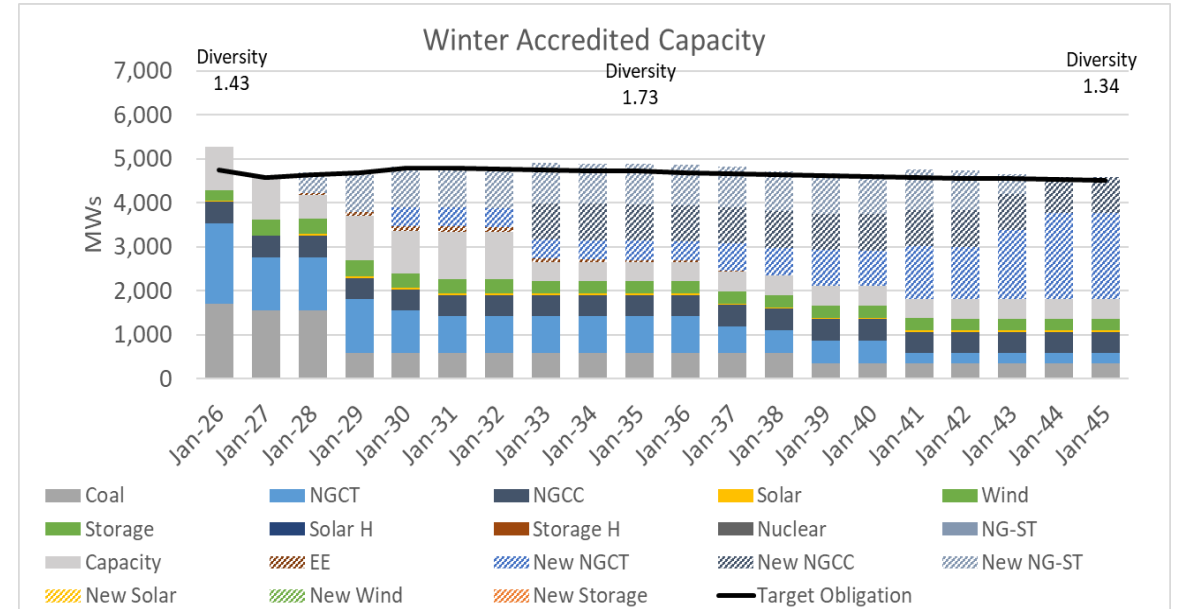
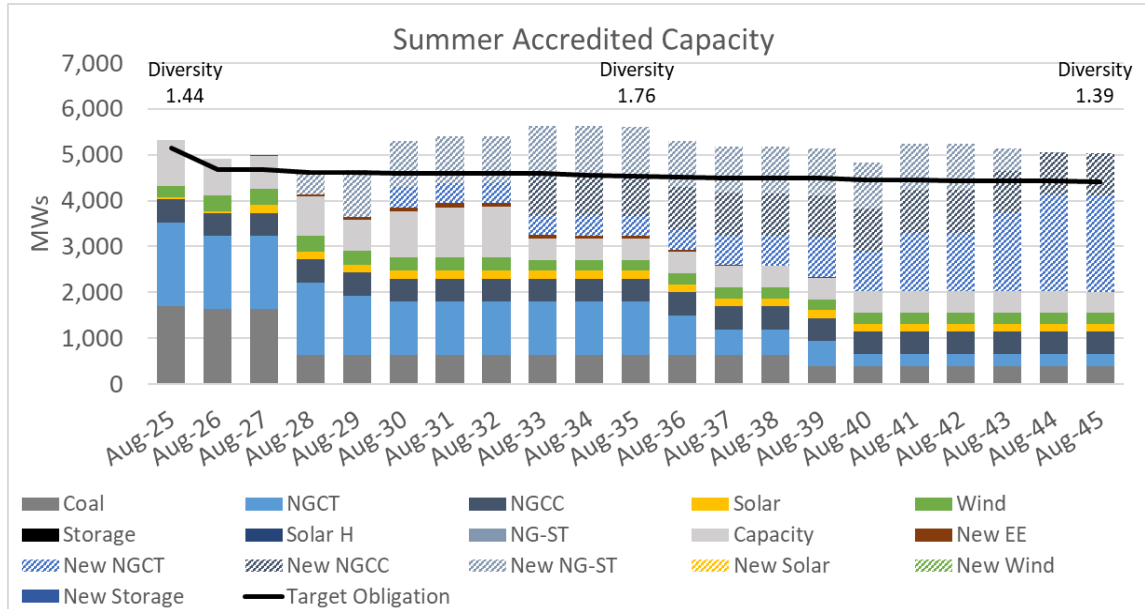
Low Case Capacity Additions										
SPP Planning Year	Cum. New EE	New Solar	New Wind	New Storage	New CT	New CC	WSH Fuel Switch	S-T Capacity	Energy Exports (%)	Energy Imports (%)
2025/26	0	0	0	0	0	0	0	0	0	52
2026/27	0	0	0	0	0	0	0	0	0	41
2027/28	31	0	0	0	0	0	0	175	0	40
2028/29	52	0	0	0	0	0	1,053	375	0	38
2029/30	87	0	0	0	480	0	0	475	0	39
2030/31	126	0	0	0	0	0	0	500	0	39
2031/32	178	0	0	0	0	0	0	500	0	40
2032/33	178	0	0	0	0	1,100	0	500	3	32
2033/34	178	0	0	0	0	0	0	0	5	10
2034/35	178	0	0	0	0	0	0	0	5	11
2035/36	178	0	0	0	0	0	0	0	5	12
2036/37	178	0	0	0	240	0	0	0	4	12
2037/38	171	0	0	0	0	0	0	0	5	12
2038/39	168	0	0	0	240	0	0	0	5	12
2039/40	160	0	0	0	0	0	0	0	5	13
2040/41	154	0	0	0	480	0	0	0	5	11
2041/42	142	0	0	0	0	0	0	0	5	12
2042/43	122	0	0	0	480	0	0	0	6	12
2043/44	100	0	0	0	480	0	0	0	5	14
2044/45	73	0	0	0	0	0	0	0	5	12
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2,400</b>	<b>1,100</b>	<b>1,053</b>			



- Portfolio optimization considered seasonal capacity requirements and market energy risk mitigation.
- Resource additions leverage market capacity and early resource alternatives through 2029.
- Combined Cycle resource supports the large capacity needs by 2032 while also serving to mitigate market energy reliance.
- Market Energy Purchases increase with resource selections while still offering ability for some sales into the market.



# Low Case Findings

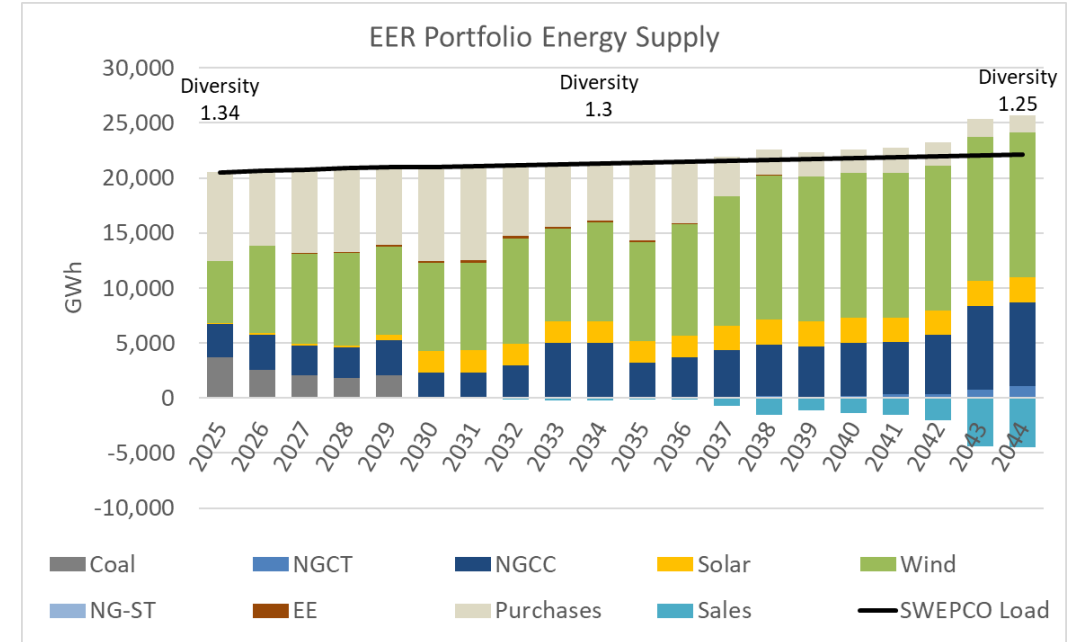


- Winter capacity needs are the controlling season to meet SPP capacity obligations.
- Total portfolio includes dispatchable resources capable of serving company demand.

Reliability	
<b>Planning Reserves</b>	<b>Fleet Resiliency</b>
% Reserve Margin	Dispatchable Capacity
2034	2034
Summer %   Winter % (ACAP)	Dispatchable Winter Accredited MW % of Company Peak Demand
36.9%   27.9%	4,077 106.8%

# EER Case Findings

EER Case Capacity Additions												
SPP Planning Year	Cum. New EE	New Solar	New Wind	New Storage	New CT	New CC	WSH Fuel Switch	FC Fuel Switch	Turk Fuel Switch	S-T Capacity	Energy Exports (%)	Energy Imports (%)
2025/26	0	0	0	0	0	0	0	0	0	75	0	39
2026/27	0	0	0	0	0	0	0	0	0	50	0	33
2027/28	17	0	0	0	0	0	0	0	0	575	0	37
2028/29	31	0	0	0	0	0	1,053	0	0	500	0	36
2029/30	49	150	0	0	480	0	0	0	0	500	0	33
2030/31	68	600	0	0	0	0	0	259	389	500	0	40
2031/32	92	0	0	0	480	0	0	0	0	500	0	40
2032/33	94	0	400	0	0	760	0	0	0	500	1	30
2033/34	95	0	200	0	0	0	0	0	0	0	1	27
2034/35	98	0	0	0	0	0	0	0	0	0	1	24
2035/36	100	0	0	0	0	0	0	0	0	0	0	33
2036/37	100	0	400	0	240	0	0	0	0	0	1	26
2037/38	99	150	400	0	0	0	0	0	0	0	3	17
2038/39	98	0	200	0	0	0	0	0	0	0	7	11
2039/40	96	0	0	0	0	0	0	0	0	0	5	10
2040/41	93	0	0	0	480	0	0	0	0	0	6	10
2041/42	89	0	0	0	0	0	0	0	0	0	7	10
2042/43	73	0	0	0	0	760	0	0	0	0	9	10
2043/44	60	0	0	0	480	760	0	0	0	0	20	7
2044/45	45	0	0	0	240	0	0	0	0	0	20	7
<b>Total</b>		<b>900</b>	<b>1,600</b>	<b>0</b>	<b>2,400</b>	<b>2,280</b>	<b>1,053</b>	<b>259</b>	<b>389</b>			

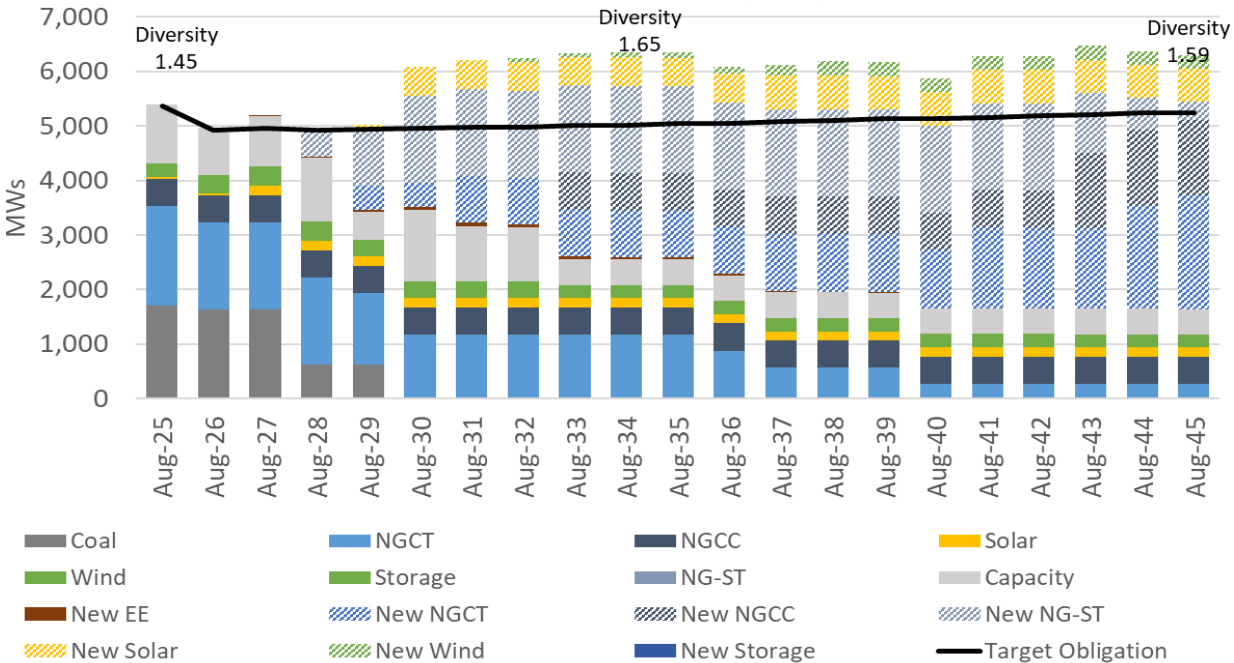


- Portfolio optimization considered seasonal capacity requirements and market energy risk mitigation.
- Resource additions leverage market capacity and early resource alternatives through 2029.
- Wind and Solar additions contribute towards energy position with some capacity benefit.
- Combustion Turbine and Combined Cycle resources support the capacity needs by 2032 while also serving to mitigate market energy reliance.
- Flint Creek and Turk Units converted to 100% natural gas.
- Market Energy Purchases decline with resource selections while still offering limited ability for sales into the market.

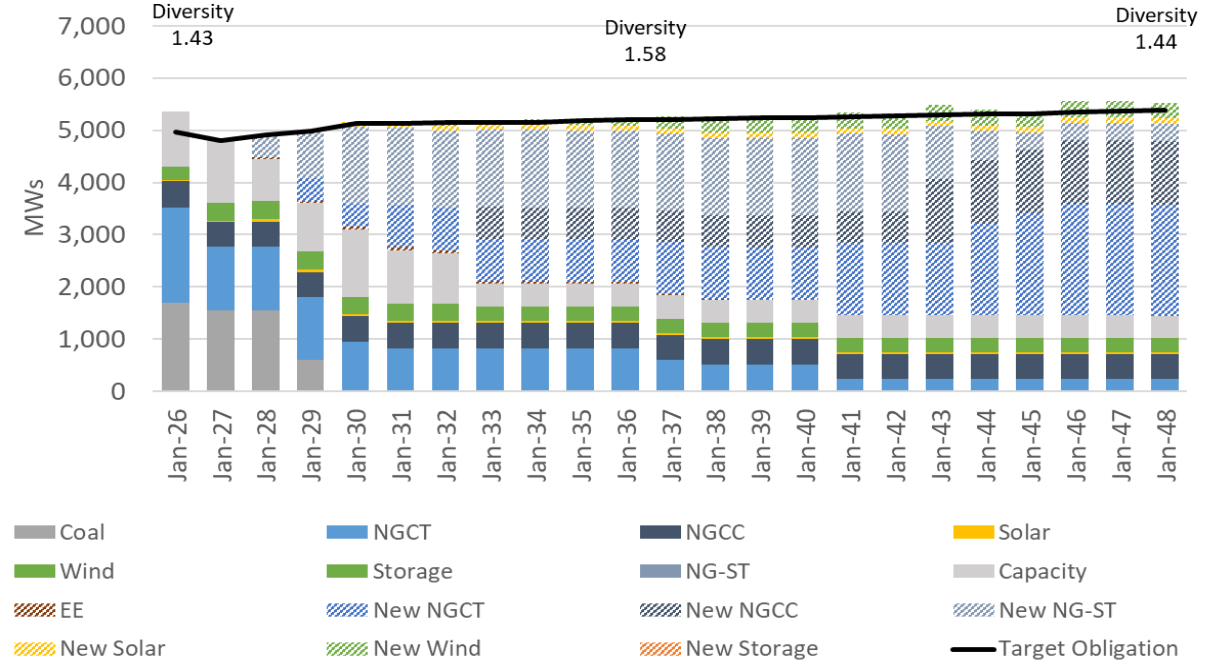


# EER Case Findings

Summer Accredited Capacity



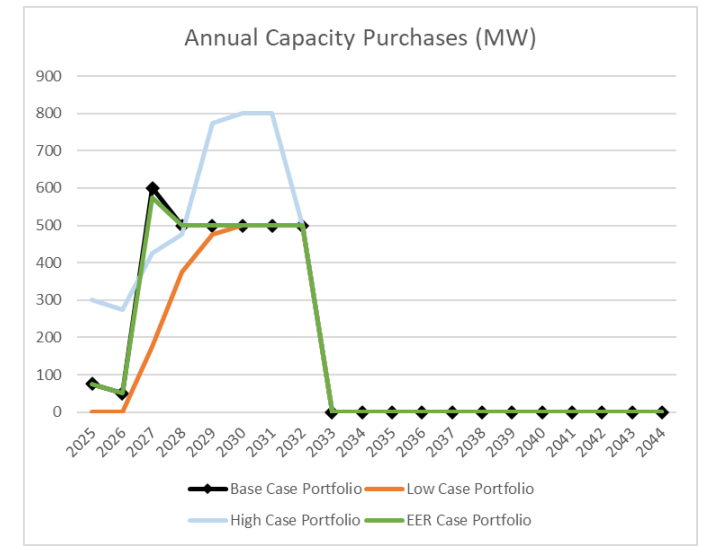
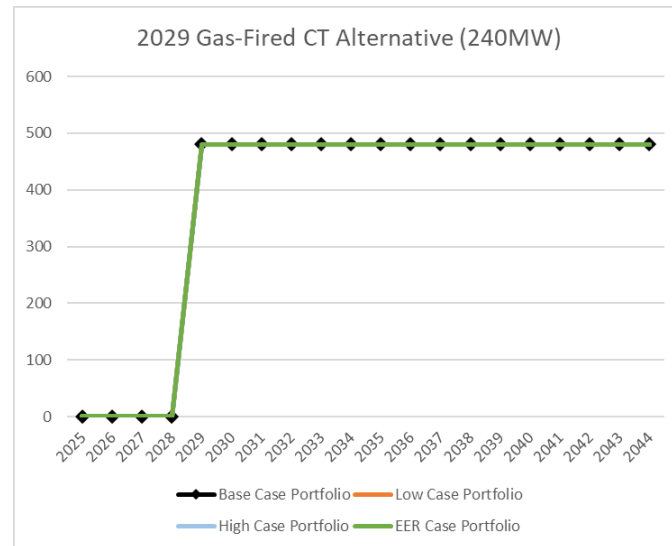
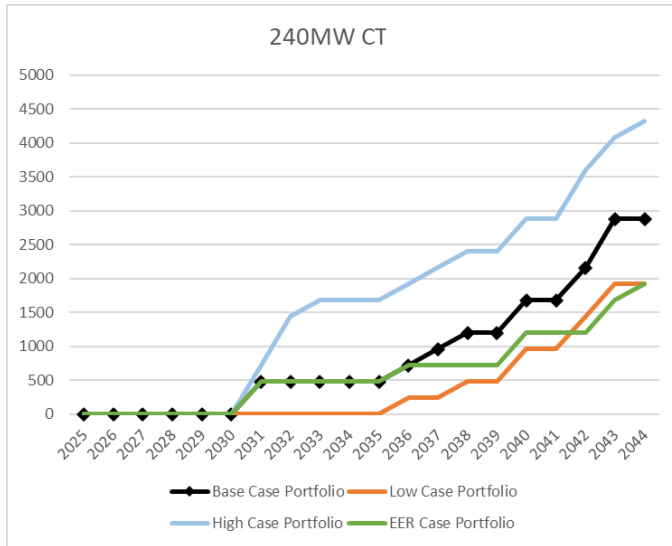
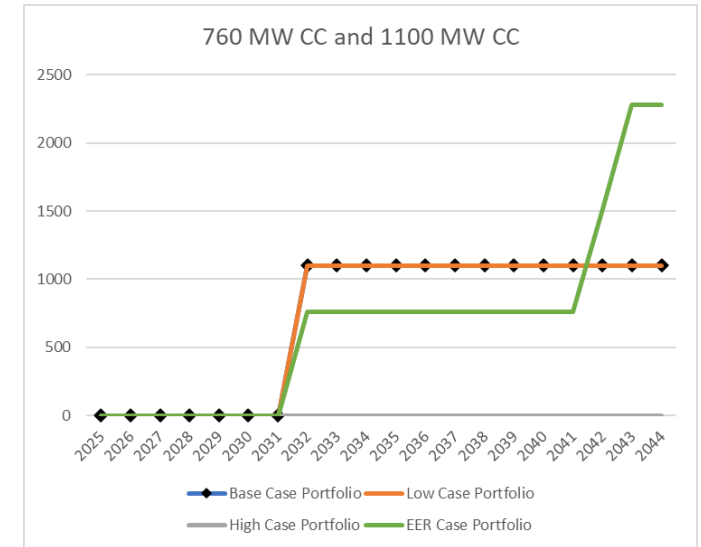
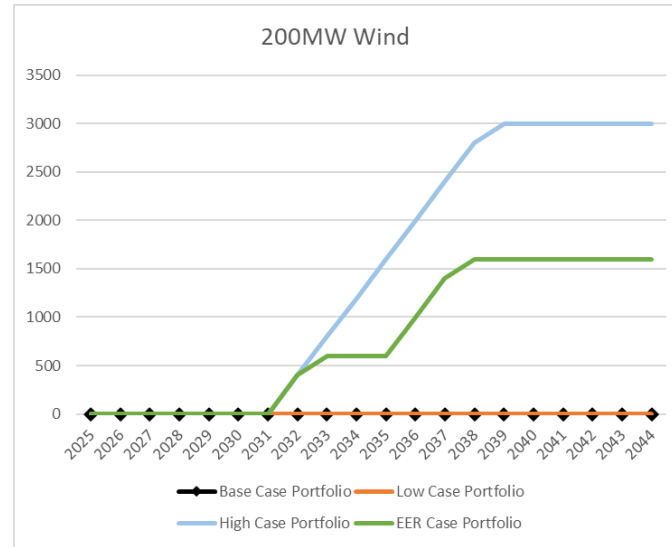
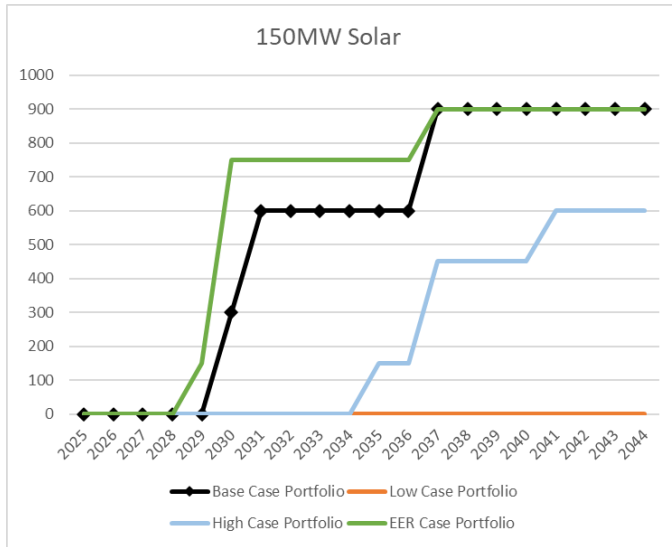
Winter Accredited Capacity



- Winter capacity needs are the controlling season to meet SPP capacity obligations.
- Renewable resources contribute towards capacity obligations, in limited amounts.
- Total portfolio includes dispatchable resources capable of serving company demand.

Reliability	
<b>Planning Reserves</b>	<b>Fleet Resiliency</b>
% Reserve Margin	Dispatchable Capacity
2034	2034
Summer %   Winter % (ACAP)	Dispatchable Winter Accredited MW
	% of Company Peak Demand
40.6%   24.3%	4,207 100.3%

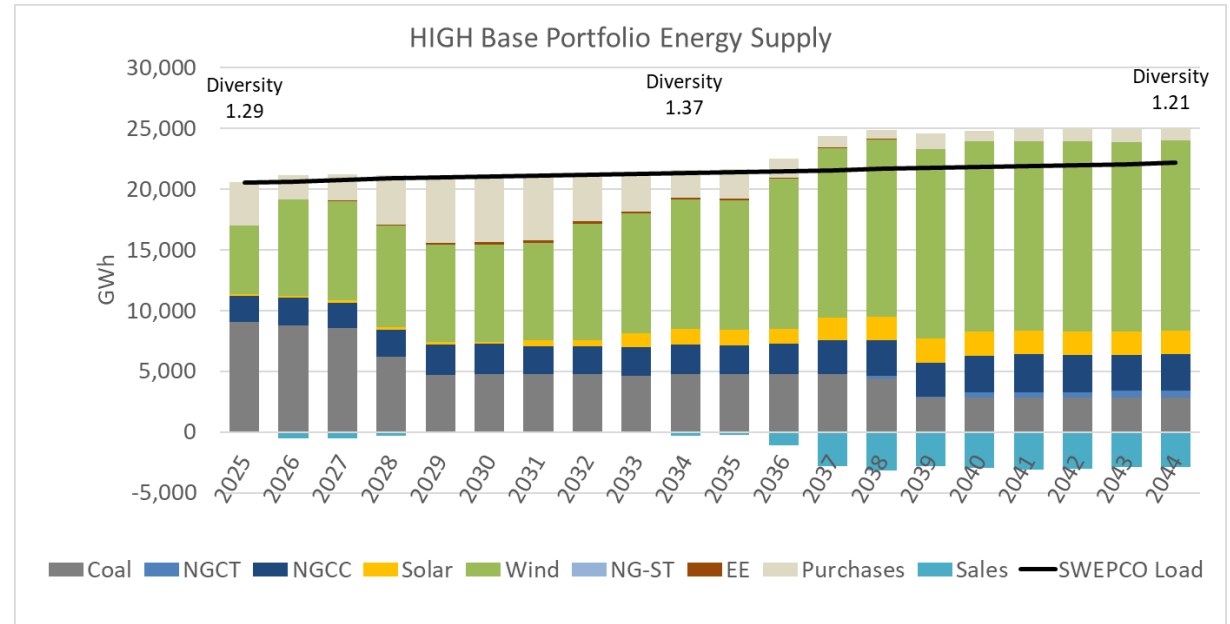
# Cumulative Resource Addition Comparisons



\*All four portfolios selected Welsh 1&3 conversions and the 2029 gas-fired CT alternative (480MW)

# High Commodity, Base Load Sensitivity

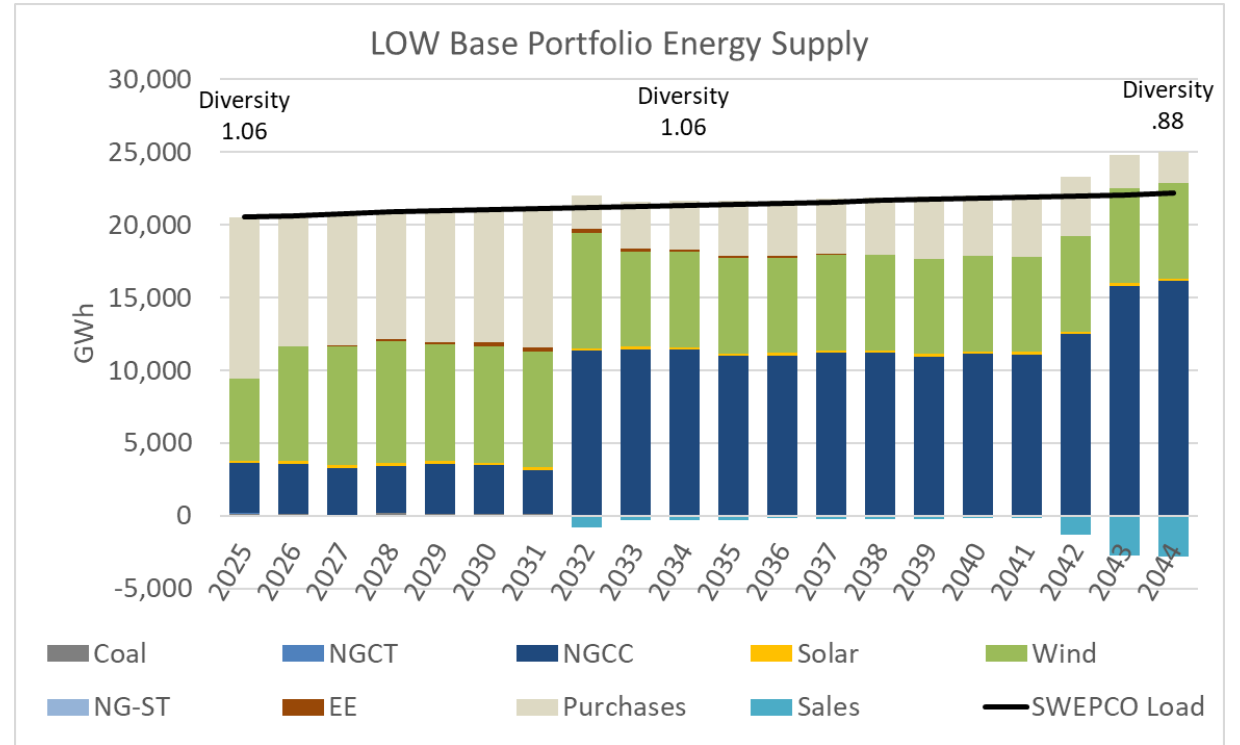
High Commodity, Base Load Sensitivity Capacity Additions										
SPP Planning Year	Cum. New EE	New Solar	New Wind	New Storage	New CT	New CC	WSH Fuel Switch	S-T Capacity	Energy Exports (%)	Energy Imports (%)
2025/26	0	0	0	0	0	0	0	75	0	17
2026/27	0	0	0	0	0	0	0	50	3	10
2027/28	16	0	0	0	0	0	0	575	3	10
2028/29	31	0	0	0	0	0	1,053	500	1	19
2029/30	48	0	0	0	480	0	0	450	0	26
2030/31	69	0	0	0	0	0	0	500	0	26
2031/32	94	150	0	0	720	0	0	500	0	25
2032/33	96	0	400	0	240	0	0	500	0	18
2033/34	96	300	400	0	240	0	0	0	0	15
2034/35	96	0	200	0	0	0	0	0	1	11
2035/36	96	0	0	0	0	0	0	0	1	12
2036/37	96	0	400	0	240	0	0	0	5	7
2037/38	96	300	400	0	0	0	0	0	13	4
2038/39	94	0	400	0	240	0	0	0	15	3
2039/40	92	0	0	0	0	0	0	0	13	6
2040/41	90	0	0	0	480	0	0	0	13	4
2041/42	85	0	0	0	0	0	0	0	14	5
2042/43	70	0	0	0	500	0	0	0	14	5
2043/44	57	0	0	0	720	0	0	0	13	5
2044/45	42	0	0	0	0	0	0	0	13	5
<b>Total</b>		<b>750</b>	<b>2,200</b>	<b>0</b>	<b>3,860</b>	<b>0</b>	<b>1,053</b>			



Reliability	
<b>Planning Reserves</b>	<b>Fleet Resiliency</b>
% Reserve Margin	Dispatchable Capacity
2034	2034
Summer %   Winter % (ACAP)	Dispatchable Winter Accredited MW
	% of Company Peak Demand
36.9%   24.9%	4,199
	100.9%

# Low Commodity, Base Load Sensitivity

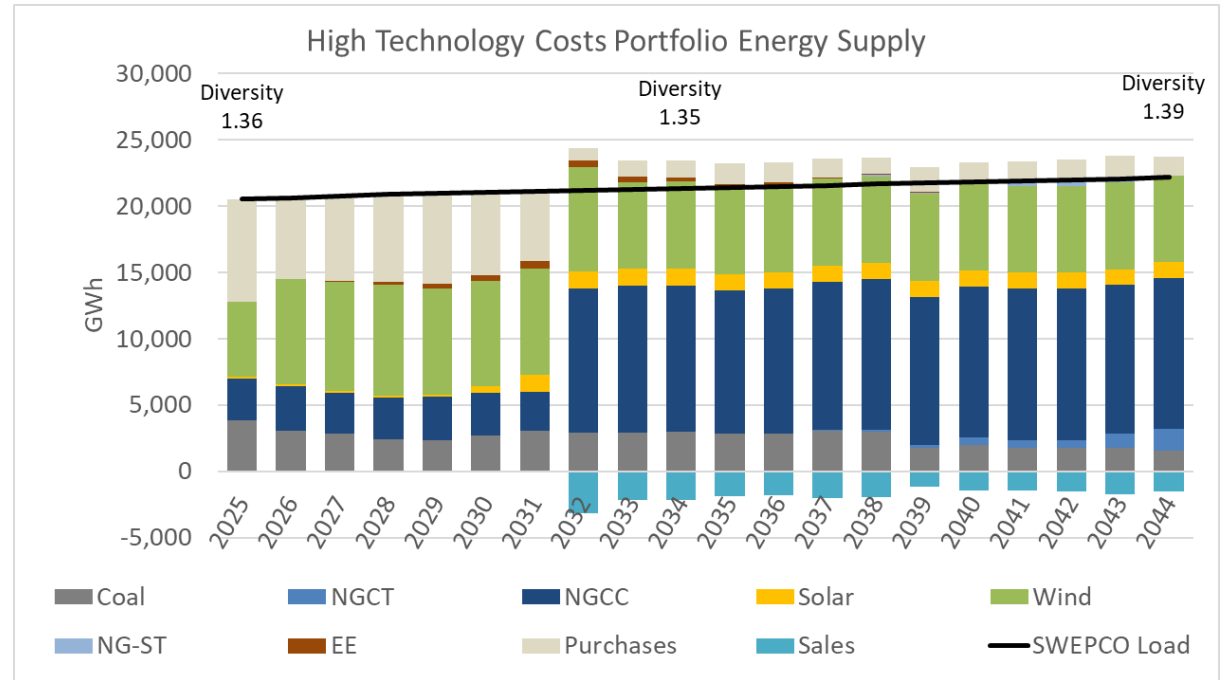
Low Commodity, Base Load Sensivity Capacity Additions										
SPP Planning Year	Cum. New EE	New Solar	New Wind	New Storage	New CT	New CC	WSH Fuel Switch	S-T Capacity	Energy Exports (%)	Energy Imports (%)
2025/26	0	0	0	0	0	0	0	75	0	54
2026/27	0	0	0	0	0	0	0	50	0	44
2027/28	19	0	0	0	0	0	0	600	0	43
2028/29	37	0	0	0	0	0	1,053	500	0	42
2029/30	57	0	0	0	480	0	0	500	0	43
2030/31	91	0	0	0	0	0	0	500	0	43
2031/32	112	0	0	0	480	0	0	500	0	45
2032/33	112	0	0	0	0	1,100	0	0	4	11
2033/34	112	0	0	0	0	0	0	0	2	15
2034/35	112	0	0	0	0	0	0	0	1	16
2035/36	112	0	0	0	0	0	0	0	1	18
2036/37	112	0	0	0	480	0	0	0	1	18
2037/38	111	0	0	0	0	0	0	0	1	18
2038/39	110	0	0	0	480	0	0	0	1	18
2039/40	106	0	0	0	0	0	0	0	1	20
2040/41	100	0	0	0	240	0	0	0	1	19
2041/42	97	0	0	0	0	0	0	0	1	20
2042/43	79	0	0	0	0	760	0	0	6	19
2043/44	62	0	0	0	480	0	0	0	12	10
2044/45	47	0	0	0	0	0	0	0	13	10
<b>Total</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>2,640</b>	<b>1,860</b>	<b>1,053</b>			



Reliability	
<b>Planning Reserves</b>	<b>Fleet Resiliency</b>
% Reserve Margin	Dispatchable Capacity
2034	2034
Summer %   Winter % (ACAP)	Dispatchable Winter Accredited MW
	% of Company Peak Demand
33.2%   25.1%	4,455
	107.1%

# High Technology Costs Sensitivity

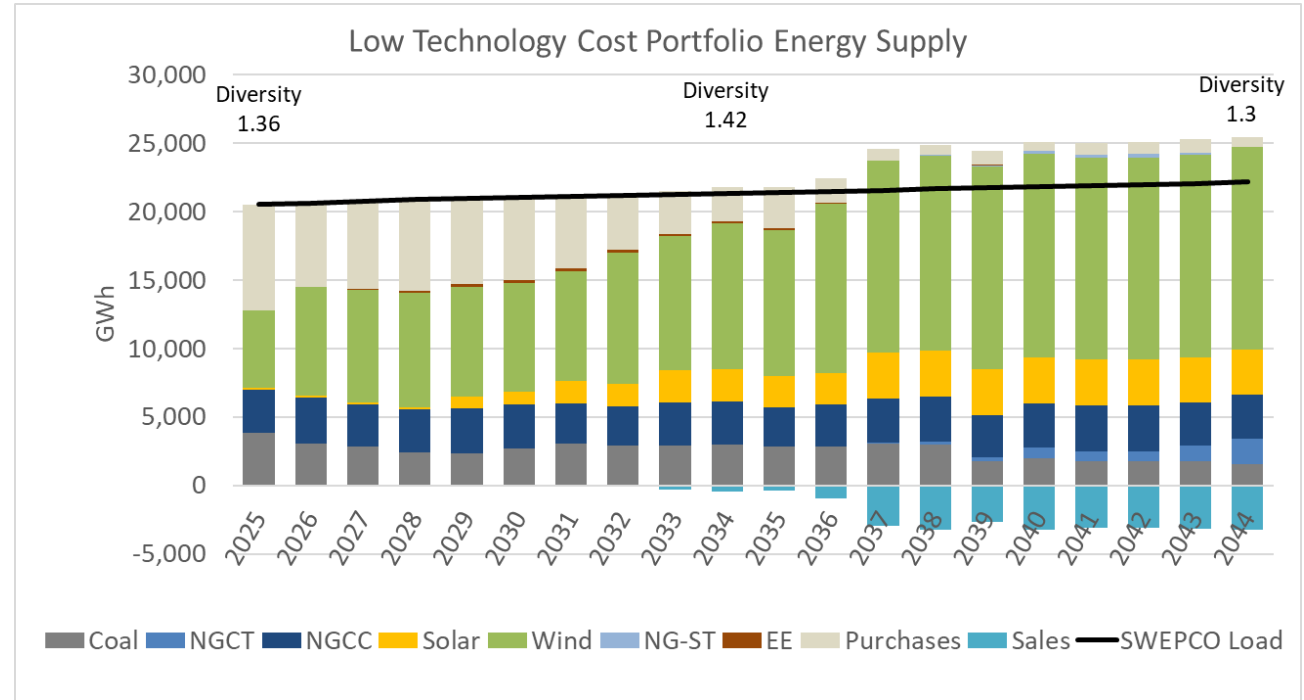
High Technology Costs Sensitivity Capacity Additions										
SPP Planning Year	Cum. New EE	New Solar	New Wind	New Storage	New CT	New CC	WSH Fuel Switch	S-T Capacity	Energy Exports (%)	Energy Imports (%)
2025/26	0	0	0	0	0	0	0	75	0	38
2026/27	0	0	0	0	0	0	0	50	0	30
2027/28	29	0	0	0	0	0	0	500	0	31
2028/29	63	0	0	0	0	0	1,053	500	0	32
2029/30	109	0	0	0	480	0	0	500	0	33
2030/31	162	150	0	0	0	0	0	500	0	30
2031/32	254	300	0	0	240	0	0	500	0	25
2032/33	254	0	0	0	0	1,100	0	0	15	4
2033/34	255	0	0	0	0	0	0	0	10	6
2034/35	257	0	0	0	240	0	0	0	10	6
2035/36	257	0	0	0	0	0	0	0	9	8
2036/37	257	0	0	0	240	0	0	0	8	7
2037/38	250	0	0	0	240	0	0	0	9	7
2038/39	241	0	0	0	240	0	0	0	9	6
2039/40	229	0	0	0	0	0	0	0	5	9
2040/41	212	0	0	0	480	0	0	0	7	6
2041/42	186	0	0	0	0	0	0	0	7	8
2042/43	164	0	0	0	720	0	0	0	7	8
2043/44	139	0	0	0	480	0	0	0	8	8
2044/45	105	0	0	0	0	0	0	0	7	6
<b>Total</b>		<b>450</b>	<b>0</b>	<b>0</b>	<b>3,360</b>	<b>1,100</b>	<b>1,053</b>			



Reliability	
<b>Planning Reserves</b>	<b>Fleet Resiliency</b>
% Reserve Margin	Dispatchable Capacity
2034	2034
Summer %   Winter % (ACAP)	Dispatchable Winter Accredited MW % of Company Peak Demand
36.5%   27.3%	4,266 102.6%

# Low Technology Costs Sensitivity

Low Technology Costs Sensitivity Capacity Additions										
SPP Planning Year	Cum. New EE	New Solar	New Wind	New Storage	New CT	New CC	WSH Fuel Switch	S-T Capacity	Energy Exports (%)	Energy Imports (%)
2025/26	0	0	0	0	0	0	0	75	0	38
2026/27	0	0	0	0	0	0	0	50	0	30
2027/28	15	0	0	0	0	0	0	575	0	31
2028/29	30	0	0	0	0	0	1,053	500	0	32
2029/30	47	300	0	0	480	0	0	375	0	30
2030/31	65	0	0	0	0	0	0	500	0	29
2031/32	81	300	0	0	720	0	0	375	0	25
2032/33	81	0	400	0	240	0	0	250	0	19
2033/34	81	300	400	0	240	0	0	0	1	15
2034/35	81	0	200	0	0	0	0	0	2	12
2035/36	81	0	0	0	0	0	0	0	2	14
2036/37	81	0	400	0	0	0	0	0	4	8
2037/38	80	450	400	0	240	0	0	0	14	4
2038/39	79	0	200	0	240	0	0	0	15	3
2039/40	77	0	0	0	0	0	0	0	12	5
2040/41	74	0	0	0	480	0	0	0	15	3
2041/42	70	0	0	0	0	0	0	0	14	4
2042/43	56	0	0	0	480	0	0	0	14	4
2043/44	42	0	0	0	720	0	0	0	14	4
2044/45	28	0	0	0	0	0	0	0	15	3
<b>Total</b>		<b>1,350</b>	<b>2,000</b>	<b>0</b>	<b>3,840</b>	<b>0</b>	<b>1,053</b>			



Reliability	
<b>Planning Reserves</b>	<b>Fleet Resiliency</b>
% Reserve Margin	Dispatchable Capacity
2034	2034
Summer %   Winter % (ACAP)	Dispatchable Winter Accredited MW
	% of Company Peak Demand
43.7%   26.1%	4,199
	100.9%



# Short Break



# Portfolio Performance Comparison

- The IRP Performance Indicators compare the performance of the candidate portfolios under each of the four IRP Objectives.
- The results inform the Company on the trade-offs between candidate portfolios across performance indicators and metrics defined under each objective.

Objective	Customer Affordability			Rate Stability			Reliability			Local Impacts & Sustainability					
Performance Indicators and Metrics	Short Term	Long Term		Portfolio Resilience	Energy Market Risk		Planning Reserves	Fleet Resiliency	Resource Diversity	Local Impacts	Emission Reductions				
	7-yr Rate (RR) CAGR	Portfolio NPVRR	Portfolio NPVRR Levelized Rate	High Minus Low Scenario Range, Portfolio NPVRR	Average Cost of Market Purchases	Average Revenue of Market Sales	% Reserve Margin (ACAP)	Dispatchable Winter Accredited MW	Shannon-Weiner Diversity Index	New Nameplate MW Installed Inside SWEPCO as % of Total New Nameplate MW	% Change from 2005 Baseline				
					AVG MWh % of AVG SWEPCO Demand	AVG MWh % of AVG SWEPCO Demand		% of Company Peak Demand			CO <sub>2</sub>	NO <sub>x</sub>	SO <sub>2</sub>		
Years Referenced	2025-2032	2025-2054	2025-2054	2025-2054   2028-2037	2028-2034	2028-2034	2034   2035	2034	2034	2025-2034	2030	2034	2044	2034	2034
Units of Measure	%	\$MM	\$/MWh	\$MM	\$K	\$K	Summer %   Winter %	MW	Accredited Capacity+ Energy Diversity	%	% Reduction				

- Performance Indicators identify the methods to evaluate analysis results towards the Objectives
- Metrics are the specific measurements to quantify results

\*Levelized Rates and NPVRR metrics are for generation component only. Metrics are for comparison only and do not represent the final costs which will apply to ratepayers.

\*\* Energy Market Risk financial figures are in nominal dollars



# Performance Indicator Matrix

Objective	Customer Affordability			Rate Stability			Reliability			Local Impacts & Sustainability					
	Short Term	Long Term		Portfolio Resilience	Energy Market Risk		Planning Reserves	Fleet Resiliency	Resource Diversity	Local Impacts	Emission Reductions				
		7-yr Rate (RR) CAGR	Portfolio NPVRR		Portfolio NPVRR Levelized Rate	High Minus Low Scenario Range, Portfolio NPVRR					Average Cost of Market Purchases AVG MWh % of AVG SWEPCO Demand	Average Revenue of Market Sales AVG MWh % of AVG SWEPCO Demand	% Reserve Margin (ACAP)	Dispatchable Winter Accredited MW % of Company Peak Demand	Shannon-Weiner Diversity Index
Years Referenced	2025-2032	2025-2054	2025-2054	2025-2054   2028-2037	2028-2034	2028-2034	2034   2035	2034	2034	2025-2034	2030	2034	2044	2034	2034
Units of Measure	%	\$MM	\$/MWh	\$MM	\$K	\$K	Summer %   Winter %	MW	Accredited Capacity+ Energy Diversity	%	% Reduction				
<b>Base Case Portfolio</b>	6.62%	\$17,077	\$49.46	\$9,786   \$1,986	\$139,430 20.5%	\$30,018 4.0%	42.4%   26.9%	4,455 107.1%	1.8+1.3 = 3.1	100%	81.1%	66.6%	69.2%	91.6%	98.7%
<b>High Case Portfolio</b>	5.82%	\$22,314	\$57.73	\$5,615   \$1,699	\$248,433 26.0%	\$1,718 0.2%	28.9%   24.7%	4,577 102.1%	1.6+1.3 = 2.9	73%	73.1%	73.1%	80.1%	88.9%	98.0%
<b>Low Case Portfolio</b>	4.78%	\$11,670	\$38.20	\$10,978   \$2,294	\$158,537 29.8%	\$8,853 1.8%	36.9%   27.9%	4,077 106.8%	1.8+1.1 = 2.8	100%	93.1%	80.0%	81.0%	98.5%	100.0%
<b>EER Case Portfolio</b>	7.23%	\$17,167	\$49.72	\$7,727   \$2,030	\$228,563 33.0%	\$2,992 0.4%	40.6%   24.3%	4,207 100.3%	1.6+1.3 = 3.0	87%	94.6%	90.1%	78.9%	97.8%	100.0%
<b>High Commodity, Base Load Sensitivity</b>	4.76%	\$18,360	\$53.18	Not Evaluated	\$178,177 19.91%	\$3,923 0.5%	36.9%   24.9%	4,199 100.9%	1.7+1.4 = 3.1	76%	73.1%	73.1%	80.4%	88.9%	98.0%
<b>Low Commodity, Base Load Sensitivity</b>	7.11%	\$14,307	\$41.44	Not Evaluated	\$175,467 30.61%	\$5,204 1.0%	33.2%   25.1%	4,455 107.1%	1.7+1.1 = 2.8	100%	93.1%	80.0%	71.6%	98.5%	100.0%
<b>High Technology Costs Sensitivity</b>	7.25%	\$18,482	\$53.53	Not Evaluated	\$130,795 19.21%	\$38,021 5.1%	36.5%   27.3%	4,266 102.6%	1.8+1.3 = 3.2	100%	81.1%	66.6%	69.2%	91.6%	98.7%
<b>Low Technology Costs Sensitivity</b>	4.23%	\$14,810	\$42.90	Not Evaluated	\$158,654 22.98%	\$4,431 0.6%	43.7%   26.1%	4,199 100.9%	1.7+1.4 = 3.1	78%	81.1%	80.0%	82.5%	92.4%	98.7%

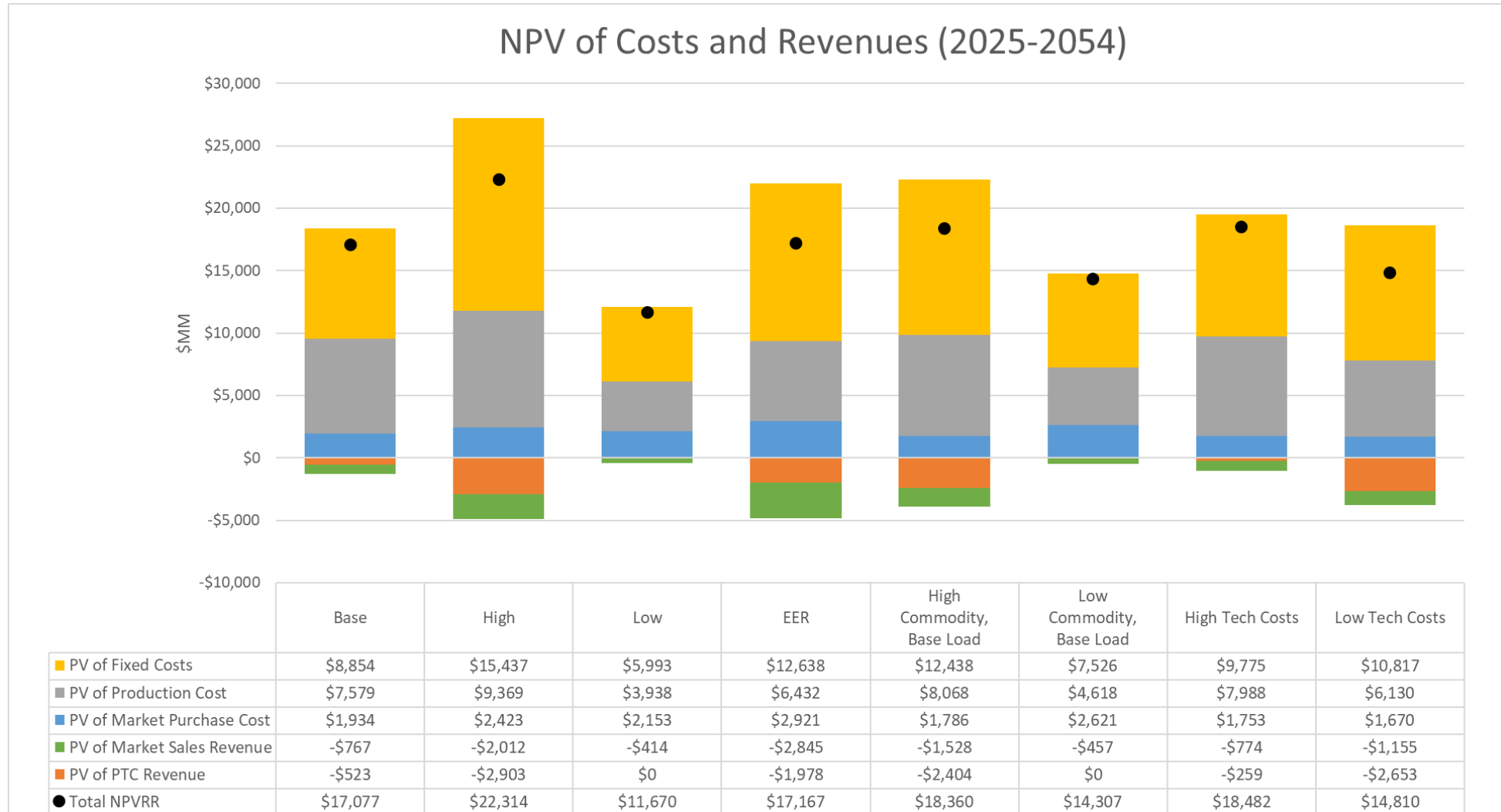
\*Levelized Rates and NPVRR metrics are for generation component only. Metrics are for comparison only and do not represent the final costs which will apply to ratepayers.

\*\* Energy Market Risk financial figures are in nominal dollars

# Energy Market Risk Analysis

	<b>Energy Market Risk</b>		<b>Energy Market Risk</b>		<b>Energy Market Risk</b>	
	<i>Purchases</i>	<i>Sales</i>	<i>Purchases</i>	<i>Sales</i>	<i>Purchases</i>	<i>Sales</i>
	2028-2034		2025-2044		2025-2054	
	Average Cost of Market Purchases (\$000) AVG MWh % of AVG SWEPCO Demand	Average Revenue of Market Sales (\$000) AVG MWh % of AVG SWEPCO Demand	Average Cost of Market Purchases (\$000) AVG MWh % of AVG SWEPCO Demand	Average Revenue of Market Sales (\$000) AVG MWh % of AVG SWEPCO Demand	Average Cost of Market Purchases (\$000) AVG MWh % of AVG SWEPCO Demand	Average Revenue of Market Sales (\$000) AVG MWh % of AVG SWEPCO Demand
<b>Base Case Portfolio</b>	\$139,430 20.5%	\$30,018 4.0%	\$105,828 14.8%	\$61,849 6.6%	\$112,272 13.0%	\$73,648 6.7%
<b>High Case Portfolio</b>	\$248,433 26.0%	\$1,718 0.2%	\$161,739 14.6%	\$87,423 6.6%	\$175,886 12.3%	\$136,797 8.1%
<b>Low Case Portfolio</b>	\$158,537 29.8%	\$8,853 1.8%	\$123,156 23.3%	\$16,236 3.1%	\$126,352 23.4%	\$20,761 3.7%
<b>EER Case Portfolio</b>	\$228,563 33.0%	\$2,992 0.4%	\$165,980 23.8%	\$45,019 4.2%	\$142,691 17.62%	\$261,851 15.4%

# Net Present Value Costs and Revenues



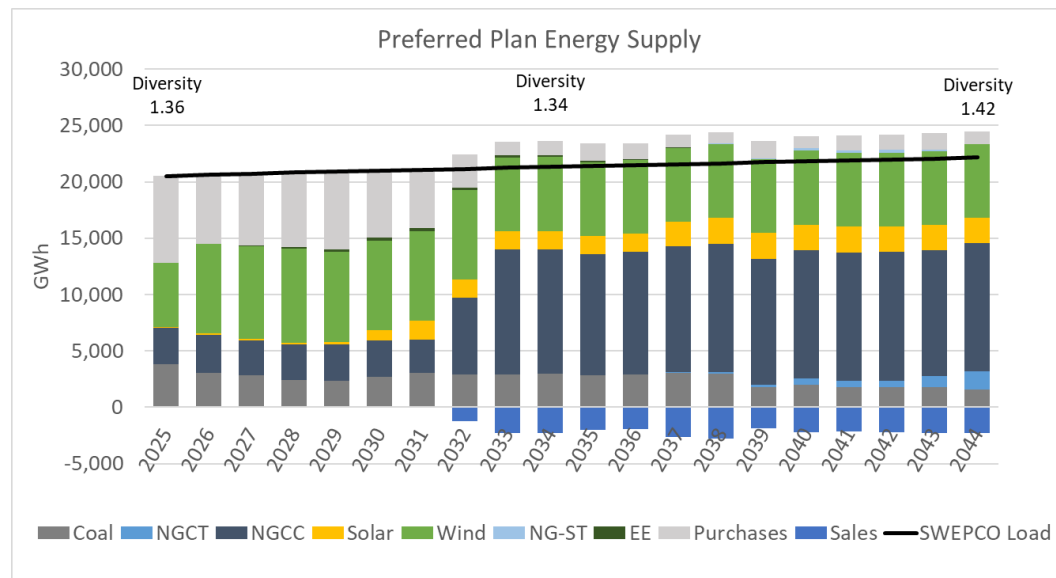
# Portfolio Performance Summary Takeaways

- The Base and EER portfolios have comparable net present value costs (revenue requirement) that are significantly less than the High portfolio
- The Base portfolio has a lower near-term cost growth rate than the EER portfolio
- The Base portfolio requires approximately \$3.7B less in cost recovery of fixed capital investments than the EER portfolio over the planning horizon
- The High and EER portfolios include a high reliance on production tax credits and market sales revenues to offset capital investment costs
- All portfolios continue to rely on the SPP market energy, but the Base portfolio has significantly lower market purchases than other portfolios
- The Base portfolio provides the most dispatchable resources as a percent of peak demand to reliably serve customers in a predictable manner.

# SWEPSCO Preferred Plan

The Base Portfolio is selected as the Preferred Plan because it supports SWEPCO's four IRP Objectives of Affordability, Rate Stability, Reliability and Local Impacts/Sustainability. The Preferred Plan:

- maintains affordable and stable rates for SWEPCO customers and mitigates energy market risks
- includes significant dispatchable resources that supports fleet resiliency and provides reliability for SWEPCO customers
- provides portfolio diversity by adding additional natural gas and solar resources to SWEPCO's existing fleet that includes substantial wind capacity



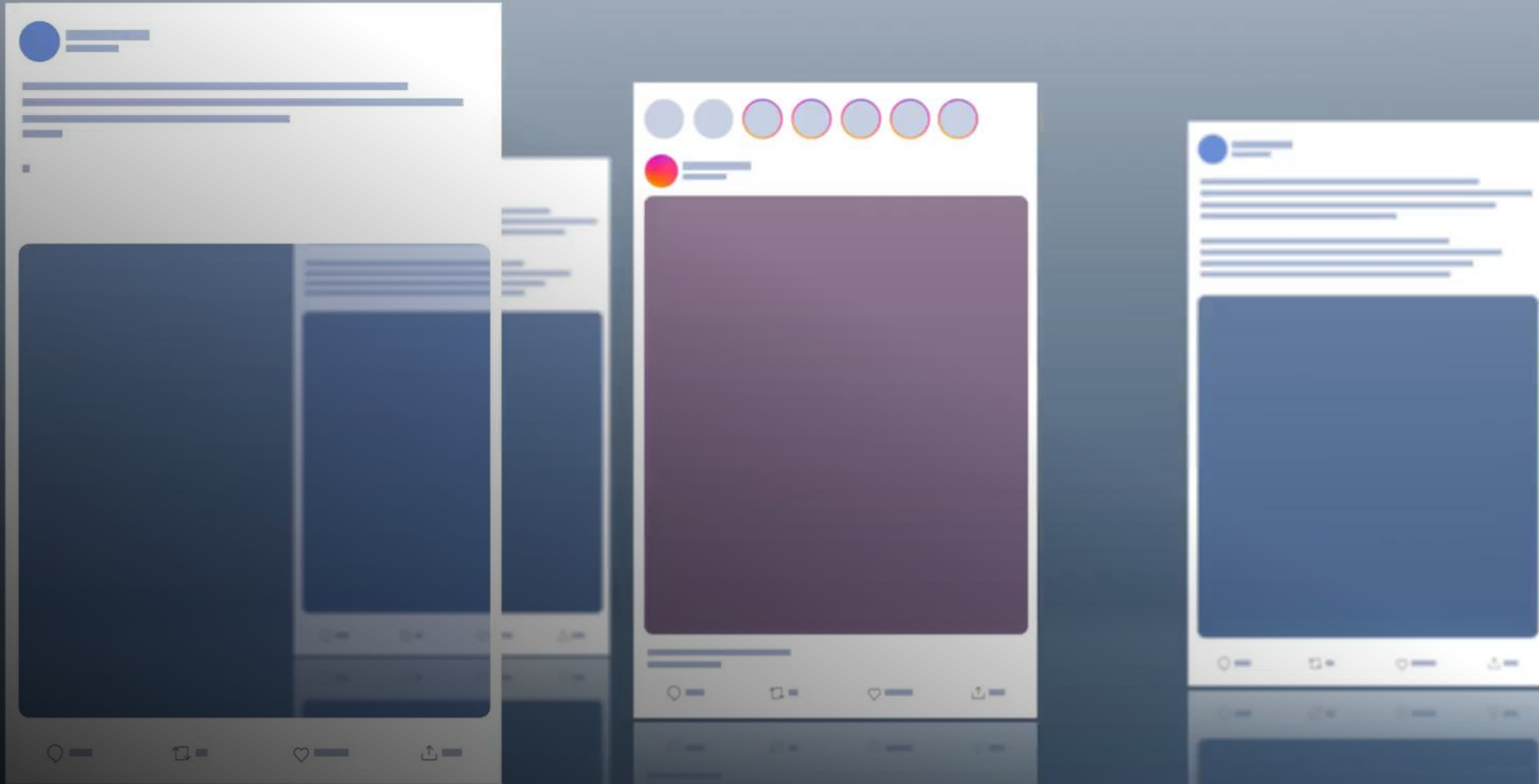
Preferred Plan Capacity Additions									Energy Exports (%)	Energy Imports (%)
SPP Planning Year	Cum. New EE	New Solar	New Wind	New Storage	New CT	New CC	WSH Fuel Switch	S-T Capacity	Energy Exports (%)	Energy Imports (%)
2025/26	0	0	0	0	0	0	0	75	0	38
2026/27	0	0	0	0	0	0	0	50	0	30
2027/28	19	0	0	0	0	0	0	600	0	31
2028/29	36	0	0	0	0	0	1,053	500	0	32
2029/30	53	0	0	0	480	0	0	500	0	33
2030/31	73	300	0	0	0	0	0	500	0	29
2031/32	96	300	0	0	480	0	0	500	0	25
2032/33	97	0	0	0	0	1,100	0	500	6	14
2033/34	97	0	0	0	0	0	0	0	11	6
2034/35	97	0	0	0	0	0	0	0	11	6
2035/36	97	0	0	0	0	0	0	0	9	7
2036/37	97	0	0	0	240	0	0	0	9	7
2037/38	94	300	0	0	240	0	0	0	12	5
2038/39	91	0	0	0	240	0	0	0	13	4
2039/40	89	0	0	0	0	0	0	0	8	7
2040/41	86	0	0	0	480	0	0	0	10	5
2041/42	82	0	0	0	0	0	0	0	10	6
2042/43	65	0	0	0	480	0	0	0	10	6
2043/44	52	0	0	0	720	0	0	0	10	7
2044/45	37	0	0	0	0	0	0	0	10	5
<b>Total</b>		<b>900</b>	<b>0</b>	<b>0</b>	<b>3,360</b>	<b>1,100</b>	<b>1,053</b>			

# Overview of Proposed Action Plan

## Overview of Proposed Action Plan

- Seek regulatory approval for the Hallsville CT and the Welsh Gas Conversion
- If the Hallsville CT is approved by regulators, evaluate adding a steam turbine to convert it to a combined cycle
- Fill in the near-term capacity needs with short-term capacity contracts
- Evaluate costs and benefits of continuing to operate Arsenal Hill 5, Lieberman 3 and 4, and Wikes 1 beyond their current planning retirement dates
- Continue to monitor environmental regulations and update the analysis of compliance options as needed
- Remain engaged and responsive to changes in SPP resource adequacy requirements
- Seek additional capacity as needed; timing and amount will be impacted by all of the above

# Feedback and Discussion



**SOUTHWESTERN  
ELECTRIC POWER  
COMPANY**

# Stakeholder Engagement Timeline

Stakeholder  
2B Meeting

- 12/13/2024

Stakeholder  
Inquiries

- 1/8/2025

SWEPCO  
Response

- 1/24/2025

Stakeholder  
Report

- 2/7/2025

SWEPCO  
Files IRP

- 2/14/2025



**Thank you for you participation!**

Further questions and feedback should be directed to:

**[SWEPCO-AR-IRP@aep.com](mailto:SWEPCO-AR-IRP@aep.com)**

**<https://www.swepco.com/community/projects/arkansasirp/>**