CenterPoint Energy Indiana South Integrated Resource Plan

Public Stakeholder Meeting 3

September 11, 2025

Stakeholder Meeting Facilitator: 1898 & Co.

WHO: 1898 & Co. is the business, technology and security consultancy part of Burns & McDonnell

WHAT: The Resource Planning & Market Assessments group has been working on Integrated Resource Plans for over 20 years

HOW: Our team will help facilitate stakeholder meetings – we look forward to working with and hearing from you all

Agenda

Time	Topic	Speaker
9:00	Sign-in & Refreshments	
9:30	Facilitators and Meeting Protocols & Participation	Drew Burczyk, Project Manager, Resource Planning & Market Assessments, 1898 & Co.
9:35	Welcome & Safety Share	Shane Bradford, Vice President, Indiana Electric, CenterPoint Energy
9:45	Stakeholder Feedback & IRP Process Recap	Matt Rice, Director Regulatory & Rates, CenterPoint Energy
10:00	Revisions to Scenarios	Matt Rice, Director Regulatory & Rates, CenterPoint Energy
10:30	BREAK	
10:40	DSM Market Potential Study Initial Results	Jeffrey Huber, Principal, Energy Efficiency, GDS Associates
11:20	Portfolio Development Methodology and Draft Scenario Optimization Results	Drew Burczyk, Project Manager, Resource Planning & Market Assessments, 1898 & Co.
11:50	LUNCH	
12:40	Draft Deterministic Portfolio Results	Drew Burczyk, Project Manager, Resource Planning & Market Assessments, 1898 & Co.
1:10	Portfolios Discussion	Drew Burczyk, Project Manager, Resource Planning & Market Assessments, 1898 & Co.
1:30	BREAK	
1:40	Probabilistic Modeling Update	Brian Despard, Senior Project Manager, Resource Planning & Market Assessments, 1898 & Co.
2:00	Early Sensitivity Results	Drew Burczyk, Project Manager, Resource Planning & Market Assessments, 1898 & Co.
2:20	Stakeholder Questions & Feedback	Moderated by Drew Burczyk, Project Manager, Resource Planning & Market Assessments, 1898 & Co.
3:00	Adjourn	

Modeling Outputs & Preliminary Results

The modeling outputs presented in this meeting are not final and do not represent CEI South's final plans at this time.

CEI South has not selected a preferred portfolio.

Meeting Protocols

- Please focus questions, comments, and feedback to the IRP process and today's agenda topics
- CenterPoint Energy Indiana (CEI) South does not authorize the use of cameras, video/audio recording devices, or AI transcription during the meeting
- Following the meeting, feedback (concepts, inputs, methodology, etc.) and questions may be sent to IRP@CenterPointEnergy.com
- CEI South will be recording the meeting to accurately capture notes and questions. The public meetings are not transcribed or recordings posted; however, Q&A summaries of our public meetings will be posted on www.CenterPointEnergy.com/irp

Meeting Participation

Time is allotted for questions following each presentation – please hold questions until the designated question period

In-person attendees – please raise your hand to be recognized

Virtual attendees will be in listen-only mode – to participate:

- Use the “Raise” hand feature in Teams to be recognized, and your mic will be activated during the allotted time for questions, or
- Enter questions into the “Q&A” feature in Teams

Identifying yourself by name prior to speaking to help us keep track of feedback and follow up actions

There will be a list compiled for items to be addressed later. Questions that are not able to be answered in this meeting will be answered later.

Welcome and Safety Share

Shane Bradford

Vice President, Indiana Electric

Safety Share

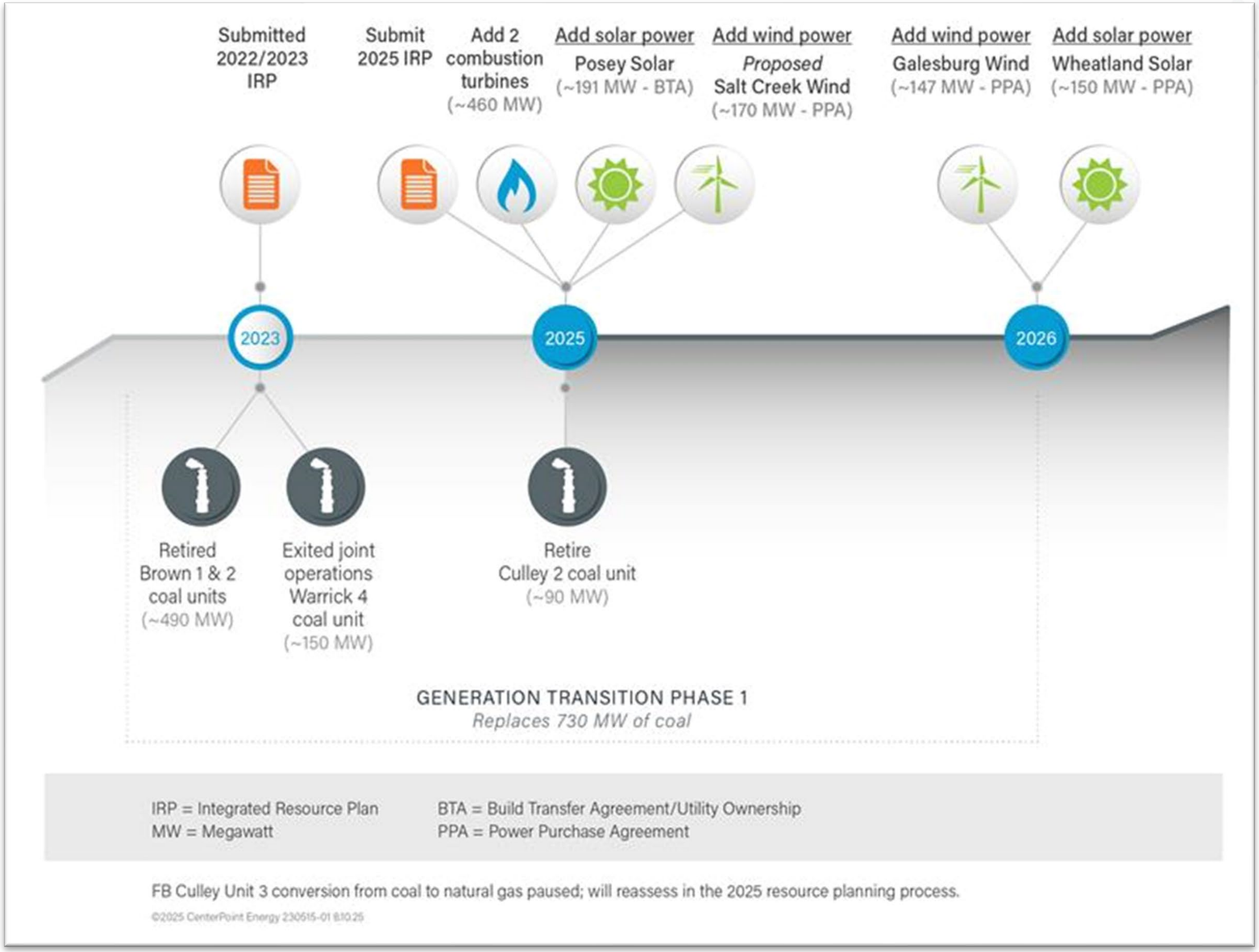
Why Call 811?

Every digging project requires a call to 811.

Hitting an underground utility line while digging can:

- cause serious personal injuries
- harm the environment
- disrupt service to an entire neighborhood and
- potentially incur fines and repair costs

Generation Transition Timeline:



Stakeholder Feedback & IRP Process Recap

Matt Rice

Director, Regulatory and Rates

Summary of Stakeholder Feedback From Meeting #2

Topic	Stakeholder Comments	CEI South Updates/Responses
Generation Timeline	Regarding Salt Creek Wind, is this project going to service CenterPoint customers or just provide power to the MISO grid as accredited power? If it's going to be service to CenterPoint customers, what kind of transmission loss are you expecting since the power is coming from Iowa?	Please see Witness Swanson's public testimony in Cause No. 46218[1]
Objectives & Draft Measures	Will the electric energy burden separate electrically heated homes from gas heated homes, or will those be combined in the aggregate?	We'll look at both the customers with electrically heated homes and the customers with gas heated homes. However, either view will show the same relative difference among portfolios.
Scenarios	Suggest adding an option where load stays at base. In this scenario, generation capital costs could still be high.	CEI South conducted a lower load sensitivity analysis to evaluate how lower the load may impact the scenario(s). An update is included in today's (9/11/2025) Stakeholder meeting.
Scenarios	When looking between high regulatory and alternative high regulatory, can you potentially do the same with low regulatory (an alternative low regulatory with low load)?	

[1]*https://iurc.portal.in.gov/docketed-case-details/?id=43b79da2-5219-f011-998a-001dd8084fd9*

Summary of Stakeholder Feedback From Meeting #2

Topic	Stakeholder Comments	CEI South Updates/Responses
Supply-Side Resource	Can CEIS incorporate real coal price offers made to CenterPoint. The uncertainty variable is not the mining cost as much as the demand.	Due to the confidential and competitive nature of CEIS's contractual coal price this was discussed during the 8/20/2025 Tech to Tech meeting
Supply-Side Resource	How many bids did CEIS receive for storage?	There were 17 standalone storage bids. The RFP results were shared during the 3/19/2025 Stakeholder meeting. The presentation is available here: centerpointenergy.com/irp.
Supply-Side Resource	Is CEIS accounting for all costs and benefits, including considerations such as health costs? Will these other benefits be incorporated into the IRP?	Health costs are captured within EPA regulations that are included in the applicable scenarios.
Supply-Side Resource	Has CEIS considered the water pressure nuclear option, such as the Westinghouse AP1000?	The general nuclear option included in the Tech Assessment is representative of a variety of future nuclear options. If you have information regarding technology performance or costs that you would like to see in the model, please email **irp@centerpointenergy.com**

Summary of Stakeholder Feedback From Meeting #2

Topic	Stakeholder Comments	CEI South Updates/Responses
MPS	For the battery storage program, without large enough penetration of batteries, it's hard for benefits to outweigh the costs. Could we look at a battery storage equipment incentive?	We performed cost-effectiveness screening using a range of incentives and adoption rates. In all scenarios the Utility Cost Test ratio was less than 1, which is not cost-effective. Results are included in today's (9/11/2025) Stakeholder meeting.
MPS	For EVs, are customers bringing their own device for the charger? Would customers have to use specific technology to participate?	We are assuming that the customer would supply their own charger, and CenterPoint would provide an incentive to join the program, as well as an annual participation incentive. A managed charging program would require some sort of network connection, which could include Wi-Fi, cellular, or a wired connection. A specific technology would not be required, as control could happen through the charger or telematics through the EVs
MPS	Some DR measures like batteries and water heaters can be used for other grid services (ancillary services, resilience) – how are these benefits being considered in developing levelized costs and/or accounted for in the IRP? Is it possible to treat these like T&D benefits and reduce from the cost side?	When performing cost-effectiveness screening, the benefits include the avoided energy, capacity, and T&D. Resilience and ancillary services have not been a benefit of Demand Response captured in the IRP analysis.

Summary of Stakeholder Feedback From Meeting #2

Topic	Stakeholder Comments	CEI South Updates/Responses
Model Inputs	Is CEIS going to include Scope 3 emissions	Scope 3 emissions are outside the scope of the IRP as it's related to emissions of the end-user and separate from electricity generation
Model Inputs	Since CEIS is considering nuclear, does CEIS want to run a stochastic process for uranium?	We are currently using publicly available data sources for uranium pricing forecasts. Uranium pricing is not expected to be a major differentiator in the portfolio risk assessment when compared with other cost drivers. Given this, we do not anticipate that running a stochastic process for uranium will materially change the outcomes of the analysis.
Model Inputs	Is CEIS planning to use the MISO published 2025/2026 indicative DLOL results for the solar and wind accreditation assumptions	We have revised the accreditation values to interpolate between the first season of DLOL and 2035. Providing a smoother shift in accreditation. Revised Solar and Wind capacity accreditation forecasts are included in this presentation's Appendix.
Model Inputs	Recommendation to analyze two DER resource portfolios, Distributed Capacity Procurement (DCP) and Virtual Power Plants (VPPs) in CEI South's 2025 IRP	CEI South's evaluated demand response programs that align with the intent of both DCP and VPP programs as well as a DG Solar incentive during the IRP process. Updates on the evaluations are included in today's (9/11/2025) Stakeholder meeting.

2025 Stakeholder Process

Proposed 2025 CEI South Stakeholder and Tech to Tech Meetings – *Dates and agendas are subject to change*

Meeting 1
March 19

- IRP Process, Objectives, & Draft Metrics
- All-Source RFP Results
- MISO Update
- Environmental Compliance Update
- Draft Sales and Demand Forecast (Reference Case)
- Commodity Inputs
- Large Load Sensitivity Discussion
- Resource Options
- Scenario Development

Tech to Tech
April 28

Meeting 2
May 14

- Follow Up Information From 1st IRP Stakeholder Meeting
- Final Scorecard and Scenarios
- DSM Market Potential Study Update
- Draft Supply-Side Resource Inputs
- Final Load Forecast and Draft Scenario Forecasts
- Probabilistic Modeling Approach and Assumptions
- Portfolio Development Methodology
- Draft Reference Case Modeling Update

Tech to Tech
August 20

Meeting 3
September 11

- Follow Up Information From 2nd IRP Stakeholder Meeting
- Revisions to Scenarios
- DSM Market Potential Study – Initial Results
- Portfolio Development Methodology and Draft Scenario Optimization Results Draft Deterministic Portfolio Results
- Portfolios Discussion
- Scenario and Probabilistic Modeling Update
- Early Sensitivity Results

Tech to Tech
October 14

Meeting 4
October 23

- Follow Up Information from 3rd IRP Stakeholder Meeting
- Preferred Portfolio
- Risk Analysis Modeling and Portfolios
- Risk Analysis Scorecard

Target Submission Date:
December 5, 2025

Stakeholder Engagement is Critical to the IRP Process
CEI South is committed to meaningful information sharing and dialogue

Target Data Release Schedule

Draft Load Forecast	Draft Base Case Model	Updated Base Case + Scenario Models	Probabilistic + Sensitivity Analysis Models
3/20/2025	5/5/2025	8/20/2025	10/14/2025
1	2	3	4

- *Released data and Tech to Tech meeting attendance will be available to the technical stakeholders with a completed Non-Disclosure Agreement (NDA).*
- *Send NDA requests to IRP@Centerpointenergy.com*

Objectives & Draft Metrics

Objective	Measure	Metrics
Affordability: *Consider portfolios' impact on the retail electric utility service providers ability to provide affordable power across residential, commercial, and industrial customer classes*	➢ 20-year Net Present Value Revenue Requirement ("NPVRR") ➢ 95th percentile of NPVRR (million$) across 200 dispatch iterations under varying market conditions ➢ **5th percentile of NPVRR (million$) across 200 dispatch iterations under varying market conditions** ➢ **Electric energy burden**	➢ $ ➢ $ ➢ $ ➢ **% HH income**
Environmental Sustainability: *Consider the impact of environmental regulations on the cost of providing electric utility service and demand from consumers for environmentally sustainable sources of electric generation*	➢ CO_2 Intensity ➢ CO_2 Equivalent Emissions ➢ **SOx and NOx Emissions**	➢ Tons CO_2/kwh ➢ Tons CO_2e ➢ **Tons**
Reliability: *Consider portfolios' ability of the electric system to supply the aggregate electrical demand and energy requirements of end use customers at all time and withstand sudden disturbances* **Resiliency:** *Consider portfolios' ability to adapt to changing conditions and withstand and rapidly recover from disruptions* **Stability:** *Consider portfolios' ability to maintain a state of equilibrium during normal and abnormal conditions or disturbances and deliver a stable source of electricity, in which frequency and voltage are maintained within defined parameters*	➢ **Unserved energy across 200 dispatch iterations under varying market conditions** ➢ Spinning Reserve ➢ Fast Start Capability ➢ **Transmission reliability analysis**	➢ MWh ➢ Portfolio MW's That Offer Spinning Reserve ➢ Portfolio MW's That Offer Fast Start ➢ Dynamic VAR Support (MVAR) ➢ Short Circuit Ratio
Risk/Other:	➢ Energy Market Purchase and sales ➢ ~~**IRA tax credit exposure**~~	➢ % (average, near/long term) ➢ $

Blue text indicates a new measure for this IRP cycle

Red text indicates a revision following prior Stakeholder meeting

MWh = Megawatt hour   MVAR = Megavolt-Ampere Reactive

Q&A

Revisions to Scenarios

Matt Rice

Director, Regulatory and Rates

Reference Case Assumptions

- As per Rule 170 IAC 4-7-4, the reference case should reflect the most likely future scenario
- As the legislative landscape evolves, the reference case has been adjusted so that it continues to reflect the most likely future scenario

Original Assumptions

Continuation of Clean Air Act 111(b)&(d)

- Coal plants must retire by 2032 or convert/co-fire by 2030
- Combined Cycles limited to a 40% capacity factor

Continuation of IRA Renewable Tax Credits

- ITC and PTC available through end of 2032

Updated Assumptions

Modification of Clean Air Act 111(b)&(d)

- Coal plants may run through entire study period
  - Add ACE costs to proxy the efficiency target for coal
- No generation limits on Combined Cycles

Modification of IRA Renewable Tax Credits

- Assuming generic solar and wind qualify for ITC/PTC through end of 2029
- Assuming generic nuclear and storage qualify for phased down ITC/PTC through end of 2035

Alternate Reference Case

Based on Stakeholder feedback, we have added an additional Scenario to modeling that reflects a significantly higher load forecast, the Alternate Reference Case.

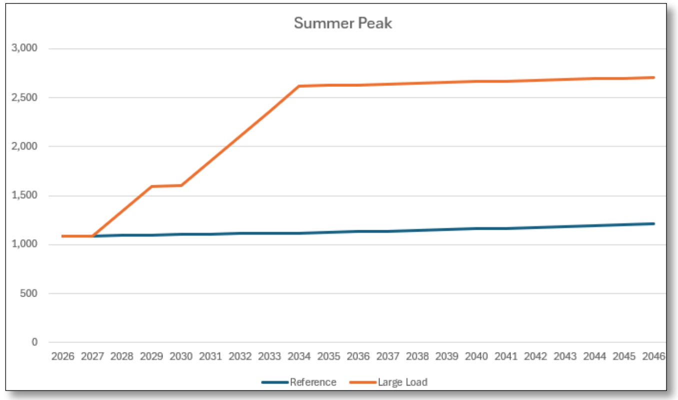
Reference Case vs Alt Reference Case

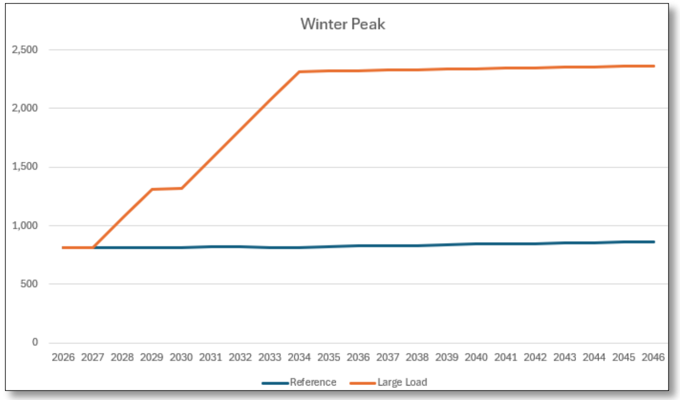
Same

- Policy
  - “ACE Proxy” on existing coal
  - OBBBA modified IRA
  - No additional CO_2 tax
- Commodity Prices
  - Base natural gas and coal prices
- Capital Cost
  - Base generation and EE costs

Different

- Load
  - Potential large load forecast





Reference Case Scenario

Scenario	Environmental Policy	Economic Policy	CO_2 Regulation	Load	Natural Gas Price	Coal Price	Generation Capital Costs	EE Costs
Reference Case	~~Clean Air Act 111 (b & d)~~ **ACE Proxy**	**Modified** IRA	No additional CO_2 regulation	Base	Base	Base	Base	Base

- As per Rule 170 IAC 4-7-4, the base case [reference case] is to be the most likely future scenario. As such, it is designed to be an extension of the status quo
- In the Reference Case Scenario, the Clean Air Act 111(b & d) is rolled back and does not include existing gas resources or a CO_2 Tax. An "ACE Proxy" is included as an environmental efficiency standard for existing coal unit(s)
- **Policy** – IRA modified with changes from the OBBBA
- **Load (-)** – Peak demand growth of 0.5% per year in the Summer and 0.3% per year for Winter for electricity (Does not include impact of CEI South EE program savings).
- **Commodity Prices (-)** – Consensus forecasts for gas, coal, and MISO capacity
- **Generation Capital Costs (-)** – Informed by the All-Source RFP and the Technology Assessment
- **EE Costs (-)** – Based on Updated Market Potential Study

Alternate Reference Case Scenario

Scenario	Environmental Policy	Economic Policy	CO_2 Regulation	Load	Natural Gas Price	Coal Price	Generation Capital Costs	EE Costs
Alternate Reference Case	~~Clean Air Act 111 (b & d)~~ **ACE Proxy**	**Modified** IRA	No additional CO_2 regulation	~~Base~~ **Much Higher**	Base	Base	Base	Base

- As per Rule 170 IAC 4-7-4, the base case [reference case] is to be the most likely future scenario. As such, it is designed to be an extension of the status quo
- The Alt Reference Case Scenario includes the same policy in the Reference Case scenario
    - the Clean Air Act 111(b & d) is rolled back and does not include existing gas resources or a CO_2 Tax. An "ACE Proxy" is included as an environmental efficiency standard for existing coal unit(s)
- **Policy** – IRA modified with changes from the OBBBA
- **Load (↑)** – addition of potential of growing large load drives significant expediated electricity demand growth
- **Commodity Prices (-)** – Consensus forecasts for gas, coal, and MISO capacity
- **Generation Capital Costs (-)** – Informed by the All-Source RFP and the Technology Assessment
- **EE Costs (-)** – Based on Updated Market Potential Study

Scenario Summary

Key Drivers:	Policy Factors			Load	Commodity Prices		Capital Costs	
Scenario	Environmental Policy	Economic Policy	CO_2 Regulation	Load	Natural Gas Price	Coal Price	Generation	EE Costs
Reference Case	~~Clean Air Act 111 (b & d)~~ **ACE Proxy**	**Modified** IRA	No additional CO_2 regulation	Base	Base	Base	Base	Base
Alternate Reference Case	~~Clean Air Act 111 (b & d)~~ **ACE Proxy**	**Modified** IRA	No additional CO_2 regulation	~~Base~~ **Much Higher**	Base	Base	Base	Base
High Regulatory	Clean Air Act 111 (b & d) and expansion to existing gas resources	IRA	Addition of CO_2 Tax	Lower	Higher	Higher	Lower	Higher
Alternate High Regulatory	Clean Air Act 111 (b & d) and expansion to existing gas resources; Electrification and EV policy	IRA	No additional CO_2 regulation	Higher	Higher	Higher	Higher	Base
Low Regulatory	No Clean Air Act 111 (b & d)	No IRA	No additional CO_2 regulation	Higher	Lower	Lower	Higher	Lower

Q&A

CenterPoint Energy Indiana South Integrated Resource Plan

Public Stakeholder Meeting 3

On break – we will return at 10:10 CDT

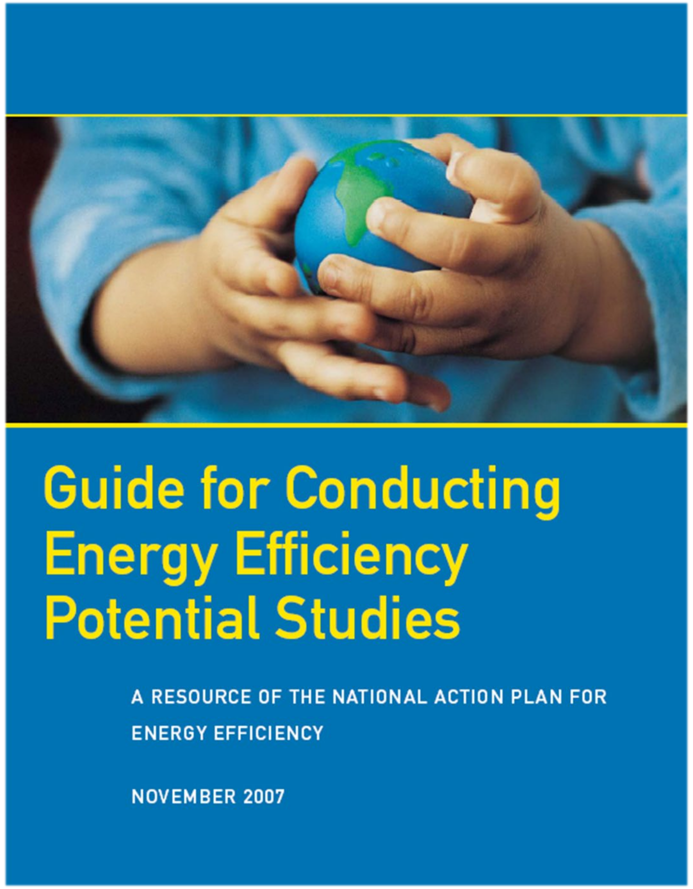
DSM Market Potential Study Initial Results

Jeffrey Huber
Principal, Energy Efficiency, GDS Associates

TOPIC OVERVIEW

- Market Potential Study Recap
  - What is a Market Potential Study (MPS)?
  - MPS & IRP Process
- Energy Efficiency (EE) Market Potential Study Overview
  - Market Research
  - Study Results
  - IRP Inputs
- Demand Response (DR) Market Potential Study Overview
  - Methodology & Modeling
  - Study Results
  - IRP Inputs
- Q&A

WHAT IS A MARKET POTENTIAL STUDY?



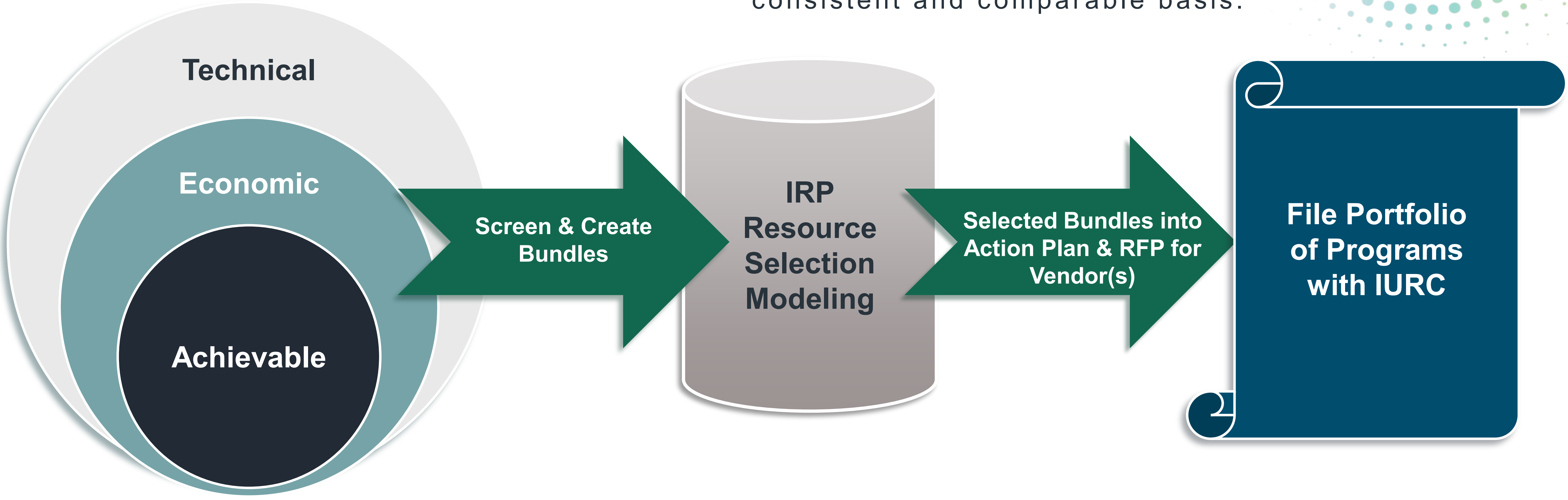
Simply put, a potential study is a quantitative analysis of the amount of energy savings that either exists, is cost-effective, or could be realized through the implementation of energy efficiency programs and policies.

-National Action Plan for Energy Efficiency

THE MPS & IRP

IURC Rules – 170 IAC 4-7-8-c-4

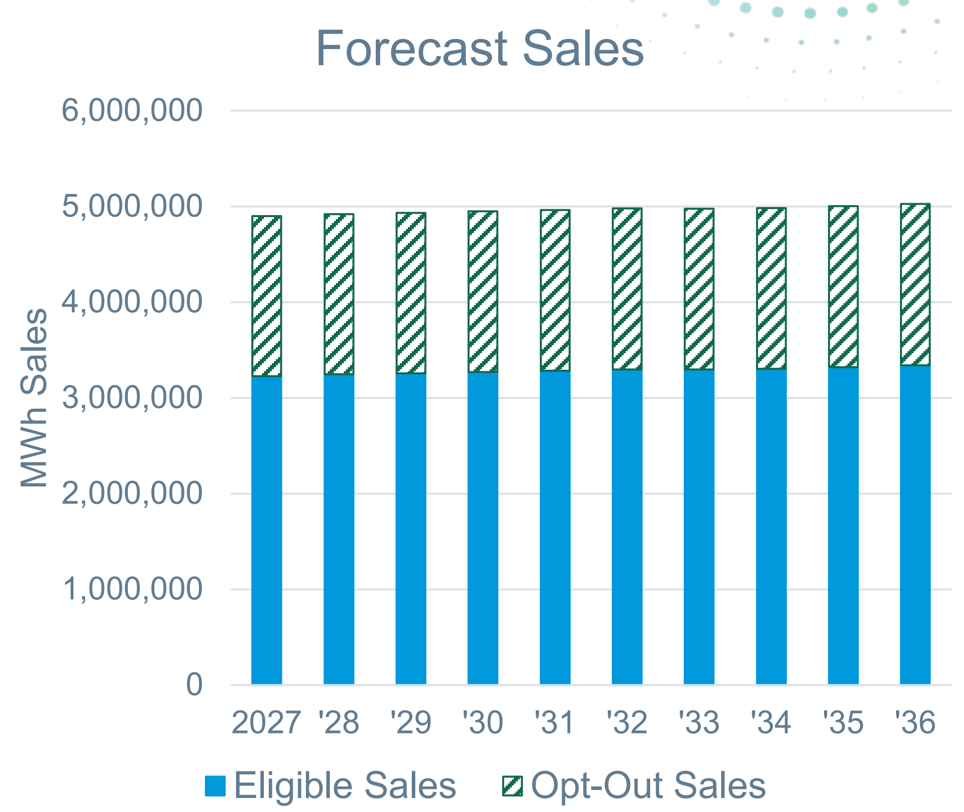
"Analysis showing Supply-side resources and demand-side resources have been evaluated on a consistent and comparable basis."



MARKET POTENTIAL STUDY

EE OVERVIEW: MARKET CHARACTERIZATION

- LOAD FORECAST
  - Review of Sales and Customer Counts
    - Residential (single family/multifamily ; market rate/income qualified)
    - Commercial (by building type)
    - Industrial (by industry type)
  - Review Eligible Sales
    - 48% of all C&I sales are from customers who have opted-out of EE programs
    - Percentage of sales from other “atypical” facilities with limited traditional EE opportunities
  - Estimating Consumption by End-Use



C&I = Commercial & Industrial

EE OVERVIEW: TYPES OF POTENTIAL OVERVIEW

TECHNICAL POTENTIAL

All technically feasible measures are incorporated to provide a theoretical maximum potential.

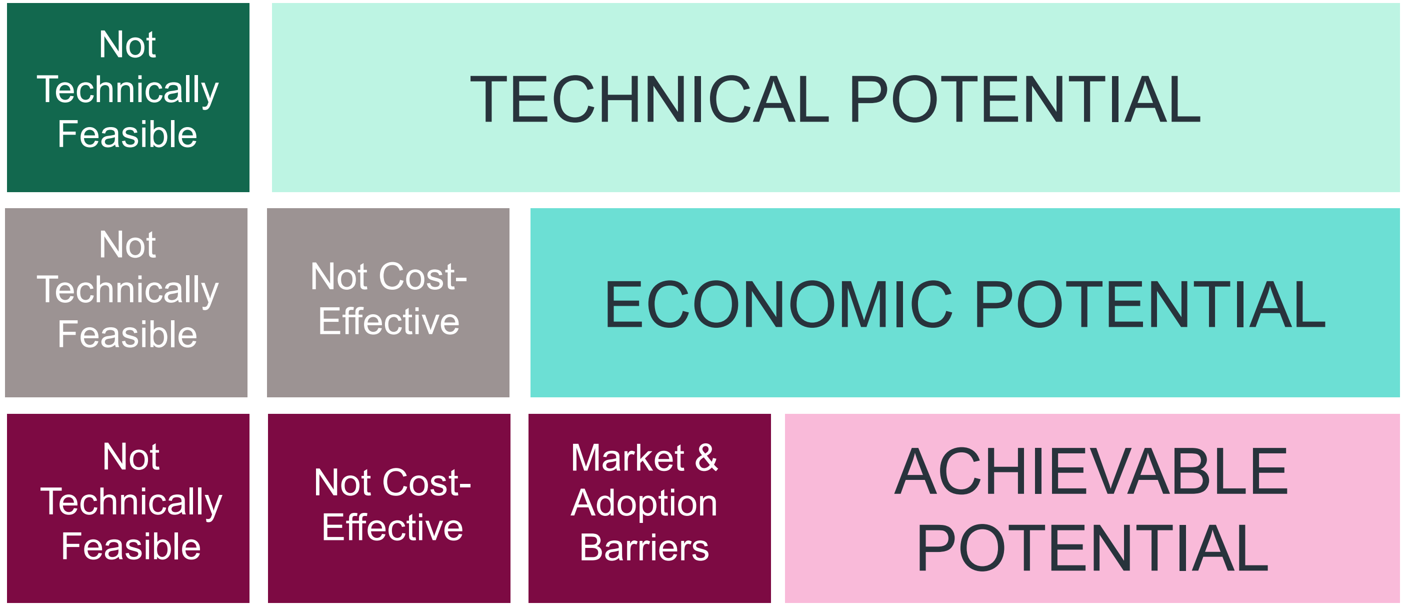
ECONOMIC POTENTIAL

All measures are screened for cost-effectiveness using the **Utility Cost Test**. Only cost-effective measures are included.

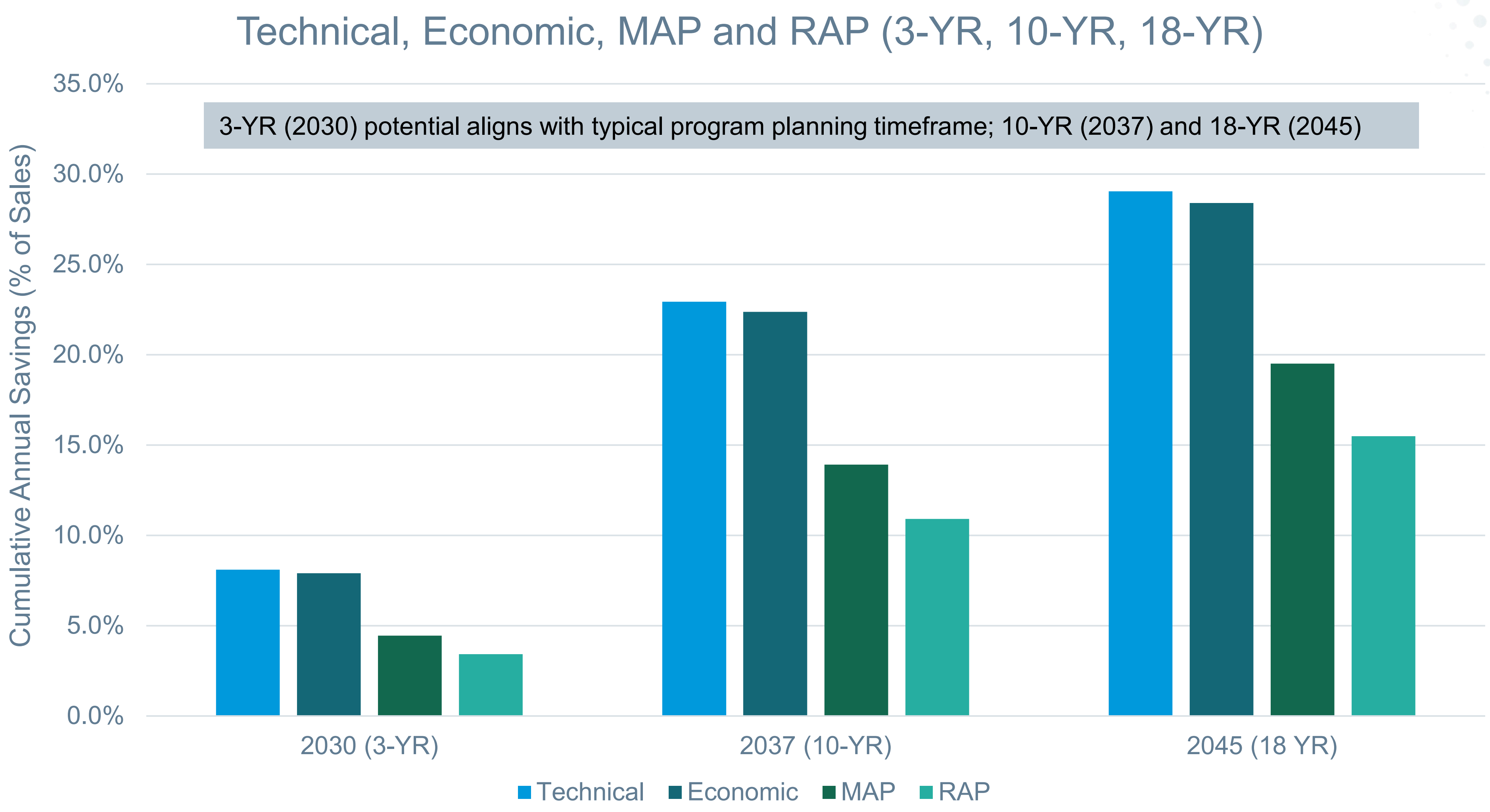
ACHIEVABLE POTENTIAL

Cost-effective energy efficiency potential that can practically be attained in a real-world program delivery case, assuming that a certain level of market penetration can be attained.

Types of Energy Efficiency Potential

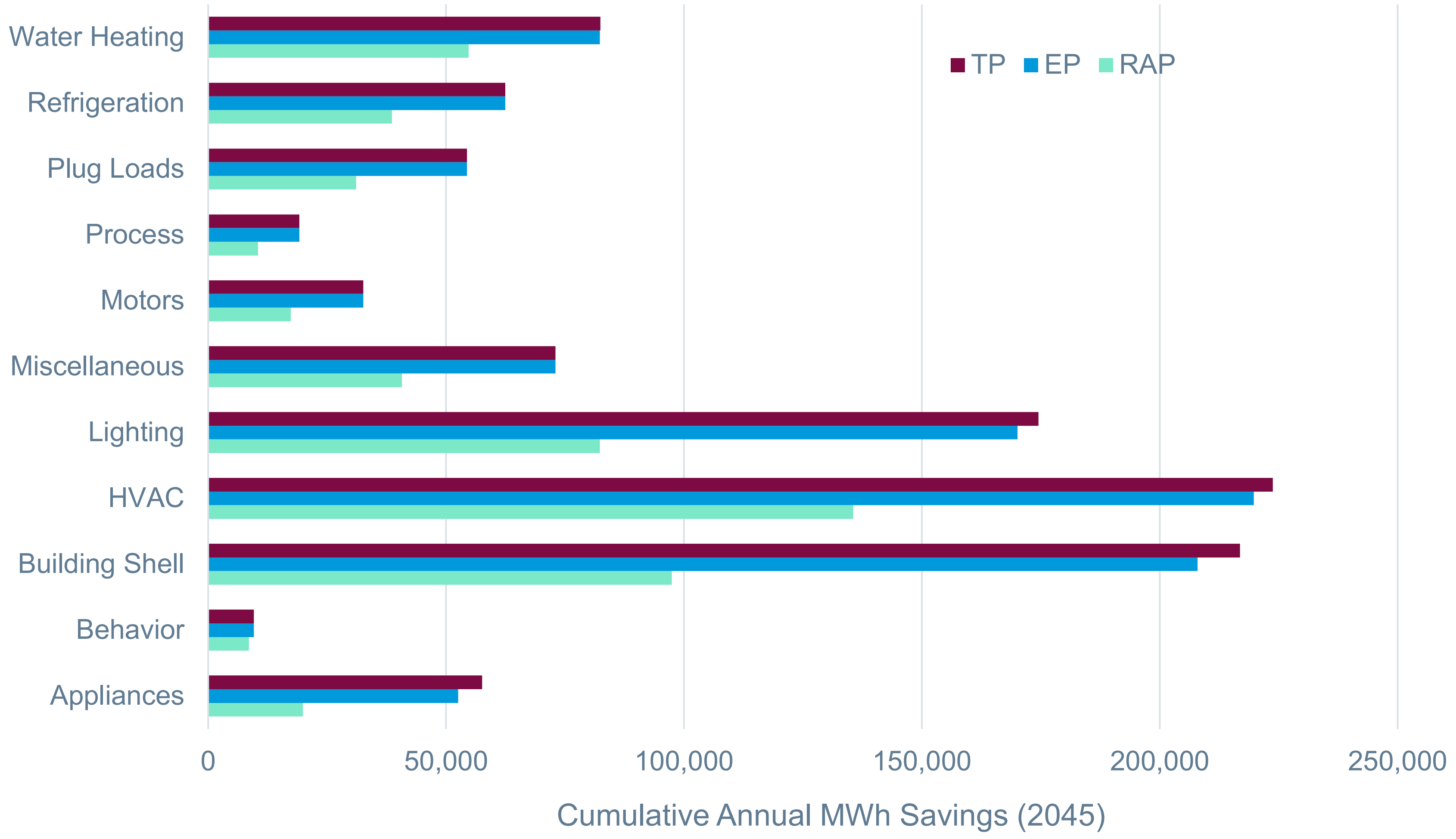


OVERALL POTENTIAL – All SECTORS



MAP = Maximum Achievable Potential RAP = Realistic Achievable Potential

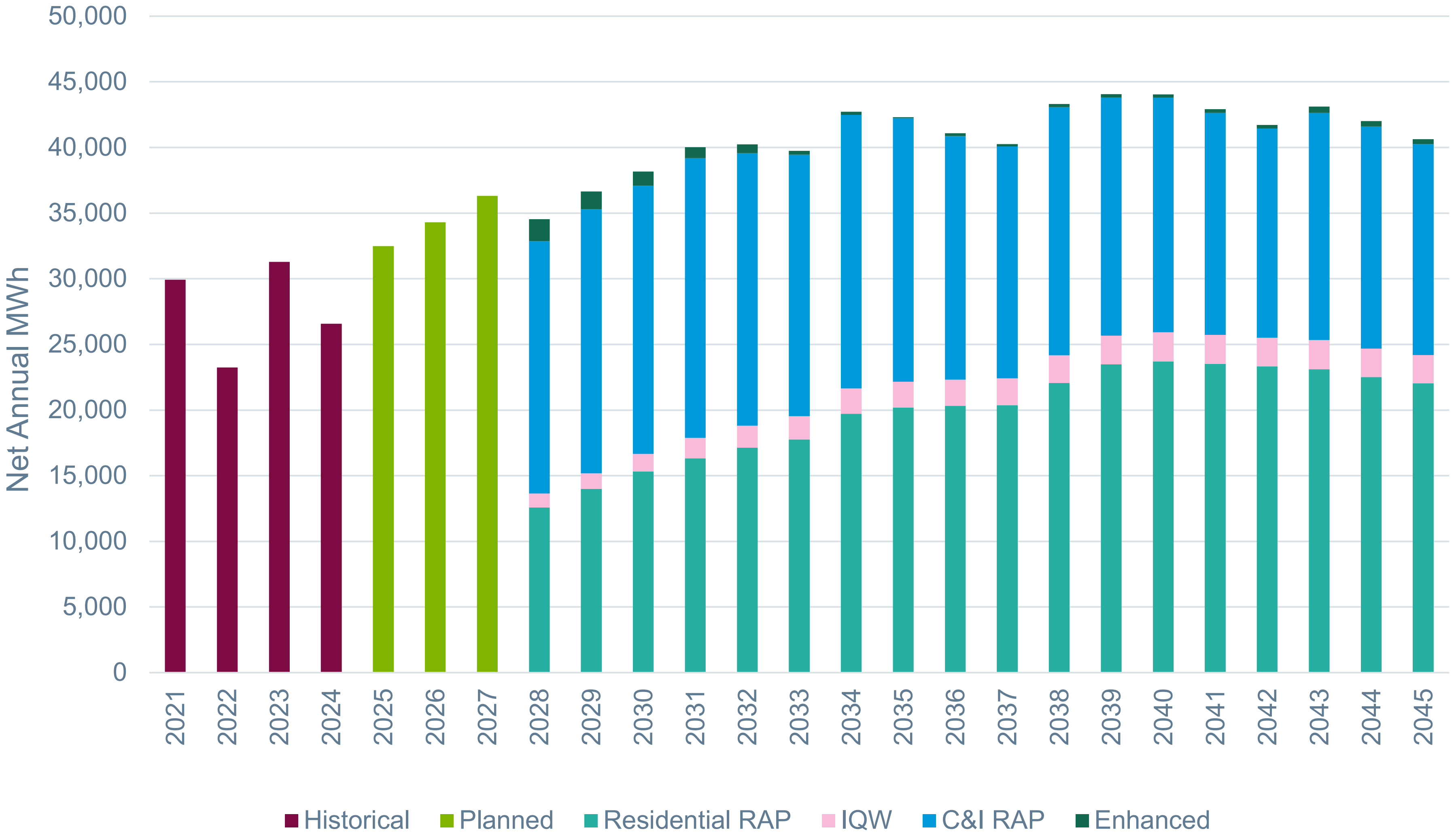
OVERALL TP/EP/RAP BY END USE – All SECTORS



- HVAC, Building Shell and Lighting are the leading overall end-uses
- Lighting is nearly all in the C&I sector
- Building Shell is largely in the residential sector
- Behavior provides low cumulative annual savings but remains a key element of annual savings (1st-yr kWh)
- Water Heating, Refrigeration, Plug Loads, and Miscellaneous (mostly C&I) have significant potential

TP = Technical Potential   EP = Economic Potential   RAP = Realistic Achievable Potential   C&I = Commercial & Industrial

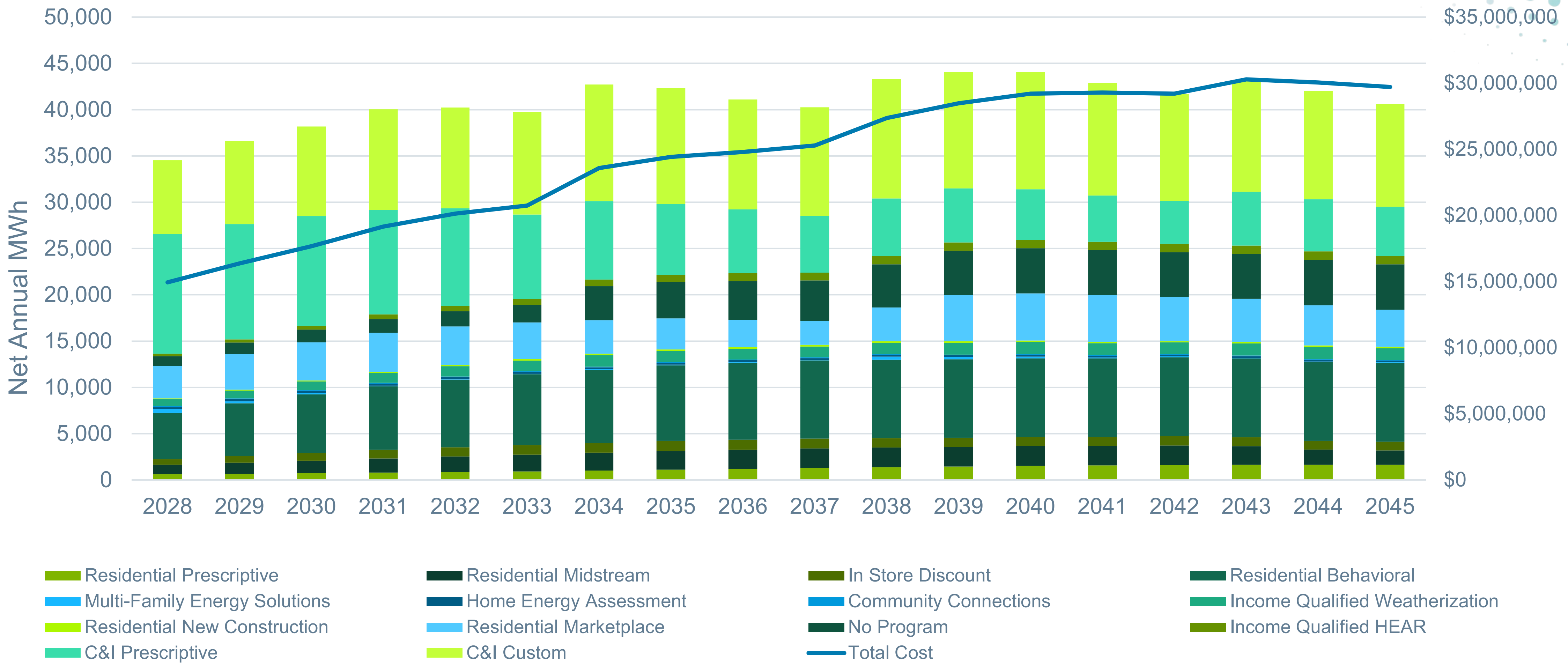
Incremental Annual "Achievable" vs Historical and Planned



- Savings are shown as "net"
- Incremental savings from Enhanced RAP shown in dark green shade at top of bars
- Enhanced C&I was developed with coordination with OSB
- Enhanced RAP used for C&I sector only
- Some historical years shown for comparison

RAP = Realistic Achievable Potential *IQW = Income Qualified Weatherization* *OSB = Oversight Board*

Program-Level Incremental Annual "Achievable" (savings and total program costs)



DSM IN THE IRP: EXPECTED INPUT STRUCTURE

CenterPoint Energy

- DSM Inputs are:
  - Sector based (residential, income-qualified, and nonresidential)
    - Residential and nonresidential will be selectable resources; income-qualified will be a “going-in” resource
  - Three time-vintages (2028-2030, 2031-2033, and 2034-2045)
  - Based on RAP and/or “Enhanced” RAP (commercial sector)
  - Based on net savings
  - Costs reflect utility incentive and non-incentive costs (less NPV T&D benefits)
  - Include hourly profiles for each bundle

RAP = Realistic Achievable Potential NPV = Net Present Value T&D = Transmission & Distribution

ANNUAL SAVINGS BY BUNDLE

*Savings are at generator (account for line losses)

DR OVERVIEW: OVERVIEW

- Goal of the DR MPS is to develop IRP inputs, but will also share some common assumptions with IRP where possible
  - Peak load forecast by season and rate class
  - Electric vehicle adoption forecast
  - Behind-the-meter solar penetration forecast
- DR MPS will also consider results of the EE MPS
  - Use consistent end-use saturation estimates
  - Consider select EE technology adoption estimates/efficiency trends and EE rebates
- Prioritizes current demand response offerings and rate structures

DR OVERVIEW: STARTING POINT

- Historical DR Program Offerings
  - DLC Central AC (Switch and Thermostat)
  - DLC Water Heating (Switch)
- Programs Under Consideration (by 2028)
  - Time of Use (TOU) with Critical Peak Pricing (CPP) Rate
  - DR Aggregation* *(Potential impacts previously analyzed by CenterPoint outside of MPS)*
- Additional Programs for MPS
  - DLC Water Heating (Grid-Enabled)
  - DLC Electric Vehicle (EV)
  - Battery Storage

DR OVERVIEW: METHODOLOGY

- Programs are screened for cost-effectiveness using the Utility Cost Test (UCT)
  - UCT = ratio of Net Present Value (NPV) benefits to NPV cost per program over 20-year lifespan
  - NPV benefits include avoided generation capacity (based on a combined Cyle natural gas plan) and avoided transmission and distribution capacity
  - DR offerings with a UCT ratio less than 1.0 may still be presented as resource options in the IRP model
- MPS will contain two DR potential scenarios:
  - RAP (Realistic Achievable Potential): projections of future DR potential at typical incentive rates and marketing levels
  - MAP (Maximum Achievable Potential): more “aggressive” projection of future DR potential, achieved by offering more generous incentives and/or top-performing jurisdiction benchmarking

DR RESULTS

Sector	DR Program	UCT Result	MW Savings			
			Spring	Summer	Fall	Winter
Residential	DLC AC Switch	Fail	0.0	0.1	0.0	0.0
	DLC Thermostat (Smart Cycle)	Pass	2.6	12.7	2.3	0.0
	DLC Thermostat (BYOT)	Pass	3.7	17.8	3.2	0.0
	DLC Water Heater Switch	Fail	0.0	0.1	0.0	0.0
	DLC Grid-Enabled Water Heater	Fail	2.4	3.9	2.4	5.7
	DLC Electric Vehicle	Fail	0.7	1.2	0.7	1.2
	TOU + CPP Rate	Pass	3.5	5.7	3.6	2.4
	Battery Storage	Fail	0.4	0.7	0.4	0.7
C&I	DLC Thermostat (BYOT)	Pass	0.7	3.6	0.6	0.0
	DLC Grid-Enabled Water Heater	Pass	2.4	2.6	2.4	2.6
	DLC Electric Vehicle	Fail	0.0	0.0	0.0	0.0
	TOU + CPP Rate	Pass	1.9	2.1	1.9	1.3
	Battery Storage	Fail	0.3	0.4	0.3	0.4
Subtotal of Programs Above 1.0 UCT Ratio			**14.9**	**44.5**	**14.1**	**6.3**
Subtotal of Demand Response from MPS/IRP			**18.8**	**50.8**	**18.0**	**14.2**
CNP DR Aggregator Totals			19.2	25.0	22.0	18.8
Total of All Demand Response			**37.8**	**75.8**	**37.0**	**33.2**

DR IRP Inputs

- All programs/sectors were bundled individually for the IRP inputs
- New DR programs provided year-round savings.
  - Existing Summer Cycler program (AC Switch & WH Switch) only provided savings in summer.
  - DLC Thermostat program provides savings spring through fall.
  - Summer peak savings generally more significant than the other seasons.

Q&A

Portfolio Development Methodology and Draft Scenario Optimization Results

Drew Burczyk
Project Manager, Resource Planning & Market Assessments, 1898 & Co.

Portfolio Development Methodology Overview

1) Begin with Existing Portfolio

- Establish the current resource mix as the foundation of the analysis

2) Define Critical IRP Decision Points

- Identify key planning questions and decision points to be addressed in the IRP

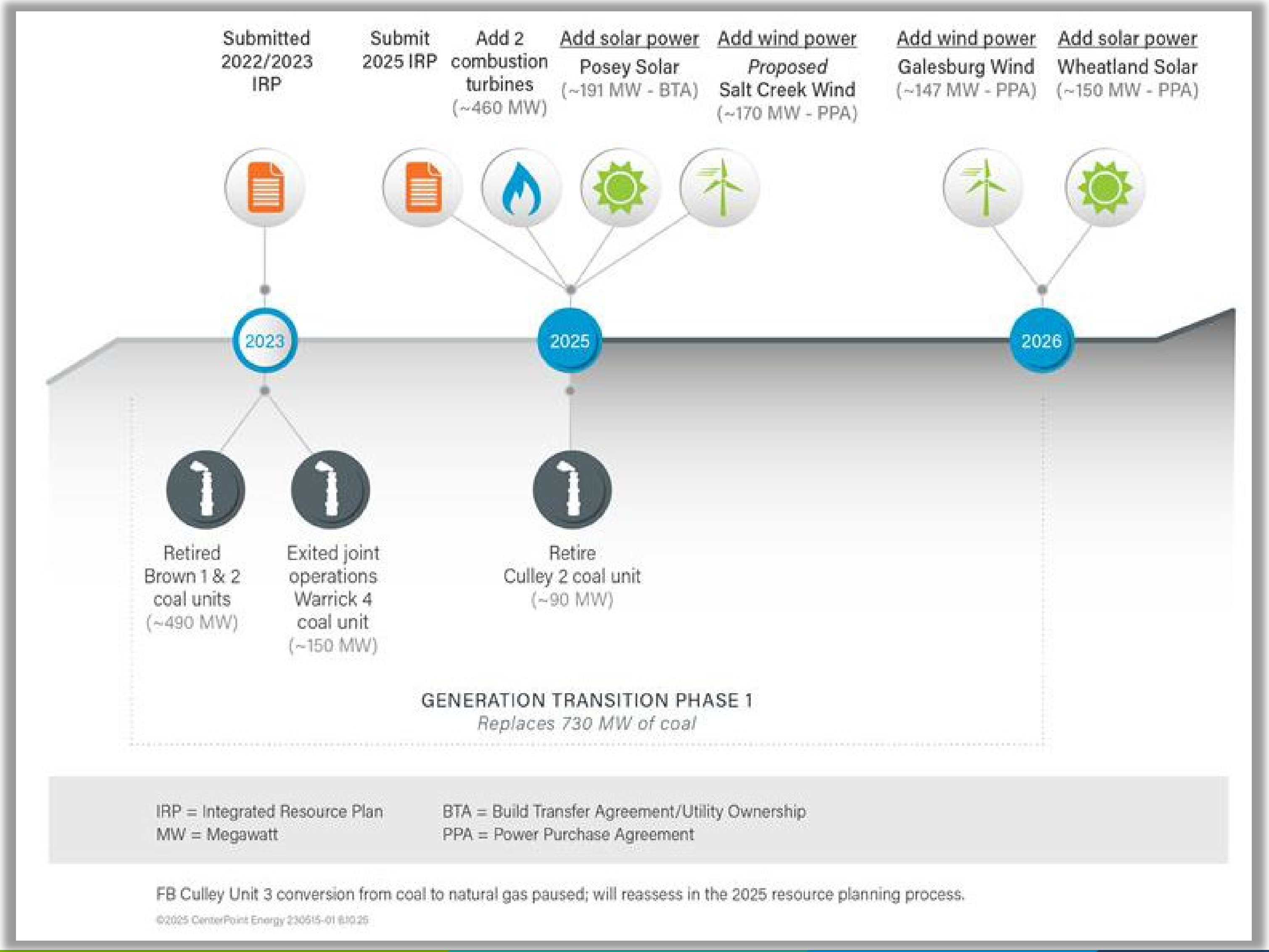
3) Identify Alternative Resources

- Explore new and emerging resource alternatives to supplement the existing resources

4) Develop a Modeling Framework to Evaluate Options

- Analyze trade-offs of resource selections
- Create diverse portfolios to assess resource and portfolio trade-offs against the 5 pillars

Portfolio Development Methodology
Step 1 Update: Generation Transition Timeline



Portfolio Development Methodology
Step 2: Key Near-Term IRP Decisions

F.B. Culley 2

- CEI South plans to suspend F.B. Culley 2 operations in December 2025
- Approximately 3-year timeline to reuse the existing interconnection
- Due to site area and condition of the unit, the resources being studied are:
  - Battery Storage
  - Aeroderivative
  - Reciprocating Engines

Demand Side Management

- Finalize DSM inputs with new MPS
- Determine what levels and programs are frequently selected under optimization simulations.
- Additional programs and optionality being studied in this IRP

F.B. Culley 3

- For the Reference Case Scenario, F.B. Culley 3 has the following paths:
  - Convert to natural gas on either 1/1/2030 or 1/1/2035
  - Co-Fire on gas and coal through 2038 and then retire 12/31/2038
  - Retire on 12/31/2032 or 12/31/2034
  - Continue on coal with ACE like efficiency upgrades by 2029

Portfolio Development Methodology

Step 2: Key Near-Term IRP Decisions

F.B. Culley 2

- Optimized Scenario simulations selected F.B. Culley 2 Battery.
- Deterministic F.B. Culley 2 pathways showed Battery having lowest NPVRR.
- Additional portfolio testing selected Battery pathway over Aeroderivative, Reciprocating engine, and no replacement options.
- FBC2 Battery included in draft portfolios.

Demand Side Management

- Optimization and deterministic runs had strong consistency in the DR and EE programs selected.
- Included consistent base level of DR and EE in all 12 draft portfolios.
- Additional stress testing to be done.

F.B. Culley 3

- F.B. Culley 3 option selection is a larger capacity block strongly tied to other resource selections.
- F.B. Culley 3 retirement pathways are selected most commonly in optimization in combination with the selection of ABB 5+6 conversion to a CCGT (ABB 7)
- Still examining different options in draft portfolios.

Portfolio Development Methodology
Step 3: Resource Alternatives

Simple Cycle Natural Gas

Combined Cycle Natural Gas

Peaking Natural Gas

Nuclear

Existing Unit Conversions

Wind

Solar

Storage

Hydroelectric

DSM / Innovative Rates

Storage Resource Options

Current Options:

- 50 MW 4-hour Storage
- 100 MW 4-hour Storage
- 100 MW 8-hour Storage
- 100 MW 10-hour Non-Lithium-Ion Storage

New Option:

- **100 MW 100-hour Non-Lithium-Ion Storage**
  - Added following stakeholder feedback
  - Representative of Iron-Air technology

Metric	100-hour Non-Lithium-Ion Storage
Installed Capacity (MW)	100
Duration (hours)	100
Assumed Operational Life (years)	15
Round Trip Efficiency (%)	34%

Portfolio Development Methodology
Step 4: Portfolio Development

- Portfolios are constructed to test alternative resource mixes and evaluate tradeoffs of various resource selections/decisions
- Portfolios are initially developed as:
  - **Scenario driven portfolios**: portfolios that align with different plausible futures
  - **Decision-driven portfolios**: develop targeted portfolios that evaluate different key decision pathways or include unique resource types
- Initial results are reviewed to identify trends and tradeoffs
- Additional portfolios are then developed to broaden the range of resource mixes and evaluate their performance

Preliminary Project Selections - Scenarios

Year	Reference Case	Alt High Reg	High Reg	Low Reg	Alt Reference Case
Load Level	**Base**	**↑↑**	**↓**	**↑**	**↑↑↑**
2025	+1 AB Brown 5 & 6 Gas Turbine (464 MW) +1 Posey Solar (191 MW) +1 Salt Creek Wind(170 MW)				
2026	+1 Wheatland Solar (150 MW) +1 Galesburg Wind (147 MW) + EE & DR 61 MW*				
2028	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)
2030	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+2 200 MW Wind (400 MW) 1 ABB5/6 Continue	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Fired CCGT 2030 (912 MW)
2031			+1 200 MW Wind (200 MW)		
2032	-1 FB Culley:3 Retire 2032 (-270 MW)	-1 FB Culley:3 Retire 2032 (-270 MW) +1 Non IRA Solar PV + Storage (150 MW) +2 100 MW Solar PV (200 MW) +2 200 MW Wind (400 MW)	-1 FB Culley:3 Retire 2032 (-270 MW) +3 100 MW 4 Hour Storage (300 MW) +1 200 MW Wind (200 MW)	-1 FB Culley:3 Retire 2032 (-270 MW)	+1 2x1 J Class Fired CCGT (1474 MW)
2040				+1 100 MW 4 Hour Storage (100 MW)	
2043			+1 Non IRA Solar PV + Storage (150 MW)		
2044	+1 Non IRA Solar PV + Storage (150 MW)				
2045		+1 Non IRA Wind (200 MW)			+1 FB Culley:3 thru 2045 (270 MW) +1 J Class SCGT (437 MW) +1 Non IRA Wind + Storage (300 MW)

*Full list of the EE & DR programs is included in the Appendix.

Q&A

CenterPoint Energy Indiana South Integrated Resource Plan

Public Stakeholder Meeting 3

On break – we will return at 12:30 CDT

Draft Deterministic Portfolio Results

Drew Burczyk
Project Manager, Resource Planning & Market Assessments, 1898 & Co.

Deterministic Modeling Approach

- Stress test of one critical decision at a time, including F.B. Culley 2 and 3 alternative options
- Review the results for how the model responds:
  - Influence of the selection of other resources
  - Portfolio NPV impacts
- Results are used to inform final portfolio selections

Deterministic Runs – F.B. Culley 2

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	Aeroderivative	No Replacement	Reciprocating Engine	Storage
2028	+1 FBC2 Aero (114 MW)	1 FB Culley:2 Interconnect Expires	+1 FBC2 Recip Engines (92.0 MW)	+1 FBC2 Storage (90 MW)
2029				
2030	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Fired CCGT 2030 (912 MW)
2031				
2032	-1 FB Culley:3 Retire 2032 (-270 MW)	-1 FB Culley:3 Retire 2032 (-270 MW) +1 100 MW 4 Hour Storage (100 MW)	-1 FB Culley:3 Retire 2032 (-270 MW)	-1 FB Culley:3 Retire 2032 (-270 MW)
2033				
2034				
2035				
2038				
2041				
2042				
2043				
2044	+1 Aeroderivative (57 MW)		+1 Aeroderivative (57 MW)	
2045				

- F.B. Culley 2 resource online by 12/31/2028 to comply with MISO interconnect re-use policy
- Storage portfolio is lower cost
  - Utilizing the interconnection for F.B. Culley 2 for storage is lower cost than all alternatives, including allowing the interconnection rights to expire
- Storage selected no matter what F.B. Culley 3 or A.B. Brown decision occurs

Deterministic Runs – F.B. Culley 3

	Retire 2032	*Retire 2035*	Co-Fire 2030	Convert 2030	*Convert 2035*	*Coal Thru 2045*
2028	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)
2029						
2030	+1 AB Brown7: Fired CCGT 2030 (912 MW)		+1 FB Culley:3 Co-Fire 2030 (270 MW) +1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 FB Culley:3 NG 2030 (270 MW) +1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Unfired CCGT 2030 (750 MW)	1 ABB5/6 Continue
2031						
2032	-1 FB Culley:3 Retire 2032 (-270 MW)	+1 100 MW 4 Hour Storage (100 MW)				+2 100 MW 4 Hour Storage (200 MW) +1 200 MW Wind (200 MW)
2033						
2034						
2035		-1 FB Culley:3 Retire 2035 (-270 MW) +1 AB Brown7: Fired CCGT 2035 (912 MW)			+1 FB Culley:3 NG 2035 (270 MW)	
2038			-1 FB Culley:3 Retire (270 MW)			
2041						
2042						+1 Aeroderivative (57 MW)
2043			+1 Aeroderivative (57 MW)			
2044						
2045						+1 FB Culley:3 thru 2045 (270 MW)

- Model generally favors F.B. Culley 3 retirement, but decision is heavily influenced by the path chosen at A.B. Brown 5 & 6
- *Green highlighted* F.B. Culley 3 options are not compliant with the environmental policy in the High Reg and Alt High Reg scenarios

Initial DSM Program Selection

- The EE/DR programs selected in at least 95% of the optimizations, and consistently showed benefits to the portfolio, were then locked in for initial portfolio testing.
- Additional stress testing of DSM program selection is planned as we continue fine-tuning portfolios. There's still opportunity for additional programs to be selected in the model moving forward.

Start Year	Demand Program	Program Description	Initial Selection Rate
2028	DR_CI BYOT (4 MW)	Commercial & Industrial Bring Your Own Thermostat	76%
2028	DR_CI TOU CPP (2 MW)	Commercial & Industrial Time of Use	90%
2028	**DR_Res TOU CPP (6 MW)**	**Residential Time of Use**	**95%**
2028	DR_Res EV (0.1 MW)	Residential Electric Vehicle Management	0%
2028	DR_Res Battery (0.1 MW)	Residential Battery Storage	0%
2028	CI_EV (<0.01 MW)	Commercial & Industrial Electric Vehicle Management	0%
2028	CI_Battery (0.01 MW)	Commercial & Industrial Battery Storage	0%
2028	DR_CI WH Grid (3 MW)	Commercial & Industrial Grid-Enabled Water Heater	19%
2028	DR_Res BYOT (19 MW)	Residential Bring Your Own Thermostat	5%
2028	DR_Res_Smart Cycle	Residential Smart Cycle	0%
2028	DR_Res WH Grid	Residential Grid Enabled Water Heater	0%
2028	**DR_Res AC Switch**	**Residential AC Switch**	**All In**
2028	**DR_Res WH Switch**	**Residential Water Heater Switch**	**All In**
2028, 2031, 2034	**EE_CI_ERAP_V1, V2, V3**	**Commercial & Industrial Enhanced Realistic Achievable Potential**	**90 – 100%**
2028, 2031, 2034	**EE_Res_Tier 1_HER_V1, V2, V3**	**Residential Tier 1 & Home Efficiency Rebates**	**95 – 100%**
2028, 2031, 2034	EE_Res_Tier2_V1 , V2 , V3	Residential Tier 2	5%
2028, 2031, 2034	**EE_IQ_HEAR_V1, V2, V3**	**Income Qualified Home Electrification and Appliance Rebates**	**All In**
2028, 2031, 2034	**EE_IQW_V1 , V2 , V3**	**Income Qualified Weatherization**	**All In**

Bolded programs are those that are locked in the initial portfolios.

Q&A

Portfolios Discussion

Drew Burczyk
Project Manager, Resource Planning & Market Assessments, 1898 & Co.

Portfolio Development Methodology
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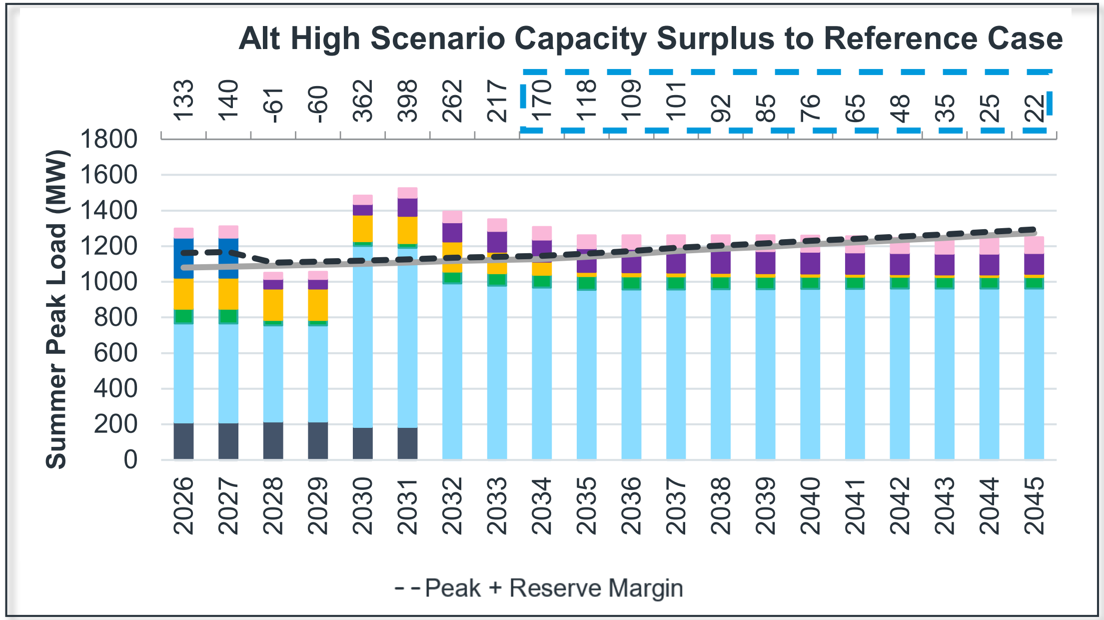
  - **Decision-driven portfolios**: develop targeted portfolios that evaluate different key decision pathways or include unique resource types
- Initial results are reviewed to identify trends and tradeoffs
- Additional portfolios are then developed to broaden the range of resource mixes and evaluate their performance. These portfolios each evaluate how a key decisions or decisions affect net present value and other scorecard metrics.

Modification of Scenario Portfolios to Align with Reference Case Load

	Alt High Reg
Load Level	↑↑
2025	+1 AB Brown 5 & 6 Gas Turbine (464 MW) +1 Posey Solar (191 MW) +1 Salt Creek (170 MW)
2026	+1 Wheatland Solar (150 MW) +1 Galesburg Wind (147 MW)
2028	+1 FBC2 Storage (90 MW)
2030	+1 AB Brown7: Fired CCGT 2030 (912 MW)
2031	
2032	-1 FB Culley:3 Retire 2032 (-270 MW) +1 Non IRA Solar PV + Storage (150 MW) +2 100 MW Solar PV (200 MW) +2 200 MW Wind (400 MW)
2040	
2043	
2044	
2045	+1 Non IRA Wind (200 MW)

Scenario portfolios were adjusted to meet reference case load to avoid overbuilding/underbuilding and have a fair NPV comparison.



Modified Alt High Reg
↑↑
+1 AB Brown 5 & 6 Gas Turbine (464 MW) +1 Posey Solar (191 MW) +1 Salt Creek (170 MW)
+1 Wheatland Solar (150 MW) +1 Galesburg Wind (147 MW)
+1 FBC2 Storage (90 MW)
+1 AB Brown7: Fired CCGT 2030 (912 MW)
+1 Solar PV + Storage (150 MW)
-1 FB Culley:3 Retire 2032 (-270 MW) +1 100 MW Solar PV (100 MW) +1 200 MW Wind (200 MW)
~~+1 Non IRA Wind (200 MW)~~

Draft Portfolios

Year	Portfolio1: Reference Case Portfolio	Portfolio2: FBC3 NG Flexibility on NG 2035	Portfolio3: FBC3 on Coal without ABB7	Portfolio4: FBC3 on Coal to SMR	Portfolio5: FBC3 to Simple Cycle Gas Turbine	Portfolio6: Renewable Heavy Portfolio	Portfolio7: FBC3 Gas Conversion with Renewables	Portfolio8: Low Reg Approach	Portfolio9: High Reg Approach	Portfolio10: Alt High Reg Approach	Portfolio11: FBC3 Co-Fire 2030	Portfolio12: Delayed Reference Case
2025	+1 AB Brown 5 & 6 Gas Turbine (464 MW) ; +1 Posey Solar (191 MW) ; +1 Future Wind 1 Project (Salt Creek, 170 MW)											
2026	+1 Wheatland Solar (150 MW) ; +1 Galesburg Wind (147 MW)											
2028	+1 FBC2 Storage (90 MW)											
2029									+1 100 MW 4 Hour Storage (100 MW)			
2030	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Fired CCGT 2030 (912 MW)	1 ABB5/6 Continue	+1 AB Brown7: Fired CCGT 2030 (912 MW)	1 ABB5/6 Continue	1 ABB5/6 Continue	+1 FB Culley:3 NG 2030 (270 MW) 1 ABB5/6 Continue	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+2 200 MW Wind (400 MW) 1 ABB5/6 Continue	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 FB Culley:3 Co-Fire 2030 (270 MW) +1 AB Brown7: Fired CCGT 2030 (912 MW)	
2031					+1 100 MW 4 Hour Storage (100 MW)	+1 100 MW 4 Hour Storage (100 MW)				+1 Non IRA Solar PV + Storage (150 MW)		
2032	-1 FB Culley:3 Retire 2032 (-270 MW)		+1 100 MW 4 Hour Storage (100 MW)			-1 FB Culley:3 Retire 2032 (-270 MW) +3 100 MW 4 Hour Storage (300 MW)	+1 100 MW 4 Hour Storage (100 MW)	-1 FB Culley:3 Retire 2032 (-270 MW)	-1 FB Culley:3 Retire 2032 (-270 MW) +3 100 MW 4 Hour Storage (300 MW) +1 Non IRA Wind (200 MW)	-1 FB Culley:3 Retire 2032 (-270 MW) +1 Non IRA Wind (200 MW) +1 Non IRA Solar (100 MW)		
2033			+1 100 MW 4 Hour Storage (100 MW)				+1 100 MW 4 Hour Storage (100 MW)					
2034												+1 AB Brown7: Fired CCGT 2034 (912 MW)
2035		+1 FB Culley:3 NG 2035 (270 MW)		-1 FB Culley:3 Retire 2035 (-270 MW) +1 Nuclear - SMR (100 MW)	-1 FB Culley:3 Retire 2035 (-270 MW) +1 J Class SCGT (437 MW)							-1 FB Culley:3 Retire 2035 (-270 MW)
2038						+1 Non IRA Wind (200 MW)					-1 FB Culley:3 Retire (270 MW)	
2039							+1 Non IRA Solar PV (100 MW)					
2040			+1 50 MW 4 Hour Storage (50 MW)				+1 Non IRA Wind (200 MW)	+1 100 MW 4 Hour Storage (100 MW)				
2041			+1 Non IRA Wind (200 MW)			+1 Non IRA Wind (200 MW)						
2043						+1 50 MW 4 Hour Storage (50 MW) +1 Non IRA Wind (200 MW)	+1 50 MW 4 Hour Storage (50 MW) +1 Non IRA Wind (200 MW)		+1 100 MW 4 Hour Storage (100 MW) +1 Non IRA Wind (200 MW)			
2044	+1 Non IRA Solar PV + Storage (150 MW)										+1 Non IRA Wind (200 MW)	+1 Non IRA Solar PV + Storage (150 MW)
2045			+1 FB Culley:3 thru 2045 (270 MW) +1 Non IRA Wind (200 MW)		+1 Non IRA Wind (200 MW)	+1 Non IRA Wind (200 MW)	+2 Non IRA Wind (400 MW)					
Average Portfolio NPV ($000)	$4,099,174	$4,296,258	$4,326,738	$4,986,020	$4,565,149	$4,680,591	$4,731,170	$4,135,718	$4,466,083	$4,255,968	$4,286,442	$4,127,707
% Delta to Min	0.0%	4.8%	5.6%	21.6%	11.4%	14.2%	15.4%	0.9%	9.0%	3.8%	4.6%	0.7%

1- Reference Case

Model Selections:

FB Culley 3 Retire on 12/31/31
FB Culley 2 Start Storage 01/01/28
AB Brown 5&6: Start Fired CCGT 01/01/30
1x Non-IRA Solar + Storage

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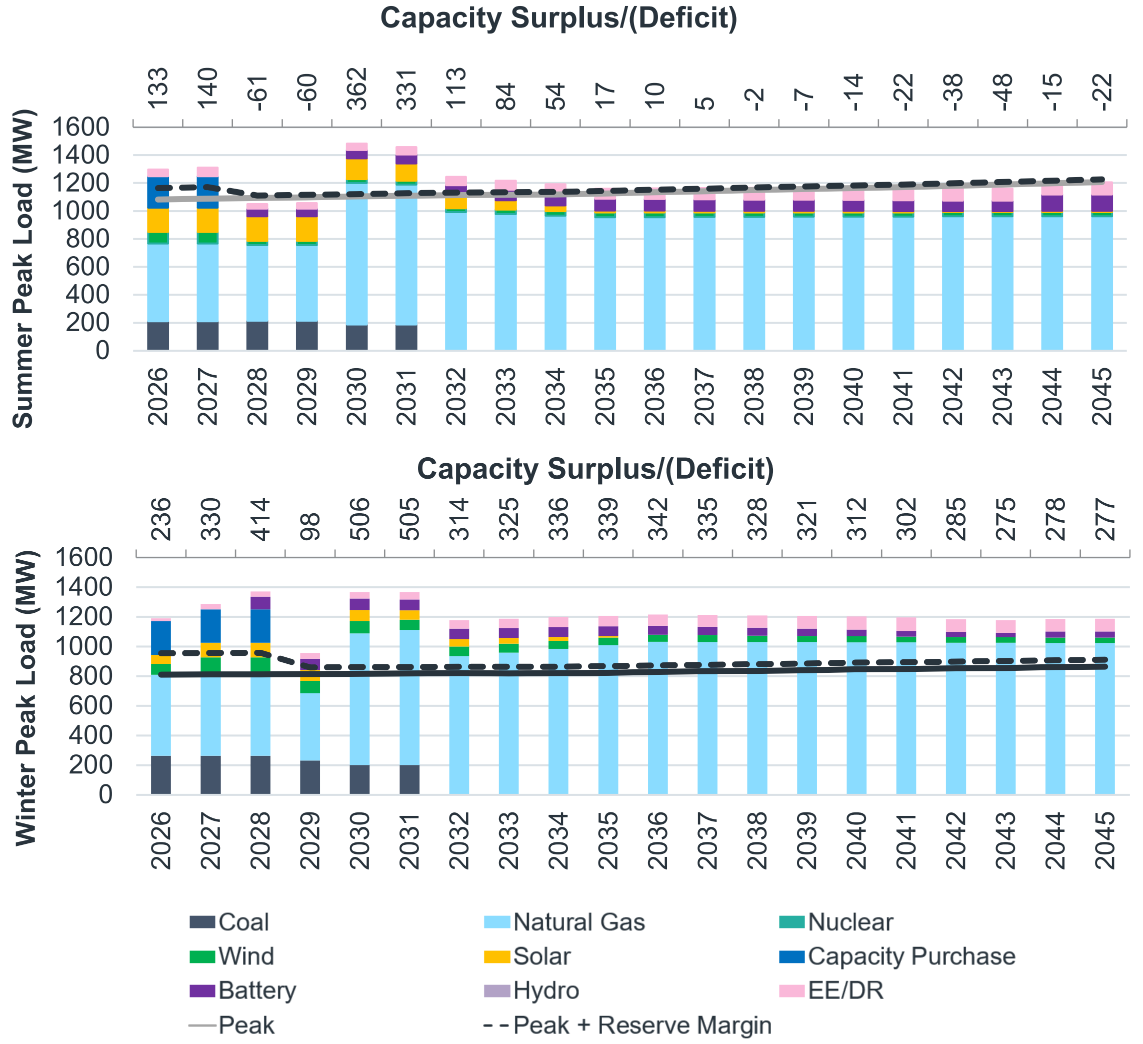
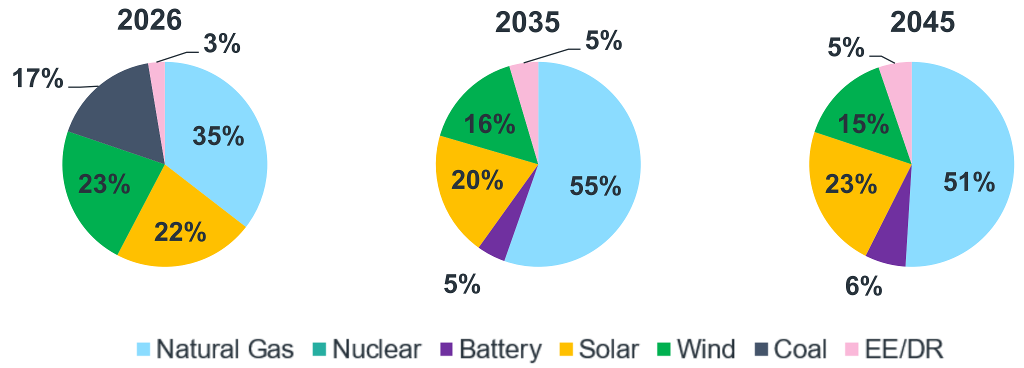
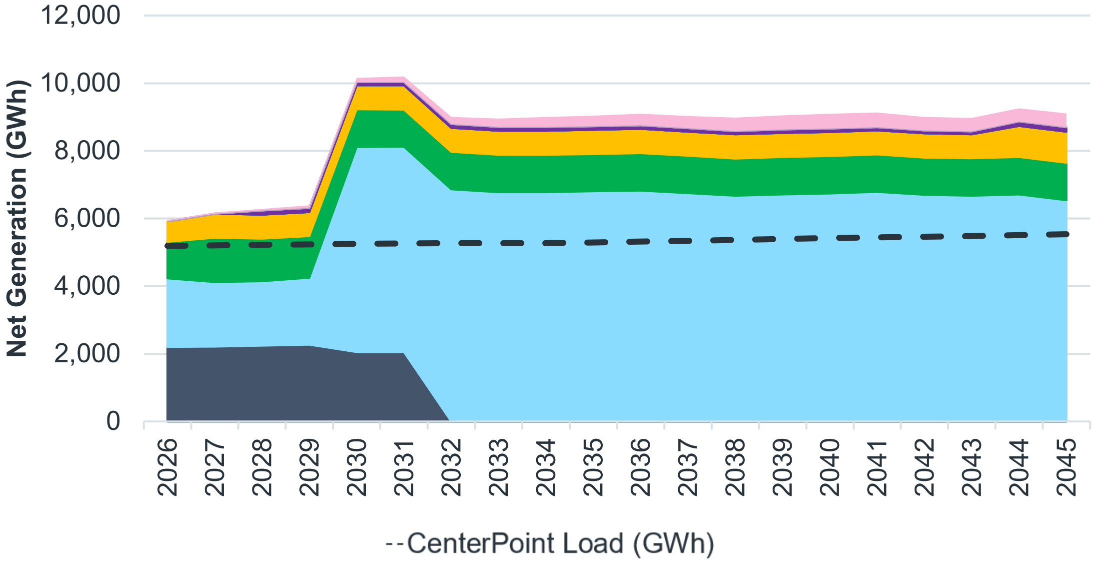
Balance of Load and Resources



Installed Capacity (MW)



Generation (MWh)



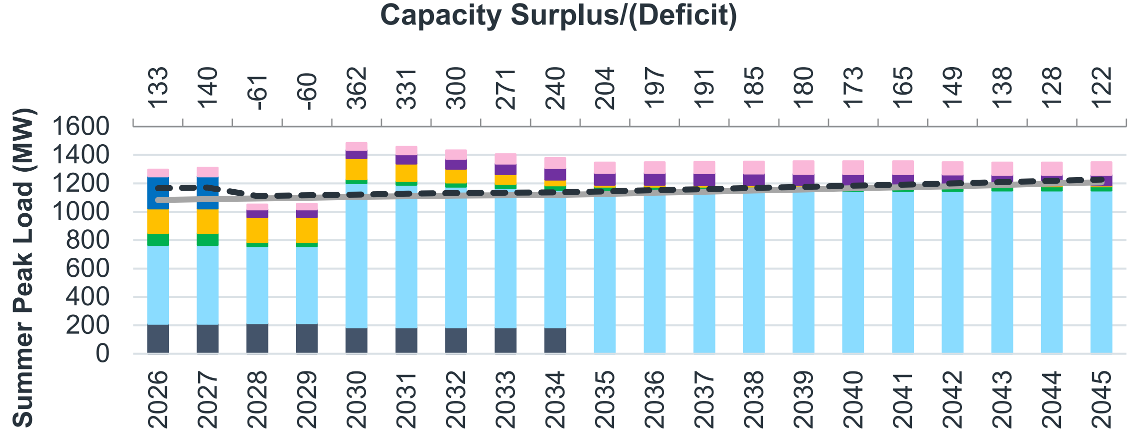
2 - FBC3 Flexibility on NG 2035

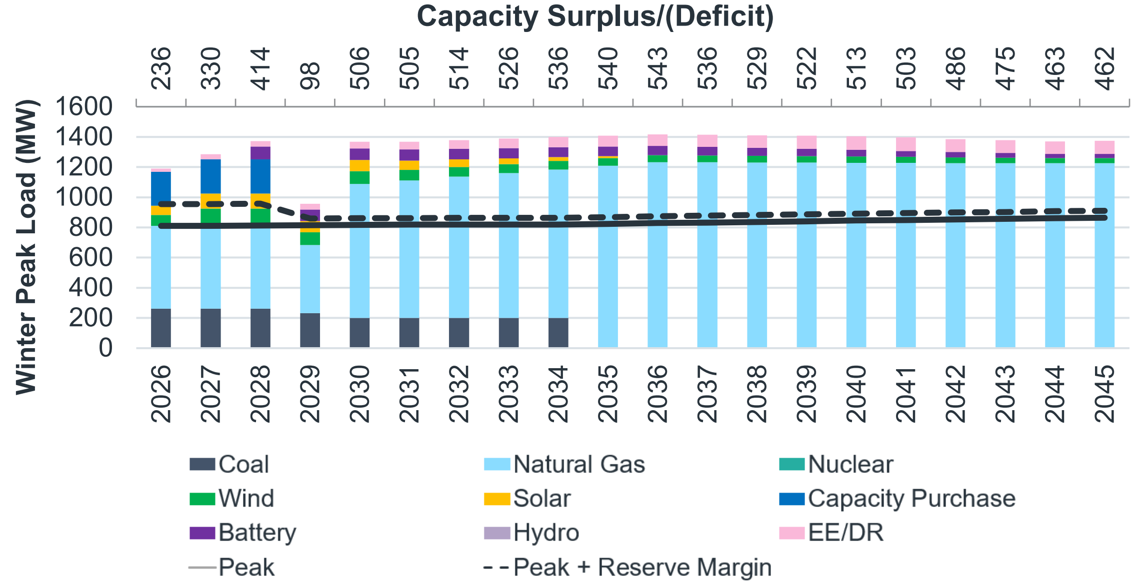
<u>Model Selections:</u>

FB Culley 3 Conversion on 01/01/35
FB Culley 2 Start Storage 01/01/28
AB Brown 5&6: Start Fired CCGT 01/01/30

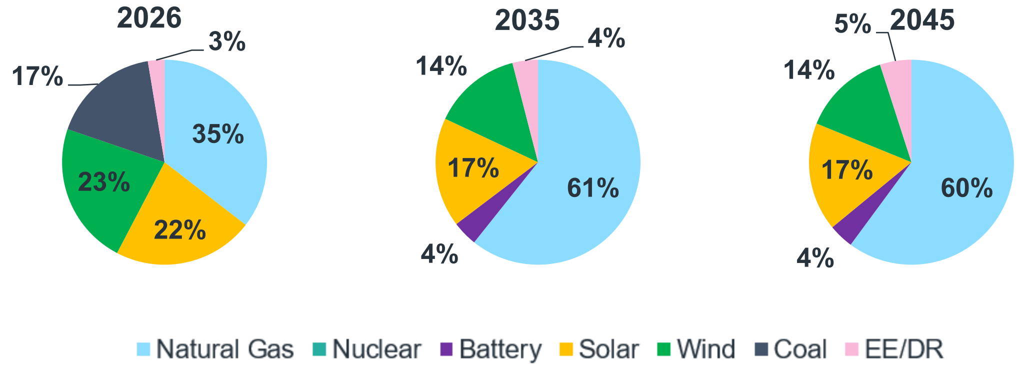
CenterPoint Energy

Balance of Load and Resources

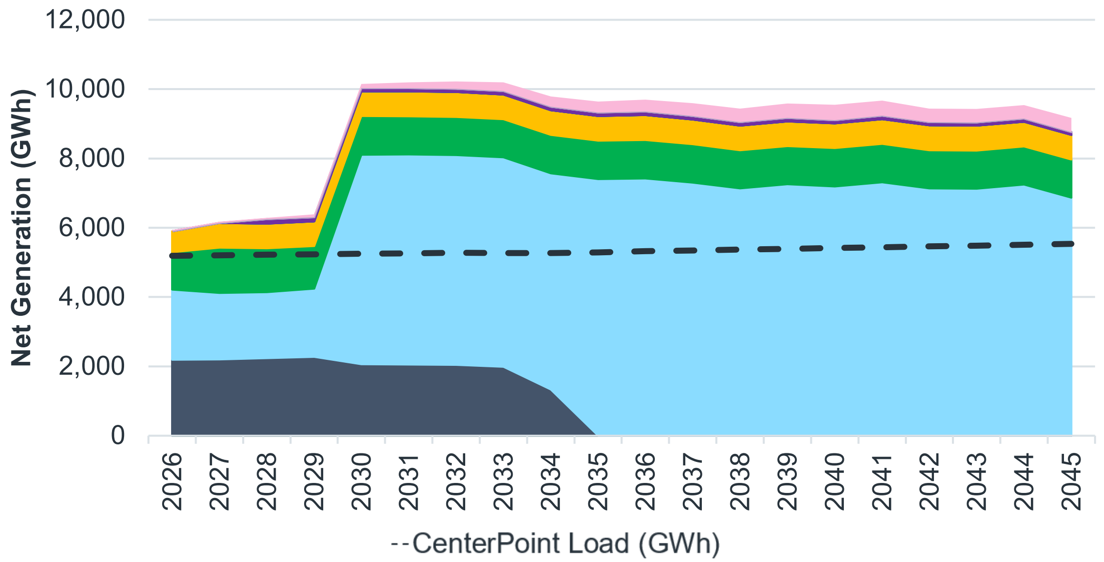




Installed Capacity (MW)



Generation (MWh)



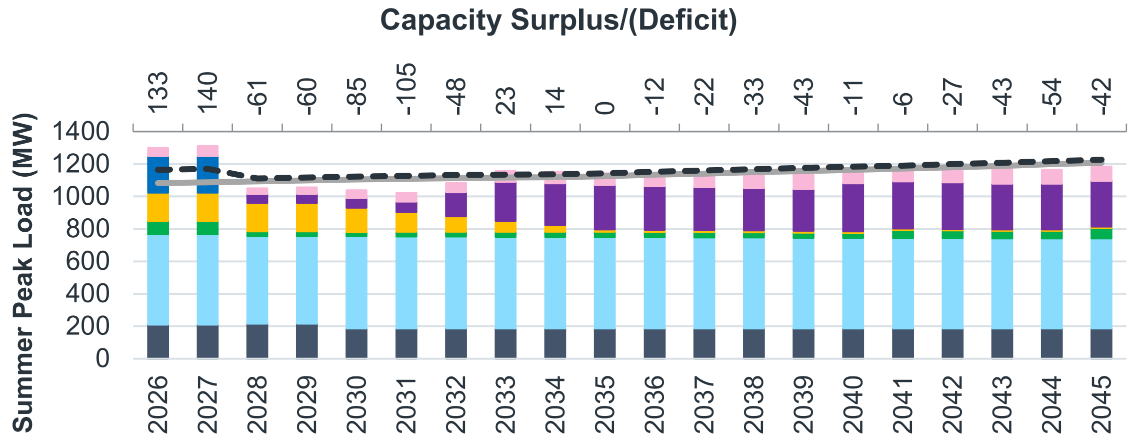
3 – FBC3 on Coal without ABB7

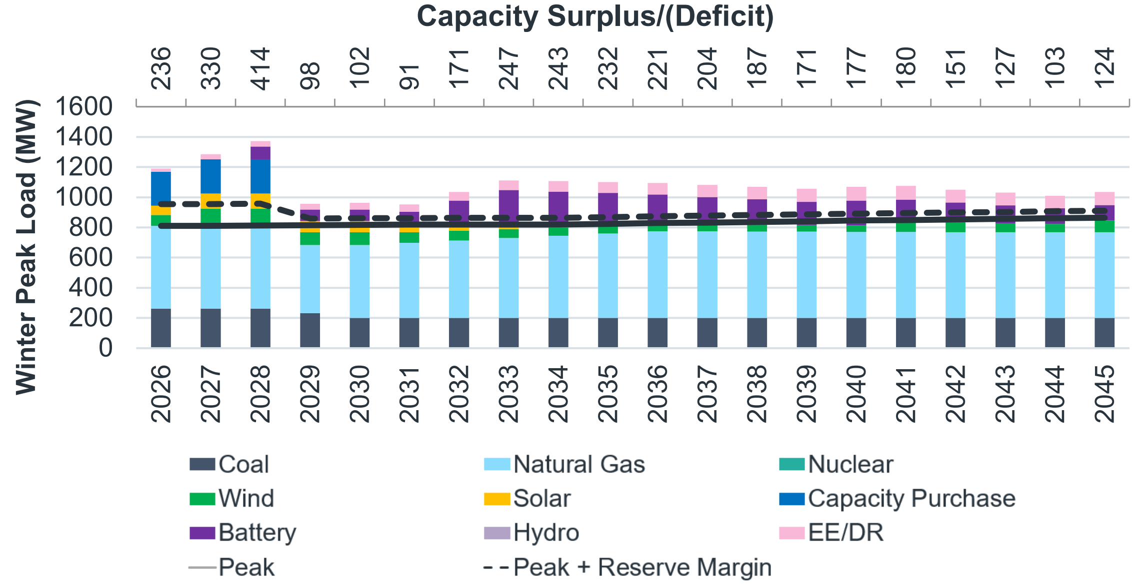
Model Selections:

FB Culley 3 BAU through 12/31/45
FB Culley 2 Start Storage 01/01/28
AB Brown BAU
2x 100 MW 4 Hour Storage
1x 50 MW 4 Hour Storage
2x Non-IRA Wind

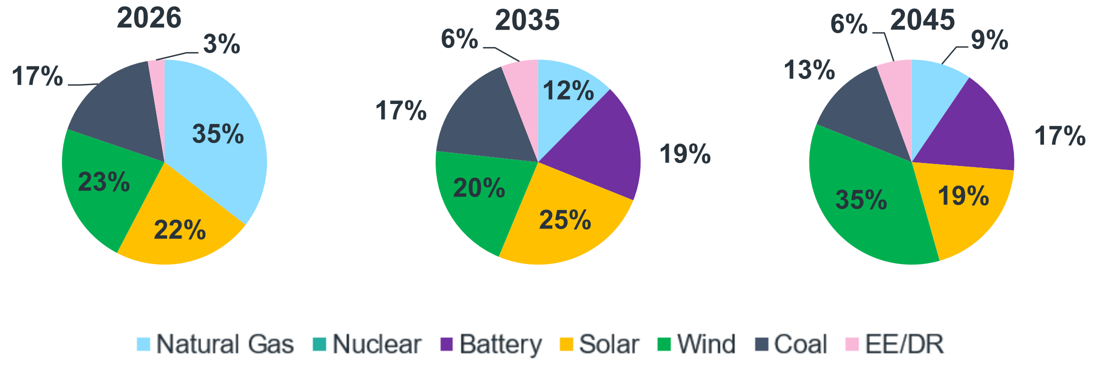
CenterPoint Energy

Balance of Load and Resources

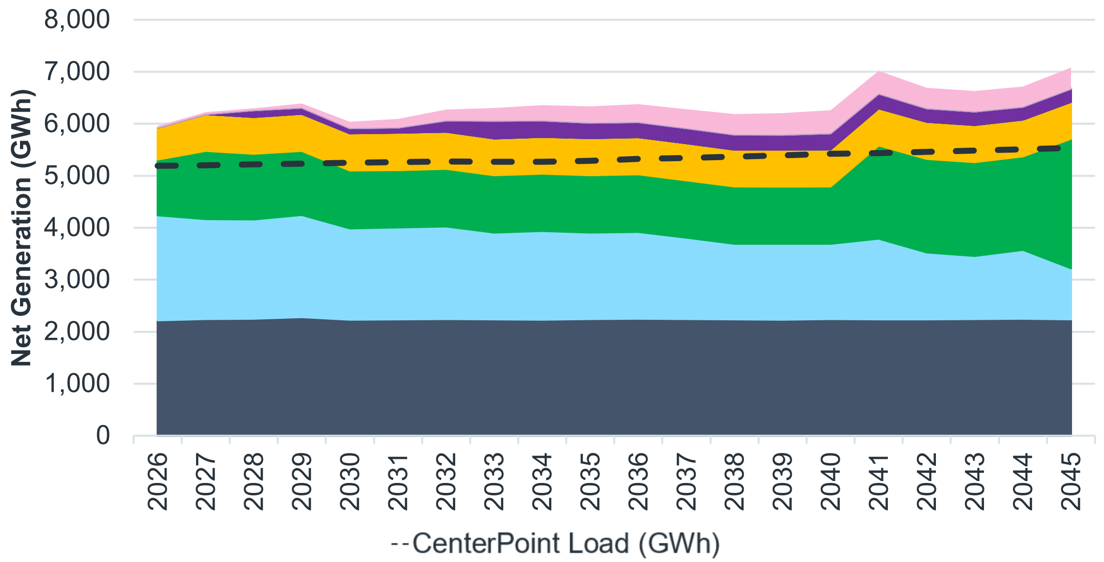




Installed Capacity (MW)



Generation (MWh)

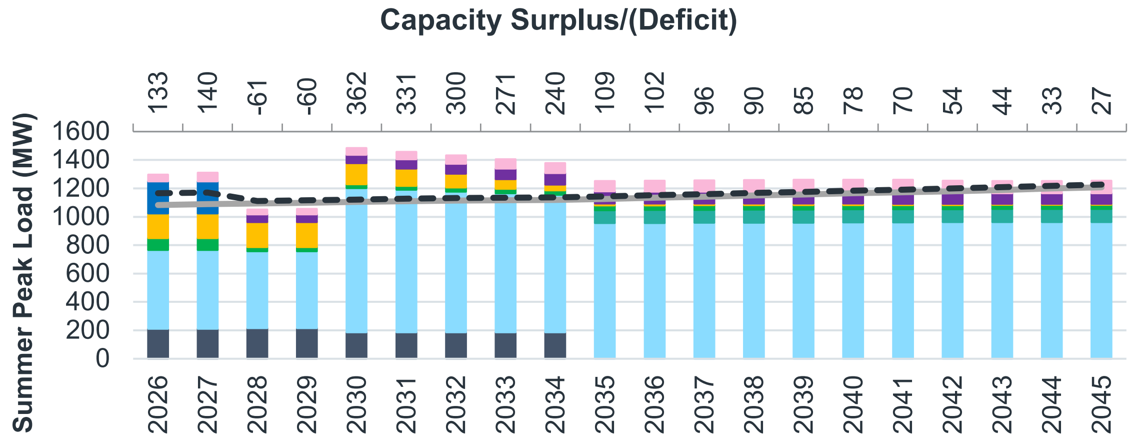


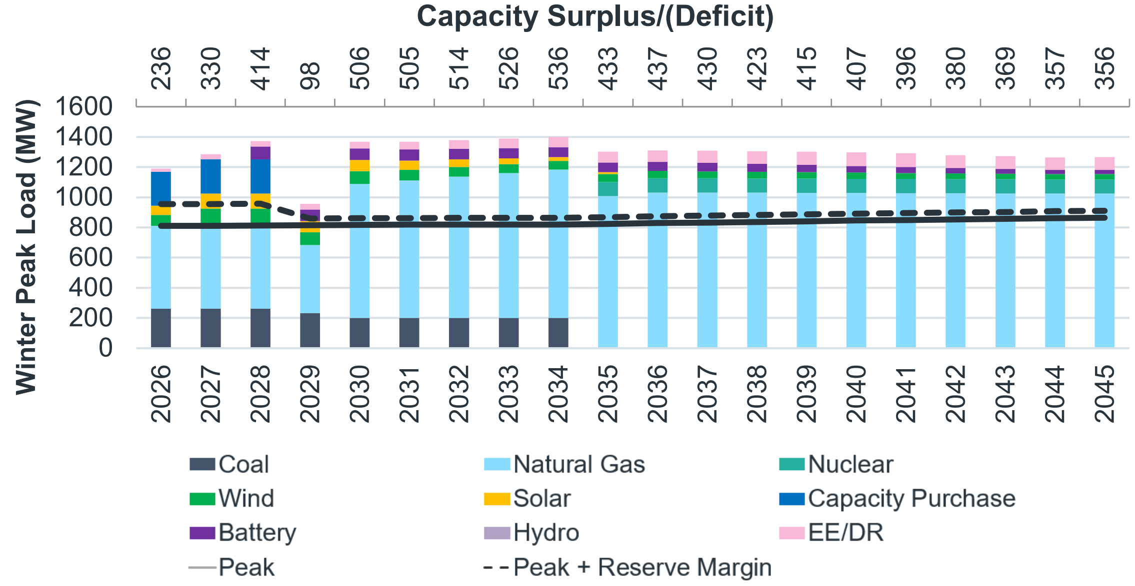
4 - FBC3 on Coal to SMR

Model Selections:

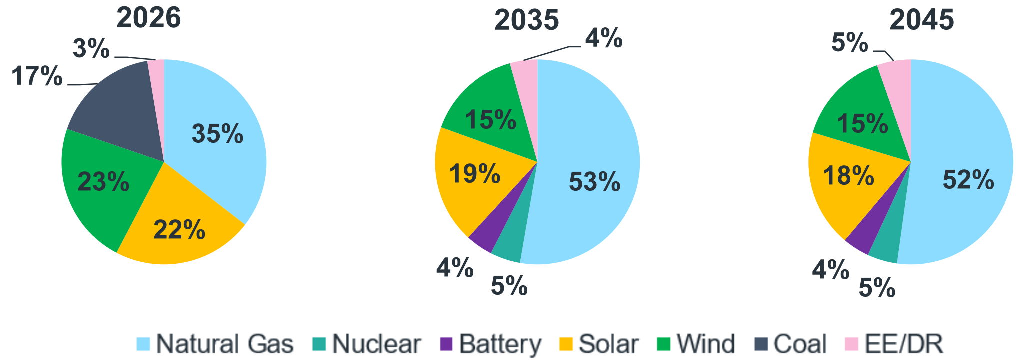
FB Culley 3 Retire on 12/31/34
FB Culley 2 Start Storage 01/01/28
AB Brown 5&6: Start Fired CCGT 01/01/30
1x Nuclear – SMR

Balance of Load and Resources

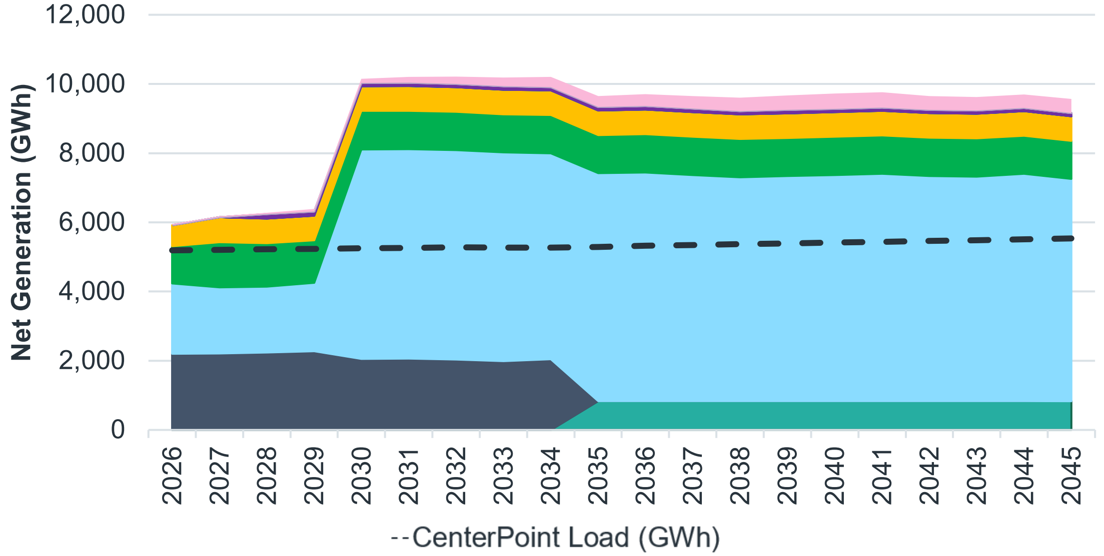




Installed Capacity (MW)



Generation (MWh)



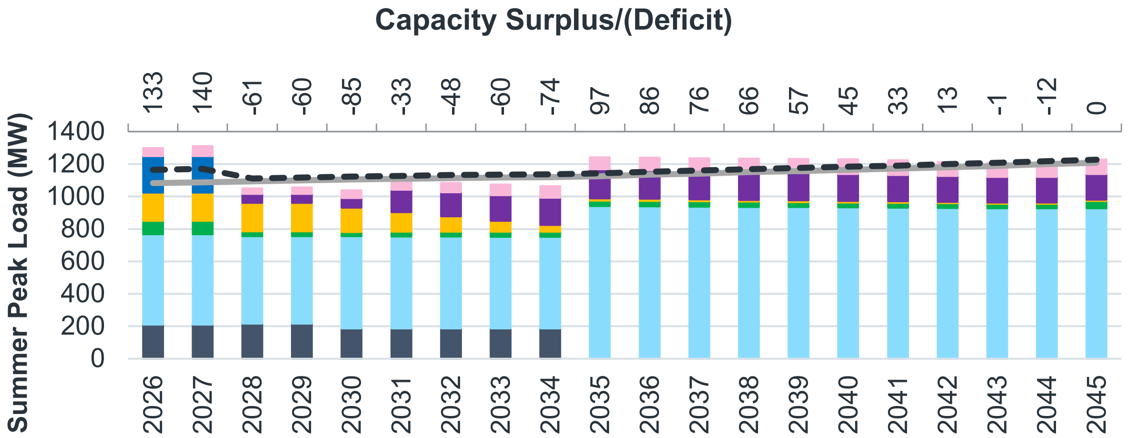
5 - FBC3 Simple Cycle Gas Turbine

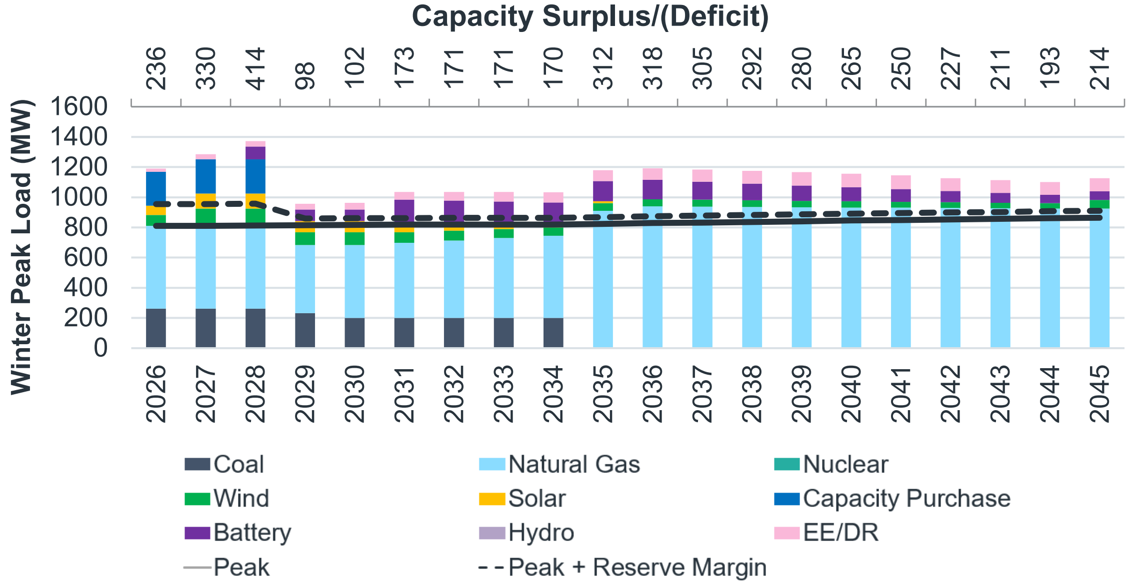
Model Selections:

FB Culley 3 Retire on 12/31/34
FB Culley 2 Start Storage 01/01/28
AB Brown BAU
1x 100 MW 4 Hour Storage
1x J Class SCGT
1x Non-IRA Wind

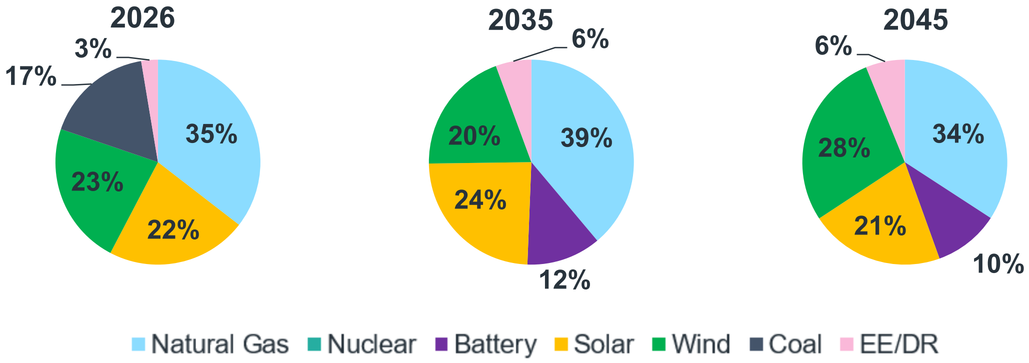
CenterPoint Energy

Balance of Load and Resources

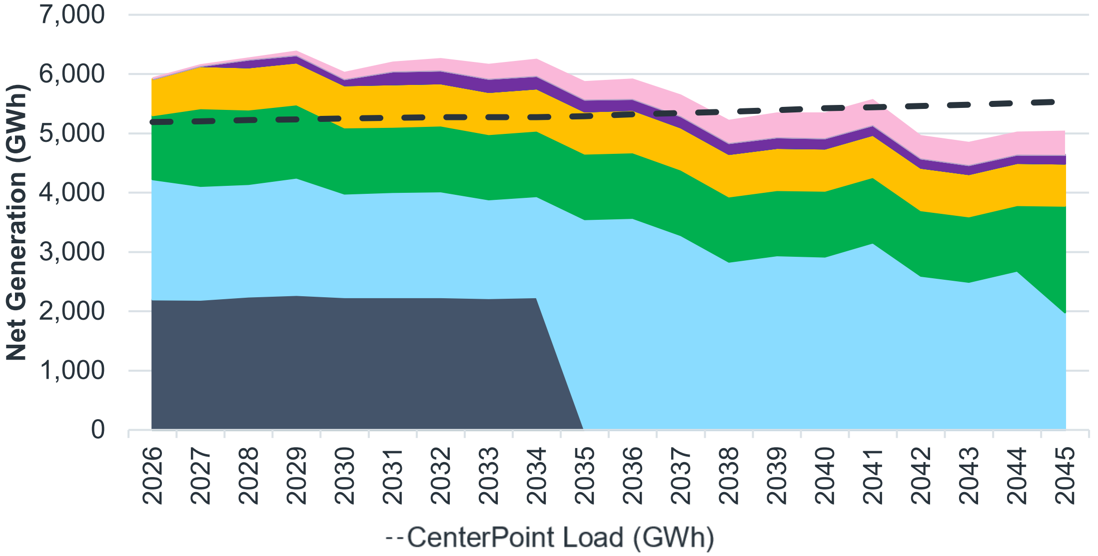




Installed Capacity (MW)



Generation (MWh)



6 - Renewable Heavy Portfolio

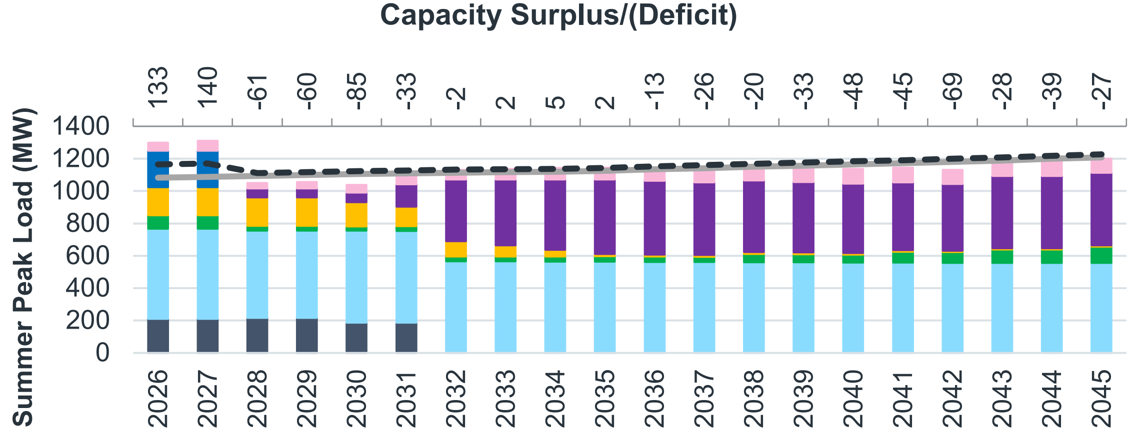
Model Selections:

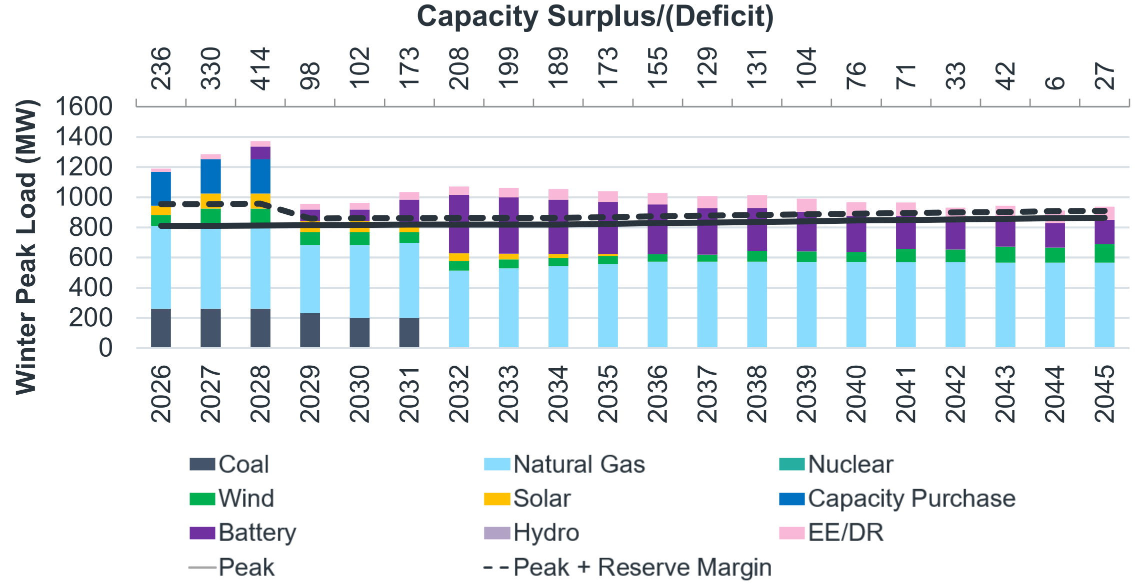
FB Culley 3 Retire on 12/31/31
FB Culley 2 Start Storage 01/01/28
AB Brown BAU

4x 100 MW 4 Hour Storage
4x Non-IRA Wind
1x 50 MW 4 Hour Storage

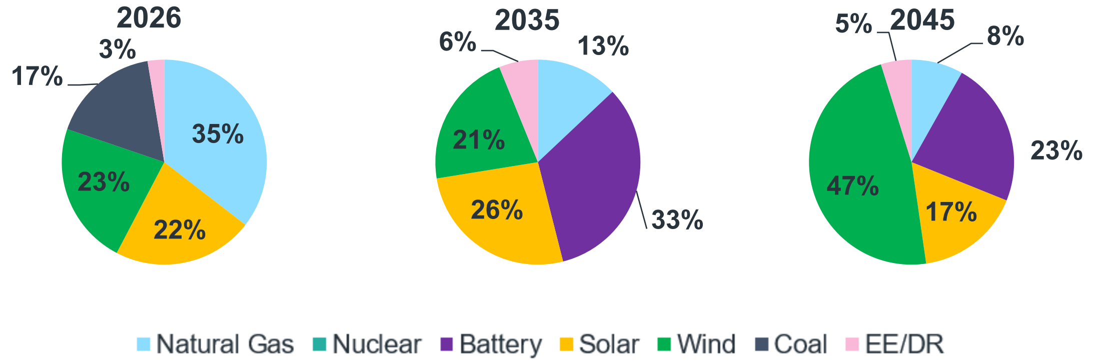
CenterPoint Energy

Balance of Load and Resources

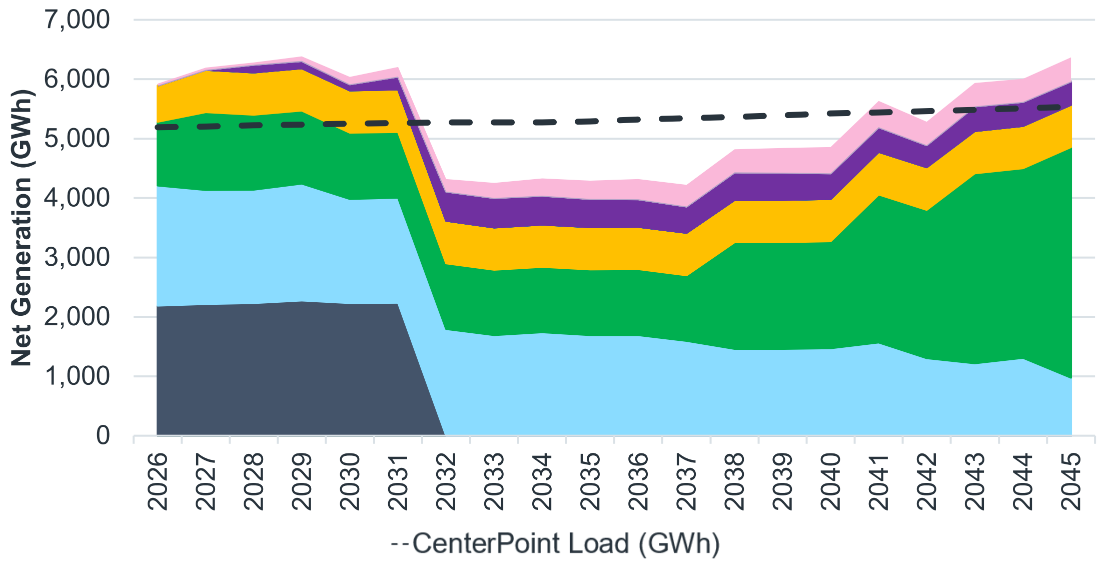




Installed Capacity (MW)



Generation (MWh)



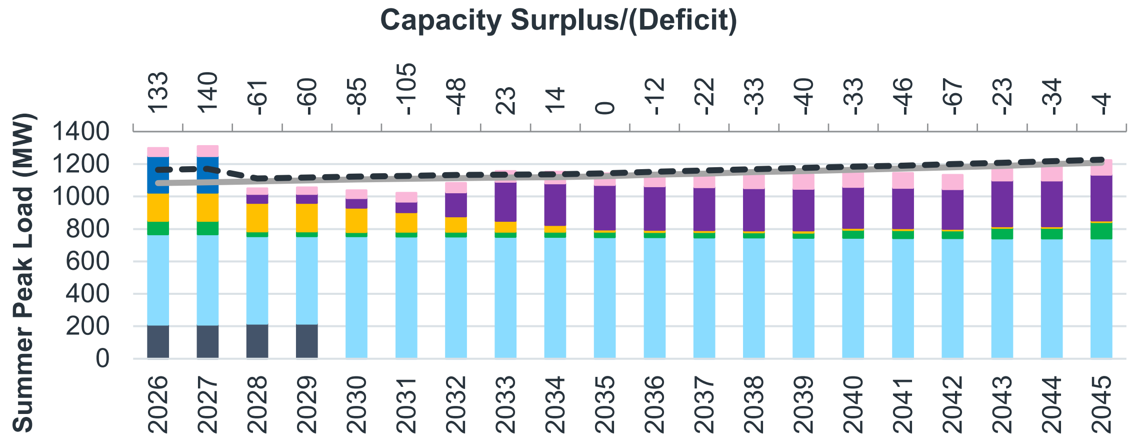
7 - FBC3 Gas Conversion with Renewables

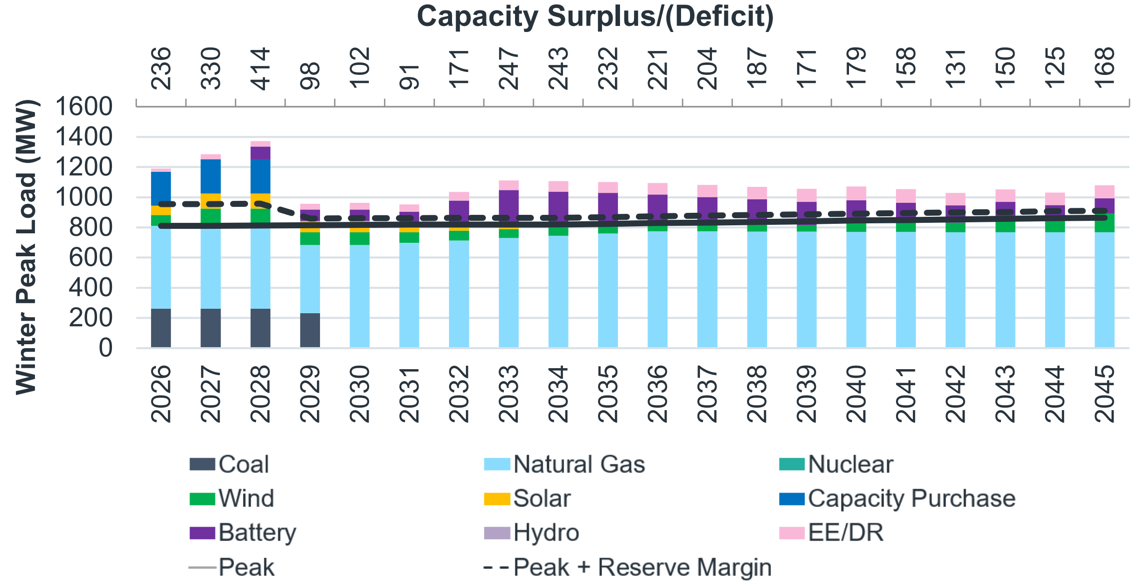
Model Selections:

- FB Culley 3 Conversion in 01/01/30
- FB Culley 2 Start Storage 01/01/28
- AB Brown BAU
- 1x Non-IRA Solar
- 2x 100 MW 4 Hour Storage
- 4x Non-IRA Wind
- 1x 50 MW 4 Hour Storage

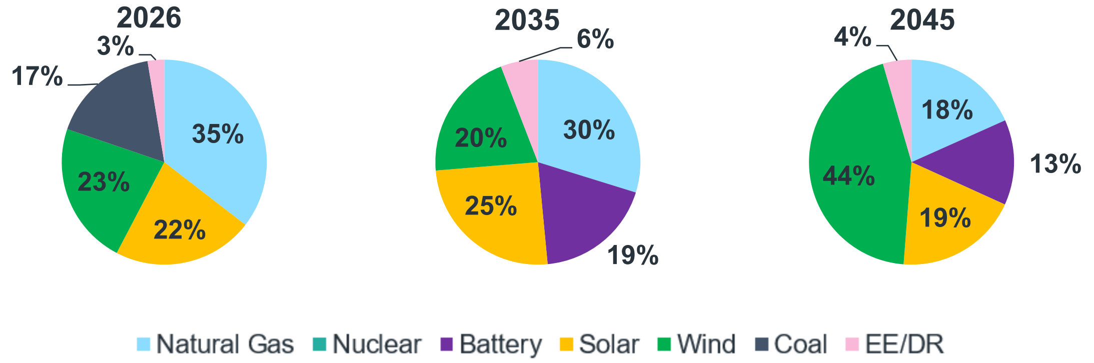
CenterPoint Energy

Balance of Load and Resources

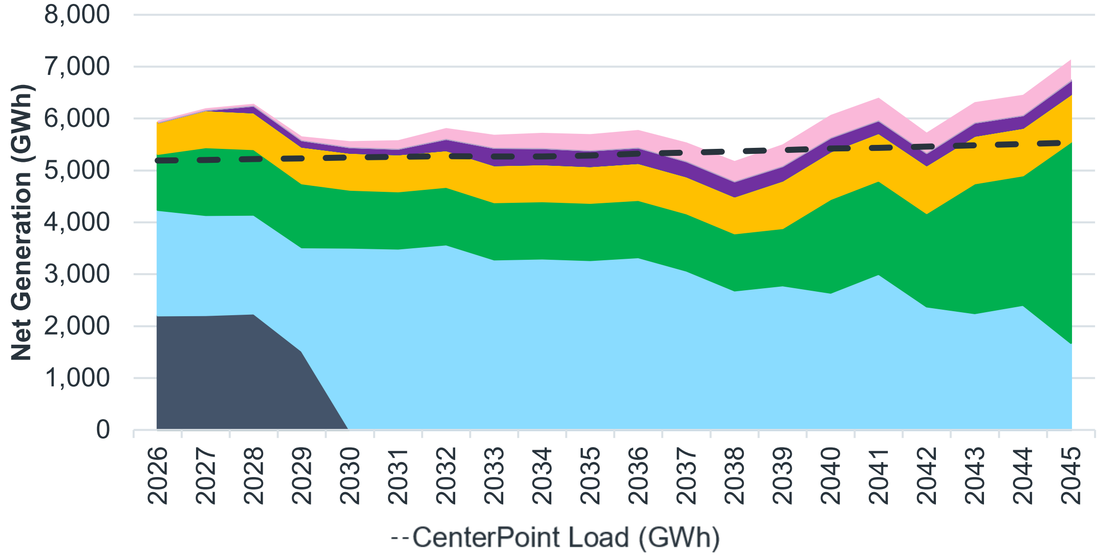




Installed Capacity (MW)



Generation (MWh)



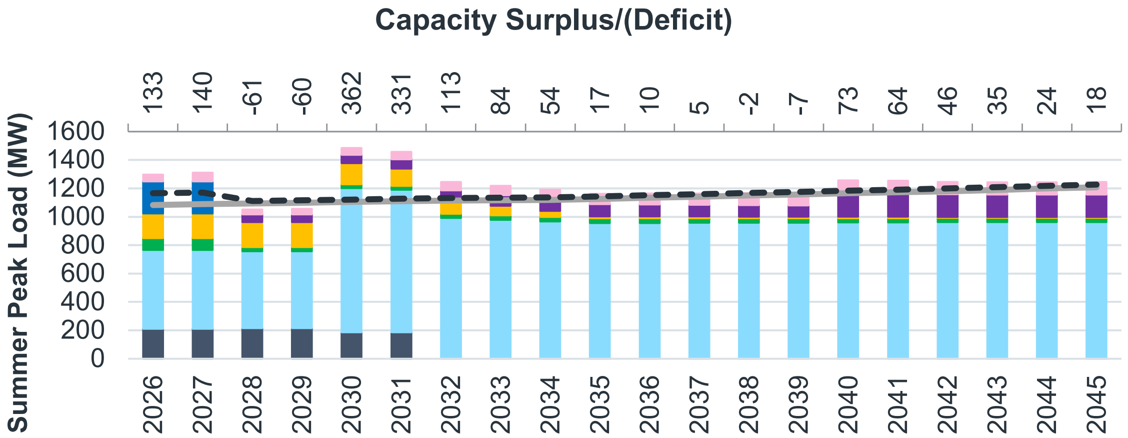
8 - Low Reg Approach

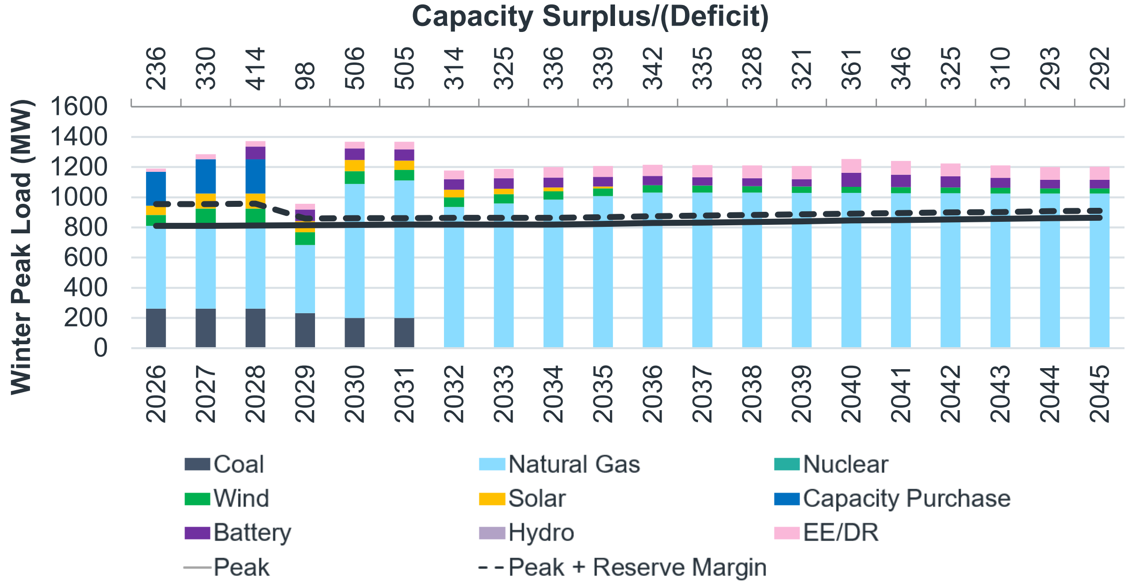
Model Selections:

FB Culley 3 Retire on 12/31/31
FB Culley 2 Start Storage 01/01/28
AB Brown 5&6: Start Unfired CCGT 01/01/30
1x 100 MW Storage

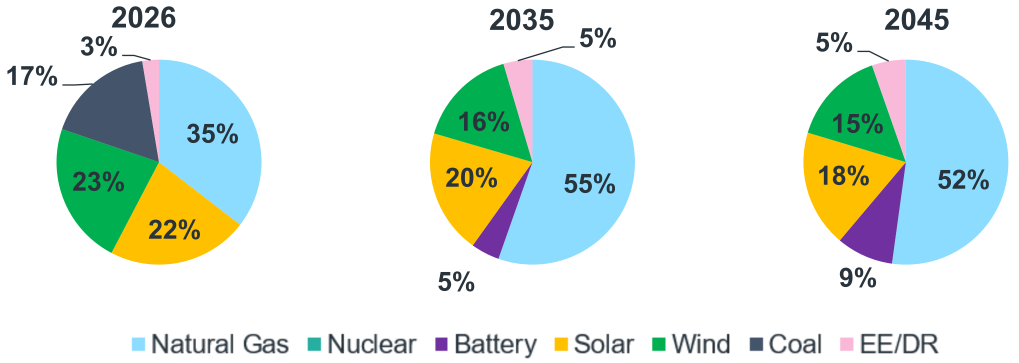
CenterPoint Energy

Balance of Load and Resources

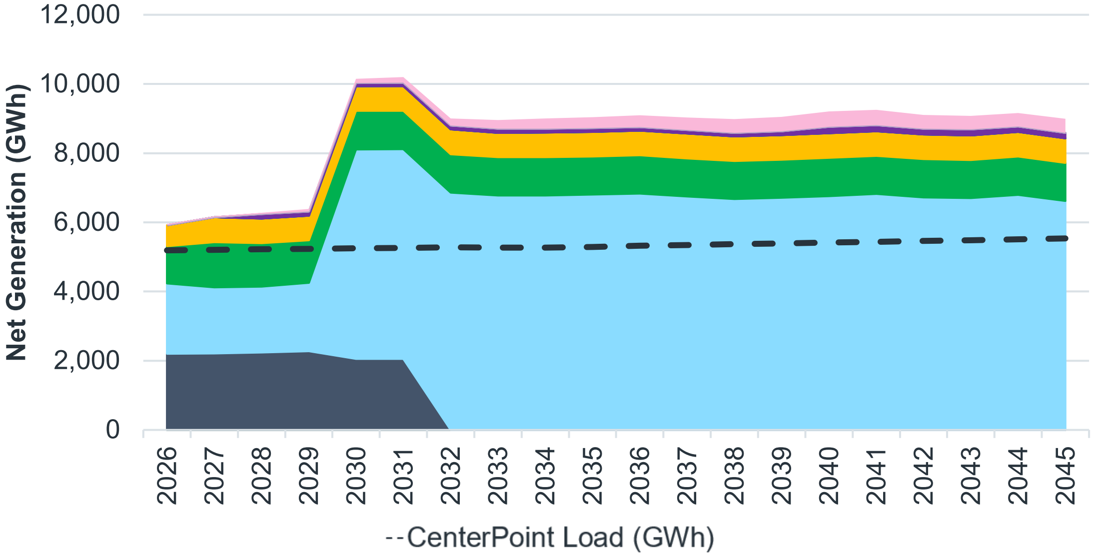




Installed Capacity (MW)



Generation (MWh)



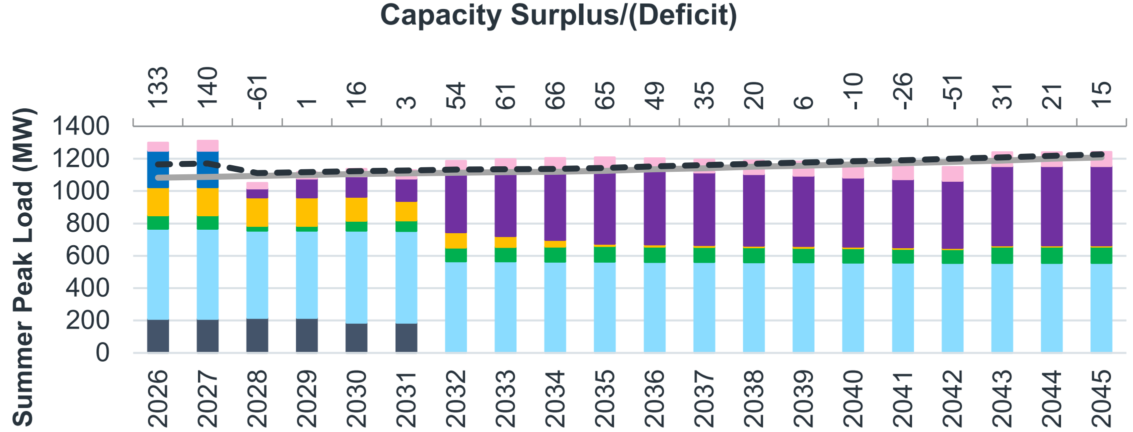
9 - High Reg Approach

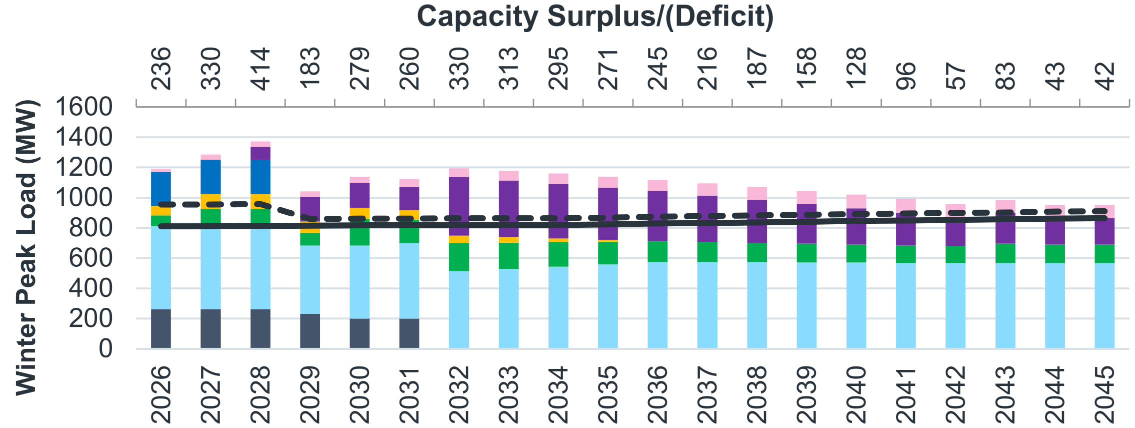
Model Selections:

FB Culley 3 Retire on 12/31/31
FB Culley 2 Start Storage 01/01/28
AB Brown BAU
5x 100 MW 4 Hour Storage
2x Non-IRA Wind
2x 200 MW Wind

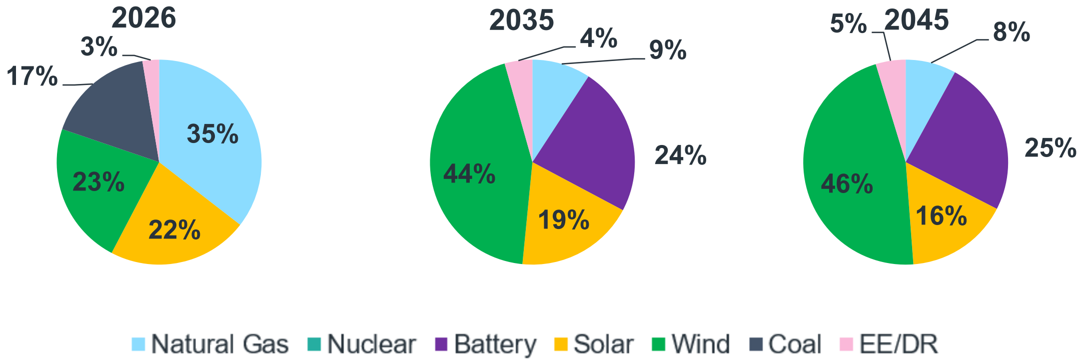
CenterPoint Energy

Balance of Load and Resources

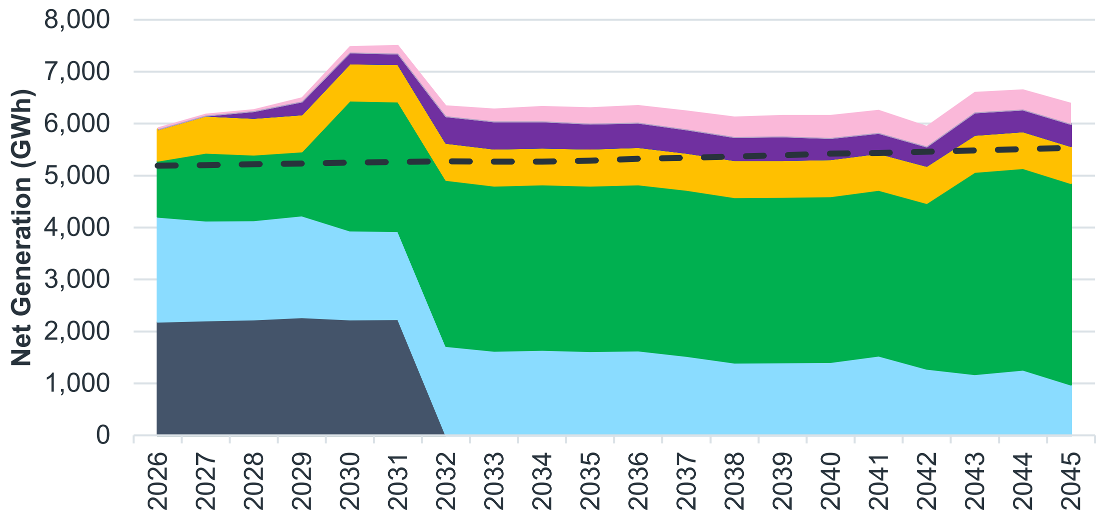




Installed Capacity (MW)



Generation (MWh)



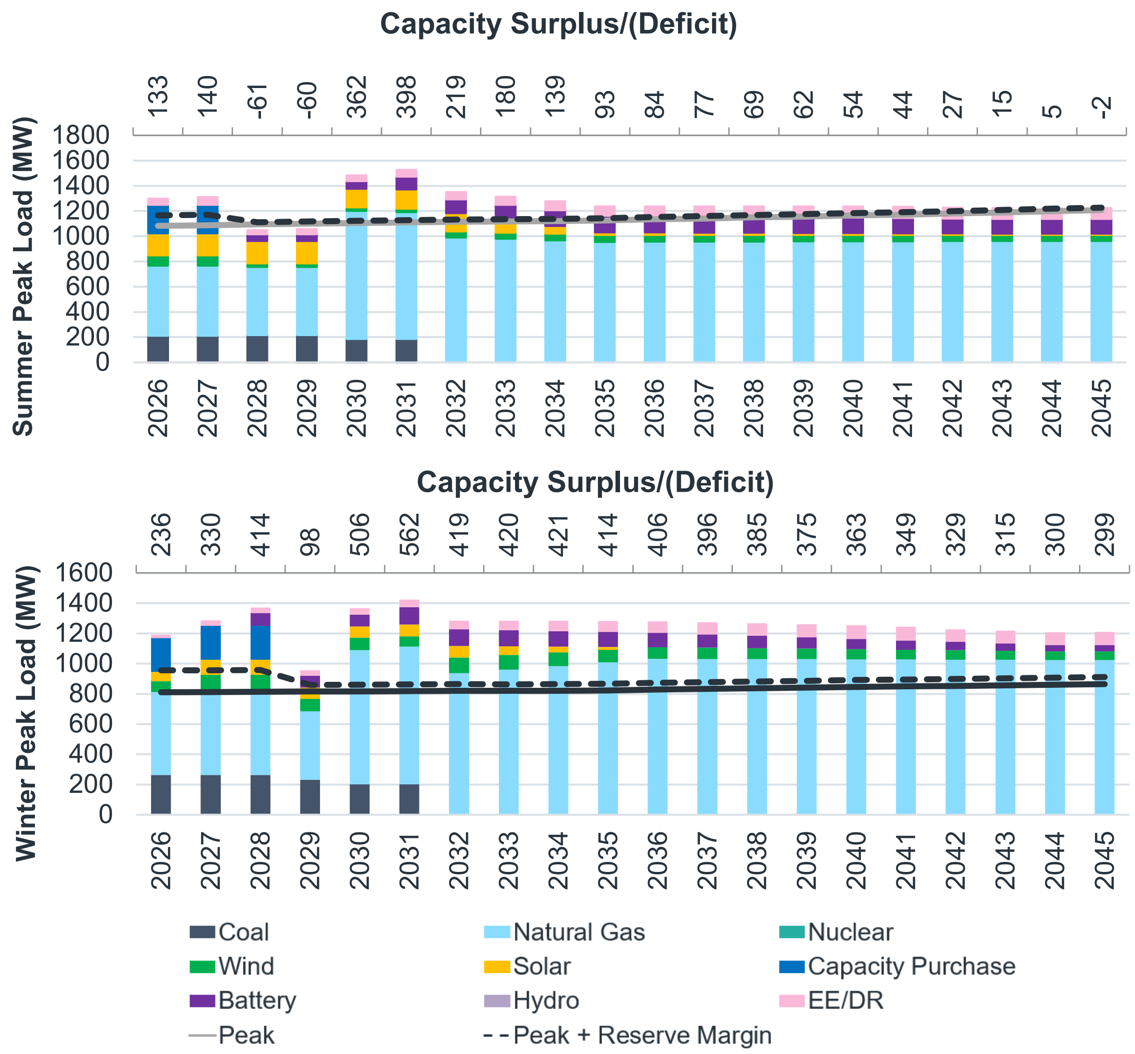
10 - Alt High Reg Approach

Model Selections:

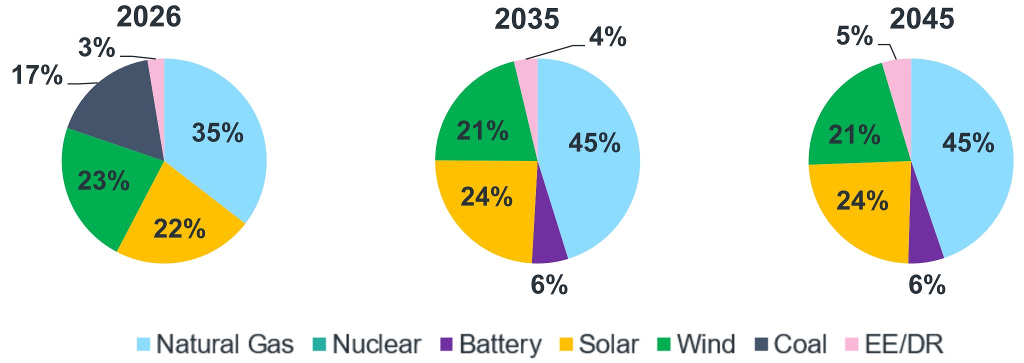
FB Culley 3 Retire on 12/31/31
FB Culley 2 Start Storage 01/01/28
AB Brown 5&6: Start Fired CCGT 01/01/30
1x Non-IRA Solar + Storage
1x Non-IRA Solar
1x Non-IRA Wind

CenterPoint Energy

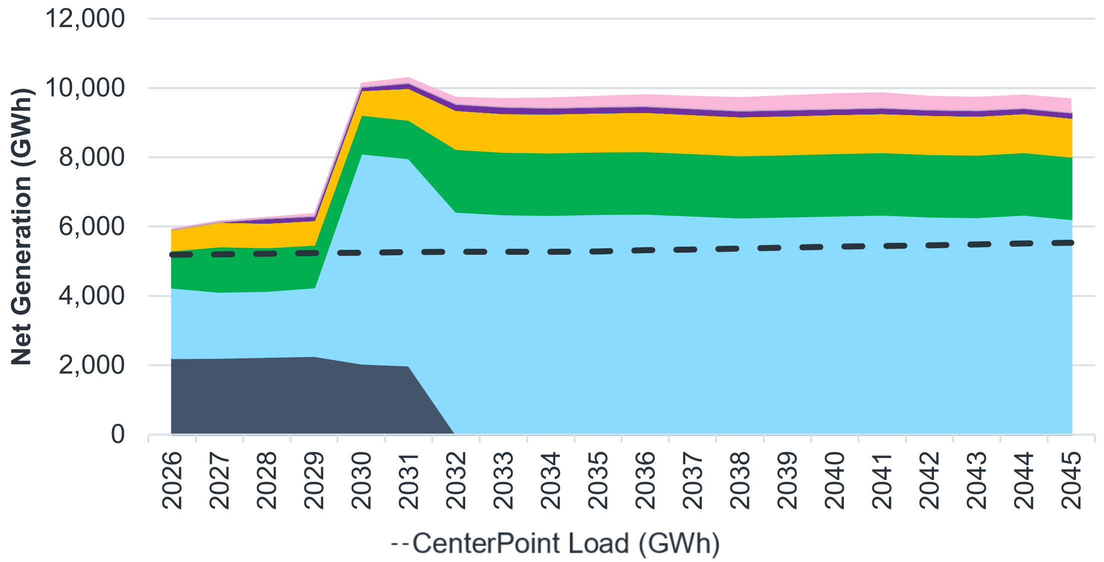
Balance of Load and Resources



Installed Capacity (MW)



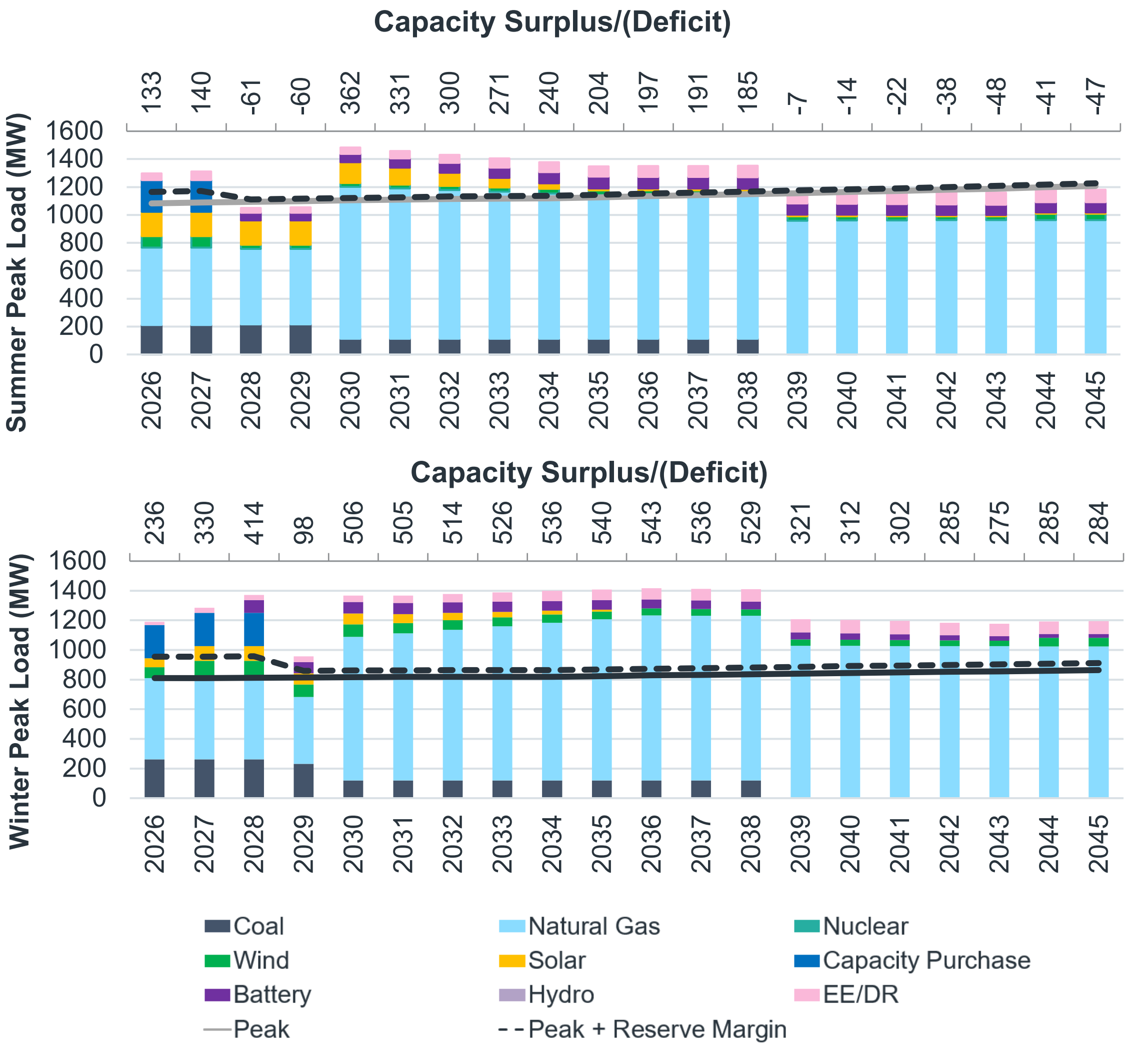
Generation (MWh)



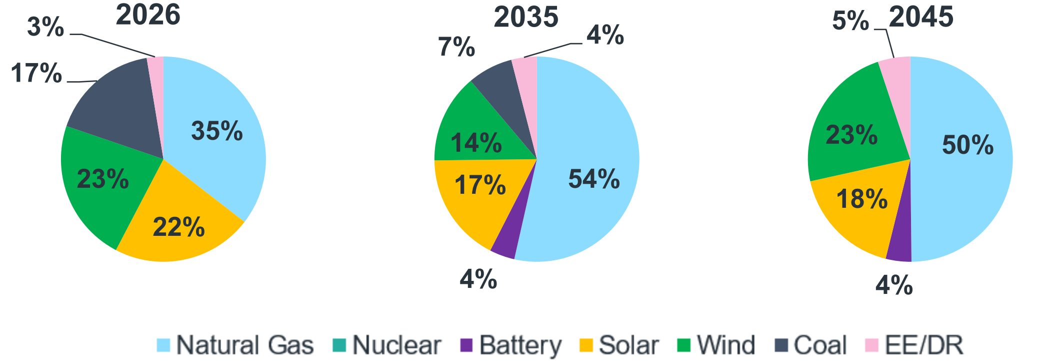
11 - FBC3 Co-Fire 2030

Model Selections:
FB Culley 3 Co-Fire on 01/01/30
FB Culley 2 Start Storage 01/01/28
AB Brown 5&6: Start Fired CCGT 01/01/30
1x Non-IRA Wind

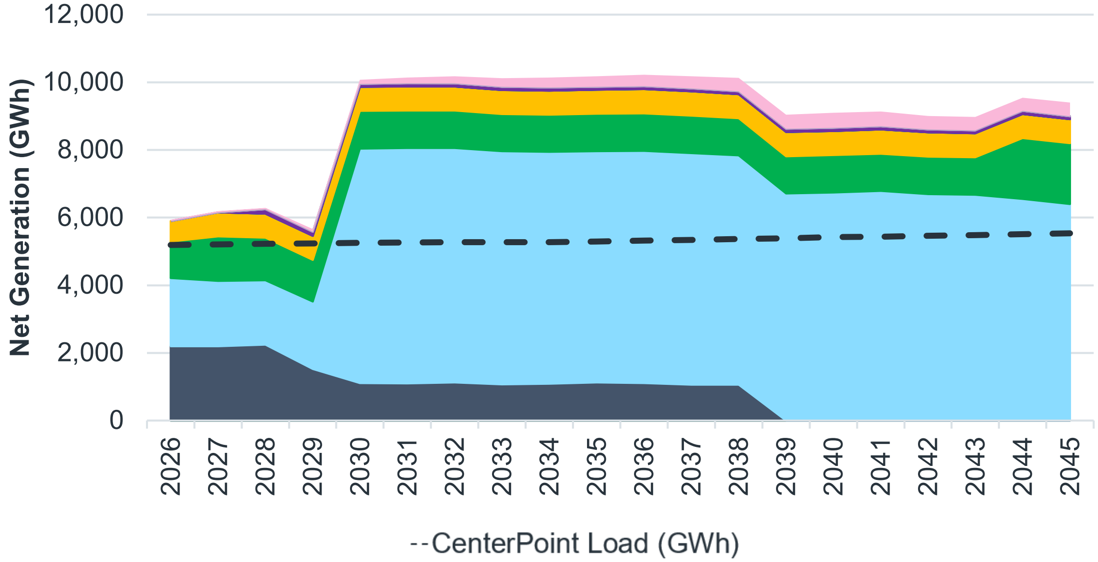
Balance of Load and Resources



Installed Capacity (MW)



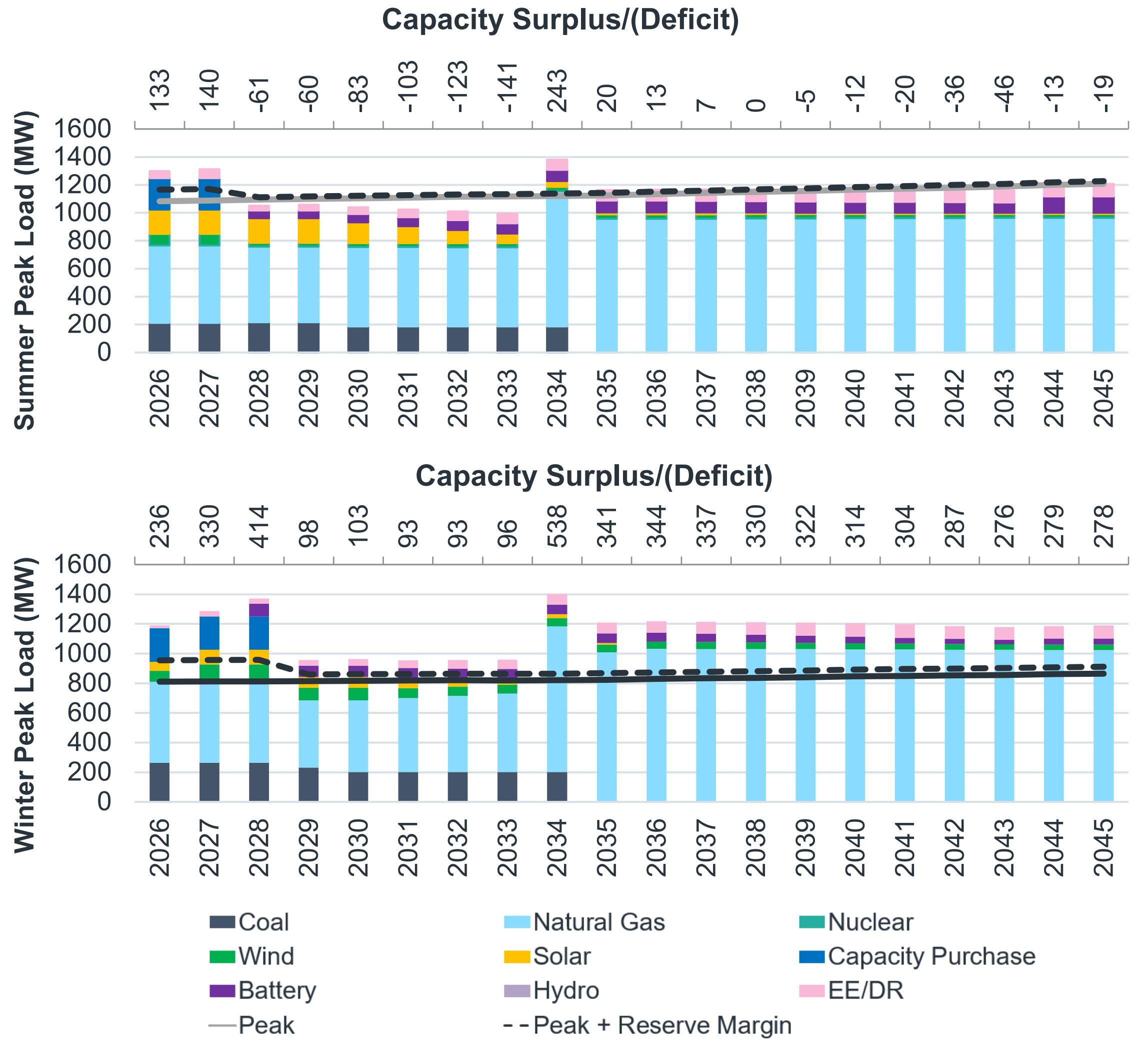
Generation (MWh)



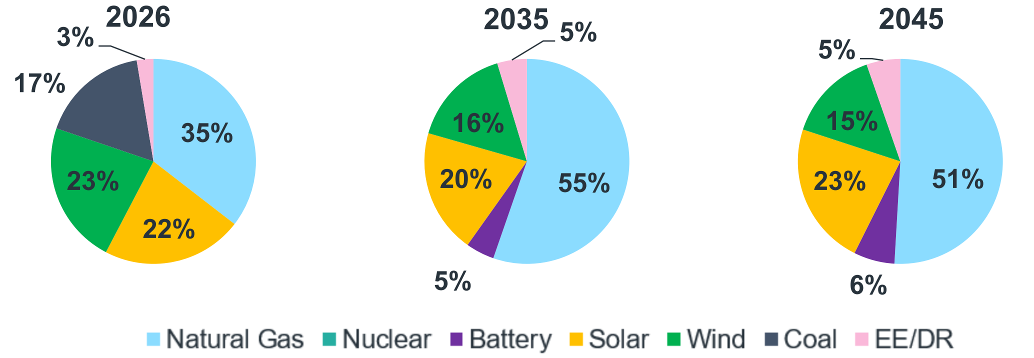
12 – Delayed Reference Case

Model Selections:
FB Culley 3 Retire on 12/31/34
FB Culley 2 Start Storage 01/01/28
AB Brown 5&6: Start Fired CCGT 01/01/34
1x Non-IRA Solar + Storage

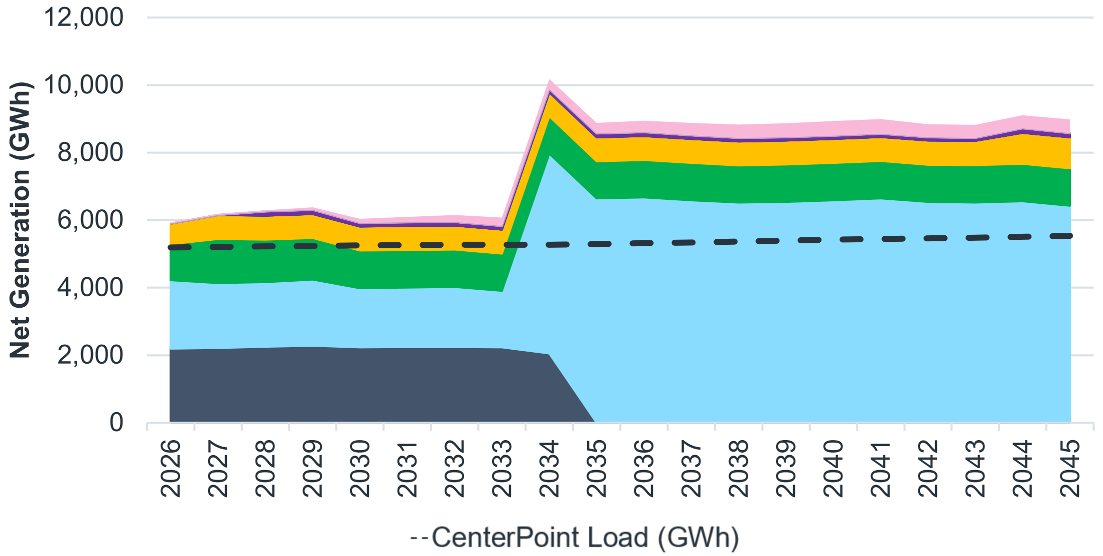
Balance of Load and Resources



Installed Capacity (MW)



Generation (MWh)



Q&A

CenterPoint Energy Indiana South Integrated Resource Plan

Public Stakeholder Meeting 3

On break – we will return at 1:25 CDT

Probabilistic Modeling Update

Brian Despard
Senior Project Manager, Resource Planning & Market Assessments, 1898 & Co.

Approach Overview

Objective: Utilize stochastic analysis around key IRP inputs to measure uncertainty around power supply portfolio costs.

Two Purposes:

1. Evaluate results of stochastic inputs analysis to inform on what inputs to use for various scenarios; and
2. Stochastically develop 200 “families” of correlated inputs to run through production cost modeling – result will be probability distribution around power supply costs

Production Cost Modeling Stochastics Process Overview

CenterPoint Energy

Typical Deterministic Approach

Inputs – Expected Values → PCM Model → Outputs – Expected Values

Portfolio NPV = X

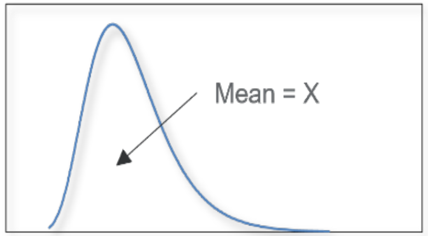
Stochastic Approach

Input Set #1 →
Input Set #2 →
Input Set #3 →
. . .
Input Set #200 →

PCM Model Run 200 times

→ Output Set #1
→ Output Set #2
→ Output Set #3
. . .
→ Output Set #200

Portfolio NPV =



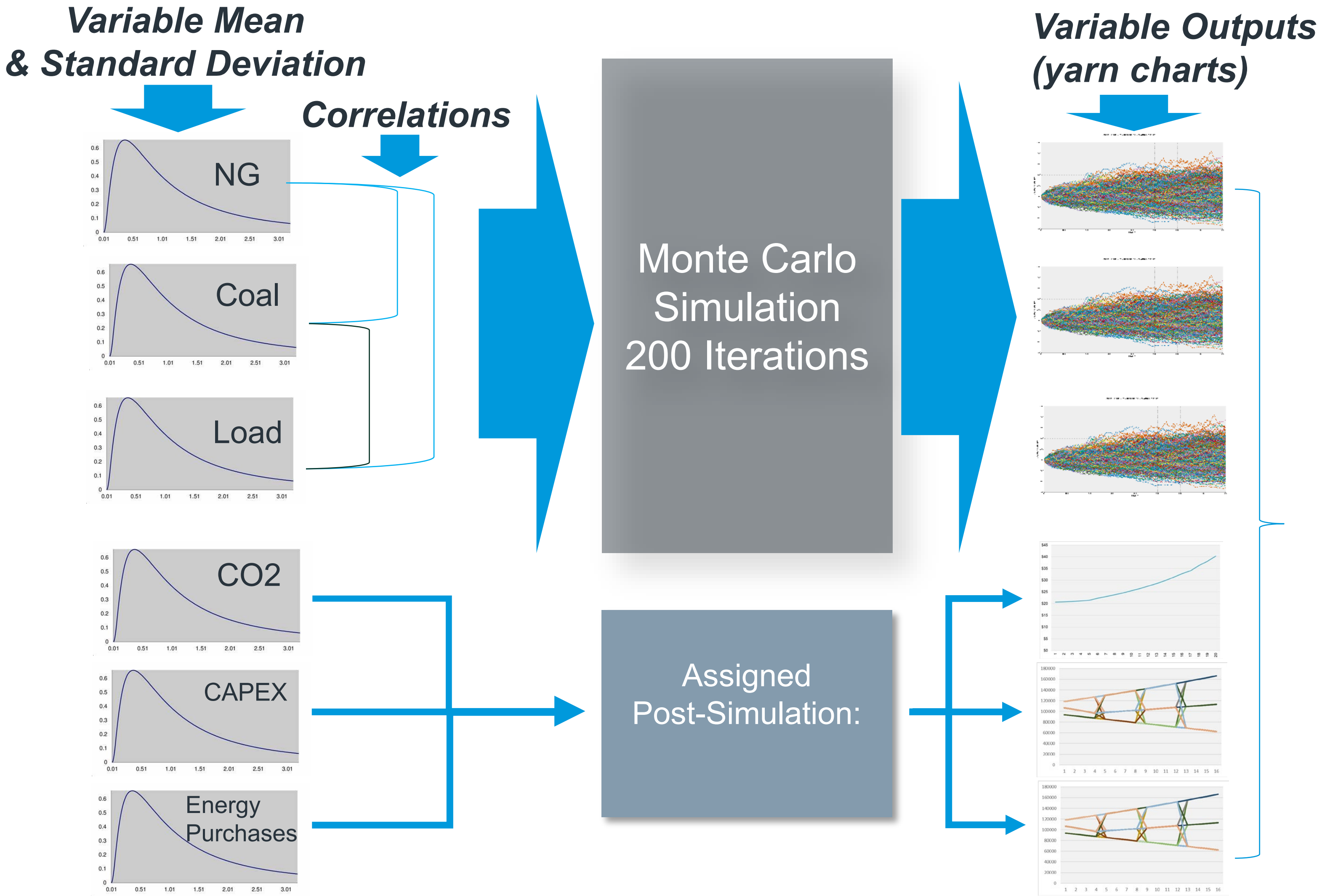
Uncertainty Variables

- Natural Gas Prices
- Coal Prices
- Peak Demand
- CO_2 Costs
- Capital Costs
- Energy Purchase & Sales

Stochastics Process Overview

1. Develop uncertainty variable parameters by month – expected value, volatility, correlations
2. Input variables into Monte Carlo simulation model
3. Run simulations with uncertainty variables being the output
4. Evaluate output implied distributions for each variable
5. Identify 200 sets of uncertainty variable "families"

Stochastics Process Overview (Cont.)



200 families of inputs where each iteration (family) reflects variable levels and paths that are tied together by correlations

Graphic and charts for illustrative purposes only

Stochastically Developed Uncertainty

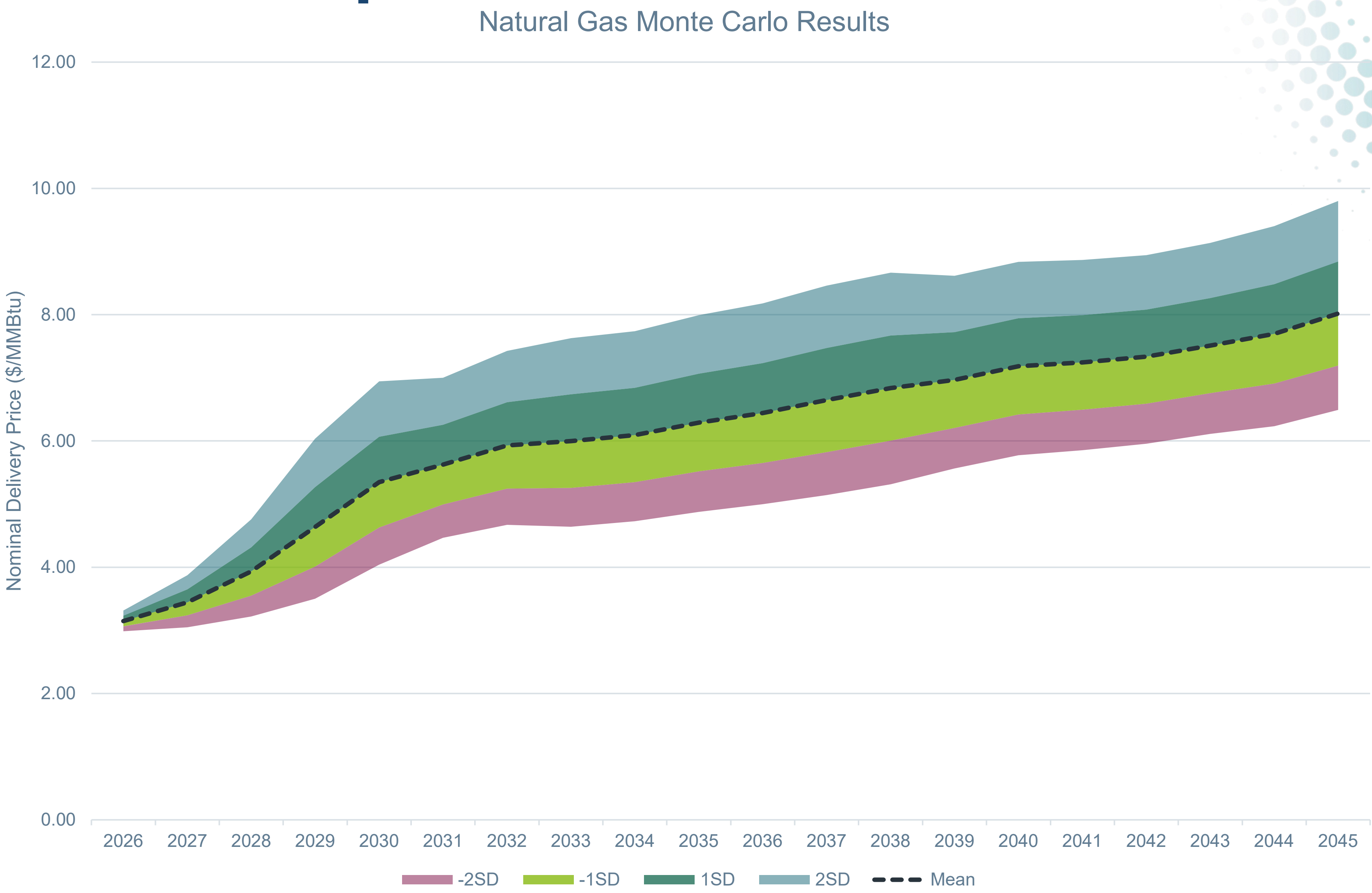
Expected Values (mean values): Reference case forecasts for each variable

Volatilities (standard deviations):

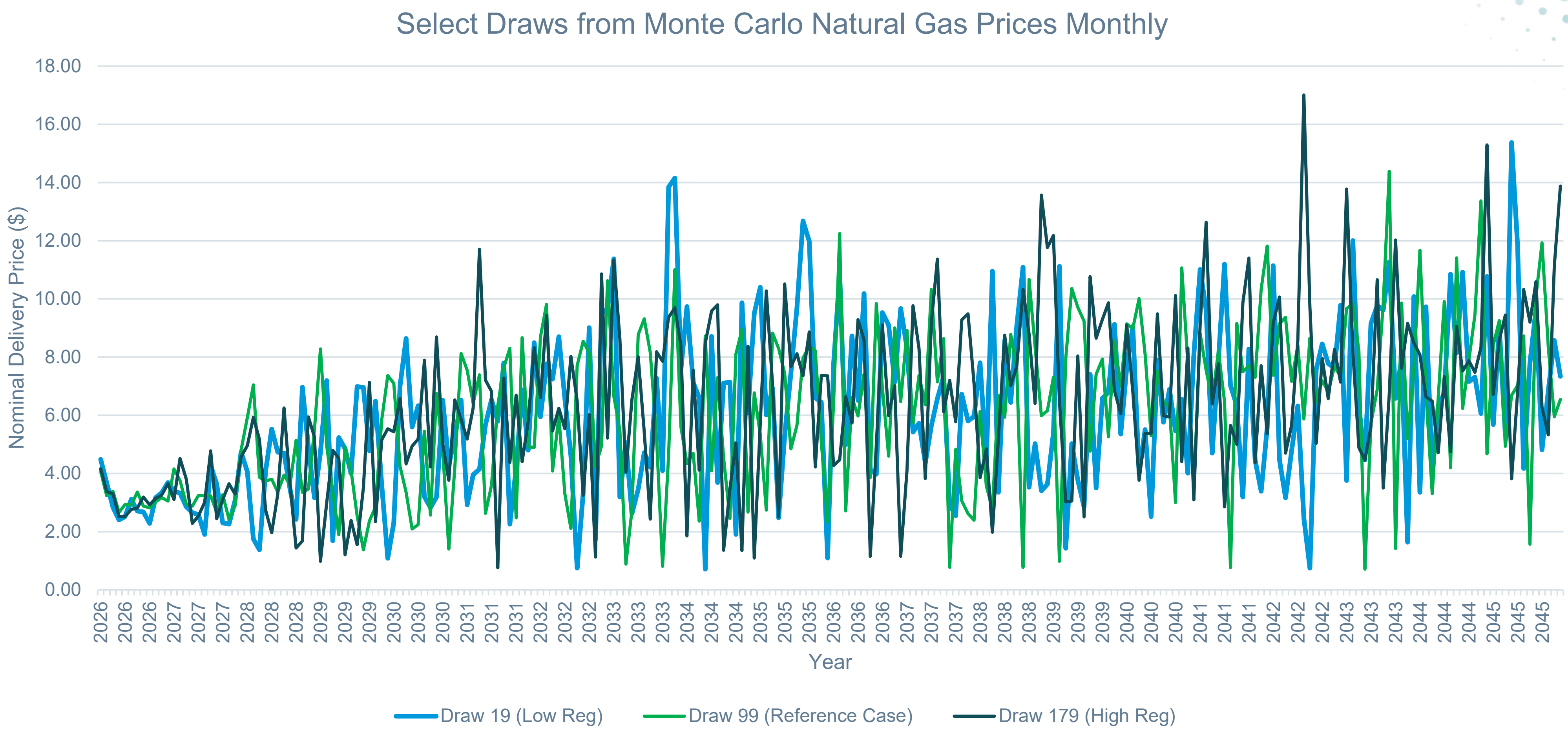
- **Natural gas pricing**: From base/high/low ABB forecast
- **Coal pricing**: From EIA's 2025 Annual Energy Outlook
- **Demand**: From various Itron demand scenarios

For **CO2 Costs, Capital Costs,** & **Energy Purchases**, the variations are assigned post-simulation. The stochastic process for **CO2 Costs and Capital Costs** are explained in detail on the next slides.

Natural Gas Example



Natural Gas Example (Continued)



CO_2 Methodology

- A CO_2 tax will be implemented only for the high regulatory scenario
- For the risk analysis, the following process is used to create variation in the CO_2 forecast
  - Assigned 200 EnCompass draws based on:
    - First 150 draws use Reference Case forecast ($0/Ton)
    - Last 50 draws implement a carbon tax

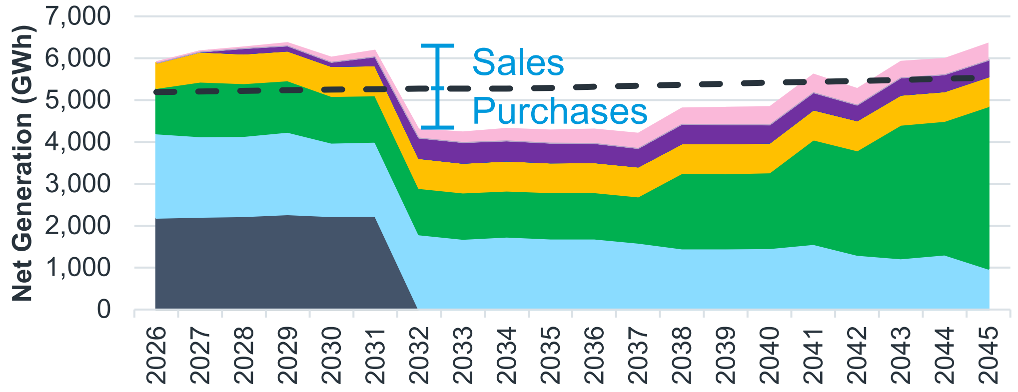
Capital Cost Methodology

- For the risk analysis, the following process is used to create variation in the capital cost forecast
  - Assigned 200 EnCompass draws based on:
    - First 50 draws use the Low forecast
    - Next 100 draws use the Reference Case forecast
    - Last 50 draws use the High forecast
  - Every 4 years, draws randomly reshuffles and the above assignments are made
  - The Low, Reference, and High forecasts align with the capital cost curves discussed in Stakeholder Meeting 2.

Energy Purchases/Sales Stochastics

- In the production cost model, the purchasing or selling of energy with the MISO market lowers portfolio costs, for the benefit of customers.
- Initial modeling approach allowed for a constraint of 660 MW energy sales and purchases limit, informed by transmission transfer capability.

Portfolio 6 Generation with 660 MW Energy Purchases & Sales Limit



- Through the risk analysis the limit of energy purchases or sales allowed on an hourly basis is tested. Across the 200 draws:
  - 1/3 assigned a 165 MW energy purchases & sales limit
  - 1/3 assigned a 330 MW energy purchases & sales limit
  - 1/3 assigned a 660 MW energy purchases & sales limit

Uncertainty Variable Parameters Expected Correlations

Variable	Demand	NG Price	Coal Price	CO_2 Cost	Dev CAPEX
Demand		Slightly Positive	Zero	Zero	Zero
NG Price	Slightly Positive		Slightly Positive	Negative	Positive
Coal Price	Zero	Slightly Positive		Negative	Zero
CO_2 Cost	Zero	Negative	Negative		Positive
Dev CAPEX	Zero	Positive	Zero	Positive	

Q&A

Early Sensitivity Results

Drew Burczyk
Project Manager, Resource Planning & Market Assessments, 1898 & Co.

Sensitivity Modeling

- **Sensitivity:** a single variable that drives results
  - Sensitivities may be used to change only one variable at a time to understand the impact of that single risk factor
- Early sensitivity analysis:
  - Alternate low regulatory sensitivity – *based on stakeholder input, using the low regulatory scenario but with a lower load forecast*
  - Large load addition – *varies only the load forecast*
  - Distributed solar incentive – *varies the adoption rate of rooftop solar (results in lower load forecast) to examine tradeoff of additional distributed solar incentive on total portfolio cost*
  - Energy sales sensitivity – *varies the energy sales limit between CEI South and MISO*

Alternate Low Reg Sensitivity

- Based on stakeholder feedback, we explored a low regulatory worldview with lower load growth
- Since only a single variable is altered, this alternate low regulatory case was explored as a sensitivity tied to the low regulatory scenario

Scenario	Environmental Policy	Economic Policy	CO_2 Regulation	Load	Natural Gas Price	Coal Price	Generation Capital Costs	EE Costs
Low Regulatory	No Clean Air Act 111 (b & d)	No IRA	No additional CO_2 regulation	Higher	Lower	Lower	Higher	Lower
Alternate Low Regulatory	No Clean Air Act 111 (b & d)	No IRA	No additional CO_2 regulation	$\boxed{\textbf{Lower}}$	Lower	Lower	Higher	Lower

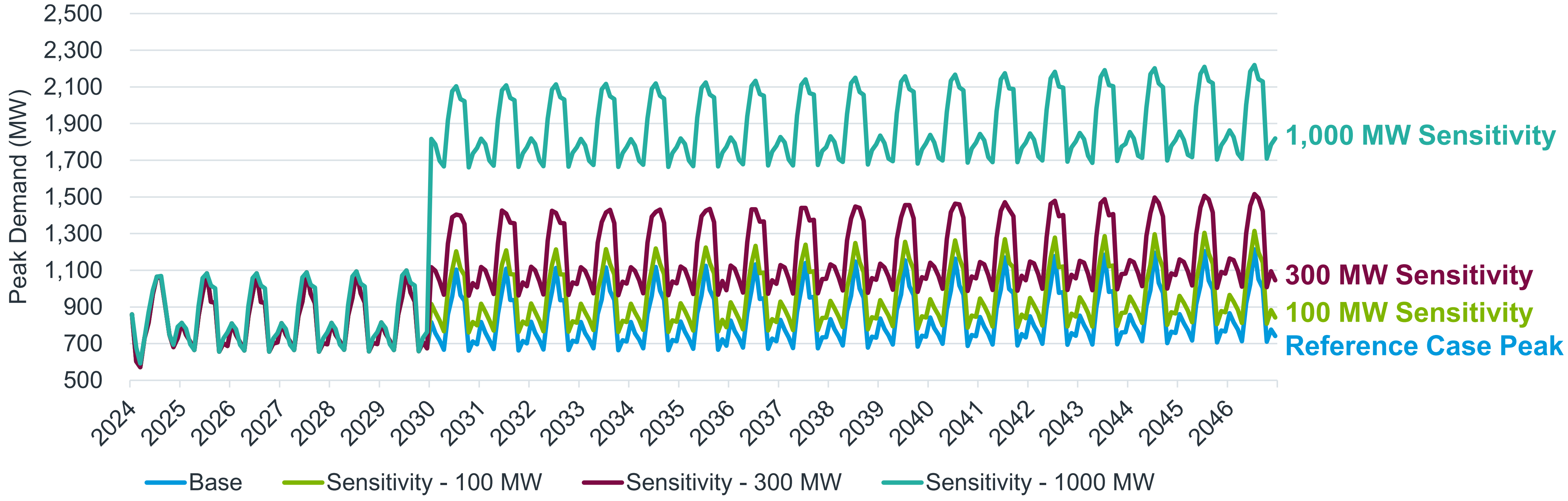
Alternate Low Reg Sensitivity

Year	Low Reg Scenario	Alternate Low Reg Sensitivity
2025	+1 AB Brown 5 & 6 Gas Turbine (464 MW) +1 Posey Solar (191 MW) +1 Salt Creek (170 MW)	+1 AB Brown 5 & 6 Gas Turbine (464 MW) +1 Posey Solar (191 MW) +1 Salt Creek (170 MW)
2026	+1 Wheatland Solar (150 MW) +1 Galesburg Wind (147 MW)	+1 Wheatland Solar (150 MW) +1 Galesburg Wind (147 MW)
2028	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)
2030	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Fired CCGT 2030 (912 MW)
2031		
2032	-1 FB Culley:3 Retire 2032 (-270 MW)	-1 FB Culley:3 Retire 2032 (-270 MW)
2040	+1 100 MW 4 Hour Storage (100 MW)	
2043		
2044		
2045		

- The alternate low reg sensitivity simulation produced a similar portfolio to the low reg scenario
- The resource mix resulting from the alternate low reg is broadly captured by the low reg and reference case portfolios
- A distinct alternate low reg portfolio would be redundant

Large Load Sensitivity

- Analysis of 3 load sizes (100 MW, 300 MW, 1000 MW) representative of any new large load user in CEI South territory
  - New growth, expansion and retention of current customers
  - Not limited to data center customers



Large Load Sensitivity
Reference Case Portfolio Performance

Year	Reference Portfolio	100 MW Load Addition	300 MW Load Addition	1,000 MW Load Addition
2025	+1 AB Brown 5 & 6 Gas Turbine (464 MW) +1 Posey Solar (191 MW) +1 Salt Creek (170 MW)			
2026	+1 Wheatland Solar (150 MW) +1 Galesburg Wind (147 MW)			
2028	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)	+1 FBC2 Storage (90 MW)	+2 100 MW Solar PV (200 MW) +1 FBC2 Storage (90 MW)
2029				+2 100 MW Solar PV (200 MW)
2030	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 AB Brown7: Fired CCGT 2030 (912 MW)	+1 100 MW 4 Hour Storage (100 MW) +1 AB Brown7: Fired CCGT 2030 (912 MW)
2031				+2 100 MW 4 Hour Storage (200 MW)
2032	-1 FB Culley:3 Retire 2032 (-270 MW)	-1 FB Culley:3 Retire 2032 (-270 MW)		
2033		+1 100 MW 4 Hour Storage (100 MW)		+1 100 MW 4 Hour Storage (100 MW)
2038				+1 1x1 J Class Unfired CCGT (568 MW)
2040	+1 100 MW 4 Hour Storage (100 MW)			
2043				
2044				
2045		+1 Non IRA Wind (Battery) (100 MW) +1 Non IRA Wind (Hybrid) (200 MW)	+1 FB Culley:3 thru 2045 (270 MW) +1 J Class SCGT (385 MW)	+1 FB Culley:3 thru 2045 (270 MW) +1 J Class SCGT (385 MW)

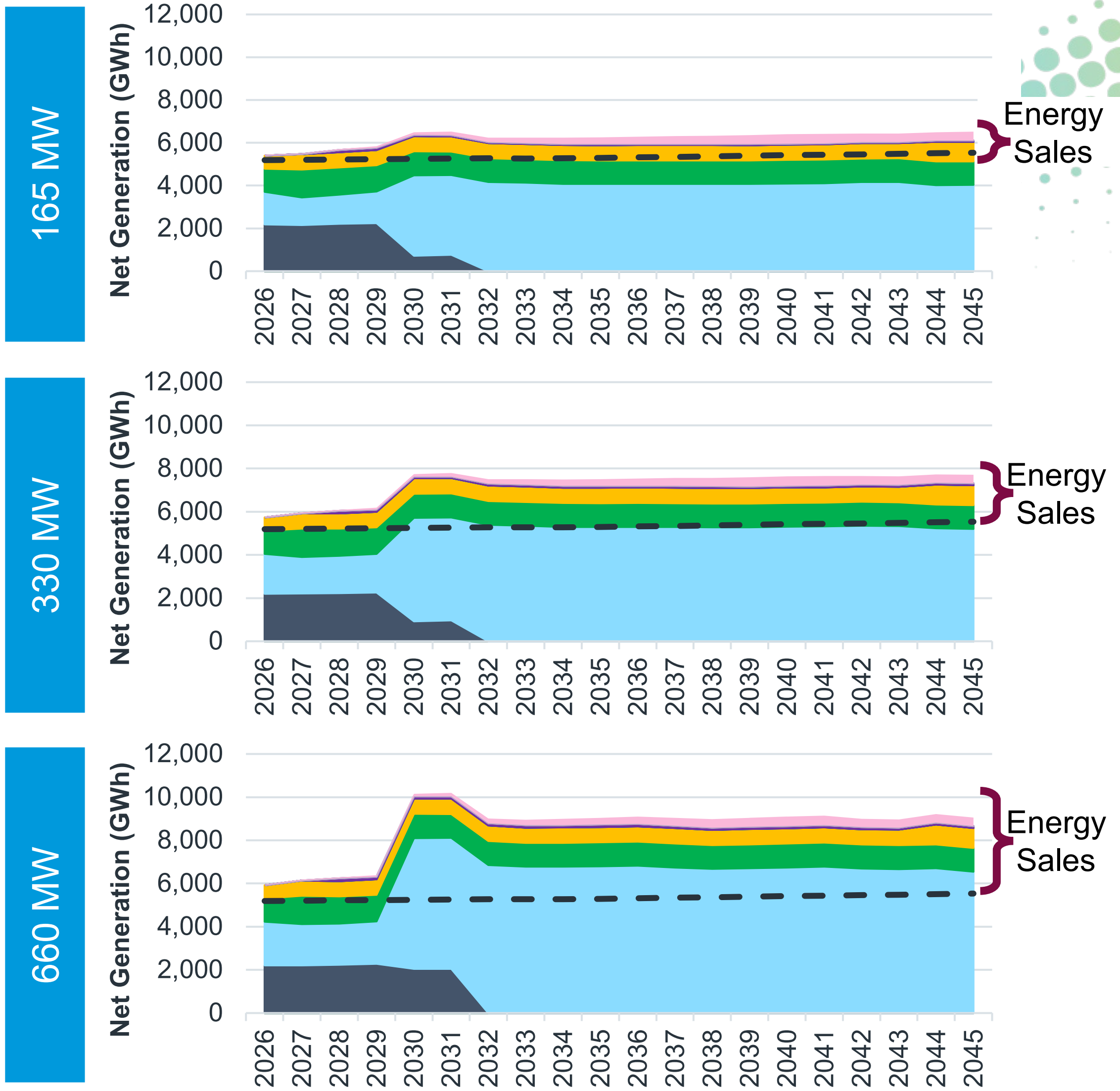
Distributed Generation (DG) Solar Incentive

- First stakeholder meeting covered the methodology for forecasting adoption and load impacts of a $500 per kW incentive for DG solar resources starting in 2026
- Itron generated a DG Solar Incentive load forecast
- Incentive estimated to have an NPV of ~$54MM
- Optimization run produced the same portfolio buildout as the reference case, but had a 1.5% increase in total portfolio cost
  - Additional Distributed Generation Solar resources do not eliminate the need for CEI South to build other resources

Year	Incremental Capacity MW Incentive	DG Solar Incentive Costs
2026	4.8	$2,420,500
2027	5.0	$2,476,500
2028	5.2	$2,610,500
2029	5.5	$2,757,000
2030	5.7	$2,868,500
2031	6.0	$3,014,000
2032	6.2	$3,093,000
2033	6.4	$3,204,500
2034	6.7	$3,339,500
2035	6.9	$3,440,000
2036	7.0	$3,496,000
2037	7.3	$3,630,500
2038	7.5	$3,731,500
2039	7.6	$3,799,000
2040	7.8	$3,899,500
2041	8.0	$3,989,000
2042	8.2	$4,078,500
2043	8.3	$4,168,500
2044	8.4	$4,191,000
2045	8.6	$4,303,000
Net Present Value of Incentive Costs		**$54,176,622**

Energy Sales Sensitivity

- Varying the energy sales quantifies the risk related to allowing high amounts of market interaction
- Running various scenario runs through different sales limits
- Analyzing the impact on NPV for lower MISO market energy sales above CEI South own energy needs



Q&A

Stakeholder Questions and Feedback

Moderated by Drew Burczyk
Project Manager, Resource Planning & Market Assessments, 1898 & Co.

Q&A

- In-person attendees – please raise your hand to be recognized

  Virtual attendees will be in listen-only mode – to participate:
  - Use the “Raise” hand feature in Teams to be recognized, and your mic will be activated during the allotted time for questions, or
  - Enter questions into the “Q&A” feature in Teams

- Identifying yourself by name prior to speaking to help us keep track of feedback and follow up actions

Appendix

Planned New Resources

The listed projects are planned resources coming online in 2026 and were included in all the preliminary portfolios.

Year	Supply Side	Demand Side
2026	Wheatland Solar (150 MW) Galesburg Wind (147 MW)	DR: Industrial (25 MW) DR: Residential Direct Load Control AC Switch (1 MW) DR: Residential Bring Your Own Thermostat (13 MW) DR: Residential Smart Cycle (14 MW) DR: Residential Water Heat Switch (0.4 MW) EE: Income Qualified Home Electrification and Appliance Rebates (0.1 MW) EE: Commercial & Industrial Enhanced Realistic Achievable Potential (4 MW) EE: Residential Tier 1 & Home Efficiency Rebates (3 MW)

Narrative - High Regulatory

Scenario	Environmental Policy	Economic Policy	CO_2 Regulation	Load	Natural Gas Price	Coal Price	Generation Capital Costs	EE Costs
High Regulatory	Clean Air Act 111 (b & d) and expansion to existing gas resources	IRA	Addition of CO_2 Tax	Lower	Higher	Higher	Lower	Higher

- In the High Regulatory Scenario, the Clean Air Act 111(b & d) is enforced as well as expanded to include existing gas resources and a CO_2 Tax is added
- **Load (↓)** – additional regulation drives lower demand growth for electricity
- **Commodity Prices (↑)** – additional environmental regulations increase costs for producing NG and coal, thus driving prices up
- **Generation Capital Costs (↓)** – continuation of the IRA, technology advancements, and lower demand for new generation results in lower capital costs
- **EE Costs (↑)** – lower load leads to less opportunity for cost-effective energy efficiency. In addition, a high regulatory environment leads to more codes and standards for equipment; This in turn results in higher incentives for more efficient equipment

Narrative – Alternate High Regulatory

Scenario	Environmental Policy	Economic Policy	CO_2 Regulation	Load	Natural Gas Price	Coal Price	Generation Capital Costs	EE Costs
Alternate High Regulatory	Clean Air Act 111 (b & d) and expansion to existing gas resources; Electrification and EV policy	IRA	No additional CO_2 regulation	Higher	Higher	Higher	Higher	Base

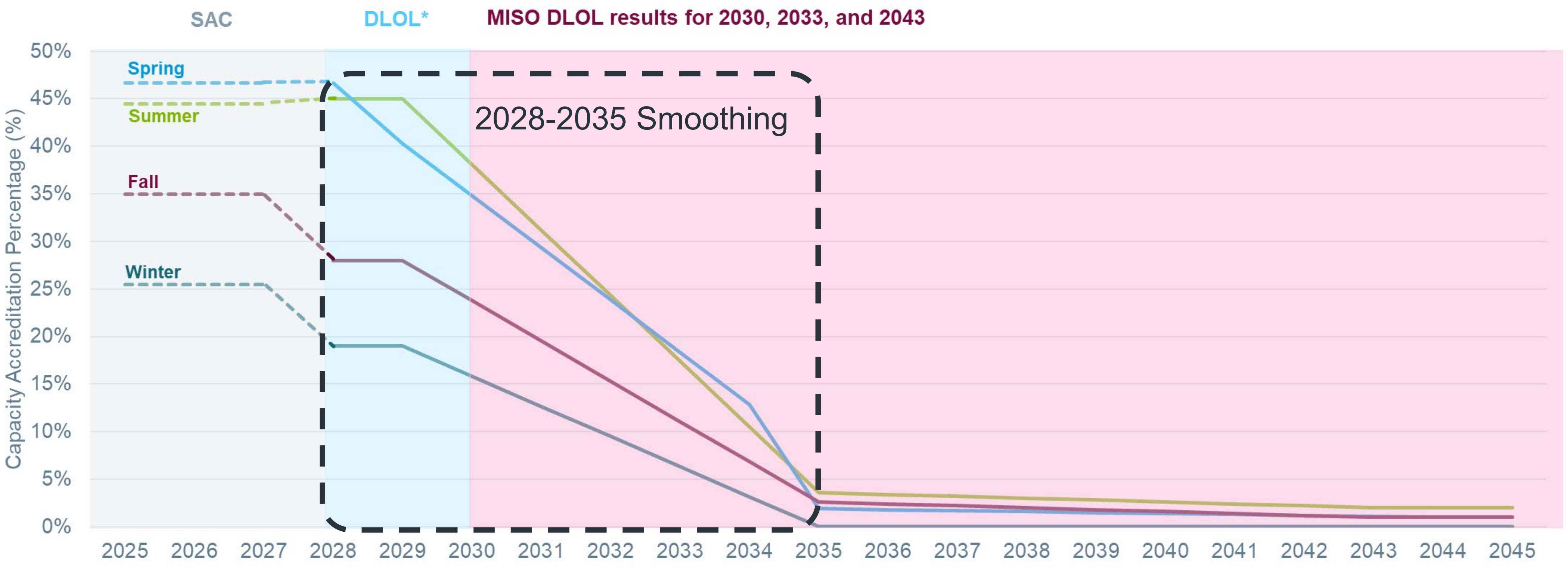
- The Alternate High Regulatory Scenario includes the same policy in the high regulatory scenario
    - The Clean Air Act 111(b & d) is enforced as well as expanded to include existing gas resources
- **Load (↑)** – additional regulation surrounding electrification of buildings and transportation drives significant electricity demand growth
- **Commodity Prices (↑)** – strict environmental regulations increase costs for producing natural gas and coal, while electrification-driven demand increases fuel consumption, driving prices up
- **Generation Capital Costs (↑)** – Demand for additional generation to match load growth as well as stringent regulation leads to increasing capital costs of generation technology
- **EE Costs (-)** – higher load creates greater opportunity for utility sponsored EE, balanced by federal/state incentives for adoption of cost-effective energy efficiency incentives which increases cost for utility sponsored EE

Narrative - Low Regulatory

Scenario	Environmental Policy	Economic Policy	CO_2 Regulation	Load	Natural Gas Price	Coal Price	Generation Capital Costs	EE Costs
Low Regulatory	No Clean Air Act 111 (b & d)	No IRA	No additional CO_2 regulation	Higher	Lower	Lower	Higher	Lower

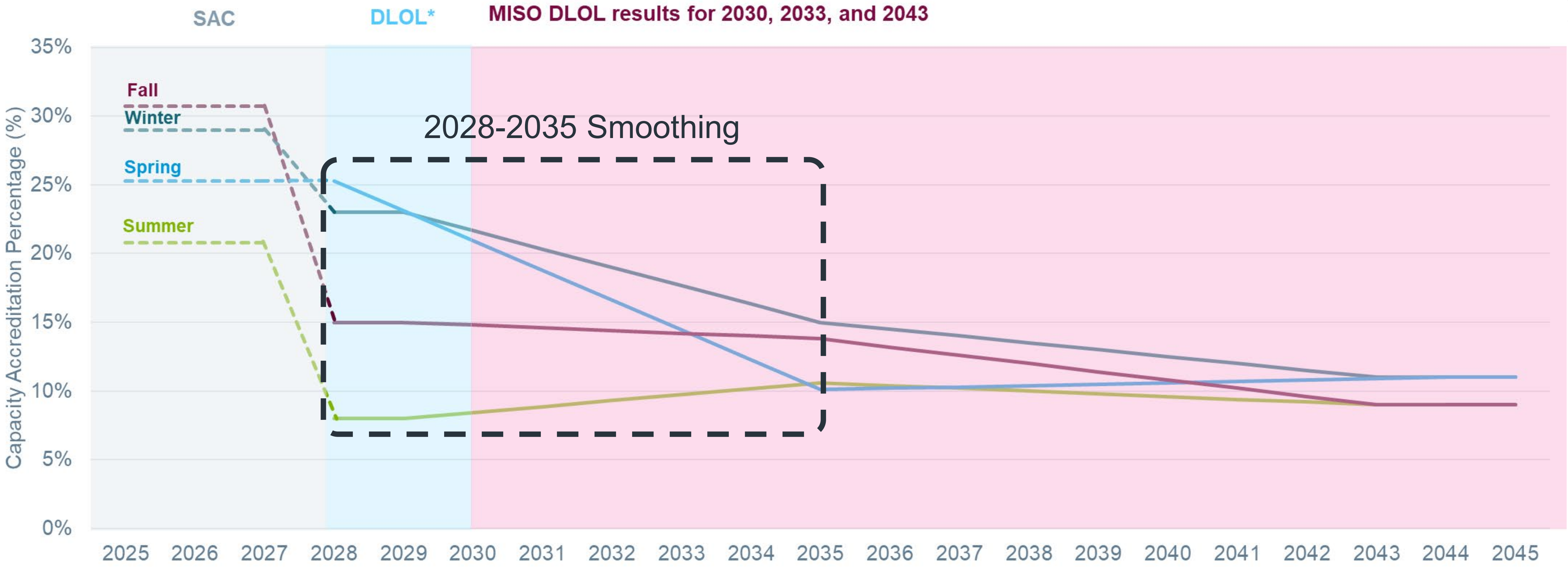
- Under the Low Regulatory Scenario, several environmental policies are eventually revised, including CAA 111. No new carbon emission regulations are created
- **Load (↑)** – reduced regulation encourages expansion of industrial/other large load users
- **Commodity Prices (↓)** – lower regulatory encourages the use of fossil fuels, increasing supply and lowering prices
- **Generation Capital Costs (↑)** – reduced incentives for renewables and increased pressure from tariffs drive costs up for new generation. Additional load growth also leads to an increase in demand, and higher costs
- **EE Costs (↓)** – higher load leads to greater opportunity for cost-effective energy efficiency and thus decreasing incentive costs

Updated Solar Capacity Accreditation Forecast



DLOL values for 2028 – 2029 utilize MISO published 2025/2026 PY DLOL values

Updated Wind Capacity Accreditation Forecast



*DLOL values for 2028 – 2029 utilize MISO published 2025/2026 PY DLOL values