2025 Integrated Resource Plan

Public advisory meeting #2

July 24, 2025

AES Indiana

Agenda and introductions

Stewart Ramsay

Managing Executive, Vanry and Associates

Agenda

Time	Topic	Speakers
10 a.m.	Safety message and virtual meeting protocols	Claire Rice, Director, Corporate Affairs & Impact, AES Indiana
10:10 a.m.	Welcome and company update	Ken Zagzebski, CEO, AES Indiana
10:15 a.m.	IRP overview and meeting #1 recap	Patrick Maguire, Senior Director of Commercial and Resource Planning, AES Indiana
10:30 a.m.	RFP overview and results	Melanie Raney, Senior Manager of Mergers and Acquisitions, AES Indiana
10:40 a.m.	New resource assumptions	Patrick Maguire, Senior Director of Commercial and Resource Planning, AES Indiana
11 a.m.	Energy efficiency and DR bundles	Jeff Huber, GDS Associates
Break for lunch		
1 p.m.	IRP scenarios	Alex Dickerson, Senior Manager of Wholesale Energy, AES Indiana
1:15 p.m.	Long-term fundamental forecasts	Will Vance, Director of Capacity and Fundamentals, ACES
2 p.m.	IRP modeling framework and scorecard	Patrick Maguire, Senior Director of Commercial and Resource Planning, AES Indiana
2:30 p.m.	Final Q&A and next steps	

IRP team introductions

AES IRP leadership team

Ken Zagzebski, CEO, AES Indiana
Brandi Davis-Handy, President, AES Indiana
Guga Garavaglia, Chief Financial Officer, AES Utilities
Patrick Maguire, Senior Director, Commercial, AES Utilities

AES Indiana IRP planning team

Alex Dickerson, Senior Manager, Wholesale Energy
Ryan Yang, Load Forecasting Analyst
Michael Hardie, Resource Planning Analyst
Brent Selvidge, Engineer
Quintin Thompson, DSM Research Analyst
Chad Rogers, Director, Regulatory Affairs
Claire Rice, Senior Director of Corporate Affairs and Impact
Melanie Raney, Senior Manager, Mergers and Acquisitions

AES Indiana IRP partners

Eric Fox, Director, Forecasting Solutions, Itron
Mike Russo, Forecast Consultant, Itron
Woody Zhu, Assistant Professor of Data Analytics, Carnegie Mellon University
Jeffrey Huber, Overall Project Manager and MPS Lead, GDS Associates
Jacob Thomas, Project Manager, GDS Associates
Hisham Othman, Senior Vice President, Quanta Technologies
Christina Owens, Director, Resource Planning, ACES
Will Vance, Director, Capacity Markets and Fundamental Analysis, ACES
Stewart Ramsey, Managing Executive, Vanry and Associates

AES Indiana legal team

Teresa Morton Nyhart, Counsel, Taft Law

Virtual meeting protocols and safety

Claire Rice

Senior Director of Corporate Affairs and Impact, AES Indiana

Virtual meeting protocols

Questions

→Your candid feedback and input is an integral part to the IRP process.

→Questions or feedback will be taken at the end of each section.

→Feel free to submit a question in the chat function at any time and we will ensure those questions are addressed.

Audio

→All lines are muted upon entry.

→For those using audio via Teams, you can unmute by selecting the microphone icon.

→If you are dialed in from a phone, press *6 to unmute.

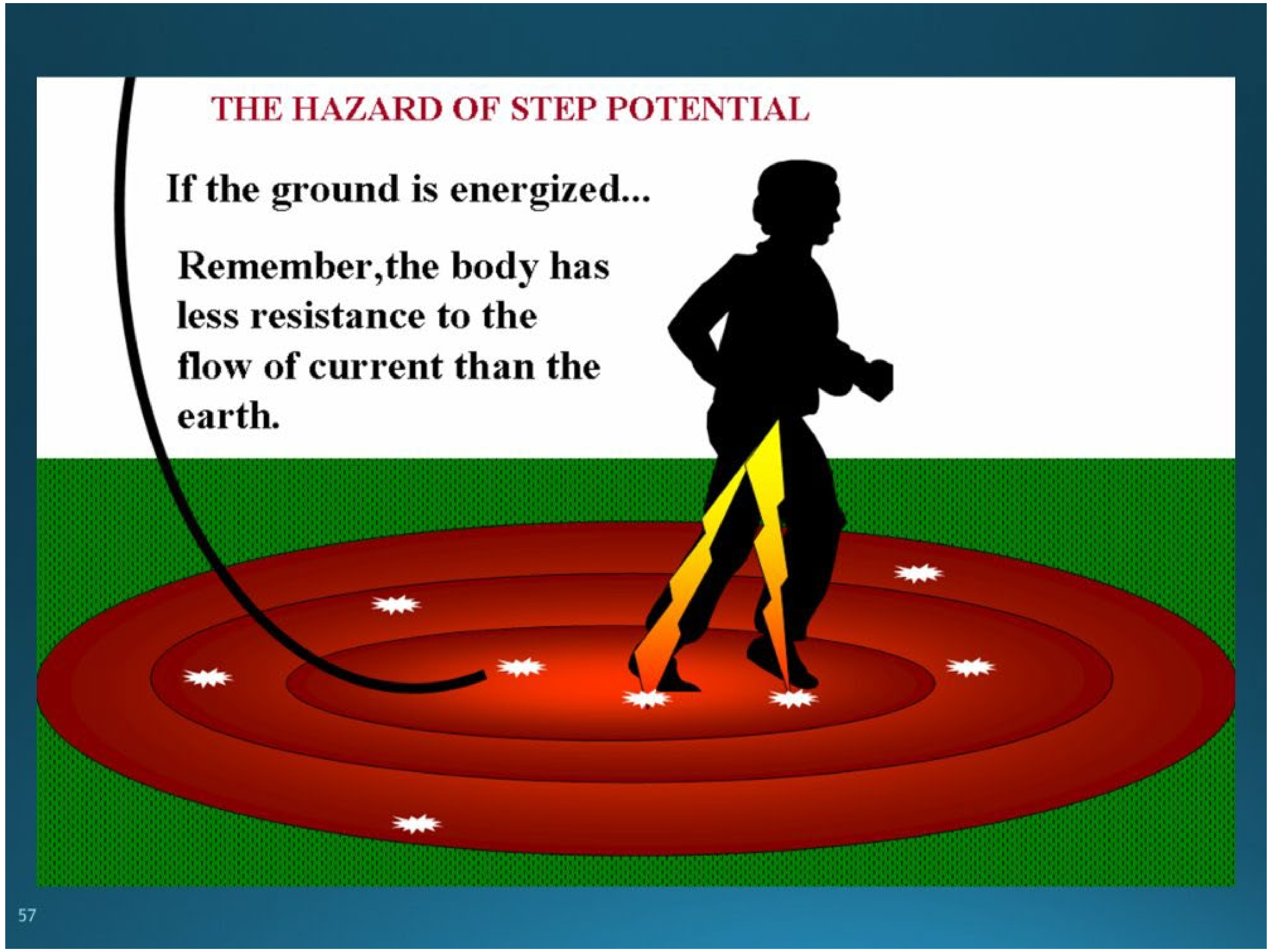
Video

→Video is not required; however, if your camera is on, please refrain from distractions.

Summer storms safety message

Step potential is the voltage difference between two points on the ground that are a step apart. This is caused by downed power lines.

Summer storms safety message



Key points to know:

→ The greater the distance between your feet the higher the step potential.

→ Avoid walking or running near a downed power line — this increases the risk.

→ Shuffle away from the area with small steps keeping your feet close together and on the ground to minimize voltage difference.

Welcome and update on AES Indiana

Ken Zagzebski

CEO, AES Indiana

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Resource planning and legislative actions pave the way toward new opportunities.

Our energy transition

2016
- → Eagle Valley Coal Retired
- → Harding Street Coal to Natural Gas Conversion

2018
- → Eagle Valley CCGT Commissioned

2021
- → Petersburg Unit 1 Retired

2023
- → Petersburg Unit 2 Retired

2024
- → Hoosier Wind Acquired
- → Hardy Hills Solar online

2025
- → Pike BESS online
- → Crossvine Solar + Storage approved
- → Petersburg Energy Center solar + storage come online

2026
- → Petersburg Units 3 & 4 repowered to Natural Gas

IRP overview and recap

Patrick Maguire

Senior Director of Commercial, AES Indiana

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2025 IRP public meeting and data release schedule

Public Advisory Meeting Schedule

Public Advisory Meeting #1: January 29, 2025

- → Recap 2022 IRP Short-Term Action Plan
- → Introduce IRP resource planning process, key dates and topics for 2025 IRP

Public Advisory Meeting #2: July 24, 2025

- → Review assumptions including replacement resource costs and commodity prices
- → Introduce IRP analysis portfolio framework and analysis scorecard

Public Advisory Meeting #3: September 10, 2025

- → Discuss preliminary IRP scorecard results

Public Advisory Meeting #4: October 22, 2025

- → Review final IRP scorecard and reliability analysis
- → Share Preferred Resource Portfolio and Short-Term Action Plan

Dates and agendas are subject to change

IRP Assumptions & Modeling Data Release Schedule

Meeting #1 Data Available: February 12, 2025

- → Base Load Forecast
- → EV Base, High and Low Scenarios
- → PV Base, High and Low Scenarios

Meeting #2 Data Available: July 24, 2025

- → IRP Scenario Commodity Curves
- → Replacement Resource Costs and Capacity Accreditation
- → Market Potential Study Results

Meeting #3 Data Available: September 10, 2025

- → EnCompass IRP Scenario Loader
- → PVRR Summary
- → Energy Position Sheets

Meeting #4 Data Available: October 22, 2025

- → EnCompass Stochastic Scenario Loader
- → Stochastic Summary Results
- → Final IRP Scorecard

Note: The released data will be available to the technical stakeholders with a completed Non-Disclosure Agreement

2025 IRP process roadmap

Assumption Gathering

Load Forecast
- Itron SAE Modeling Approach
- Base, High & Low Load Scenarios
- Customer EV & DG Scenarios

DSM Market Potential Study
- End Use Analysis of Efficiencies
- Develop Tech, Economic & Achievable Potentials
- Create DSM Inputs for EnCompass

Costs for New Resources
- RFP issued October 2024
- RFP Results used to inform new Resource Costs

Other Inputs & Assumptions
- Discount Rate
- Commodity Prices
- MISO Resource Accreditation & PRMs
- Modeling Parameters & Constraints

Distribution System Plan
- Circuit Level Analysis
- Assess EV, DG & DER Impacts
- Non-wires Alternatives

Modeling & Portfolio Selection

Capacity Expansion Modeling
- Portfolio Optimization & Retirement and Replacement Analysis

Production Cost Modeling, Stochastic Analysis & PVRR
- Portfolio Dispatch Analysis & calculation of PVRR
- Risk Analysis

Portfolio Evaluation & Scorecard
- Evaluation of the Scorecard & the Five Pillars
- Identify Preferred Resource Portfolio

IRP Submitted Nov. 1, 2025

IRP-related Filings
- Certificate of Public Convenience & Necessity (CPCN)
- Demand Side Management Plan

2025 IRP Contributors:
- **ACES** – Stochastic Analysis & Fundamental Market Curves
- **GDS** – DSM Market Potential Study
- **Itron** – Load Forecasting
- **Carnegie Mellon University** – Customer Electric Vehicle & Solar Forecasts
- **Quanta** – Reliability Analysis
- **Charles River Associates** – All-resources RFP

2024 RFP overview and results

Melanie Raney

Senior Manager of Mergers and Acquisitions, AES Indiana

2024 all-source generation RFP

AES Indiana conducted an all-source RFP

- → Positions AES Indiana to efficiently procure generation consistent with IRP preferred resource portfolio
- → Informs IRP replacement resource costs
- → RFP offers requested for commercial operation date (COD) of 2025-2033
- → Requested 3GW intermittent resources, 3 GW non-intermittent resources, 3 GW bridge capacity and DERs
- → RFP issued Sept. 29, 2024
- → All proposals received by Nov. 1, 2024

Technology	Proposals	Project Nameplate (MW)
Solar	51	3,892
Wind	3	819
Thermal	12	2,037
Solar + storage	47	3,258
Storage	41	4,070
ZRC	42	

Results

- → 42 different developer respondents
- → 83 projects totaling over 14 GW
- → 196 proposals totaling over 25.6 GW
- → The term ‘project’ refers to a project site, while ‘proposal’ denotes a bid associated with a project site. Typically, multiple proposals are submitted per site, particularly for PPAs.

Thermal development partner RFP

AES Indiana issued an RFP in Q2 2025 as a continuation of the all-source generation RFP.

- → All Source RFP bidders expressed interest in developing projects at AES Indiana sites.
  - → 3 potential AES sites: Petersburg, Eagle Valley and Harding Street
  - → AES Indiana provided interested bidders information about the sites in advance of proposal due date
  - → AES Indiana indicated that the company was targeting early 2030's COD
- → 4 respondents to date
- → Multiple partnership structures proposed including build transfer, build own transfer and PPA

New resource assumptions

Patrick Maguire

Senior Director of Commercial and Resource Planning, AES Indiana

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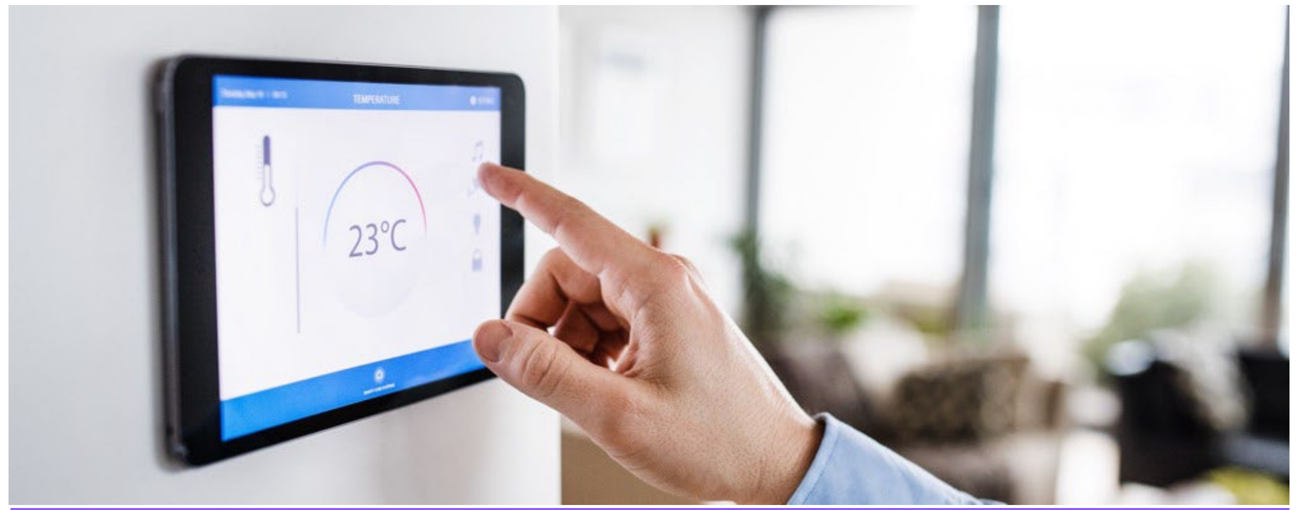
Commercially available options



DSM/EE

→ EE and DR measures bundled into tranches for planning model selection

Wind

→ Land-based wind

Solar

→ Utility-scale

Storage

→ Standalone front-of-meter

→ Solar and storage

Natural gas

→ CCGT

→ CT

Nuclear

→ Small modular reactors

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IRP model inputs for new resources

Overnight capital cost to construct ($/kW)

→Costs associated with development and construction of a resource

Operating cost

→Fixed operation and maintenance (FOM) are costs incurred whether plant is operating or not, e.g. staff cost, regular maintenance, administrative costs

→Variable operation and maintenance (VOM) are costs associated with electricity production, e.g. repair and replacement of parts

Operating characteristics

→Heat rates

→Ramp rates

→Capacity accreditation

→Asset useful life

→Solar and wind generation profiles

→Storage roundtrip efficiency

→Market availability limits

Methodology for capital cost assumptions

Proposals

AES Indiana aggregated proposals by technology type and calculated the average cost of proposals for each technology. This estimate serves as the base cost starting point in 2026 for solar and storage. Gas and wind adjusted based on small number of bids.

Forecasts

AES Indiana then used the average trend from Wood Mackenzie, National Renewable Energy Laboratories and Bloomberg New Energy Finance capital cost forecasts by technology type to determine the changes to the cost starting point over the planning period. This approach captures the potential technology learning curve or cost efficiencies from improvements in design and manufacturing processes.

Estimates

SMR estimates from RFP response and secondary sources.

Methodology for O&M cost assumptions

Fixed O&M

- → AES Indiana used the average of the five-year fixed cost forecast for Company resources as a proxy for FOM for new wind, solar, storage, hybrid and thermal resources.
- → AES Indiana then used the average trend from Wood Mackenzie, National Renewable Energy Laboratories and Bloomberg New Energy Finance fixed cost forecasts by technology type to determine the changes to the fixed cost starting point over the planning period.
- → SMR estimates from RFP response and secondary sources.

Variable O&M

- → Only applies to thermal resources
- → AES Indiana used the estimated VOM for its thermal resources as a proxy for new CCGT and SCCT resources.
- → SMR estimates from RFP response and secondary sources.

ITC/PTC assumptions in 2025 IRP

On July 4, 2025, the One Big Beautiful Bill Act (OBBBA) was signed into law.

Tax credits for renewables were directly impacted, with implications for cost projections in the IRP.

Assumptions for annual percentages of tax credits assumed in the IRP as of July 17, 2025, are shown below. Some assumptions are subject to change as we receive more guidance over the next month.

Tax credit assumptions in IRP

		2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Solar	ITC	30%	30%	30%	30%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Storage	ITC	30%	30%	30%	30%	30%	30%	30%	30%	30%	23%	15%	0%	0%	0%	0%	0%
Wind	PTC	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Nuclear	PTC	100%	100%	100%	100%	100%	100%	100%	100%	100%	75%	50%	0%	0%	0%	0%	0%
Geothermal	PTC	100%	100%	100%	100%	100%	100%	100%	100%	100%	75%	50%	0%	0%	0%	0%	0%

Wind and Solar: assumed selectable projects in the IRP achieved safe harbor to begin construction in 2025.
Assumptions driven by developer feedback and publicly available information on OBBBA tax credits.

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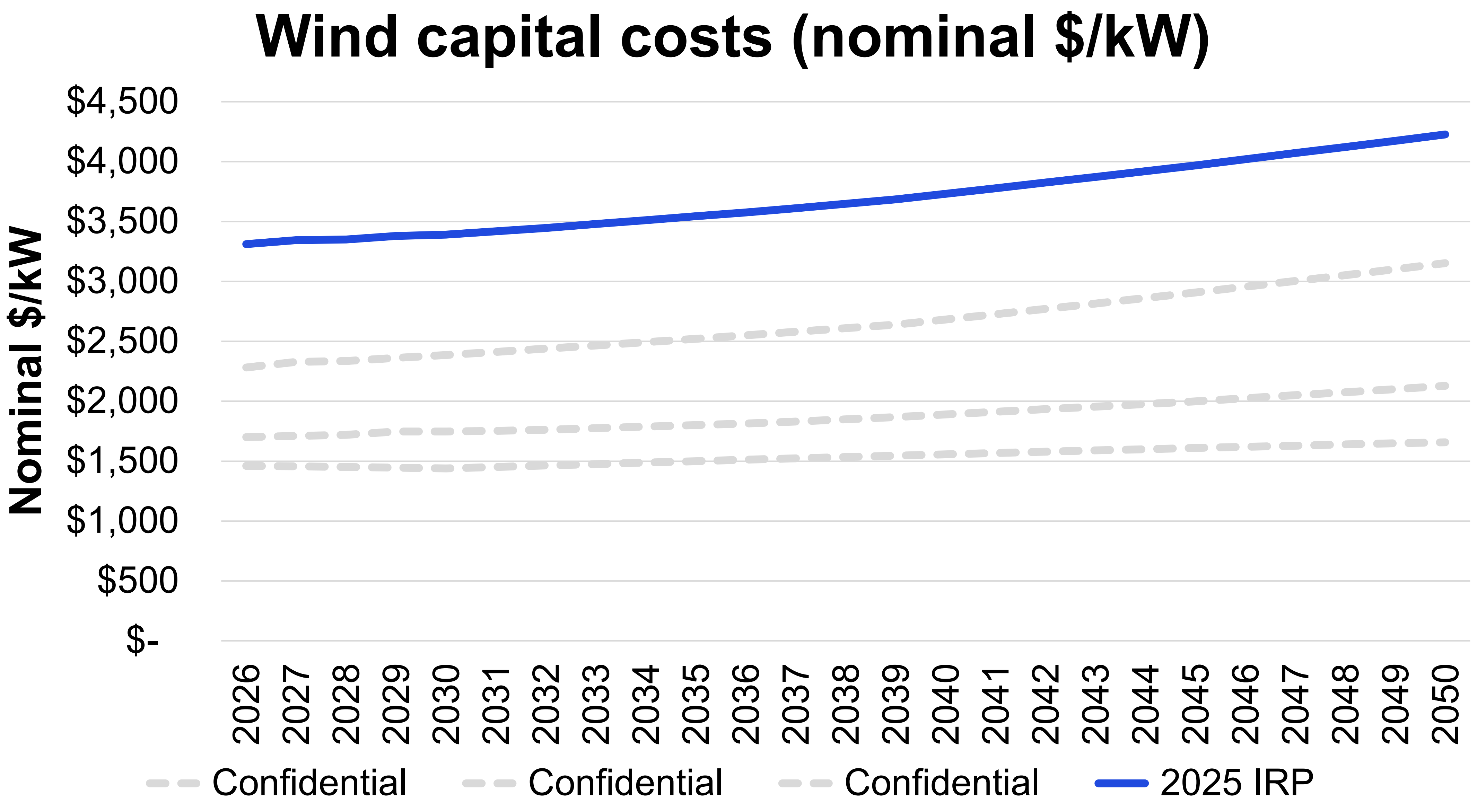
Wind: Costs and parameters

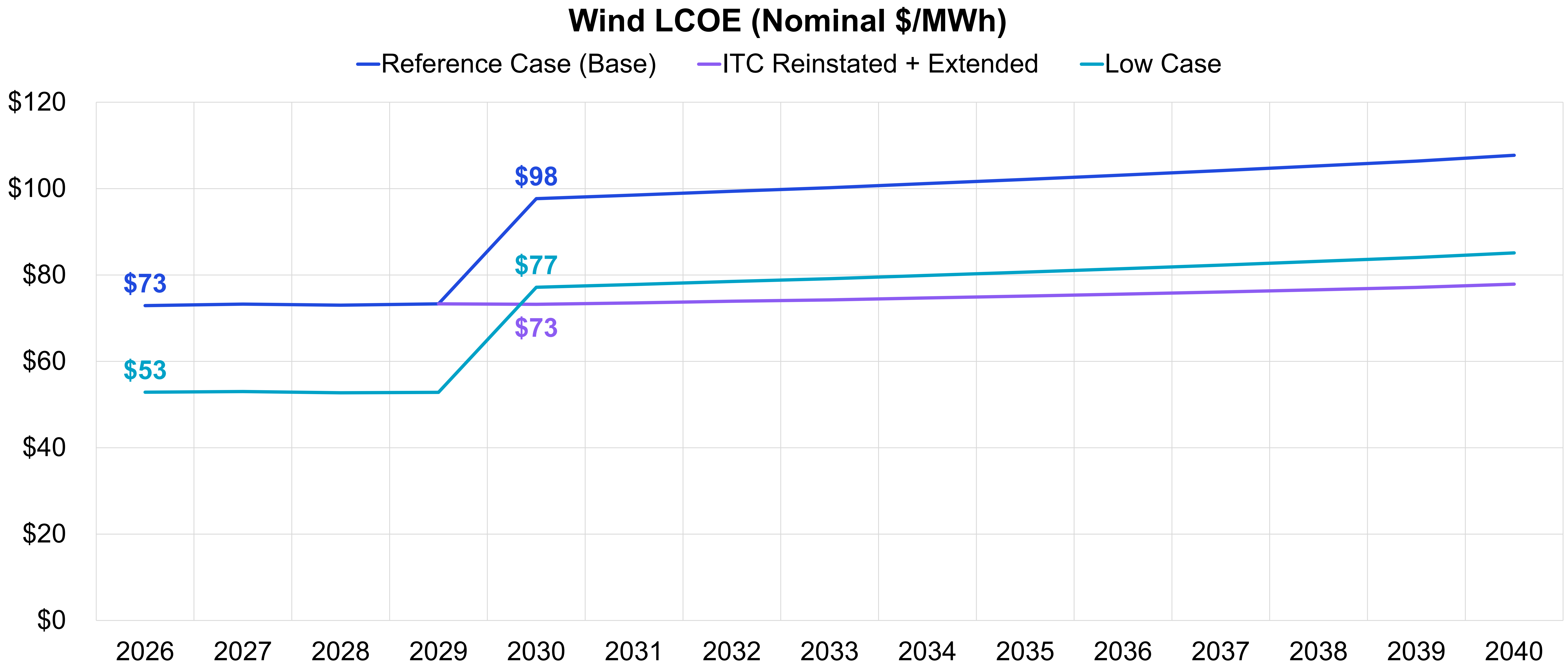
- → Capital cost ($/kW) in 2026: $3,331
- → Fixed O&M ($/kW-yr) in 2026: $54.03
- → Location: Indiana
- → Annual capacity factor: 40.4%
- → Source profile: NREL System Advisory Model (SAM)
- → Useful life: 30 years



Note: Confidential cost forecasts in chart include forecasts from NREL, Wood Mackenzie and BNEF

Note: Capital Cost estimates presented here are without federal tax credits. Federal tax credits will be included in modeling based on the IRP scenario assumptions.

Wind: LCOE



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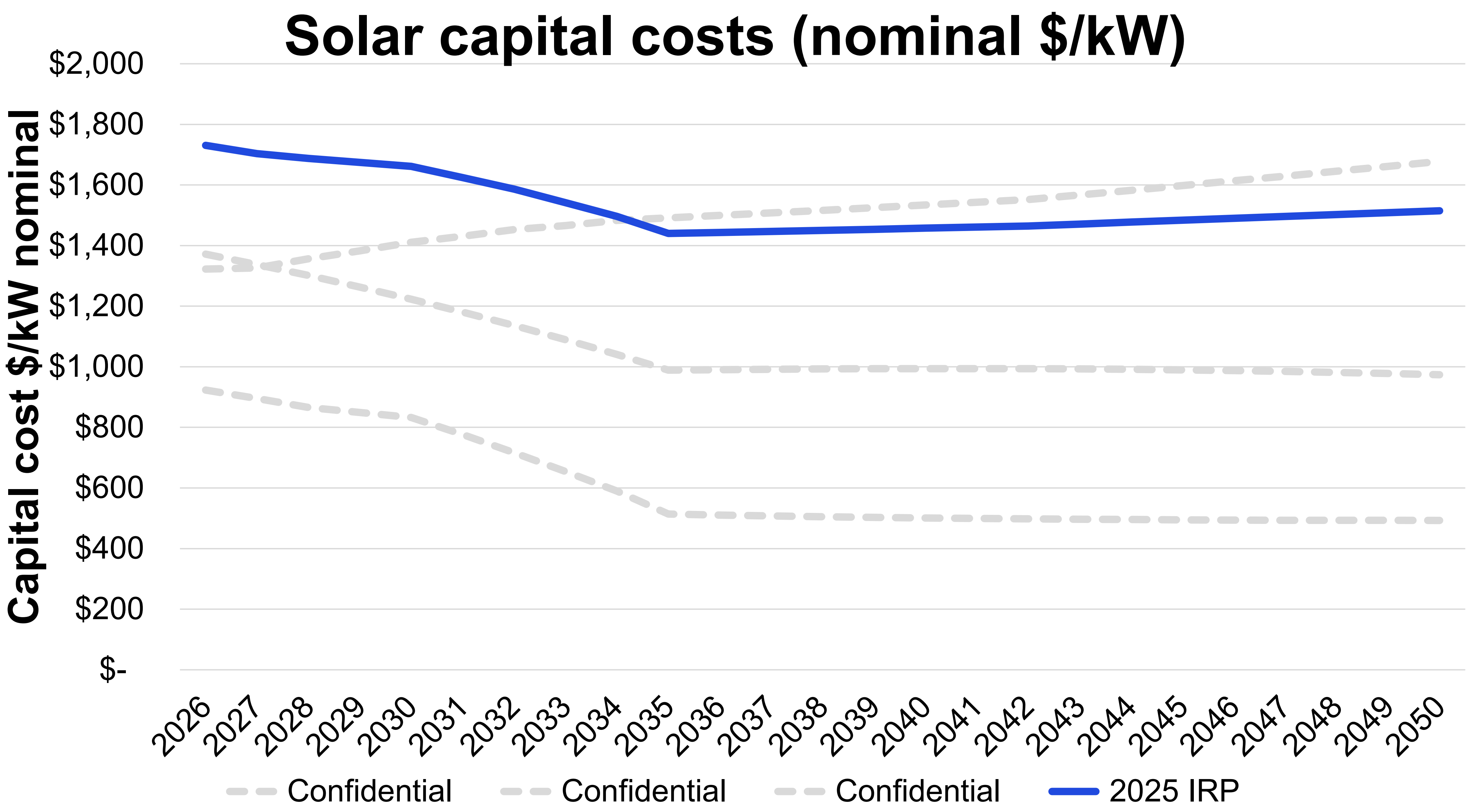
Solar: Costs and parameters

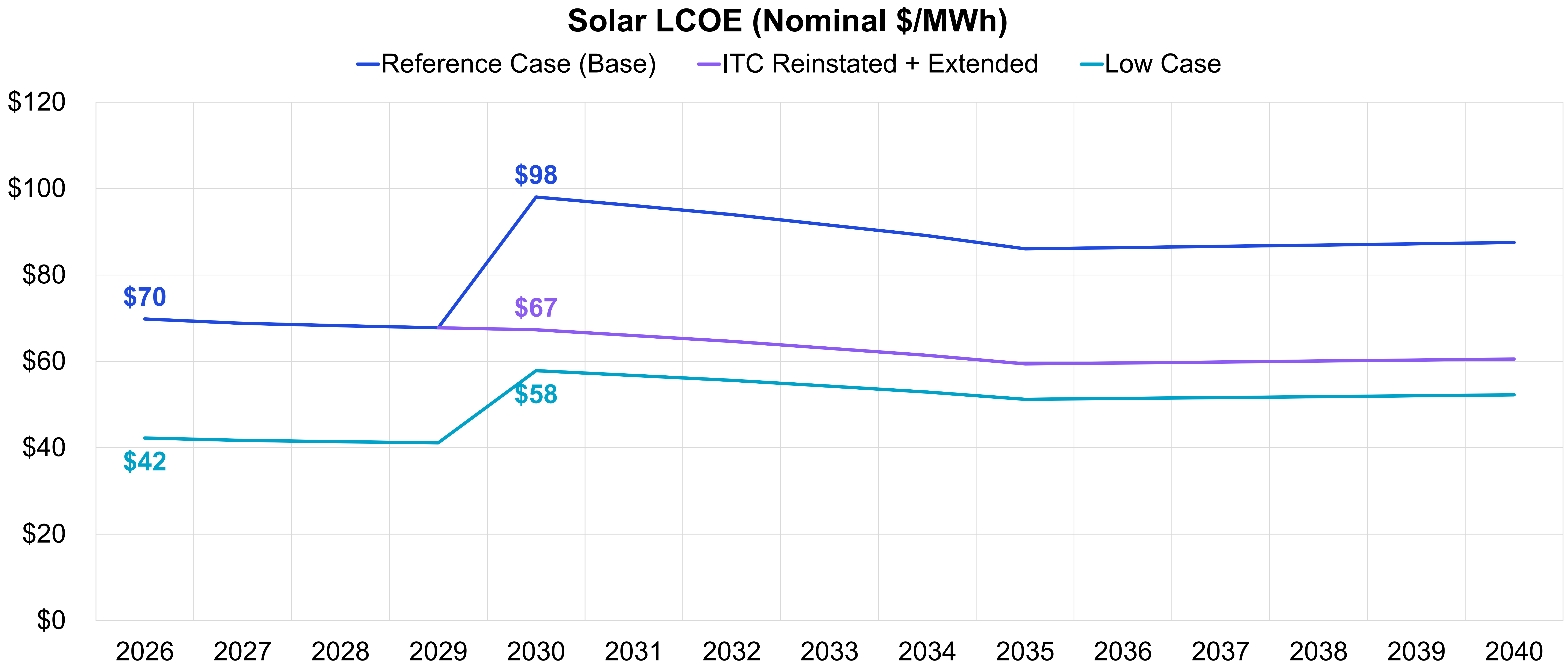
- → Capital cost ($/kW) in 2026: $1,731
- → Fixed O&M ($/kW-yr) in 2026: $16.73
- → Annual capacity factor: 23%
- → Source profile: NREL System Advisory Model (SAM)
- → Project size: 25 MW ICAP
- → Useful life: 35 years



Note: Confidential cost forecasts in chart include forecasts from NREL, Wood Mackenzie and BNEF

Note: Capital Cost estimates presented here are without federal tax credits. Federal tax credits will be included in modeling based on the IRP scenario assumptions.

Solar: LCOE



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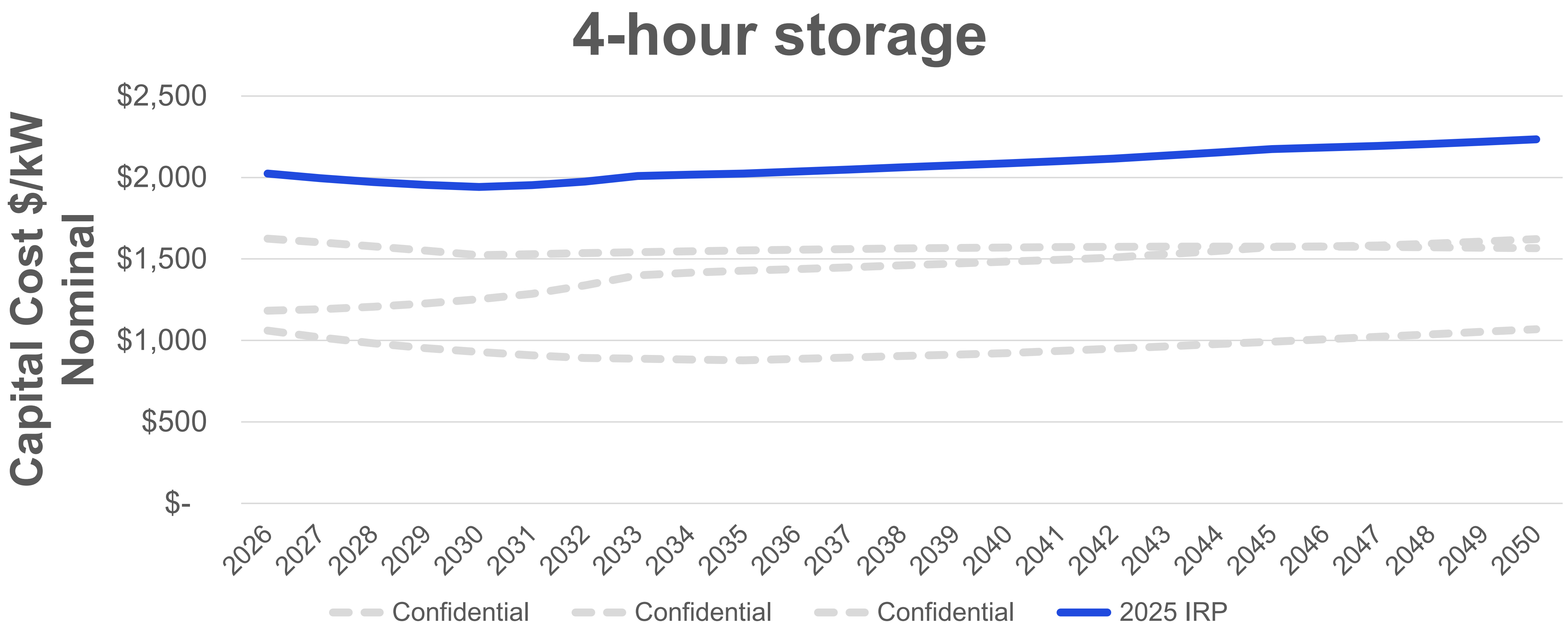
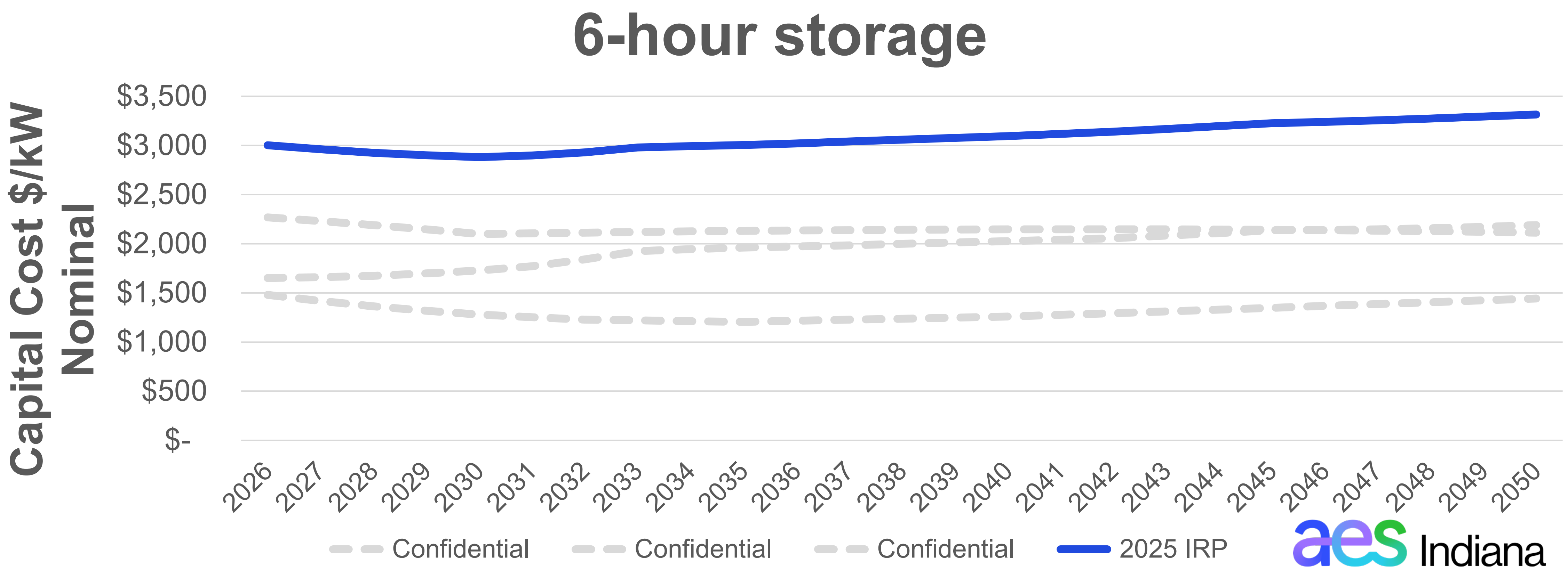
Storage: Costs and parameters

- →Capital cost:
  - →4-hour: $2,024/kW
  - →6-hour: $3,002/kW
- →Fixed O&M
  - →4-hour: $28.15/kW-year
  - →6-hour: $38.66/kW-year
- →Project size: 20 MW ICAP | 80 MWh (4-hour)
- →Round trip efficiency (RTE): 85%
- →Cycles per year: 365
- →Useful life: 20 years





Note: Capital cost estimates presented here are without federal tax credits. Federal tax credits will be included in modeling based on the IRP scenario assumptions.

Note: Confidential cost forecasts in chart include forecasts from NREL, Wood Mackenzie and BNEF

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CCGT: Costs and parameters

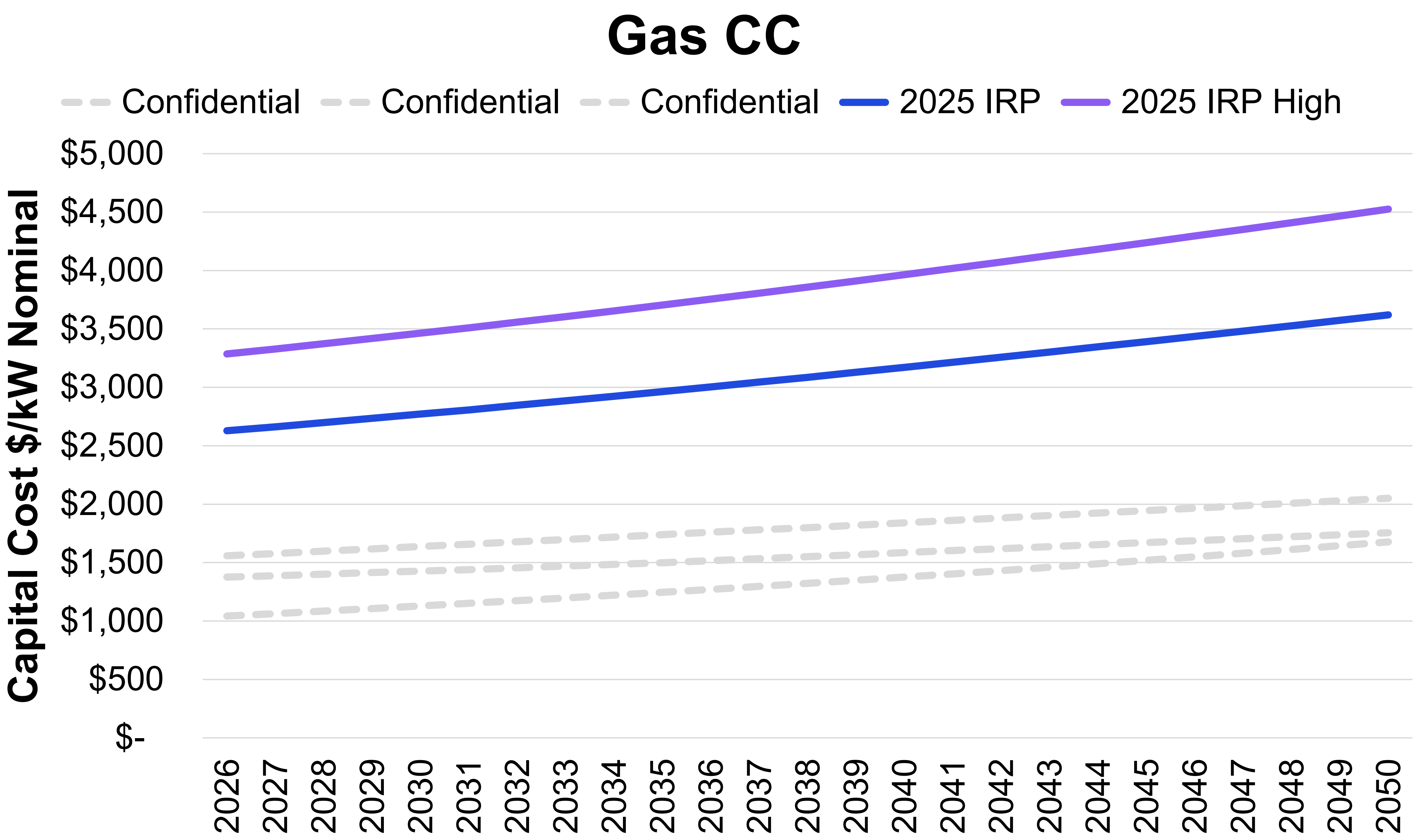
→Capital cost in 2026: $2,629/kW

→Fixed O&M in 2026: $59.22/kW-year (includes firm gas transportation)

→Project size: 640 MW (ICAP, summer net)

→Heat rate at max economic load: 6,200 Btu/kWh

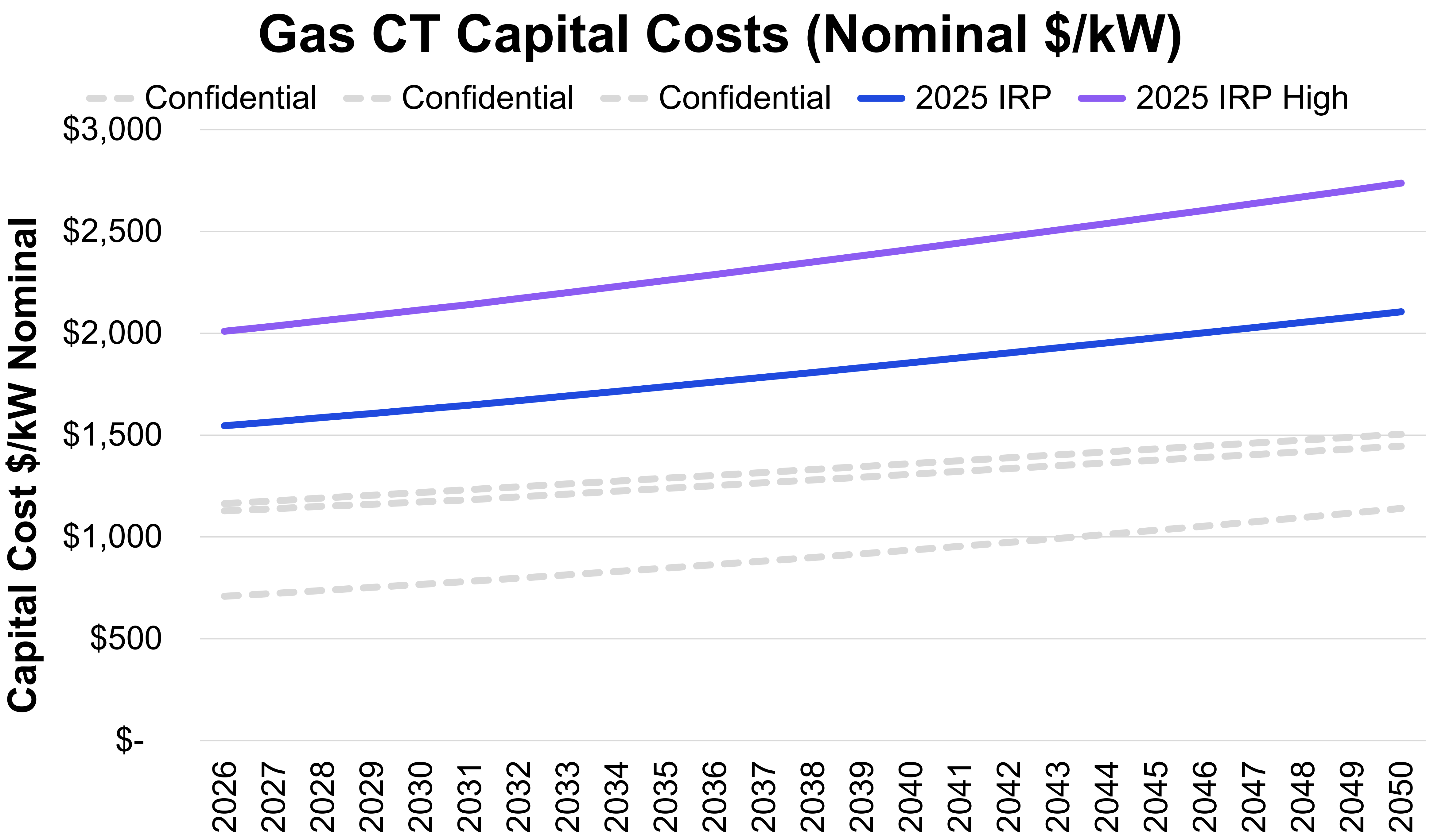
→Useful life: 30 years



Note: Confidential cost forecasts in chart include forecasts from NREL, Wood Mackenzie and BNEF

CT: costs and parameters

- →Capital cost in 2026: $1,546/kW
- →Fixed O&M in 2026: $51.42/kW-year (includes firm gas transportation)
- →Project size: 240 MW ICAP
- →Heat rate at max economic load: 10,012 Btu/kWh
- →Useful life: 30 years



Note: Confidential cost forecasts in chart include forecasts from NREL, Wood Mackenzie and BNEF

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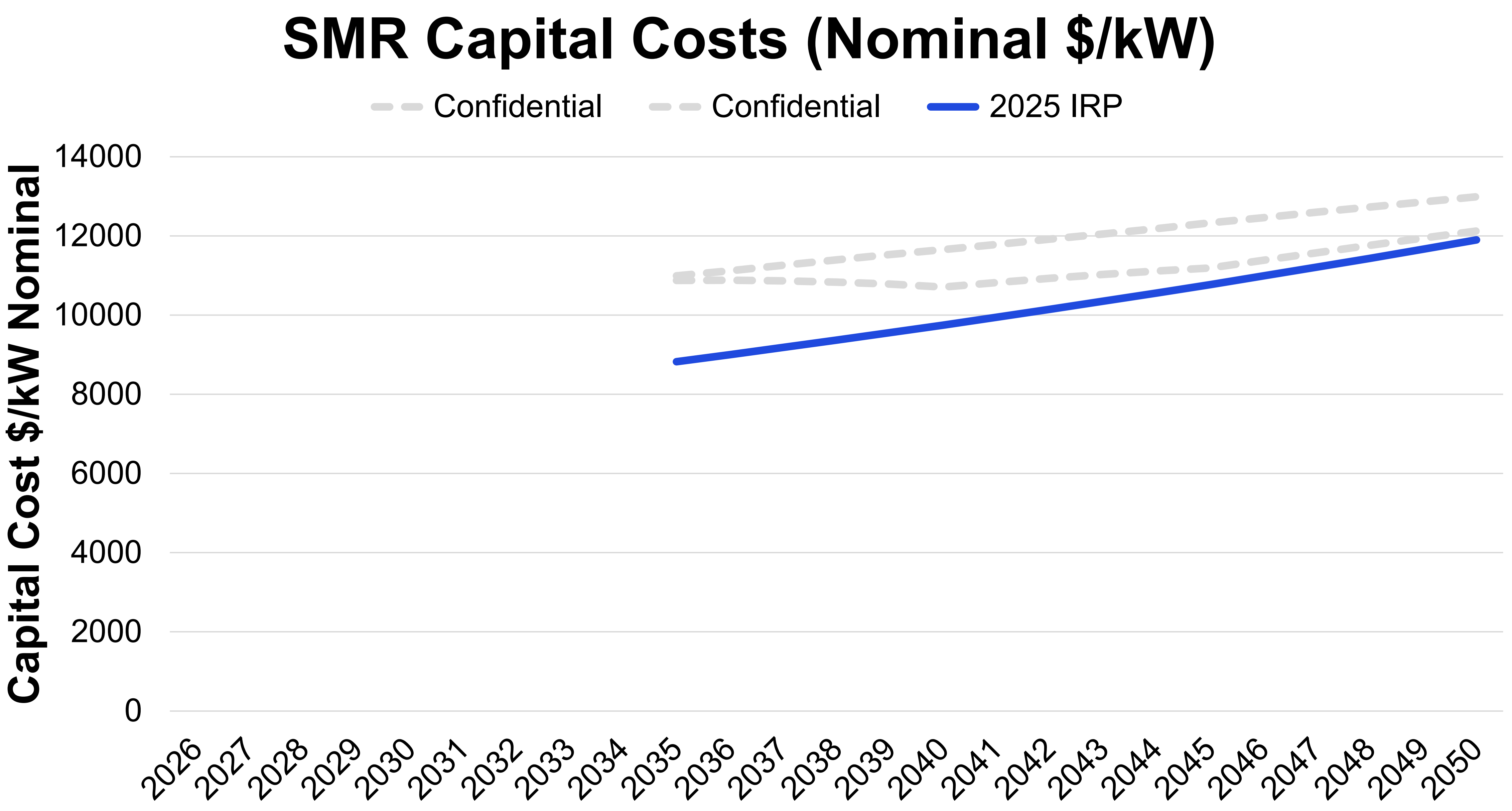
SMR capital and operating costs

- →Capital cost ($/kW) in 2035: $8,824
- →Fixed O&M ($/kW-yr) in 2035: $235.53
- →Variable O&M ($/MWh) in 2035: $1.47
- →Project size: 470 MW ICAP
- →Heat rate at max economic load: 8,000 Btu/kWh



Note: Confidential cost forecasts in chart include forecasts from NREL and Wood Mackenzie

Note: Capital Cost estimates presented here are without federal tax credits. Federal tax credits will be included in modeling based on the IRP scenario assumptions.

New resource build limits

Project Type	Incremental Size (ICAP MW)	*Per year limits (ICAP MW)* 2026	2027	2028	2029	2030	2031	2032	2033	2034	2035+	*Planning Period Max (ICAP MW)*
Wind	50	0	0	0	0	400	400	600	600	600	600	8,000
Solar	25	0	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	8,000
4-Hour Storage	20	0	800	800	800	800	800	800	800	800	800	1,600
6-Hour Storage	20	0	800	800	800	800	800	800	800	800	800	1,600
8-Hour Storage	20	0	800	800	800	800	800	800	800	800	800	1,600
Gas CCGT	640	0	0	0	0	1,360	1,360	1,360	1,360	1,360	1,360	4,080
Gas CT	240	0	0	0	0	960	960	960	960	960	960	2,880
SMR	470	0	0	0	0	0	0	0	0	0	940	1,880

Resource accreditation

	Summer	Fall	Winter	Spring
Gas CCGT	94%	95%	85%	85%
Gas CT	85%	85%	90%	90%
Gas ST	75%	75%	75%	75%
Oil	70%	70%	80%	80%
Nuclear	94%	90%	87%	81%

2025 IRP resource accreditation is based on a combination of:

(a) Indicative MISO Direct Loss of Load (DLOL) modeling

(b) MISO-provided AES Indiana indicative DLOL values for existing resources

(c) AES Indiana projections for future penetration levels of various technologies, particularly solar and storage

	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Solar																				
Summer	39%	34%	30%	28%	25%	23%	22%	20%	19%	18%	17%	16%	15%	14%	13%	12%	12%	11%	10%	10%
Fall	24%	21%	19%	17%	16%	15%	14%	13%	12%	11%	10%	10%	9%	9%	8%	8%	7%	7%	6%	6%
Winter	16%	13%	11%	10%	9%	8%	7%	7%	6%	6%	5%	5%	4%	4%	3%	3%	3%	2%	2%	2%
Spring	24%	21%	19%	18%	16%	15%	14%	13%	12%	12%	11%	10%	10%	9%	9%	8%	8%	8%	7%	7%
Storage																				
Summer	95%	95%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Fall	95%	95%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Winter	95%	95%	95%	80%	78%	76%	70%	66%	63%	61%	59%	57%	55%	54%	52%	51%	50%	49%	48%	47%
Spring	95%	95%	95%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%	85%
Wind																				
Summer	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%	7%
Fall	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%	11%
Winter	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%	17%
Spring	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%	12%

2025 DSM market potential study introduction

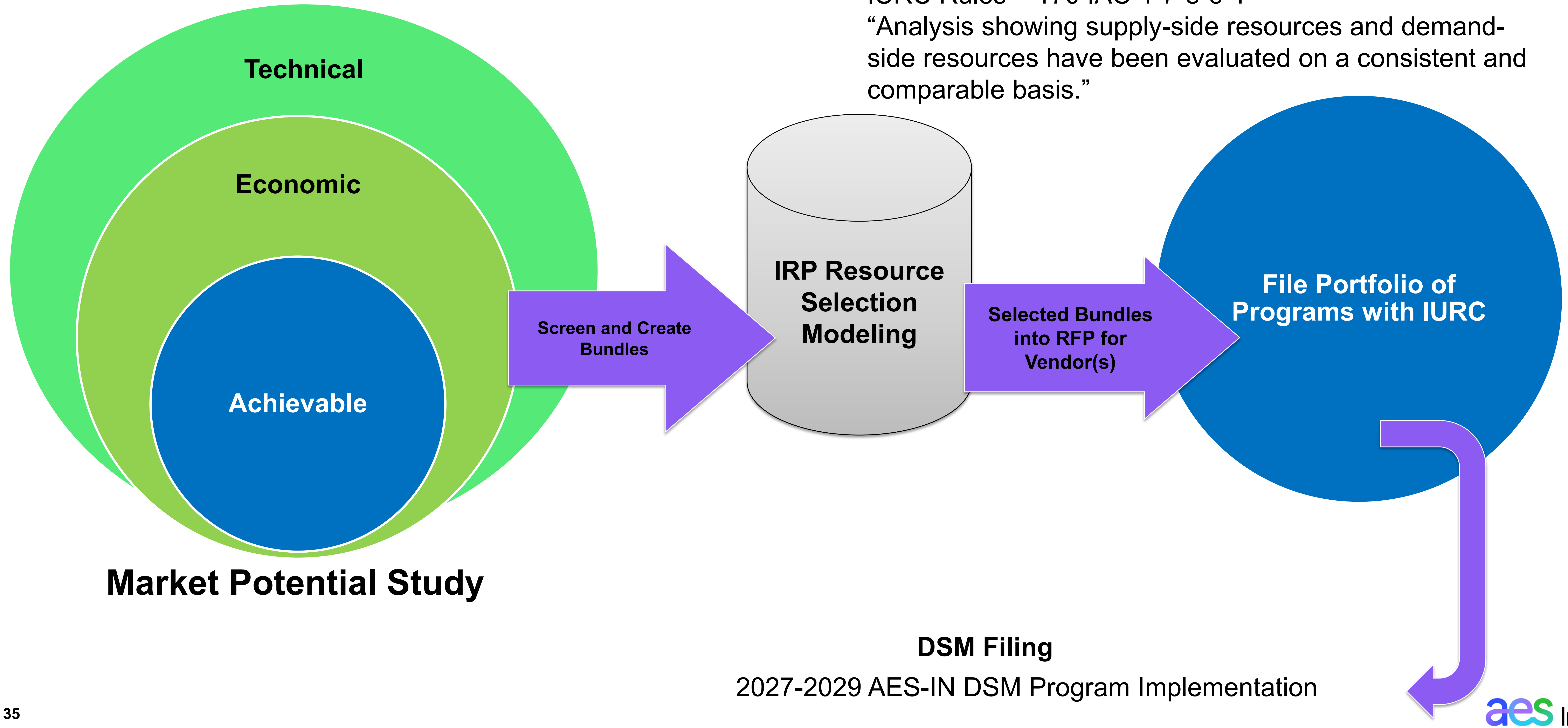
Jeff Huber

GDS Associates

AES Indiana

DSM overview: DSM process in the 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.”



DSM Filing

2027-2029 AES-IN DSM Program Implementation

Energy efficiency potential analysis

Market characterization and research

- Primary research to improve upon inputs typically used in both the AES-IN load forecast and the GDS Market Potential Study
  - **Residential**
    - End-Use Market Share
    - Unit Energy Consumption
- **Small Commercial & Industrial**
  - End-Use Intensity
  - Distribution of customers by building type
  - End-Use Saturation

**Received survey responses from over 990 residential households and 250 commercial businesses*

- Data collection elements limited to items that may be answered accurately
- **Residential survey collected:**
  - Ownership, age, and count of electric end-use equipment across major end-use categories
  - Information on smart appliances and electric vehicles
- **Nonresidential survey focused on:**
  - Key end-uses: lighting, cooling, heating, ventilation, water heating, refrigeration
  - Key Equipment Penetration
  - Limited Efficiency Saturation (LEDs, controls)
- Willingness-to-participate (WTP) survey to collect consumer awareness and willingness to participate in various programs or purchase various Energy Efficiency equipment or Demand Response programs

EE overview: Potential overview

TECHNICAL POTENTIAL

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

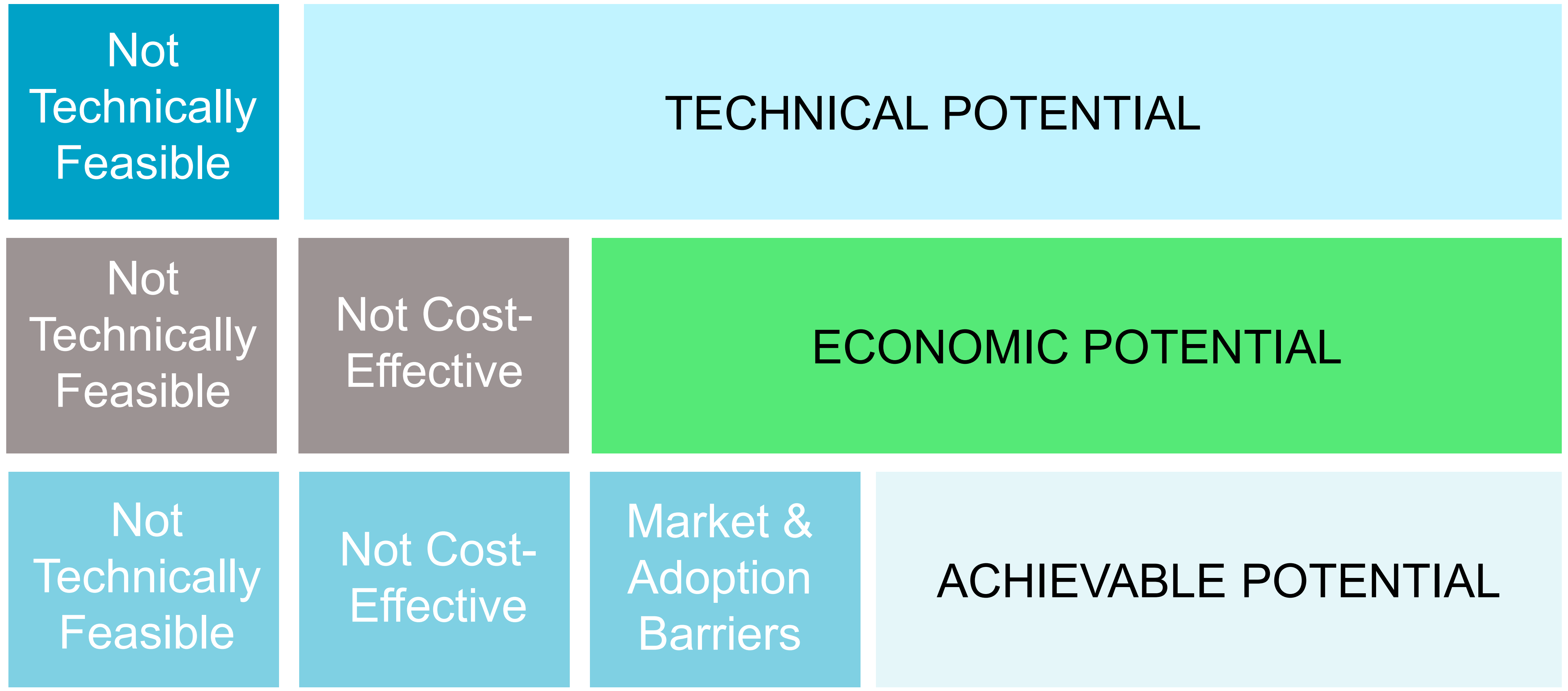
ECONOMIC POTENTIAL

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



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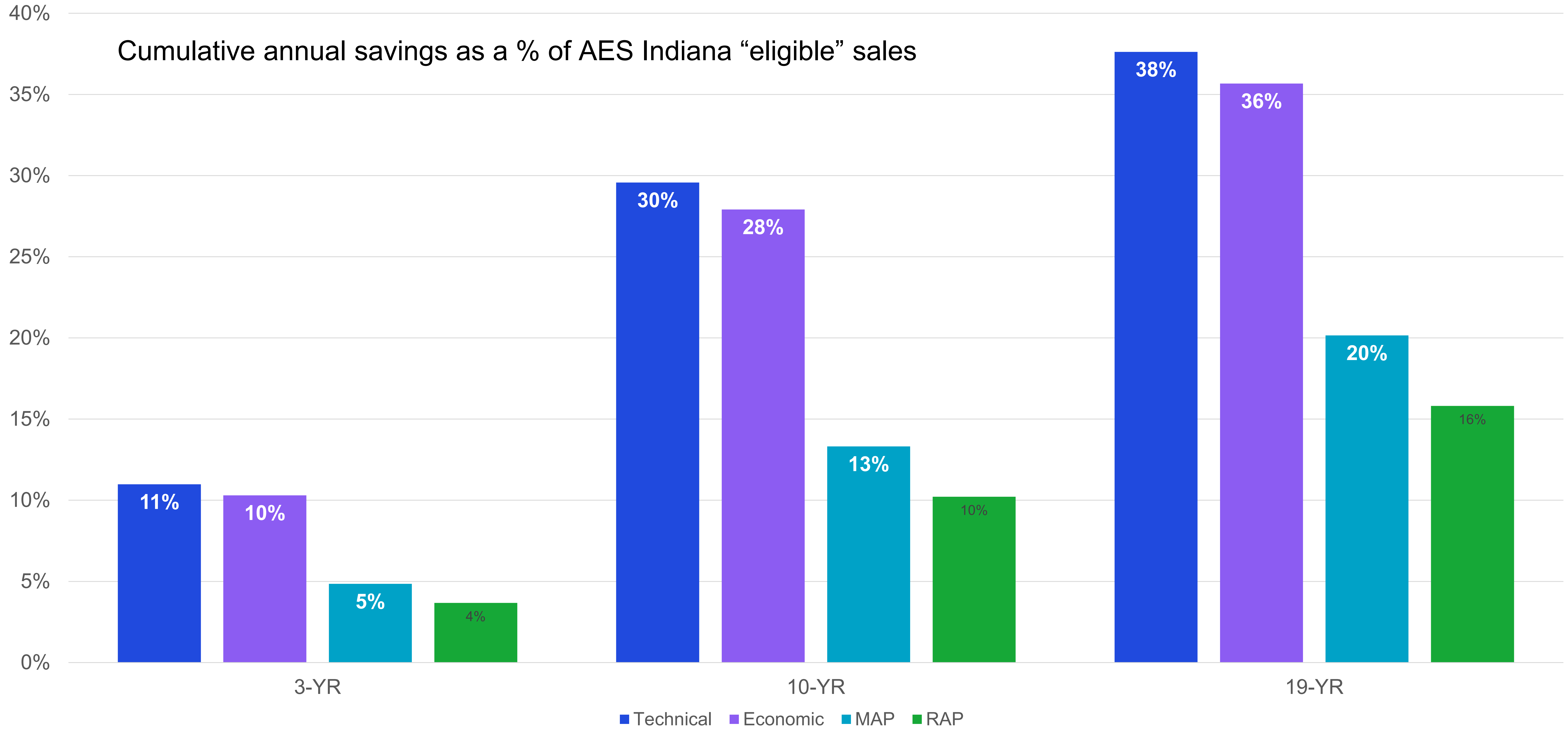
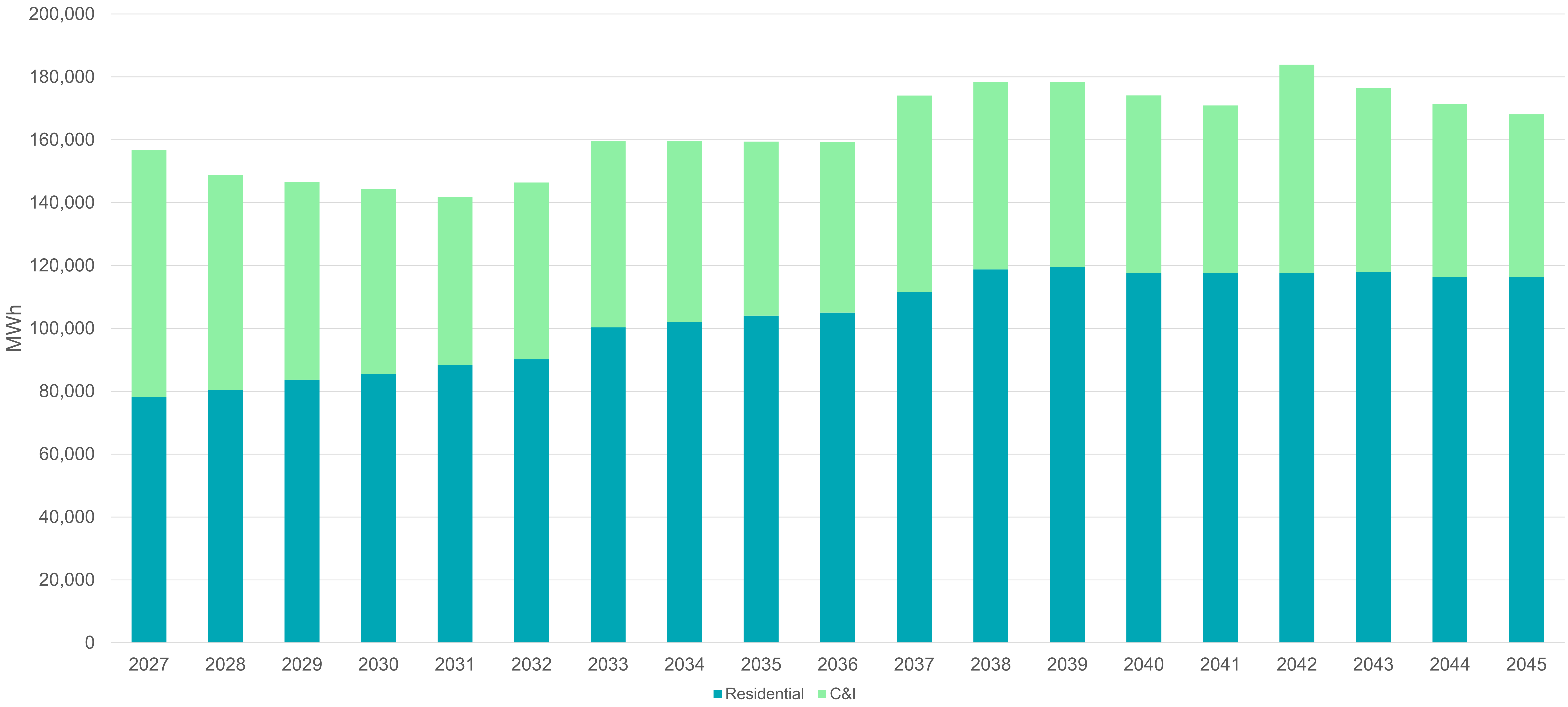
Overview of results: Cumulative annual

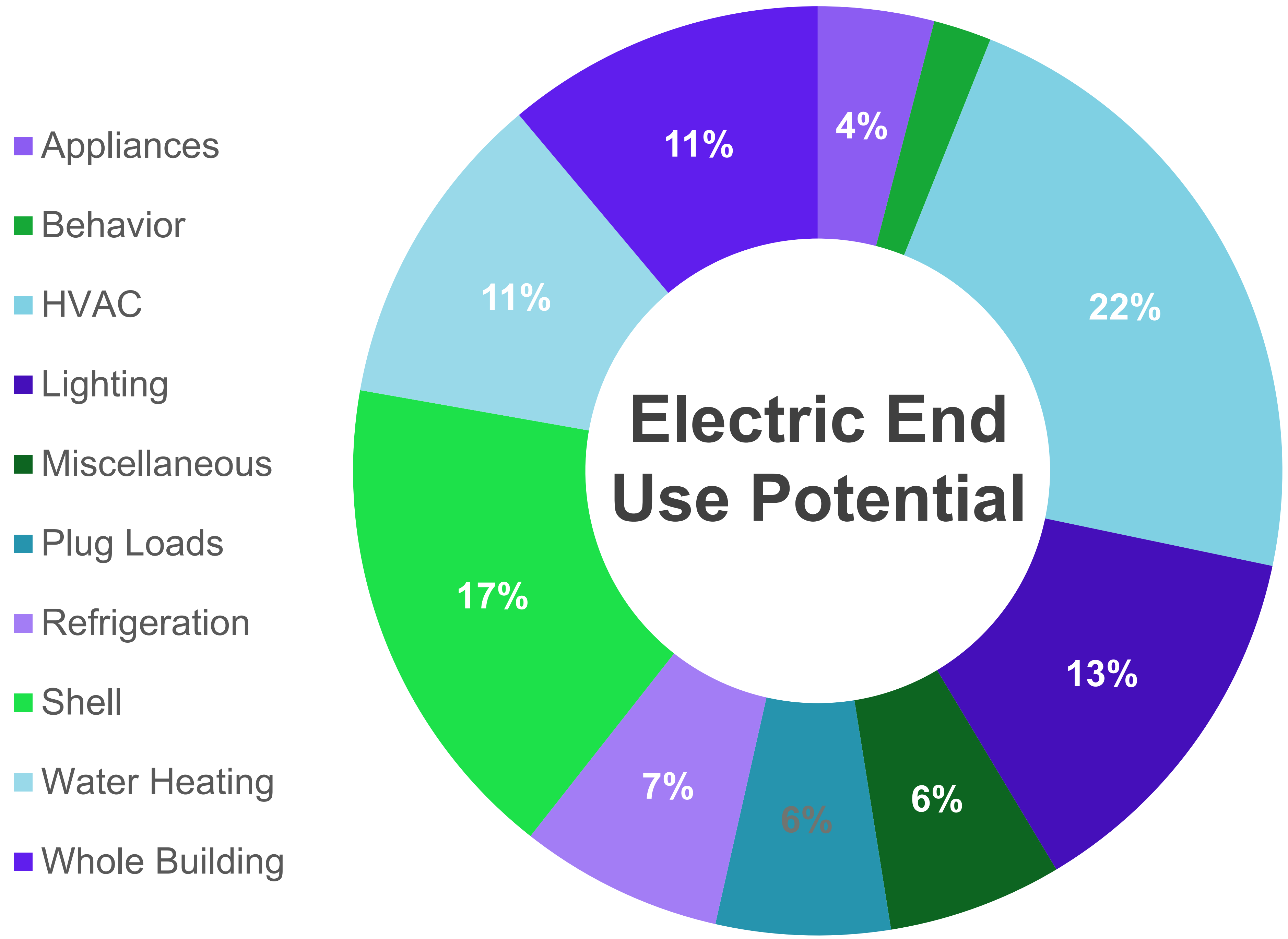


Incremental annual savings by sector: RAP



Cumulative annual savings by end use

2045 Cumulative Annual



16%

Residential cumulative annual realistic achievable potential as a percentage of forecasted sales in 2045

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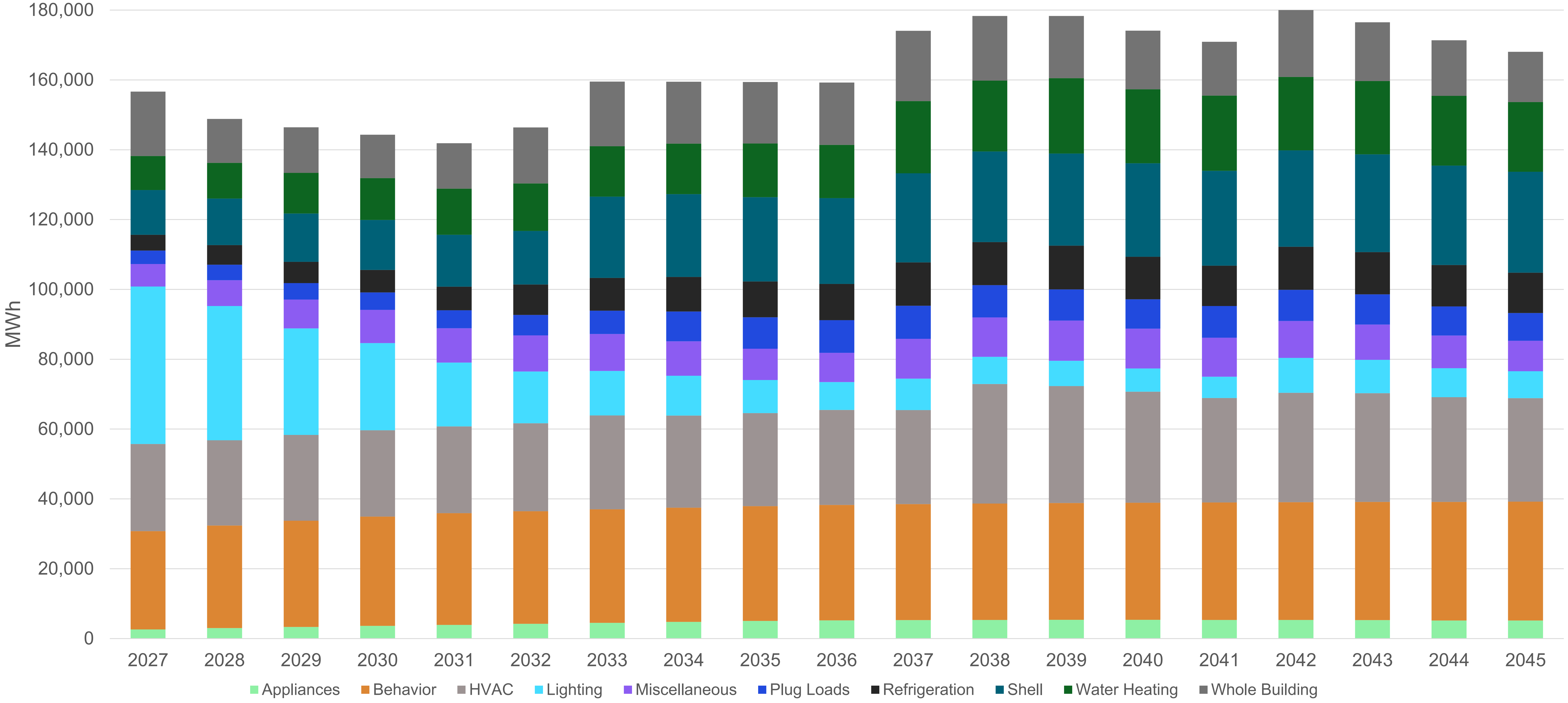
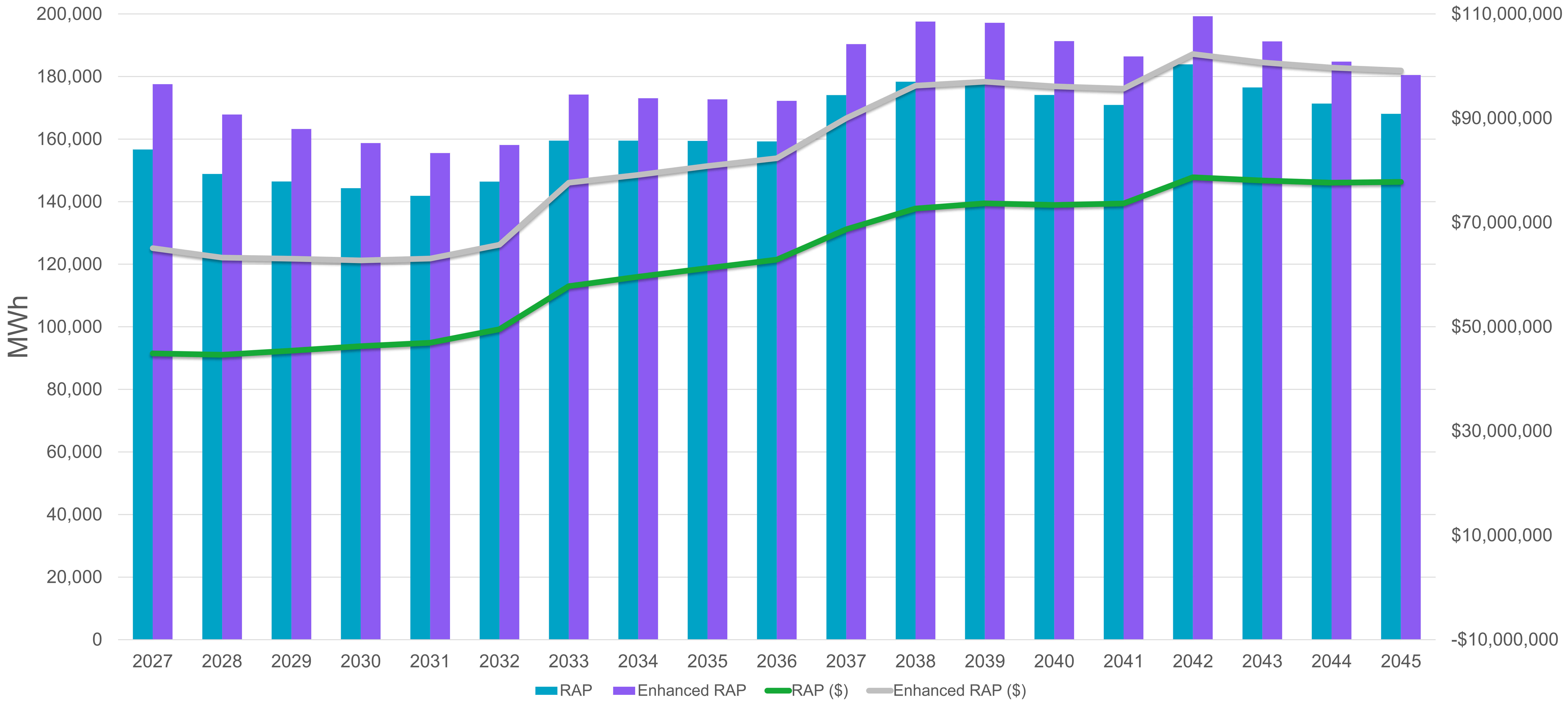
Incremental annual savings by end use



RAP and enhanced RAP: Annual savings and costs



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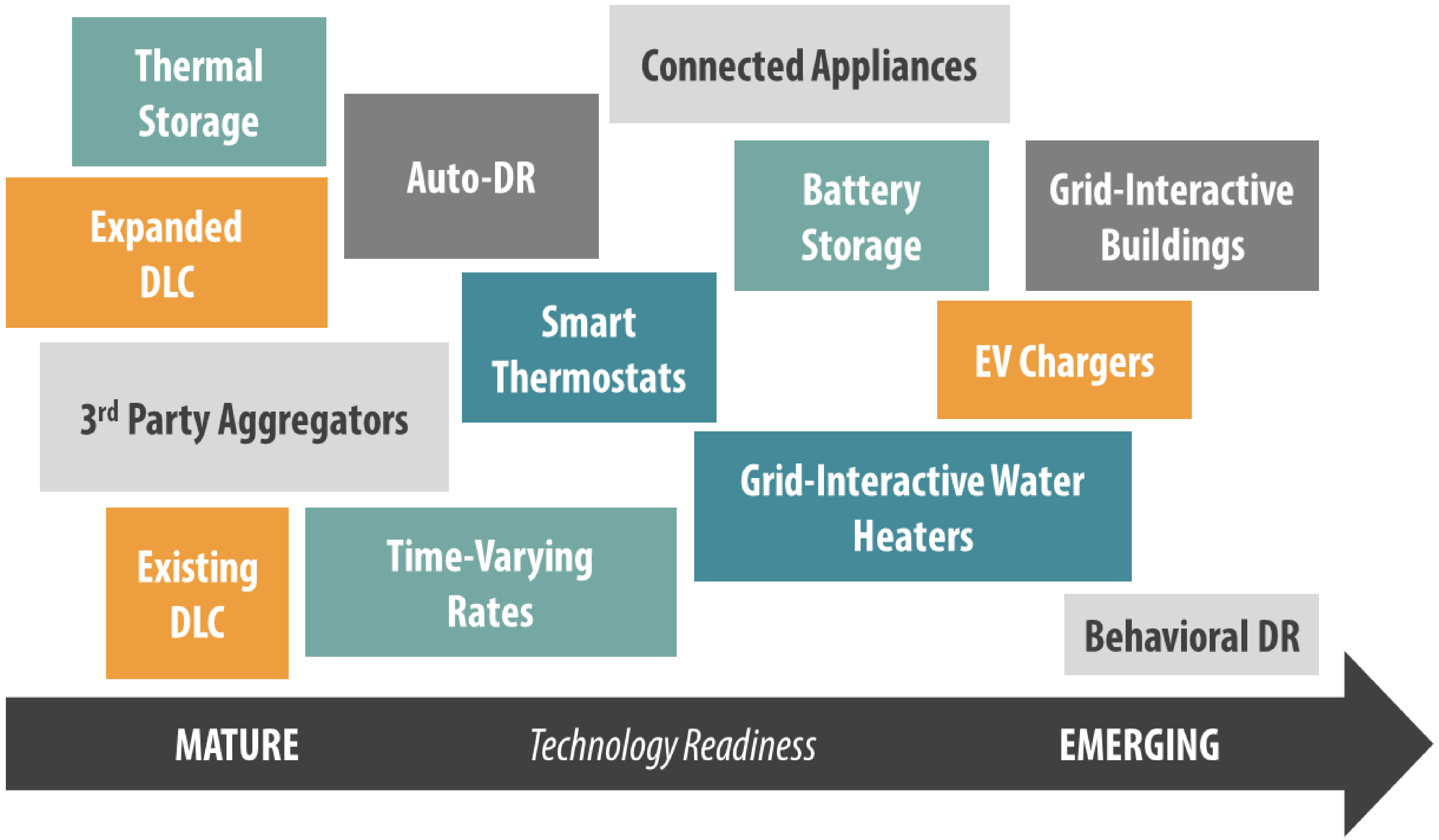
Demand response potential analysis

DR overview: programs considered

- → **DLC – Central AC/Thermostats**
- → DLC –Room ACs
- → DLC – Smart Appliances
- → **DLC – Water Heaters**
- → DLC – Electric Space Heat
- → DLC – Lighting
- → Battery Energy Storage
- → **Electric Vehicle Charging**
- → Curtailment Agreements
- → Demand Bidding
- → Capacity Bidding
- → Time of Use Rates
- → Peak Time Rebate
- → Behavior DR



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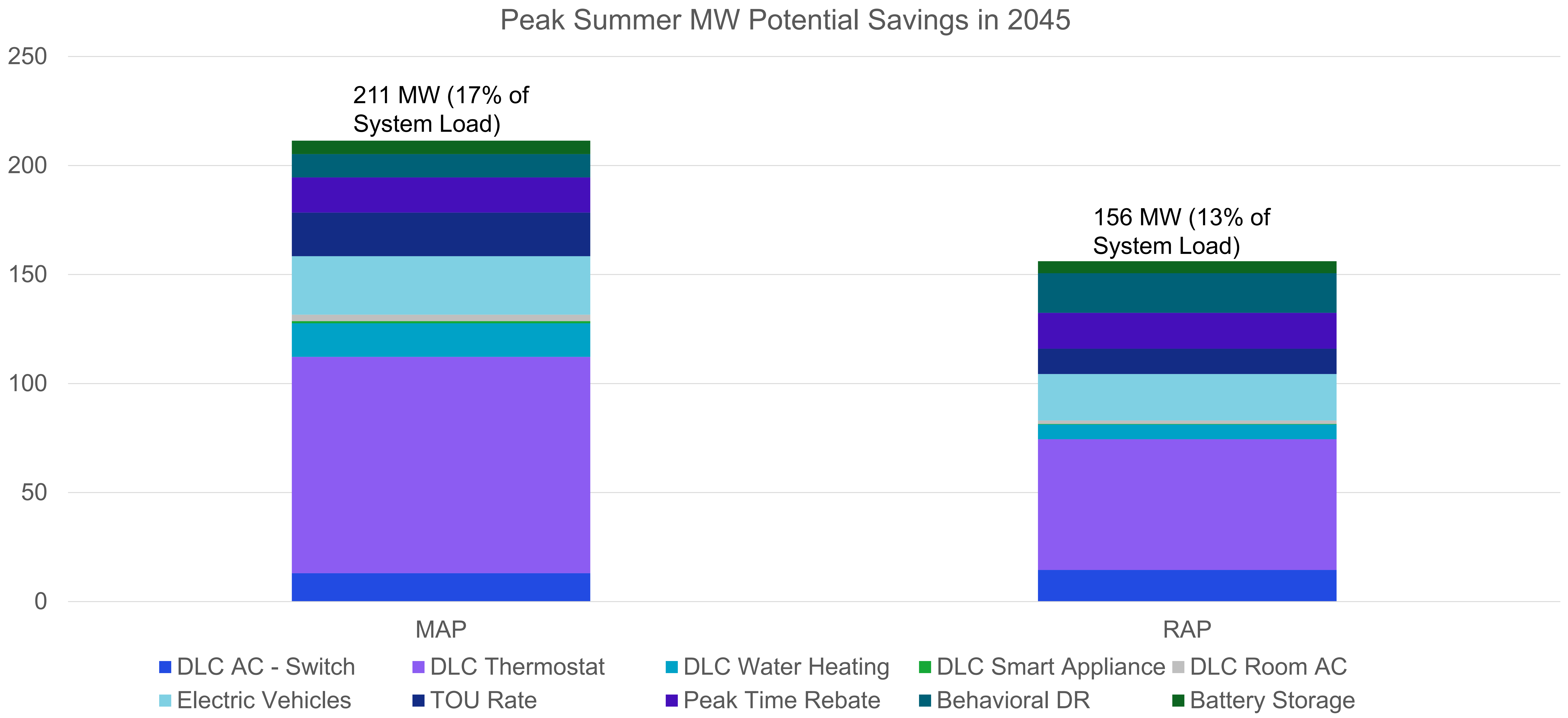
Residential demand response MAP/RAP results



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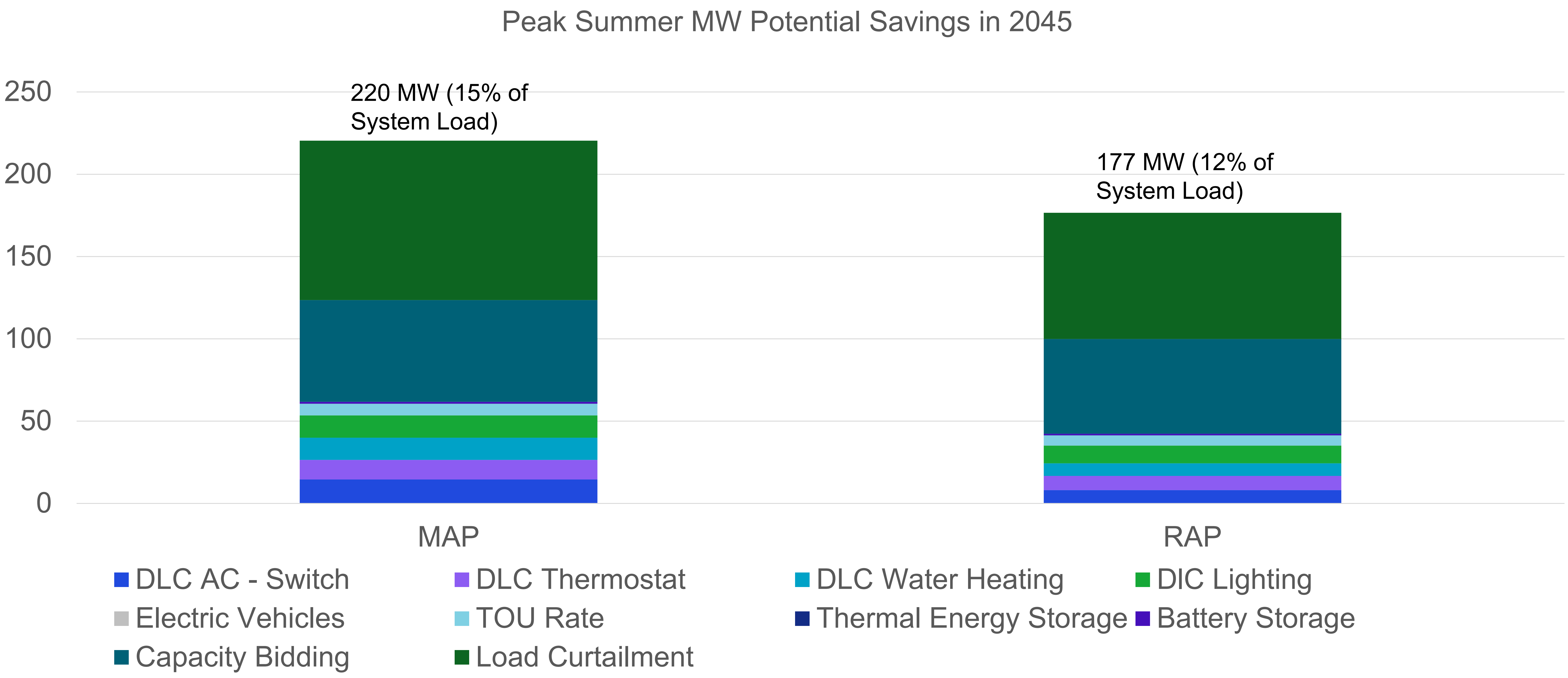
C&I demand response MAP/RAP results



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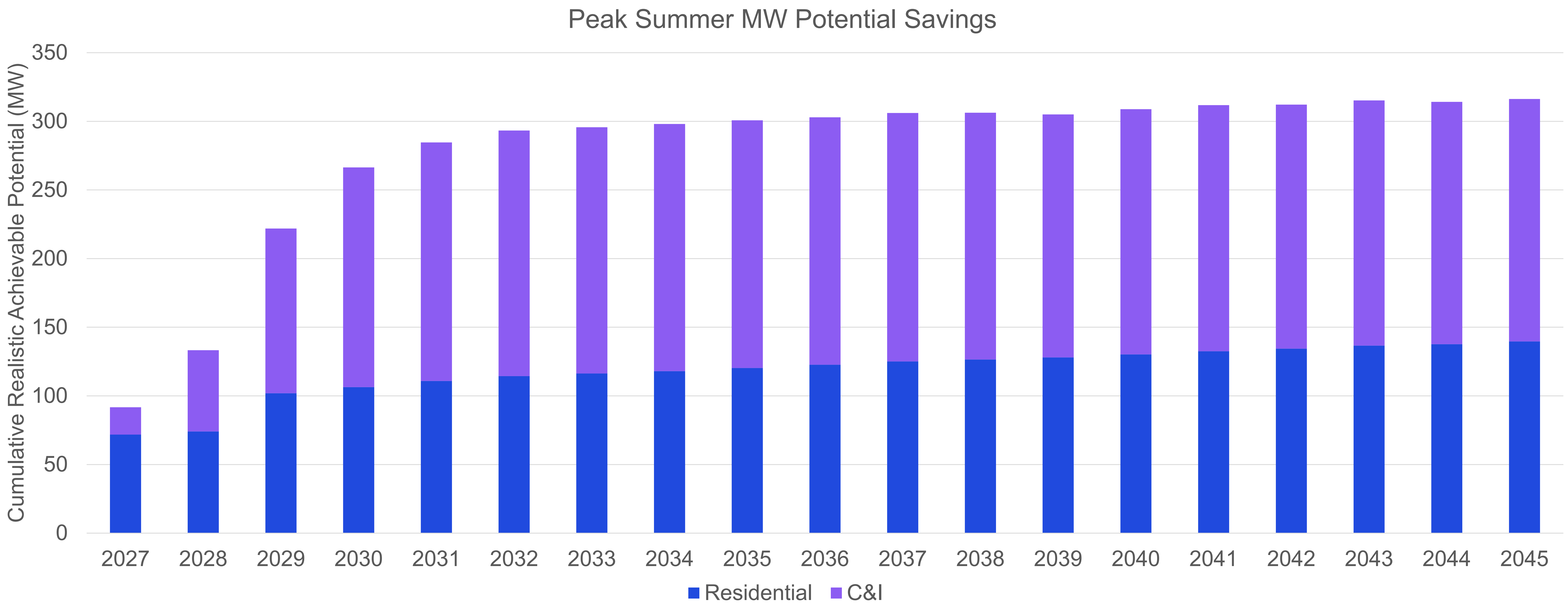
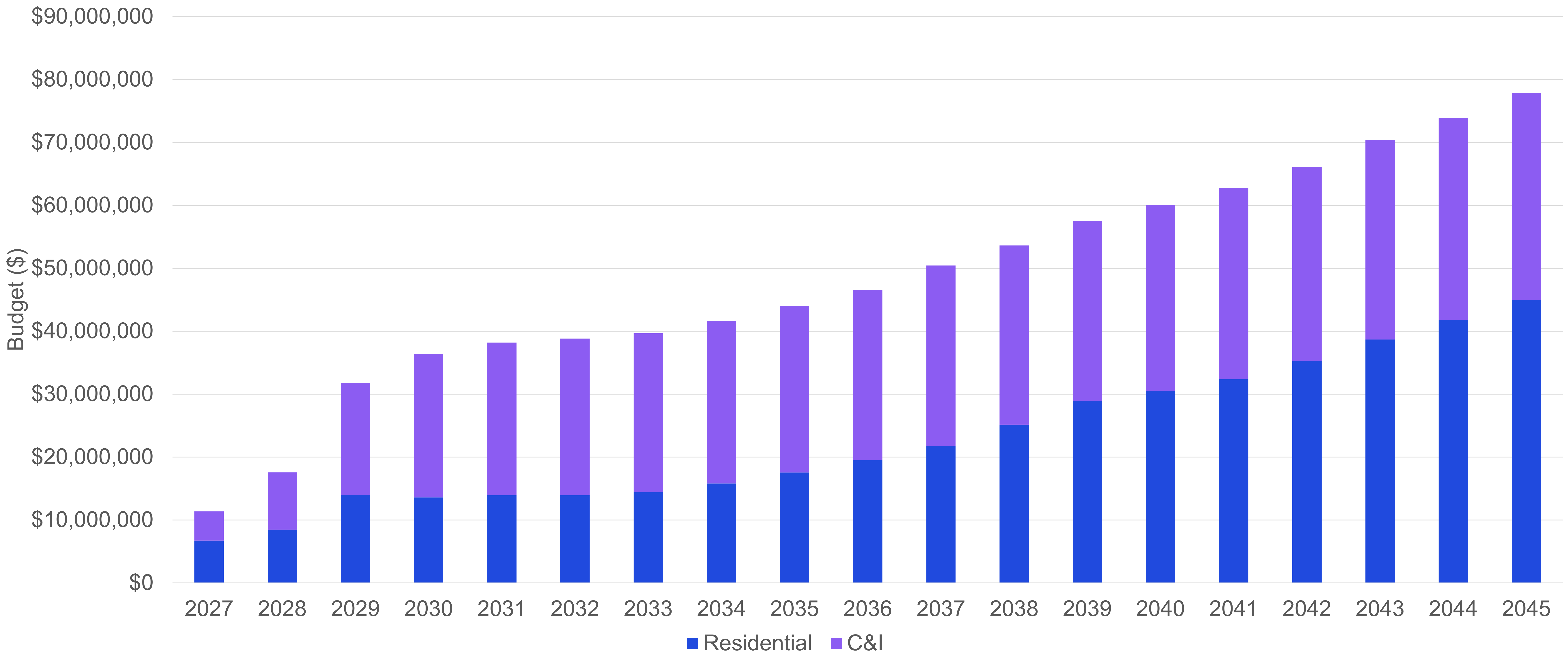
Annual demand response (RAP – by sector)

CUMULATIVE ANNUAL



Annual demand response budgets (by sector)



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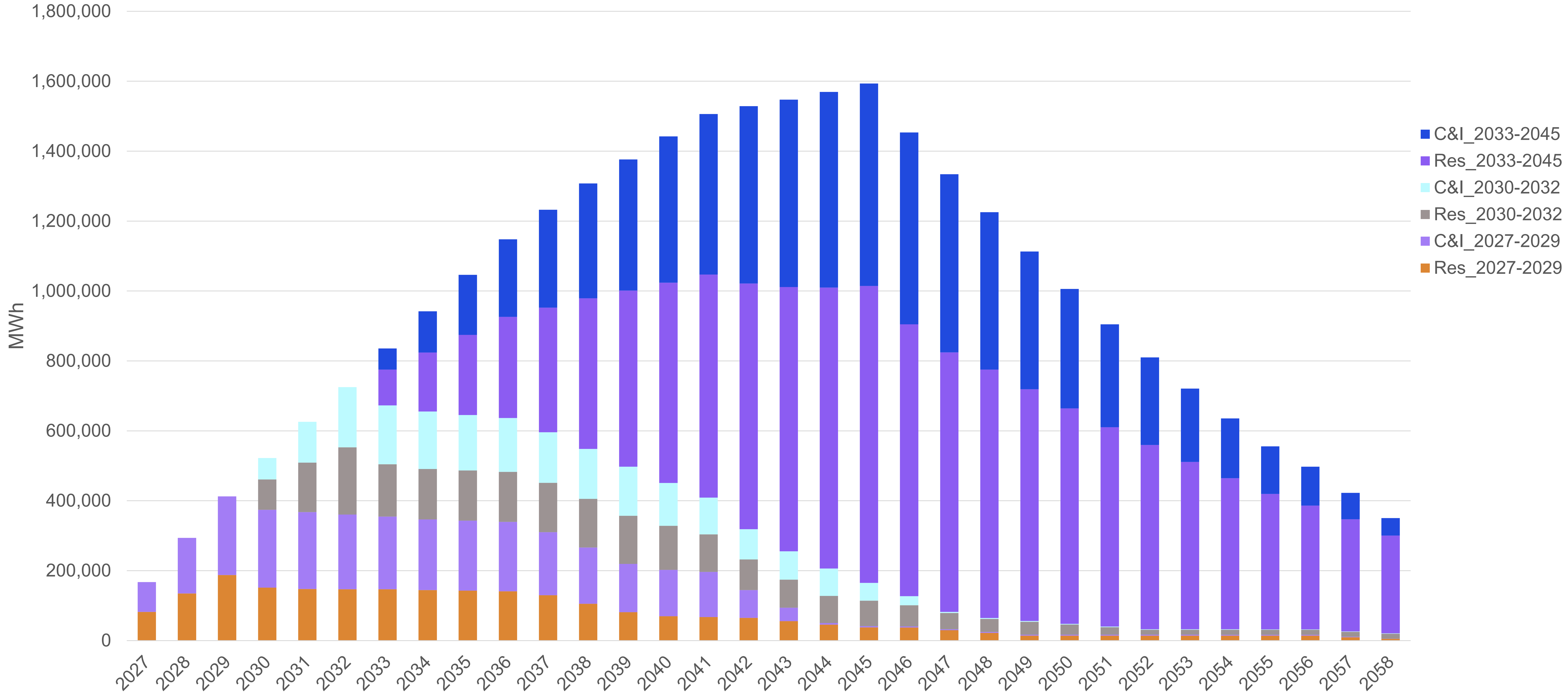
IRP inputs

DSM in the IRP: Expected input structure

- **DSM inputs are:**
  - Three time-vintages (2027-2029, 2030-2032, and 2033-2045)
  - Vintages are sector based (residential, income-qualified, and nonresidential)
    - Residential and nonresidential will be selectable resources ; income-qualified will be a “going-in” resource
  - Provided both Enhanced RAP and RAP for Commercial, RAP only for residential
  - Based on net savings
  - Costs will reflect utility incentive and non-incentive costs (less NPV T&D benefits)
  - Include hourly profiles for each bundle

IRP inputs – energy efficiency – enhanced RAP



DSM in the IRP: expected input structure

- **Time-differentiated savings:**
  - Within a bundle/vintage, the EE savings are broken out by end-use.
  - Saving by end-use are mapped to 8,760 end-use load shape data, developed by National Renewable Energy Laboratory (NREL) and Lawrence Berkley National Lab (LBL).
  - Residential sector includes 33 end-uses
  - Nonresidential sector includes 11 end-uses
  - Hourly savings shapes are provided so that the model captures the timing of savings relative to the AES Indiana system and peak periods.

DR IRP bundles

→DLC Central AC Switch (One Way)
→DLC Central AC Switch (Two Way)
→DLC Thermostat
→DLC Water Heater
→Residential DLC Smart Appliances
→Residential DLC Room AC
→Electric Vehicles

→Time of Use Rate
→Residential Peak Time Rebate
→Residential Behavioral DR
→Battery Storage
→C&I Thermal Energy Storage Rate
→C&I Capacity Bidding
→C&I Load Curtailment

DR cost-effectiveness & RAP results

Residential Programs

	UCT Result	Spring	Summer	Fall	Winter
DLC Central AC Switch - One Way	Pass	8.1	13.1	8.2	0.0
DLC Central AC Switch - Two Way	Pass	1.3	2.1	1.3	0.0
DLC Thermostat (Free Thermostat)	Pass	0.5	2.6	0.5	2.3
DLC Thermostat (BYOT)	Pass	12.4	60.0	10.8	54.1
DLC Water Heater Switch	Fail	2.8	4.5	2.8	7.8
DLC Grid-Enabled Water Heater	Fail	1.6	2.6	1.6	4.4
DLC Smart Appliances	Fail	0.2	0.3	0.2	0.3
DLC Room Air Conditioning	Fail	1.0	1.6	1.0	0.0
DLC Electric Vehicle	Fail	5.1	8.2	5.1	16.0
Electric Vehicle Time of Use Incentive	Fail	8.7	14.1	8.8	11.9
Electric Vehicle EVX Rate	Pass	0.0	0.0	0.0	0.1
Time of Use Rate	Pass	7.5	12.1	7.5	5.2
Peak Time Rebate	Pass	10.7	17.2	10.7	10.0
Behavioral Demand Response	Pass	11.8	19.0	11.8	8.1
Battery Storage	Fail	3.6	5.7	3.6	5.7

C&I Programs

	UCT Result	Spring	Summer	Fall	Winter
DLC Central AC Switch - One Way	Fail	0.0	0.0	0.0	0.0
DLC Central AC Switch - Two Way	Pass	7.7	8.4	7.9	0.0
DLC Thermostat (Free Thermostat)	Pass	0.9	4.5	0.8	4.1
DLC Thermostat (BYOT)	Pass	0.9	4.5	0.8	4.1
DLC Water Heater Switch	Pass	6.2	6.7	6.3	6.7
DLC Grid-Enabled Water Heater	Pass	1.2	1.3	1.2	1.3
DLC Lighting	Fail	10.3	11.2	10.5	8.8
DLC Electric Vehicle	Fail	0.0	0.0	0.0	0.0
Electric Vehicle Time of Use Incentive	Fail	0.0	0.0	0.0	0.0
Time of Use Rate	Pass	5.9	6.5	6.1	2.5
Thermal Energy Storage Rate	Fail	0.1	0.1	0.1	0.0
Battery Storage	Fail	0.9	1.0	0.9	1.0
Capacity Bidding	Fail	37.3	60.1	37.4	46.9
Load Curtailment	Pass	73.5	80.0	75.1	60.6

	Spring	Summer	Fall	Winter
Total	220.4	347.2	220.9	261.9
Total with UCT>1	148.7	237.8	148.9	159.2

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IRP scenario framework

Alex Dickerson

Senior Manager of Wholesale Energy, AES Indiana

IRP scenario drivers

	Reference case	Gas infrastructure challenges	High regulatory: environmental	Stable markets scenario
EPA GHG NSPS	Repealed	Repealed	**111B remains in effect**	Repealed
Tax credits (ITC/PTC)	OBBBA	OBBBA	**IRA reinstatement + extension**	OBBBA
AES Indiana load	Base	Base	↑	↓
Natural gas prices	Base	↑	↑	↓
Thermal CAPEX	Base	Base[1]	↑	↓
Renewables CAPEX	Base	Base	Base	↓
EV/distributed solar	↓	Base	↑	Base

[1] High fixed O&M to reflect high firm gas transportation costs

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IRP scenario analysis

Reference case	Natural gas infrastructure and supply challenges	High regulatory: environmental	Stable market scenario
→ EPA New Source Performance Standards (NSPS) for GHG repealed → Tax credits (ITC/PTC) follow OBBBA → Base case economic outlook → Base natural gas prices → Power prices assume high data center demand within MISO → Low case of electric vehicles and distributed solar	→ EPA NSPS for GHG repealed → Tax credits (ITC/PTC) follow OBBBA → Base case economic outlook → High gas and power prices → Challenges to gas infrastructure and supply drive high gas prices → Base case adoption of electric vehicles and distributed solar	→ EPA NSPS for GHG remain law → IRA tax credits reinstated and extended through 2040 → High load base load growth → Power and gas prices assume high data center demand within MISO → High penetration of electric vehicles and distributed solar	→ EPA NSPS for GHG repealed → Tax credits (ITC/PTC) follow OBBBA → Low case economic outlook → Gas and power prices lowered to historical norms → Base case adoption of electric vehicles and distributed solar

Overview of commodities by IRP scenario

AES Indiana worked with ACES Power to develop commodity scenarios for the 2025 IRP.

Commodity forecasts and inputs include:
→ Power prices
→ Gas prices
→ Capacity prices
→ NOx prices
→ Power price shapes
→ Gas price shapes

AES Indiana plans to use scenarios from ACES's fall 2024 fundamental forecast for the reference case, natural gas infrastructure and supply challenges, and stable market outlook scenarios.

ACES has developed a custom fundamental forecast for the high regulatory: environmental scenario for better alignment.

AES 2025 IRP scenario	ACES commodity scenario
Reference case	ACES fall 2024 fundamental forecast – high demand without GHG rules
Natural gas infrastructure and supply challenges	ACES fall 2024 fundamental forecast – high gas
High regulatory: environmental	ACES custom scenario – high demand with GHG rules
Stable market outlook	ACES fall 2024 fundamental forecast – low gas

ACES fundamental forecast

Will Vance

Director of Fundamental Analysis, ACES

aes Indiana

Agenda

1 Introduction

2 Key Inputs

3 Forecasted Generation Mix

- Installed capacity, capacity credit, generation

4 Forecasted Prices

- Monthly on-peak/off-peak power, sample hourly shapes, capacity

5 Scenarios

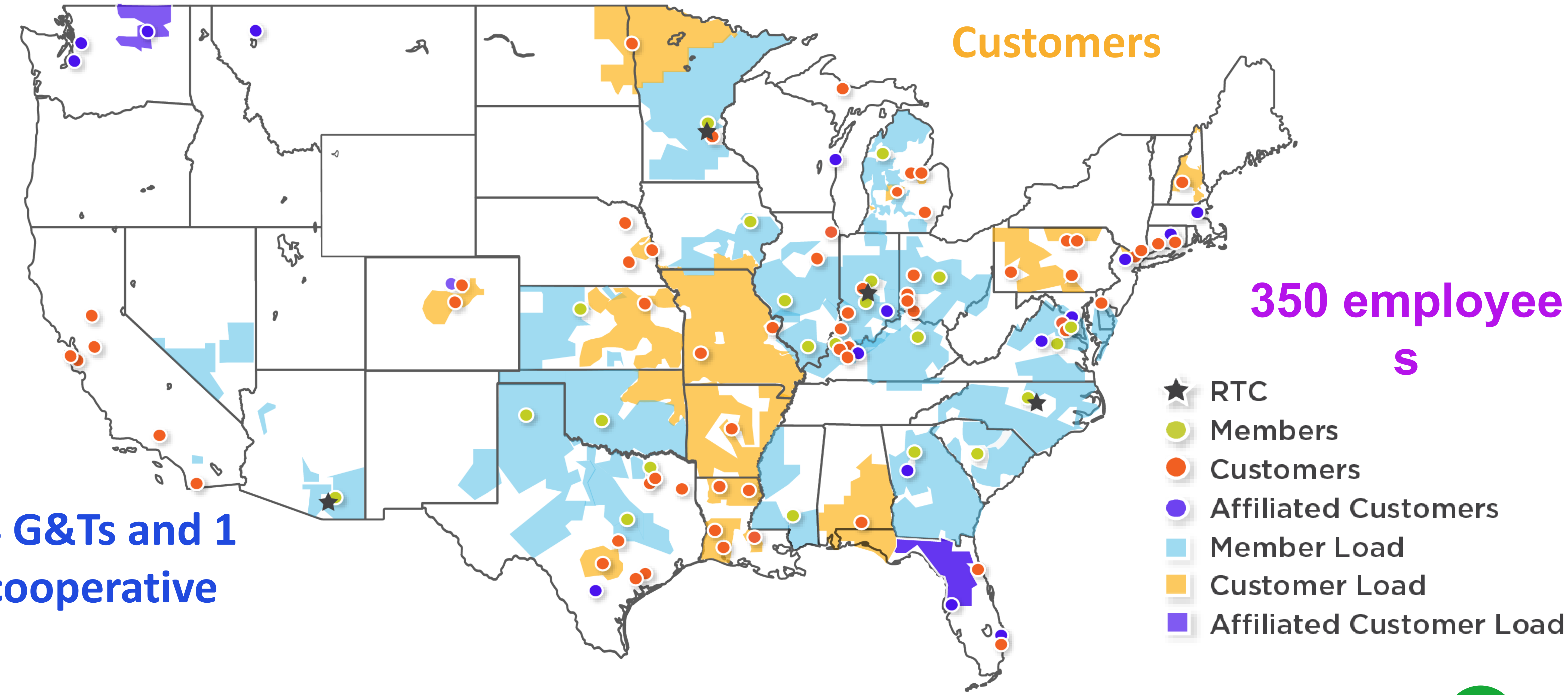
- High and Low Gas Prices and High Demand

Who is ACES?

ACES is a nationwide energy management company

We help our Members and Customers buy, sell, and manage energy more efficiently, with less risk

Provide services to additional 70+ Customers

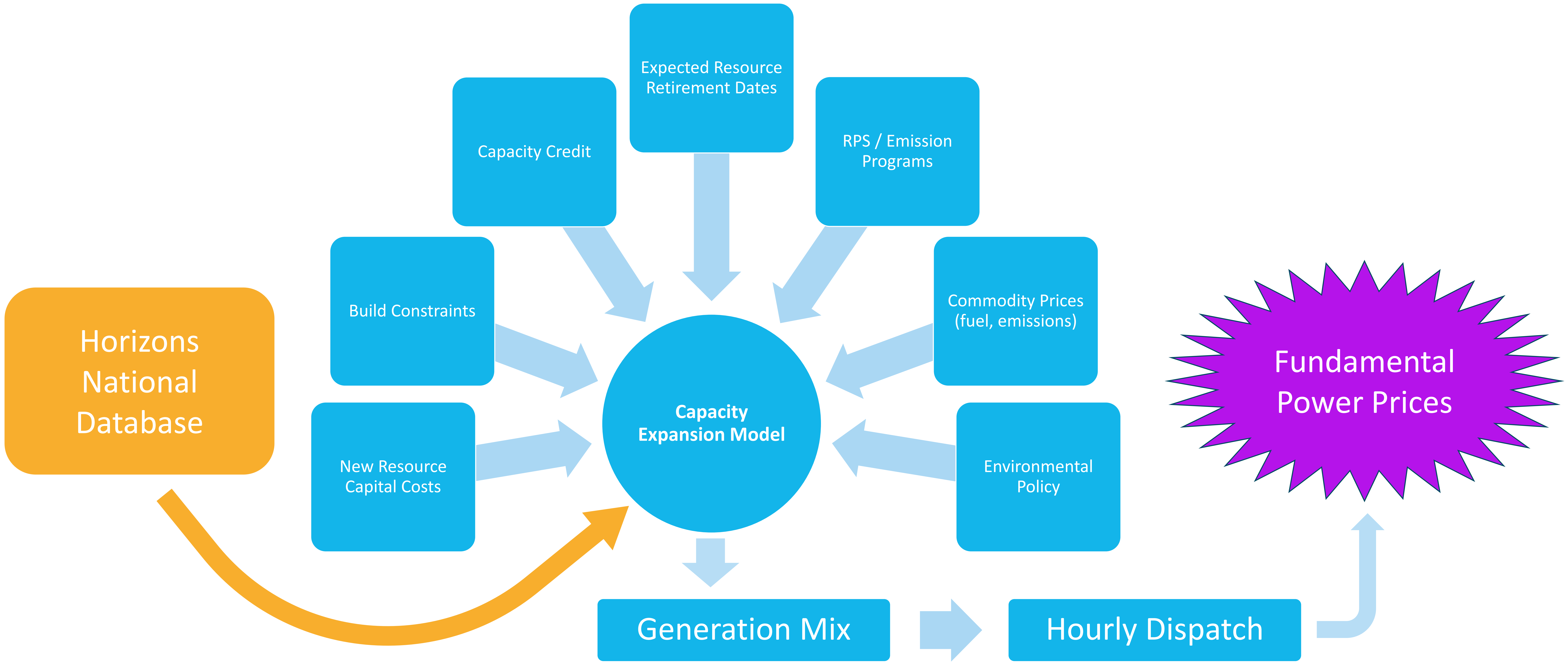


350 employees

Owned by 24 G&Ts and 1 distribution cooperative

ACES excellence in energy

What is a Fundamental Forecast?



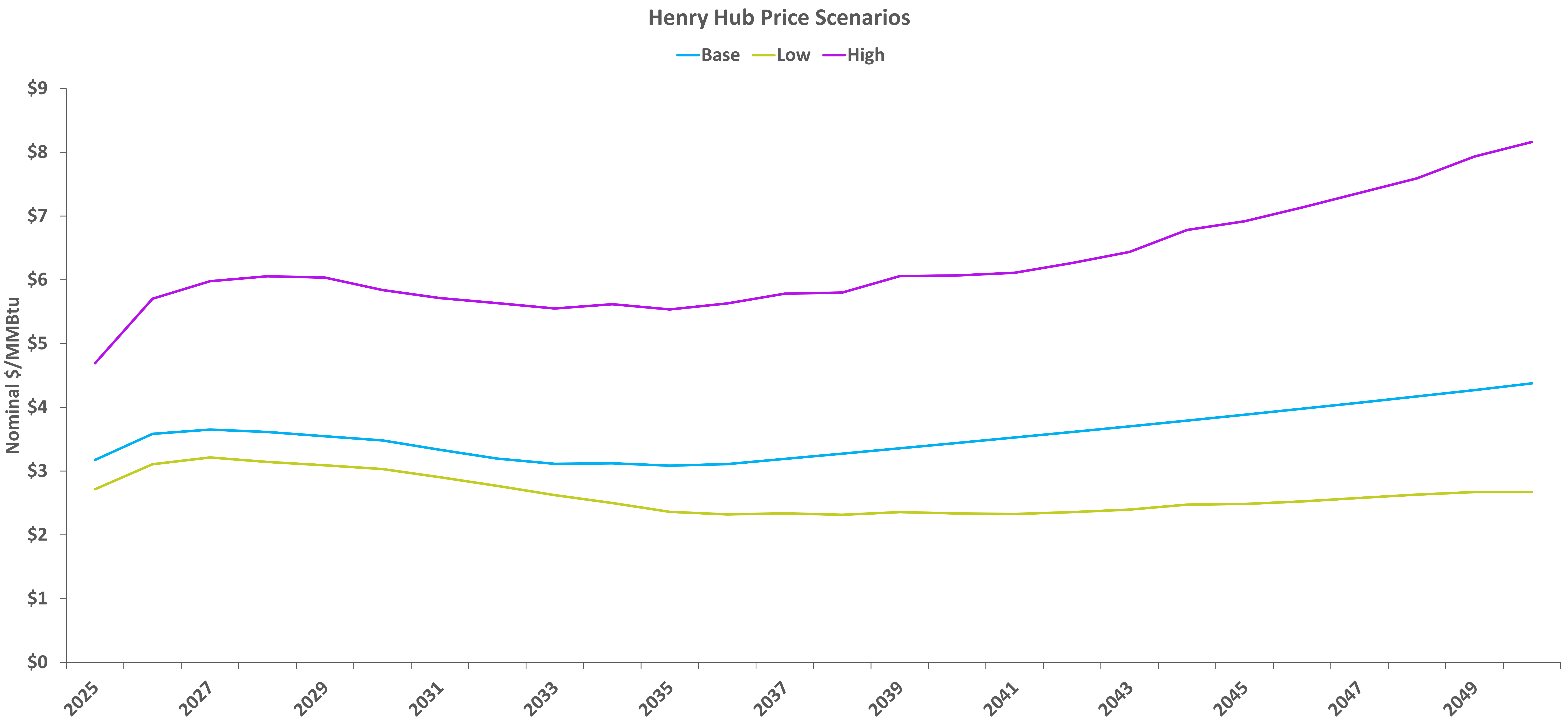
ACES Fundamental Forecast

The forecast includes several scenarios. We will focus on these four:

1. High Demand – includes data center load groups but limited environmental regulation
2. High Gas – high natural gas prices
3. High Demand with GHG Rules – High demand scenario with EPA's Rule 111b
4. Low Gas – low natural gas prices

Key Inputs

Natural Gas



Henry Hub Price Scenarios
Base
Low
High
Nominal $/MMBtu
$9
$8
$7
$6
$5
$4
$3
$2
$1
$0
2025
2027
2029
2031
2033
2035
2037
2039
2041
2043
2045
2047
2049

New Resource Capital Costs (nominal $/kW)

- Used public sources and confidential market intelligence
  - National Renewable Energy Laboratory's (NREL) 2024 Annual Technology Baseline (ATB)
  - U.S. Energy Information Administration's (EIA) 2023 Annual Energy Outlook (AEO)
  - Lawrence Berkely National Laboratory (LBNL) 2023 Interconnection Cost Report
- Each state has a tech-specific capex factor

Total Interconnection Cost (2022 $/kW)	
	Weighted Average Across RTOs
Natural Gas	$63
Solar	$154
Solar Hybrid	$229
Storage	$189
Wind Onshore	$95
Wind Offshore	$184

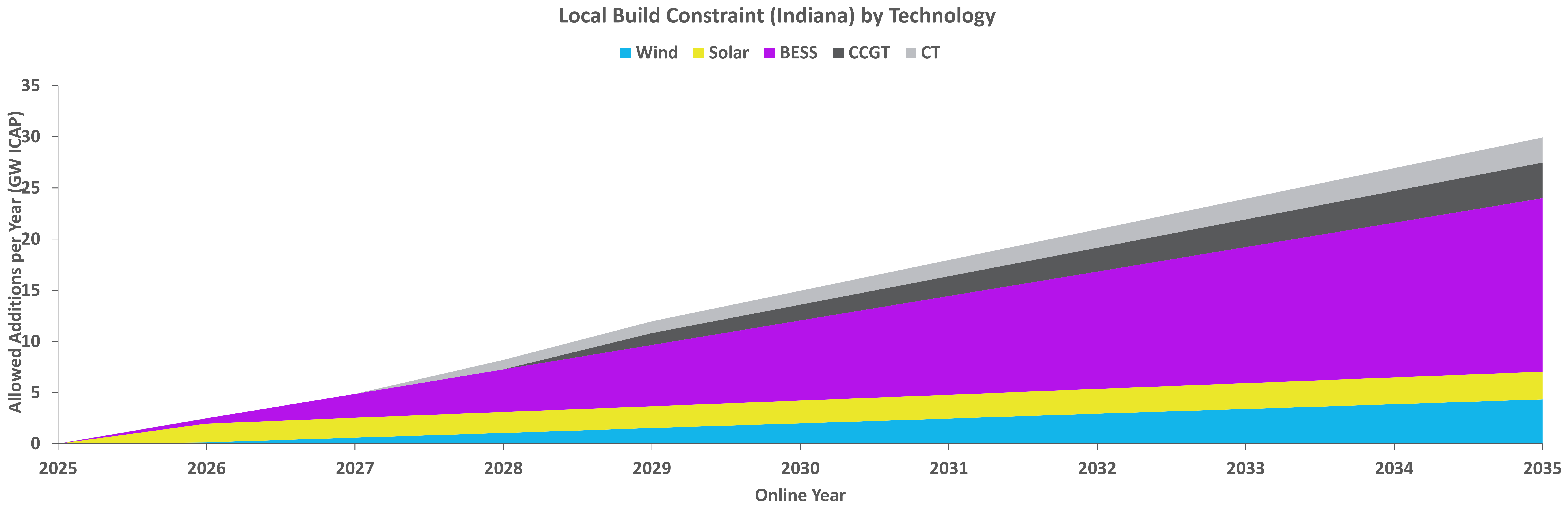
Sample CapEx Factors					
	State				
Technology	IL	IN	KY	MI	OH
CCGT	122%	99%	100%	108%	98%
CT	120%	100%	100%	107%	98%
ICE	121%	102%	101%	109%	94%
SMR	118%	101%	101%	106%	99%
Solar	113%	100%	100%	104%	99%
Battery	107%	102%	102%	102%	99%
Wind	120%	102%	101%	106%	98%

Source: Sargent & Lundy (S&L) report for the EIA

ACES excellence in energy

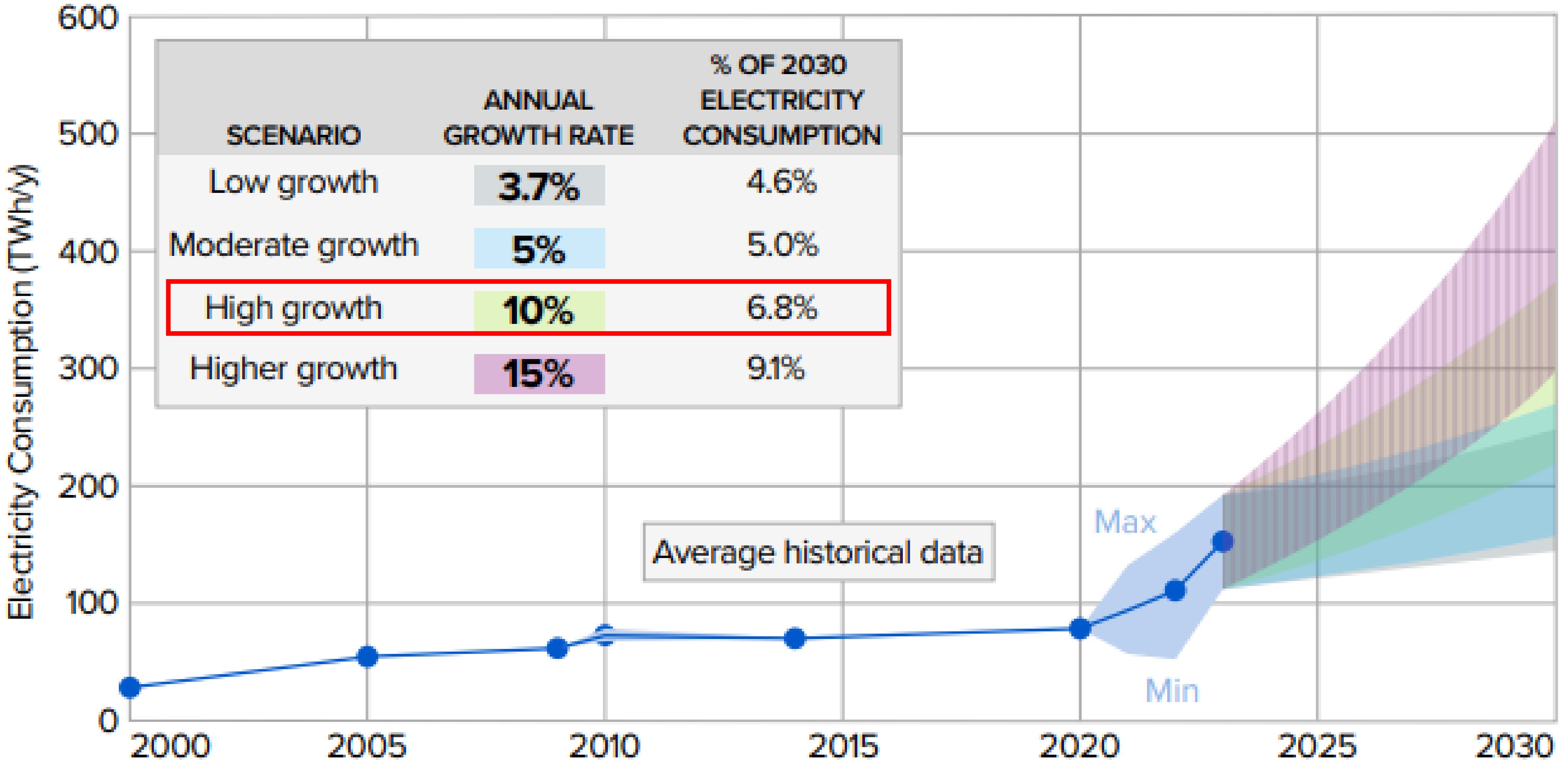
Build Constraints

- Applies local and global build constraints
- Primary intelligence comes from the EIA's 860m



High Demand

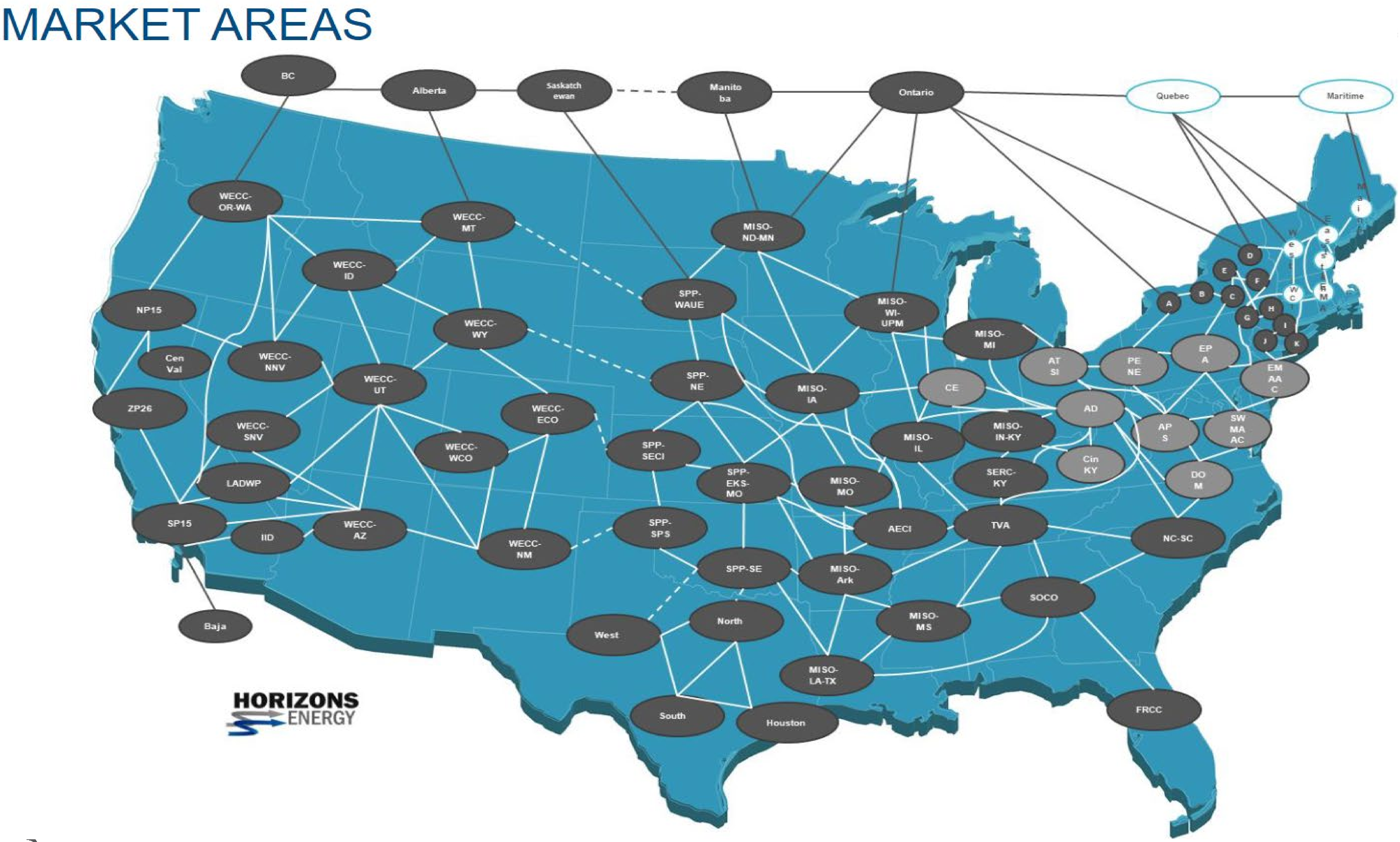
- Incremental data center load growth with high load factor
- Uses EPRI's 2024 White Paper "Powering Intelligence" High Growth Scenario
  - Existing 2023 data center load experiences 10% annual growth rate from 2024 – 2030, tapering off to 3% from there



- For Indiana, this is an incremental 1 GW of growth by 2030

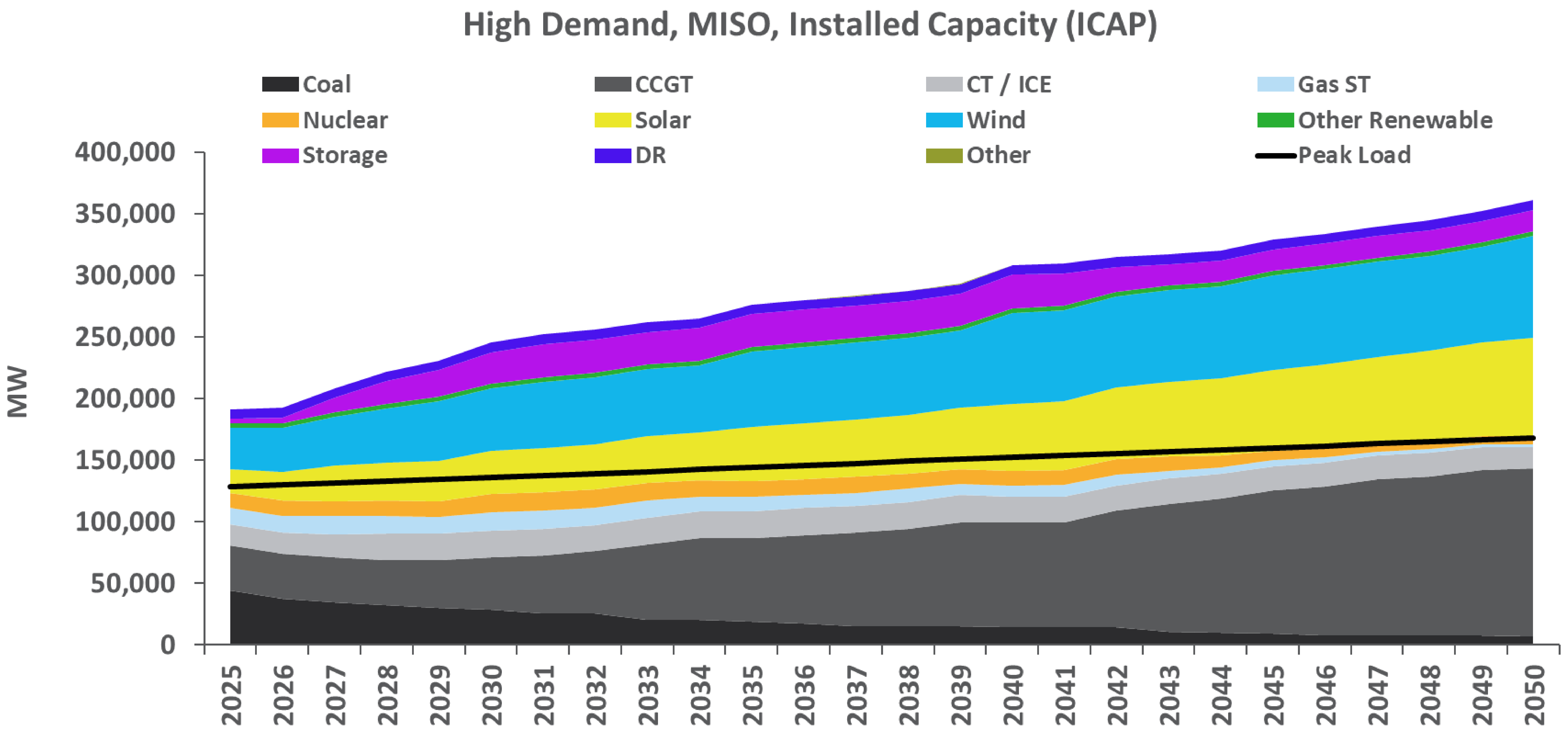
Results

National Data Base Topology



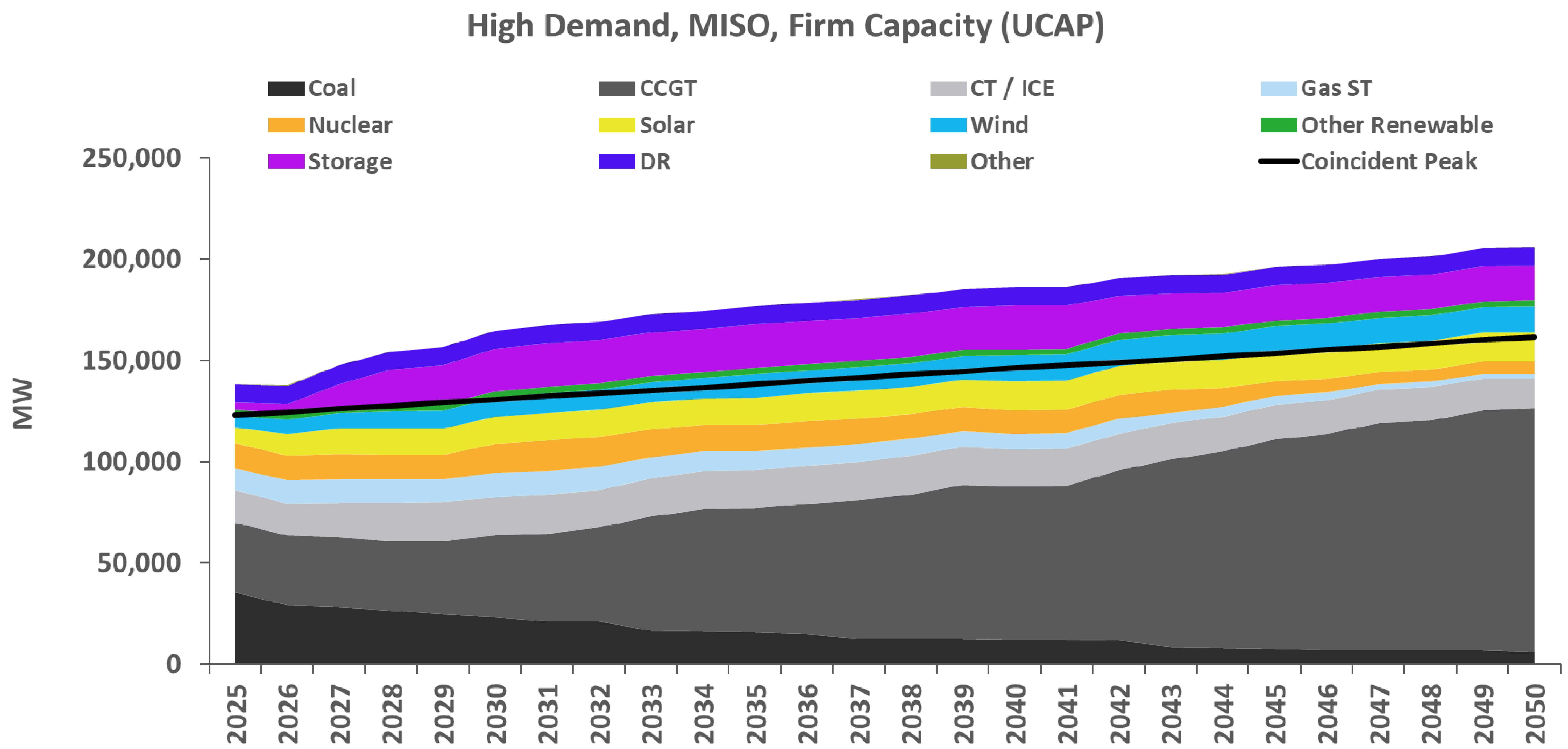
ACLS excellence in energy

Results: High Demand – Installed Capacity



ACES excellence in energy

Results: High Demand – Capacity Credit



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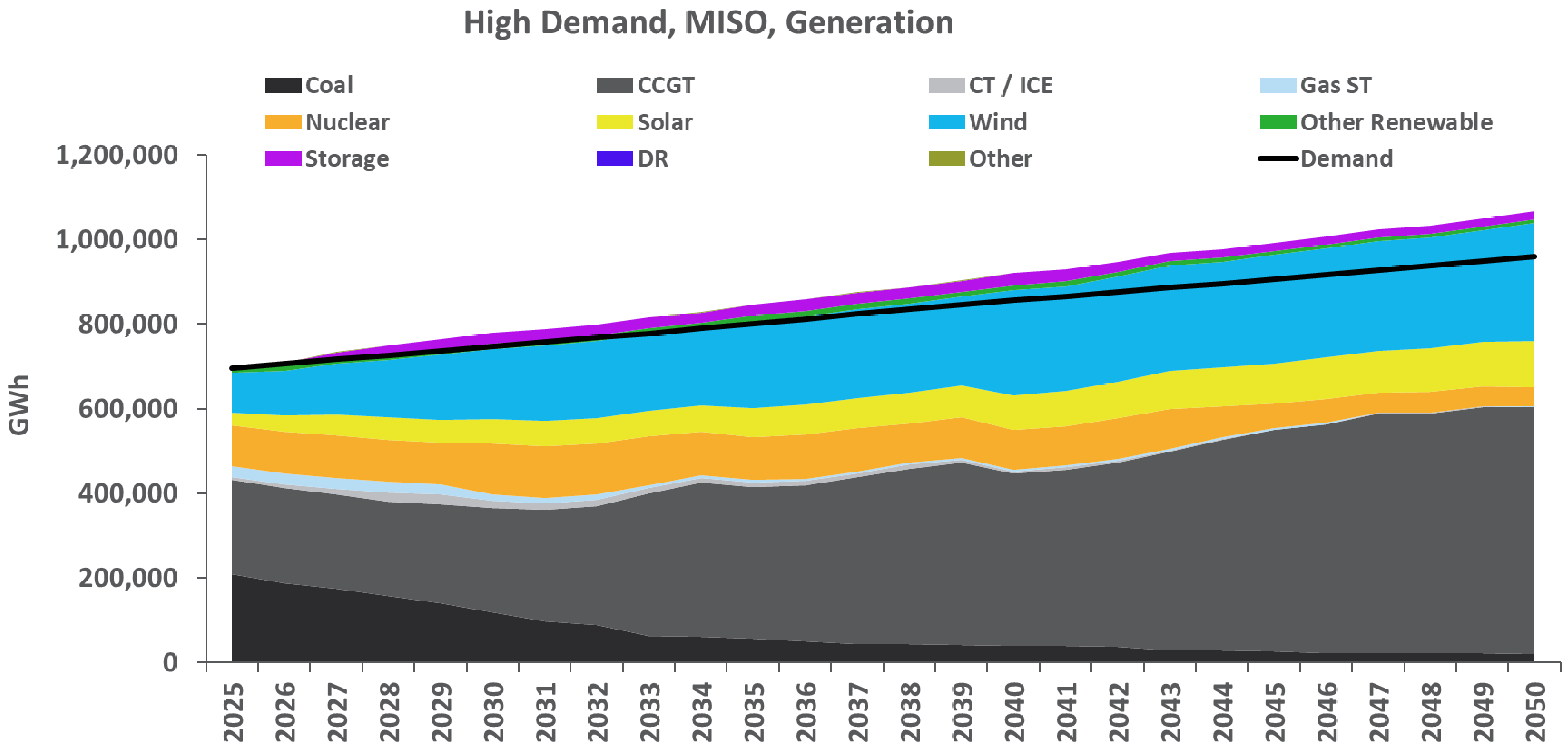
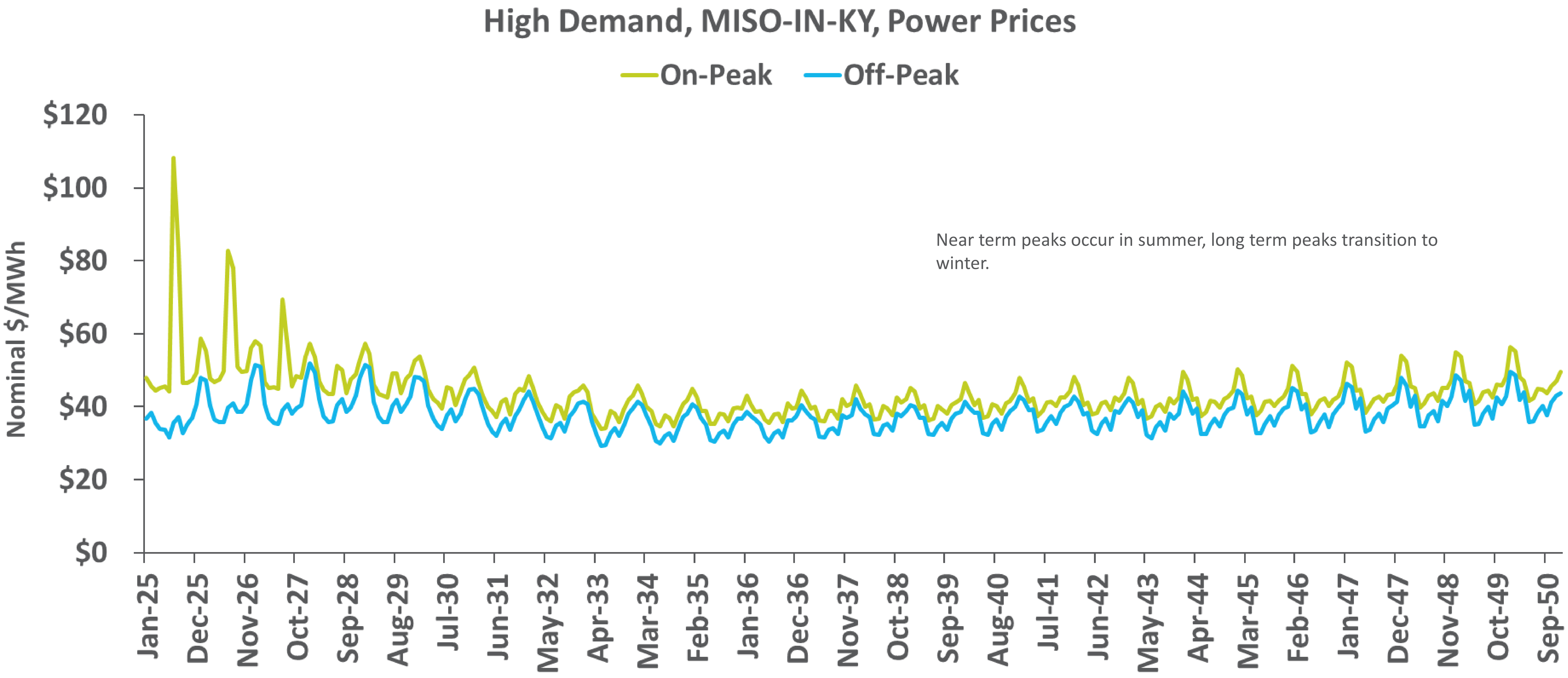
Results: High Demand – Generation



Results: High Demand – Monthly Prices



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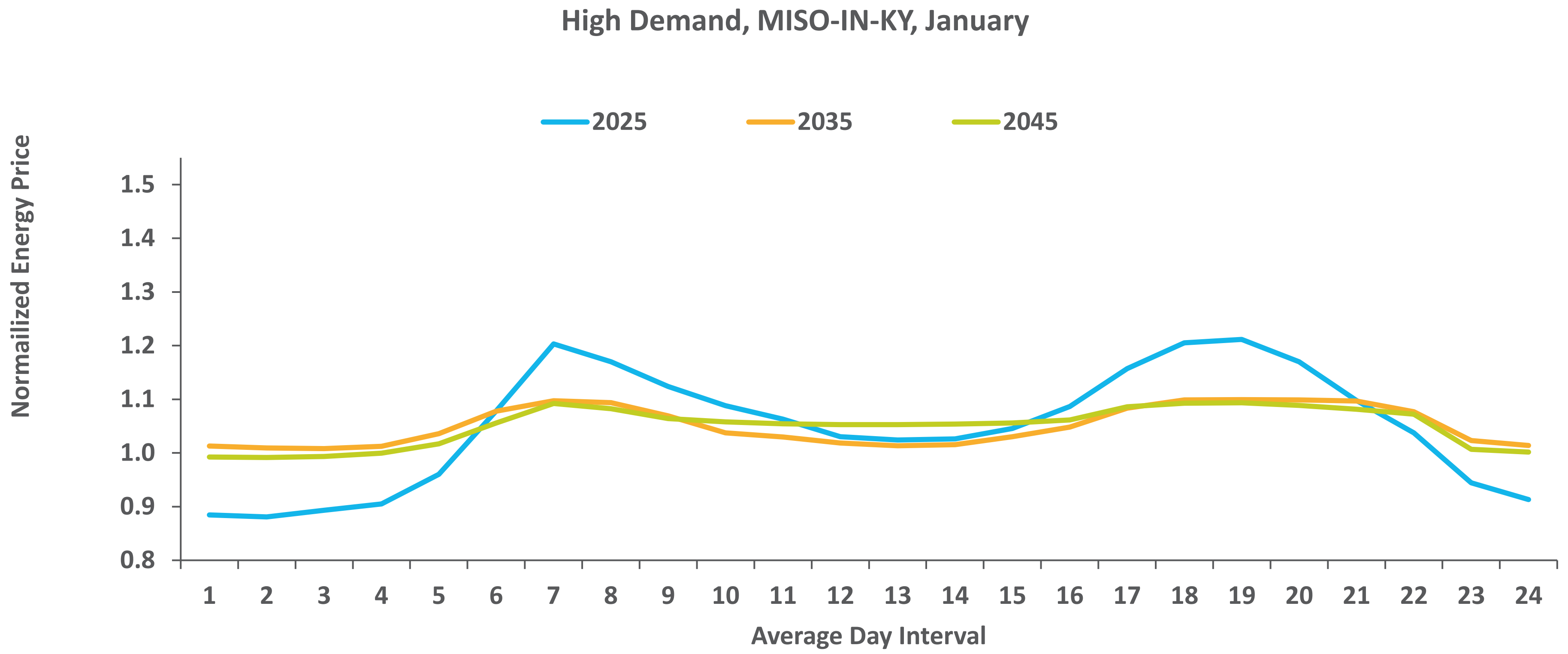
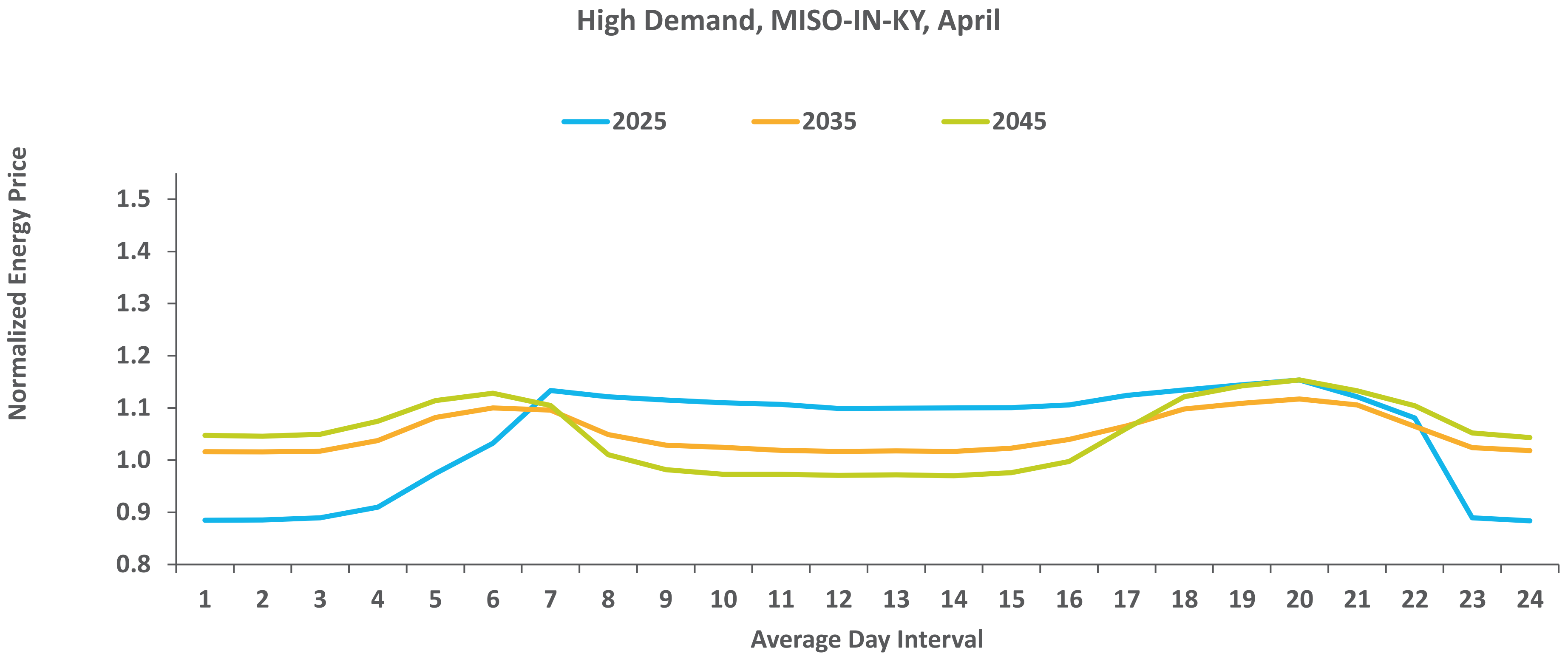
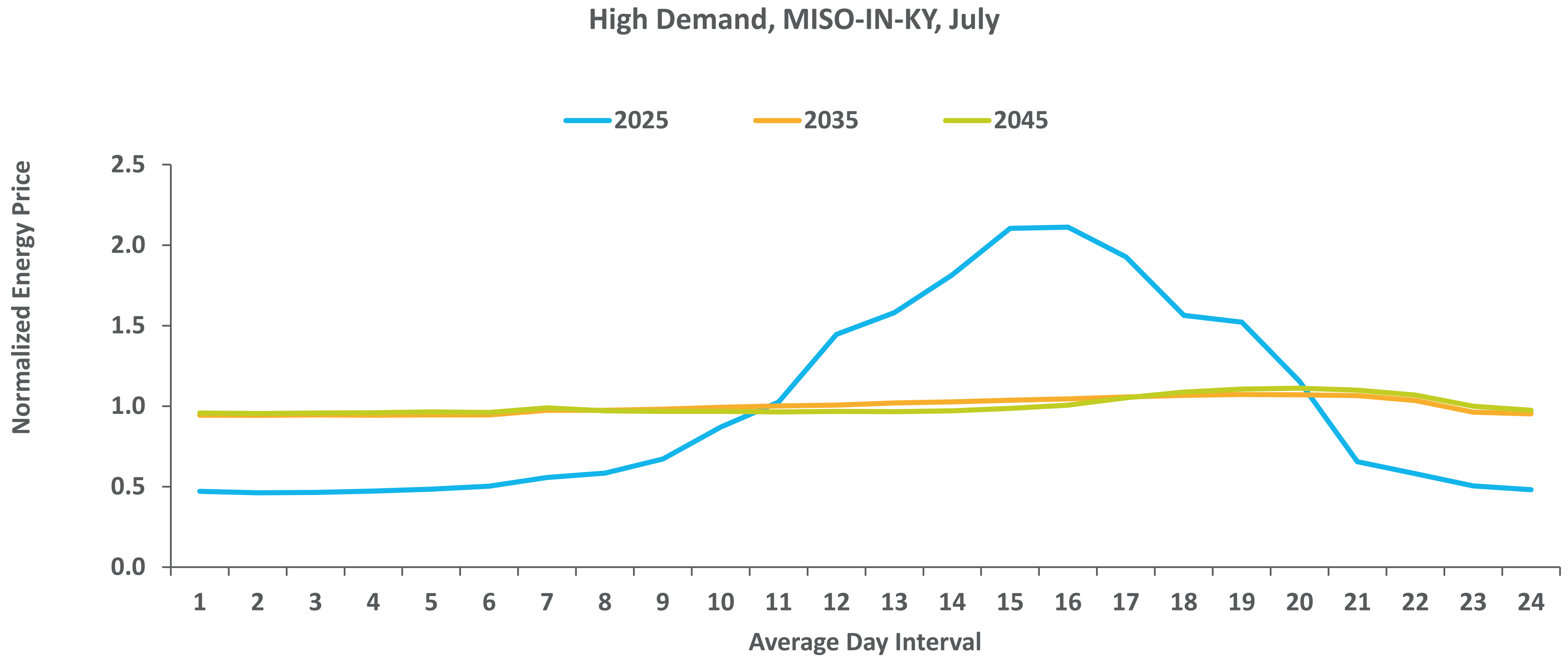
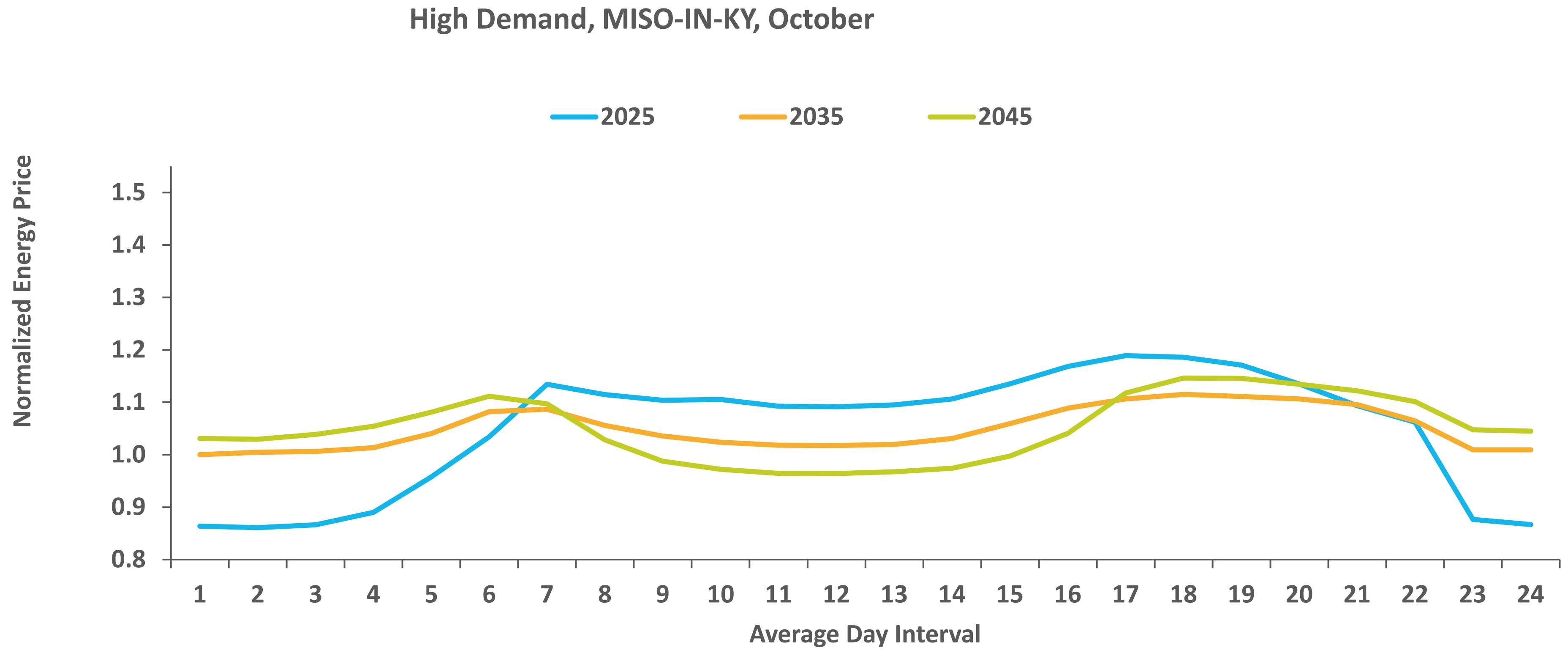
Results: High Demand – Power Shape









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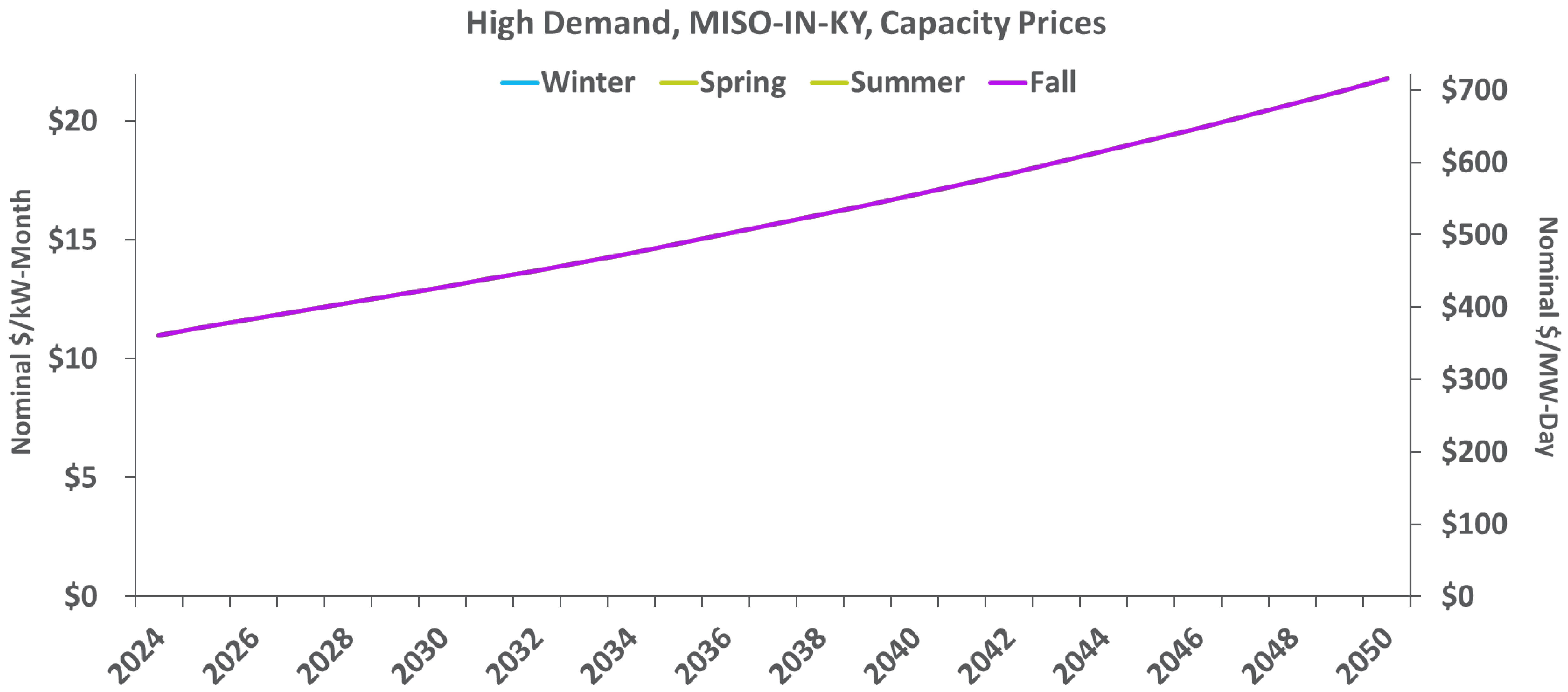
Results: Base Case – Capacity Prices



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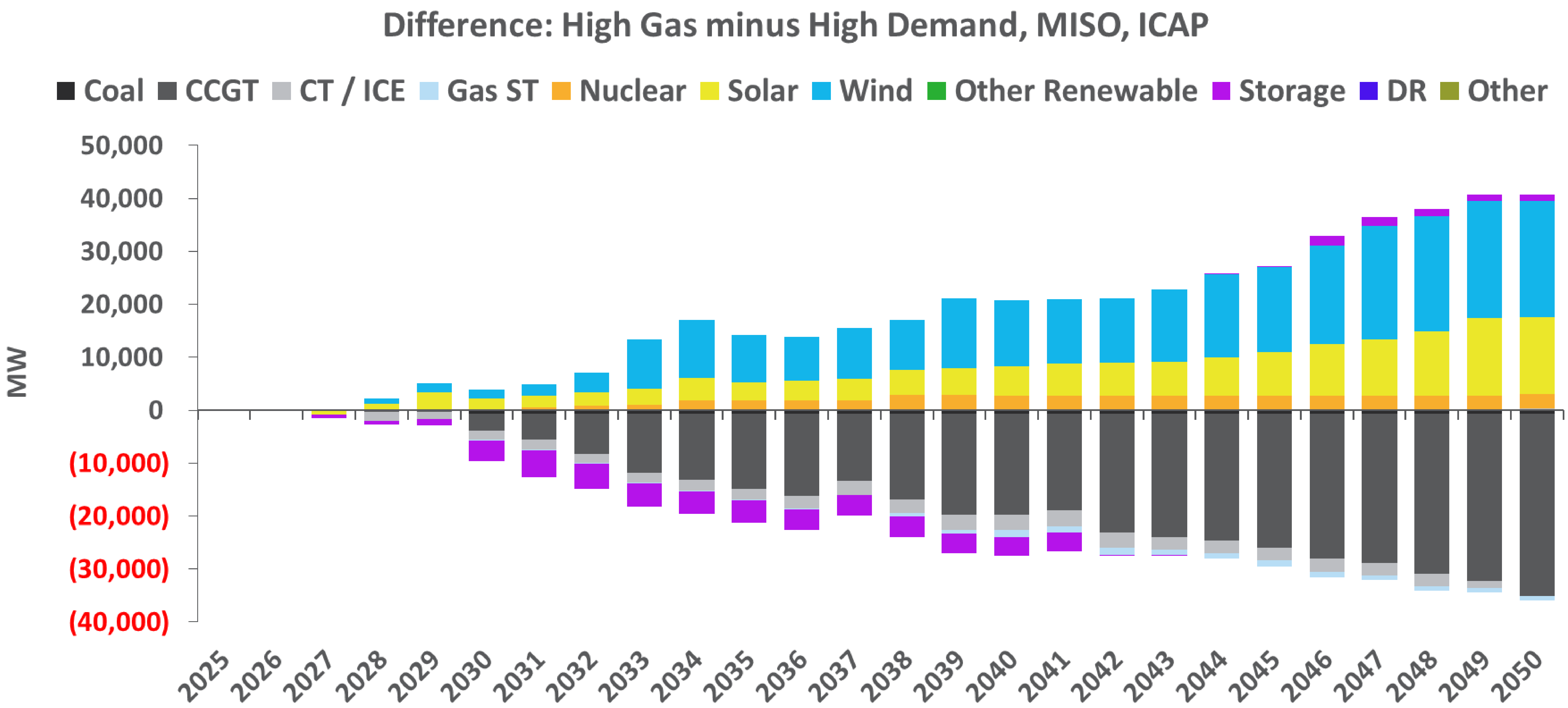
Scenarios

Results: High Gas vs. High Demand



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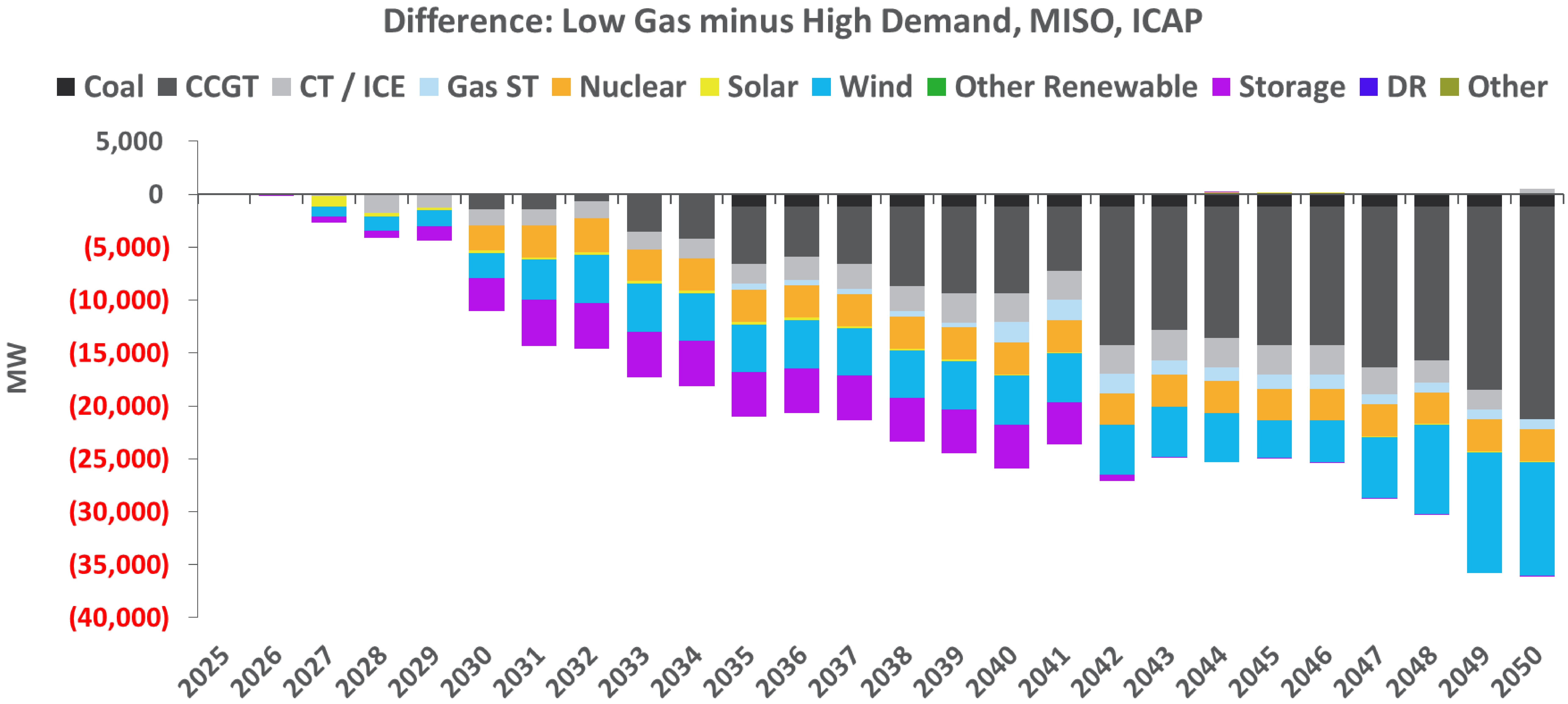
Results: Low Gas vs. High Demand

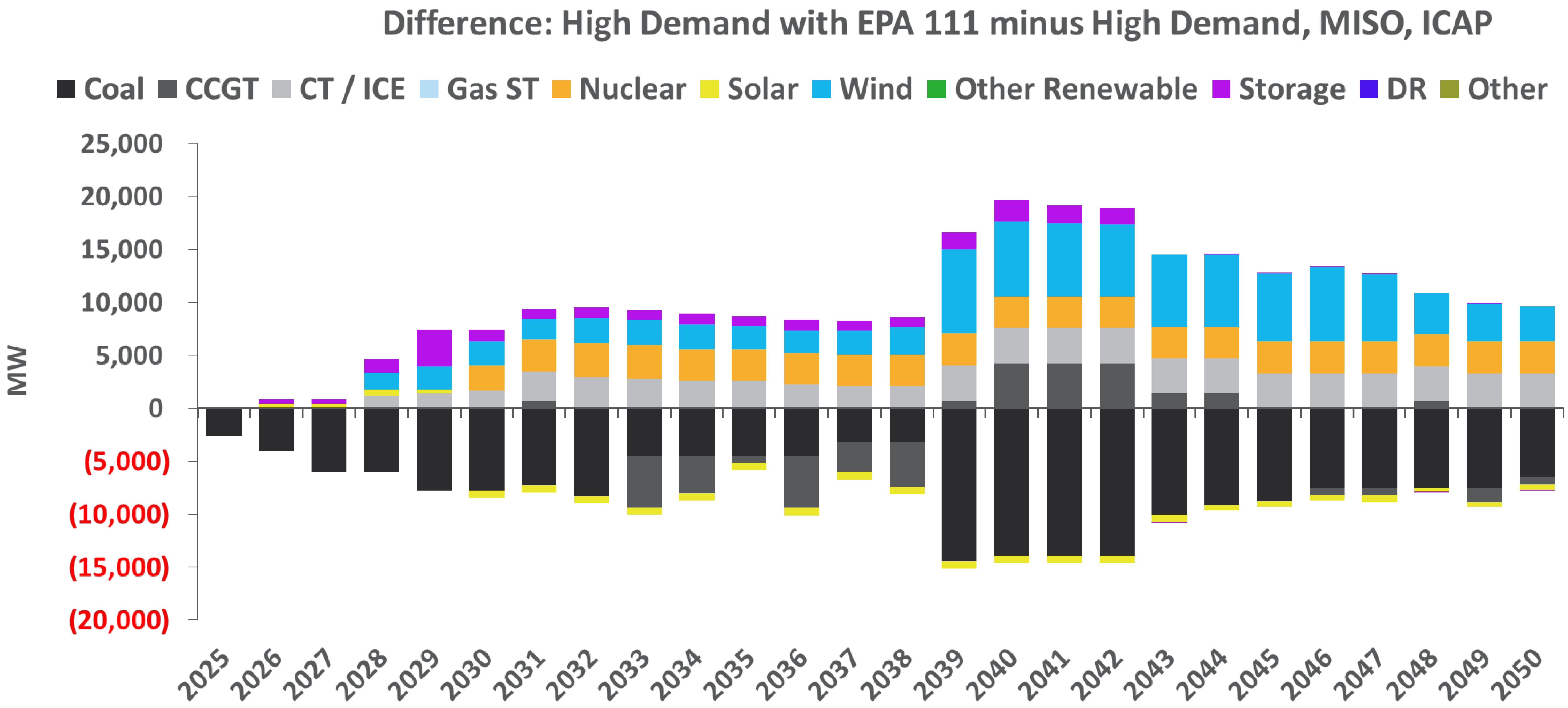


Scenario Assumption: High Demand with EPA 111

- New CCGTs and CTs are limited to a 40% Capacity Factor
- Coal must co-fire 40% natural gas beginning in 2032
- All coal retires by 2039

Source: https://www.epa.gov/system/files/documents/2024-04/cps-table-of-all-bser-final-rule-4-24-2024.pdf

Results: High Demand with and without EPA 111



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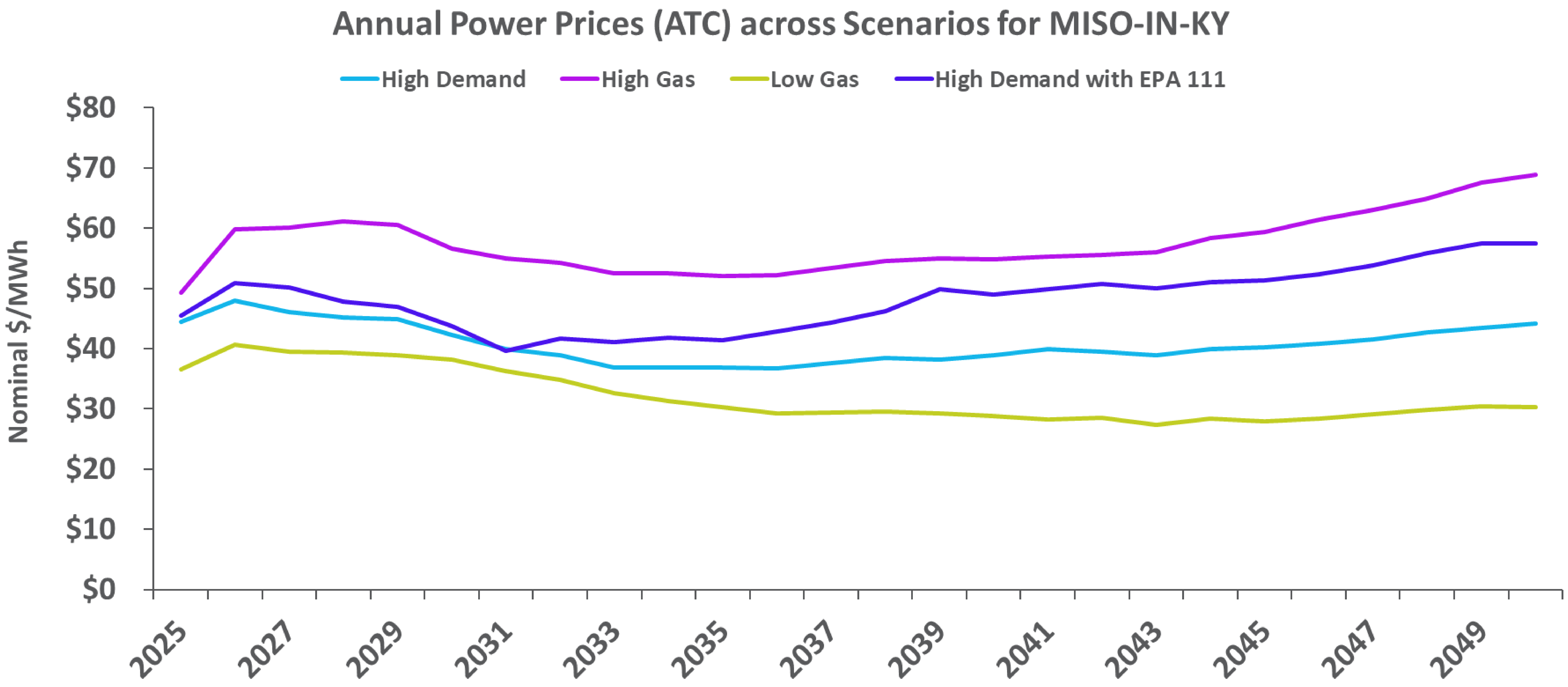
Results: Scenario Prices



Commodity assumptions

Alex Dickerson

Senior Manager of Wholesale Energy, AES Indiana

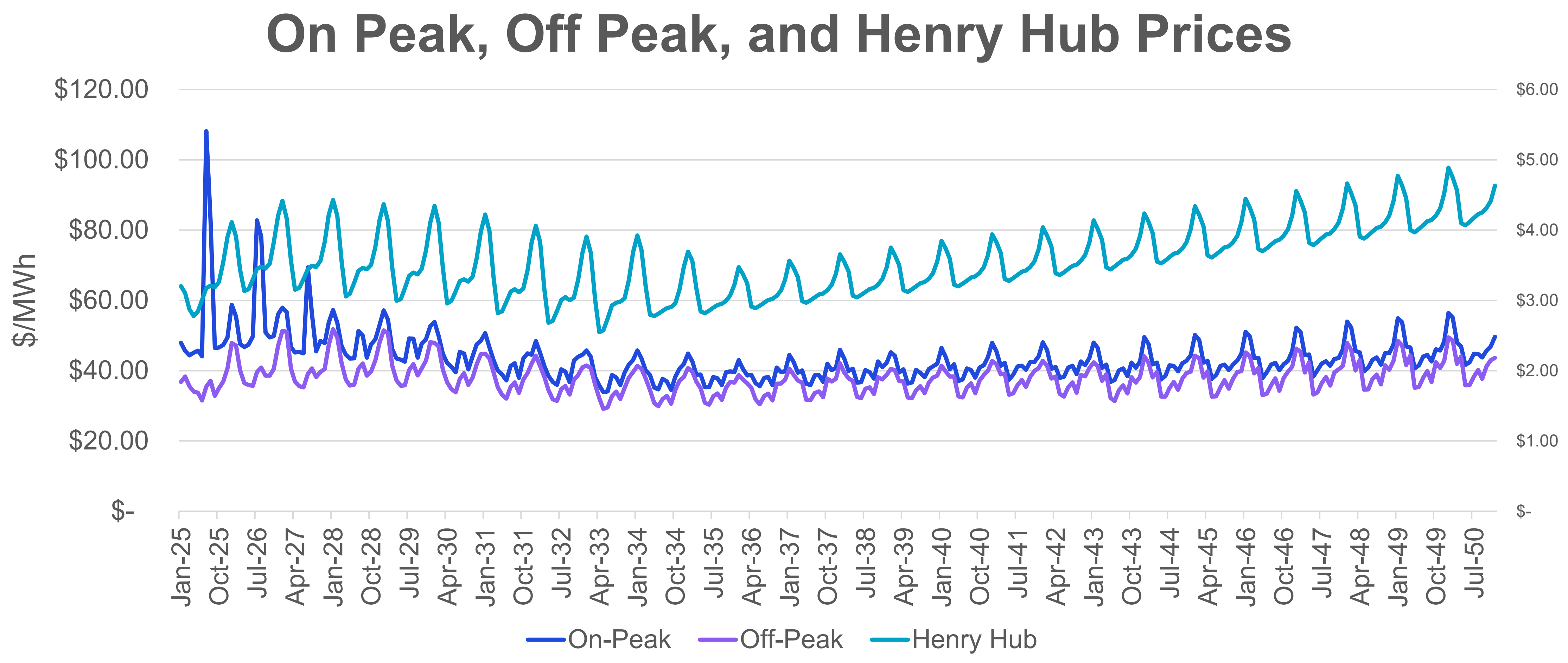
Reference case

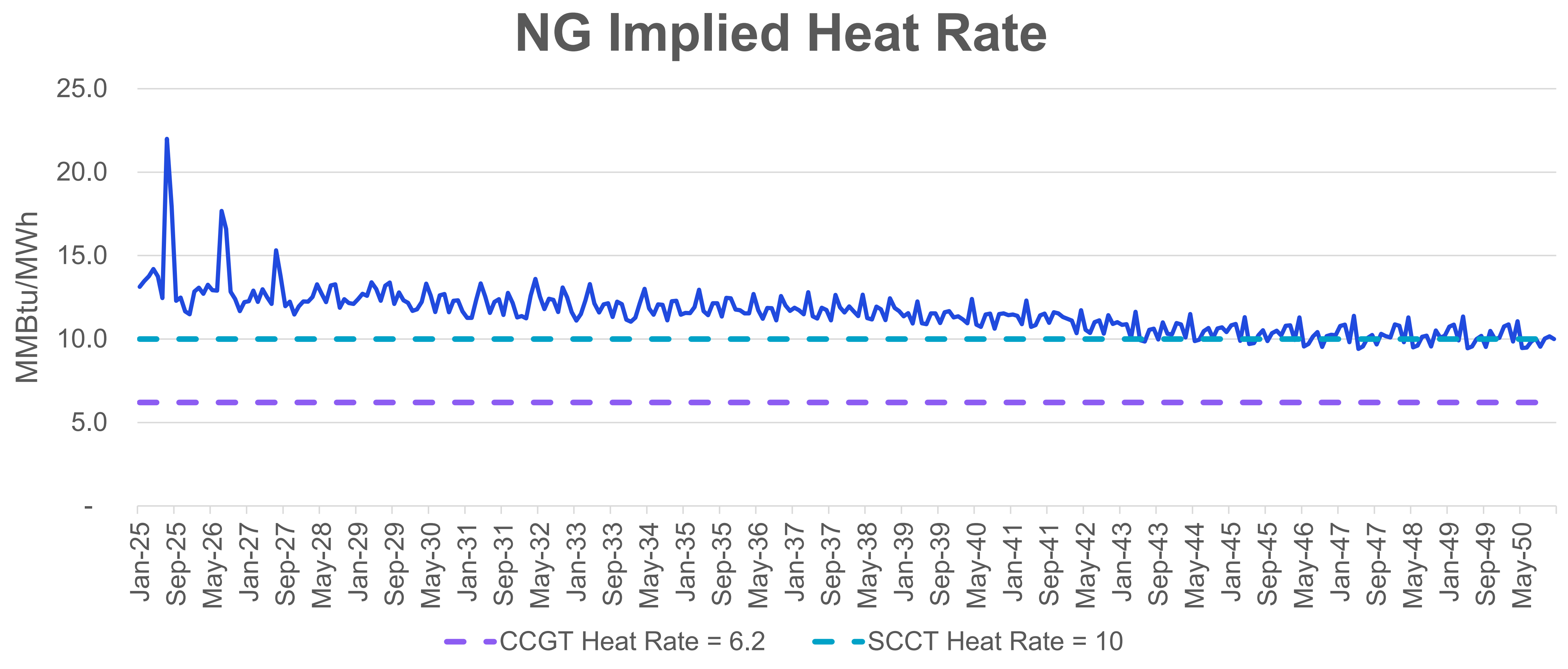
Reference case uses ACES fall 2024 fundamental forecast – high demand without GHG rules.

Fundamental assumptions:
→GHG rules repealed

→Incremental high load factor data center load growth

→Uses EPRI's 2024 white paper "Power Intelligence" high growth scenario
→Existing 2023 data center load experiences 10% growth rate from 2024–2030, tapering off to 3% after 2030





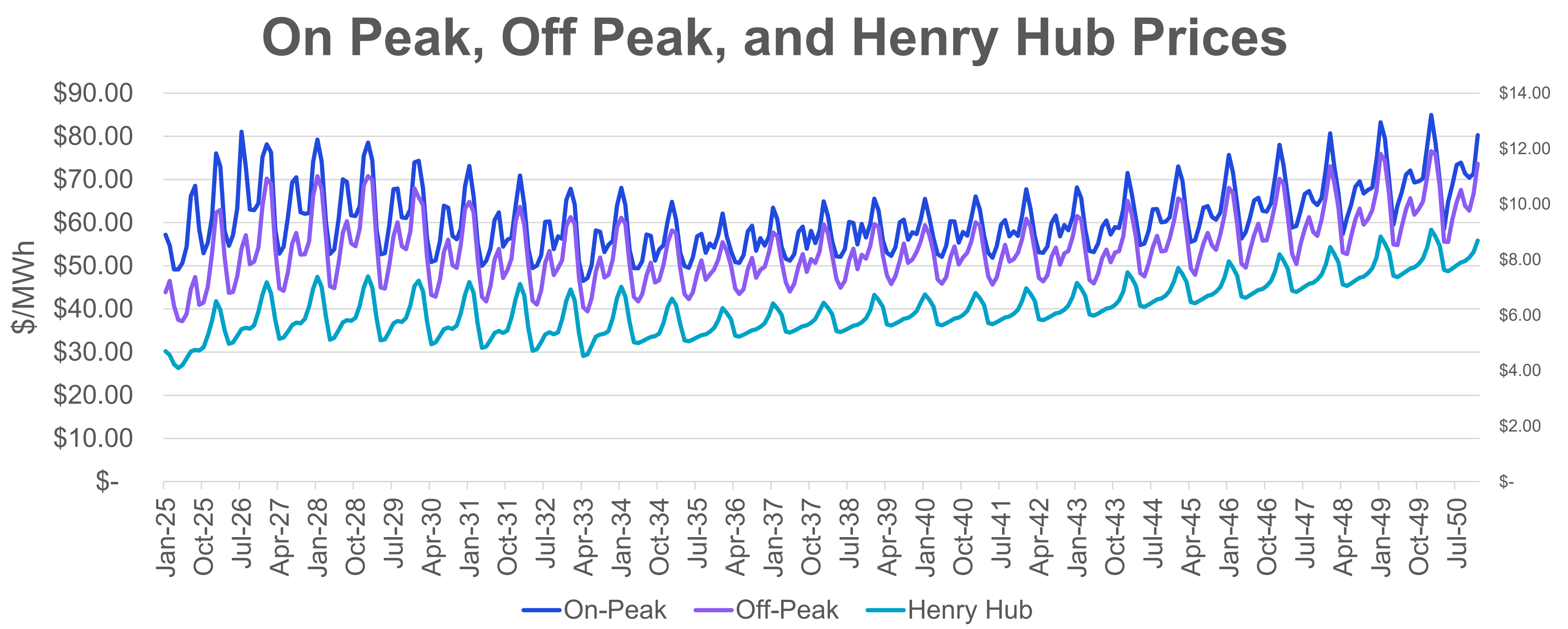
Natural gas infrastructure and supply challenges

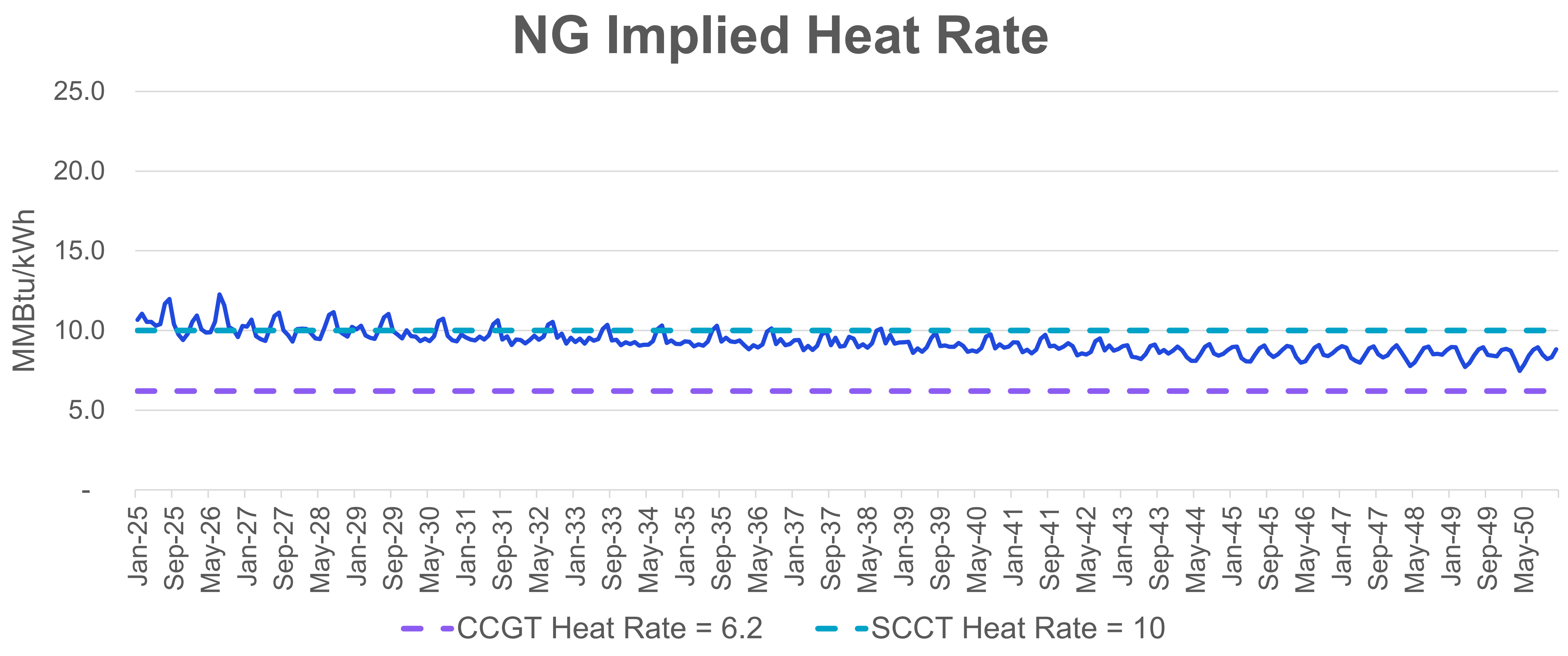
Natural gas infrastructure and supply challenges scenario uses ACES fall 2024 fundamental forecast – high gas

Fundamental assumptions:

→High gas prices resulting from supply constraints due to insufficient infrastructure and limitations on fracking.

→Limited data center growth due to challenges to gas infrastructure and supply challenges which limit natural gas generation development to serve data center customers.





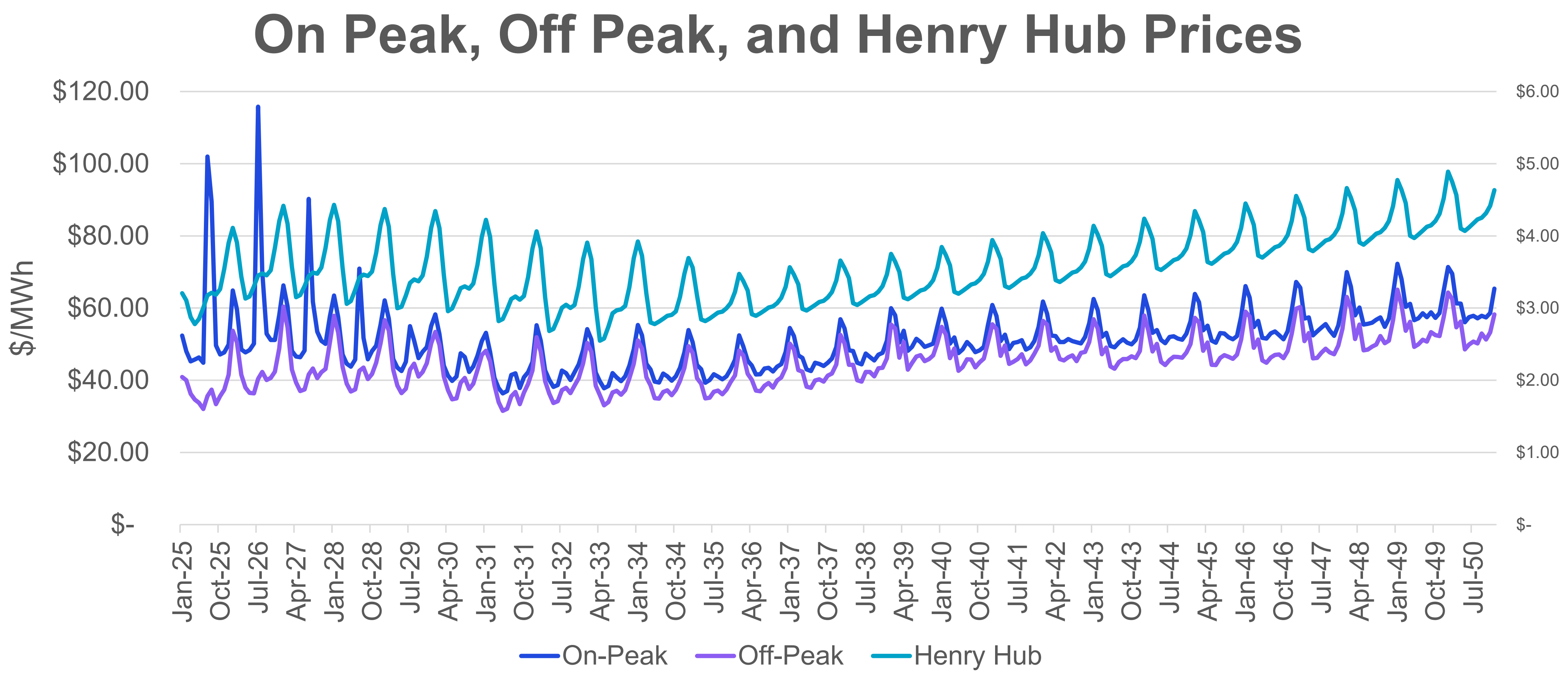
High regulatory: environmental

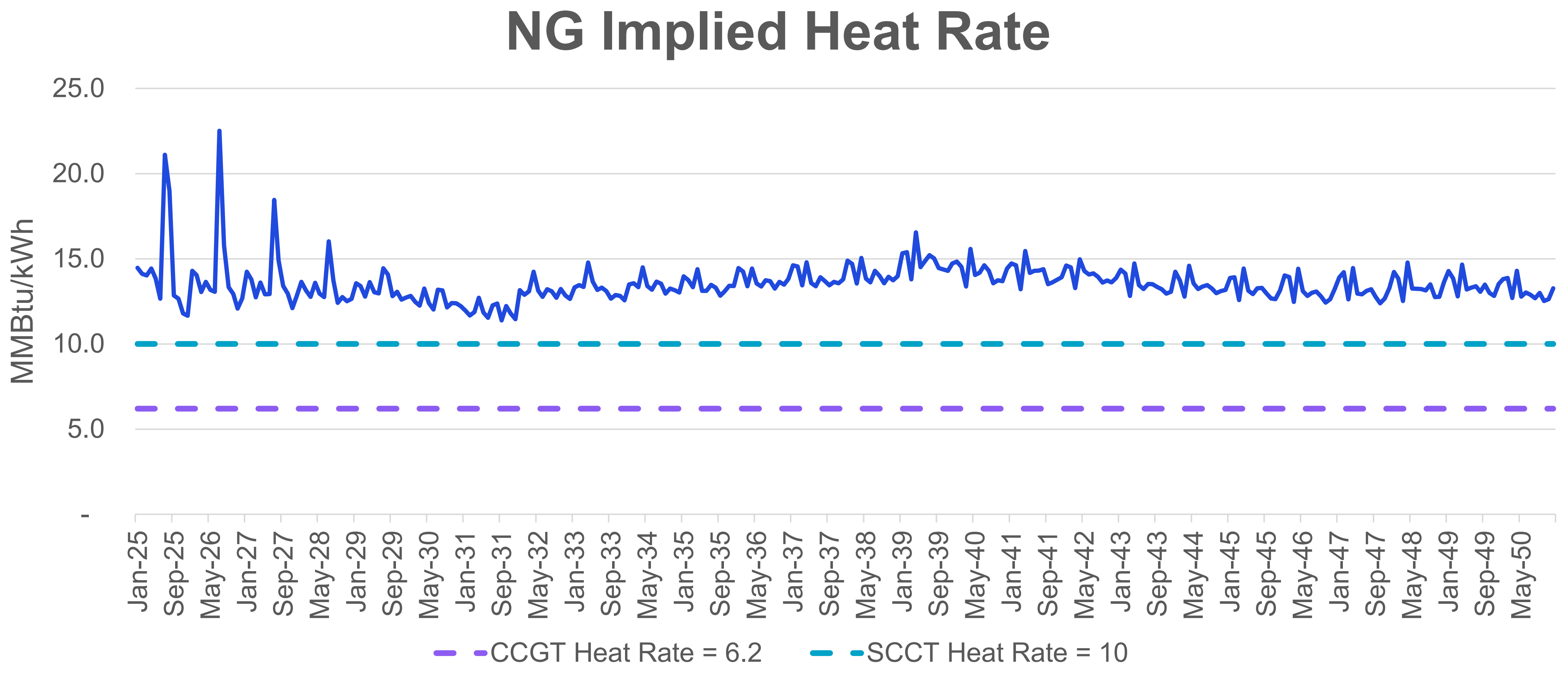
High regulatory: Environmental scenario uses custom ACES fundamental forecast – high demand with GHG rules

Fundamental assumptions:

→GHG rules remain law through planning period
- →New CCGTs and CTs are limited to 40% capacity factor
- →Coal must co-fire with 40% natural gas beginning in 2032
- →All coal retires by 2039

→Same demand assumptions included in high demand without GHG rules fundamental forecast discussed on prior slide





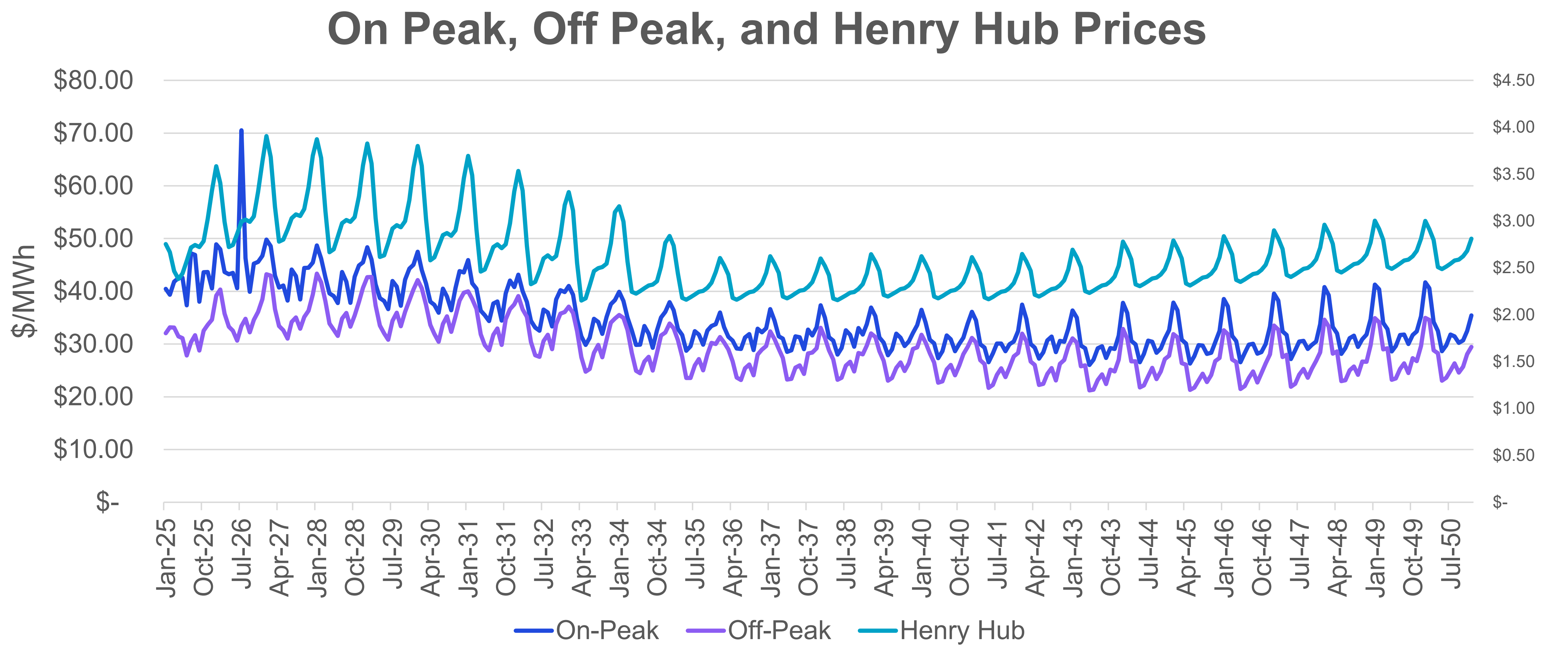
Stable market outlook

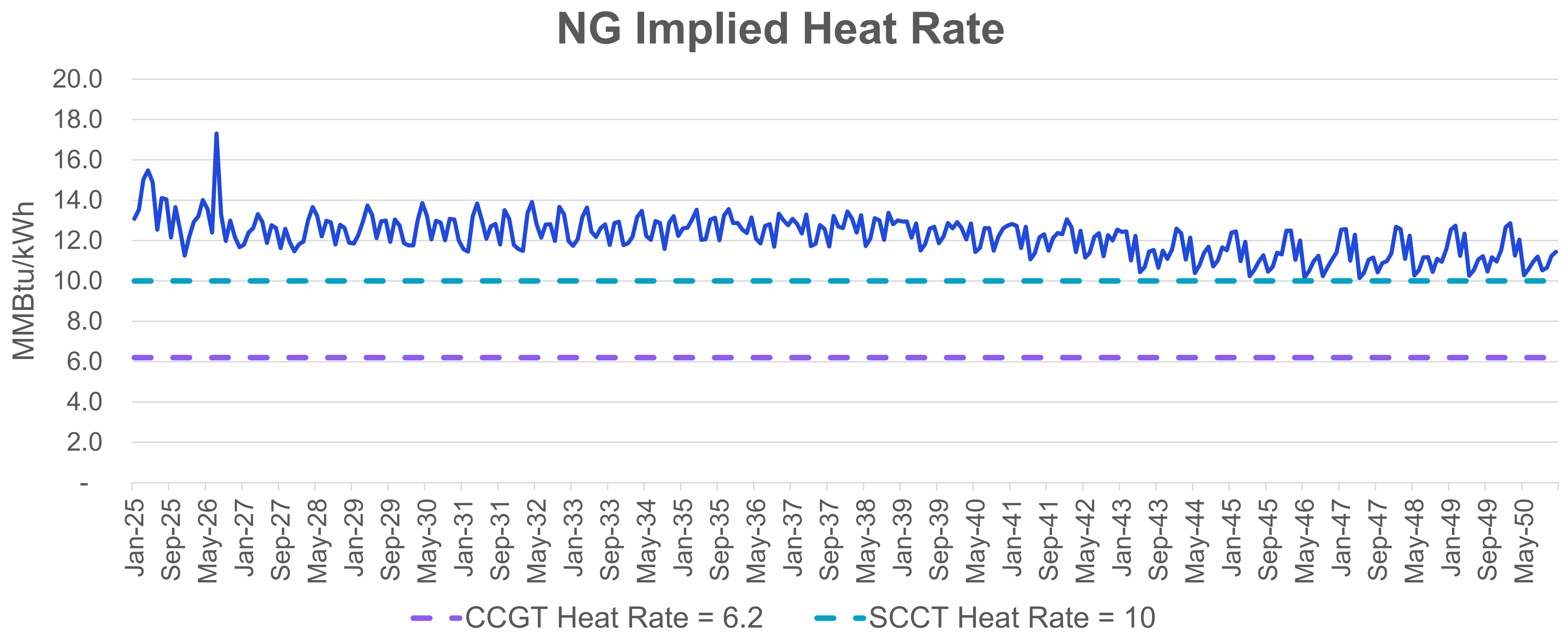
Stable Market Outlook scenario uses ACES Fall 2024 fundamental forecast – low gas

Fundamental assumptions:

→GHG rules repealed, and IRA tax credits applied as defined by OBBBA

→Low case economic outlook along with gas and power prices lowered to historical norms





IRP evaluation framework

Patrick Maguire

Senior Director of Commercial and Resource Planning, AES Indiana

aes Indiana

IRP evaluation framework overview

1 IRP scenario analysis – deterministic optimization

- Reference case
- Natural gas infrastructure and supply challenges
- High regulatory: environmental
- Stable market outlook

Scenario analysis generates an optimized portfolio for each scenario.

2 IRP PVRR and risk analysis – stochastic

- Reference case – optimized portfolio
- NG infrastructure and supply challenges – optimized portfolio
- High regulatory: environmental – optimized portfolio
- Stable market outlook– optimized portfolio
- Additional non-optimized portfolio Example: SMR portfolio
- Stakeholder non-optimized portfolio Example: clean energy strategy

PVRR Risk and Analysis stochastically assesses PVRR risk of portfolios - includes additional predefined portfolios.

3 Scorecard evaluation and preferred resource portfolio selection

- Affordability
- Environmental sustainability
- Reliability, resiliency, and stability
- Risk and opportunity

Modeling scenarios with data center ramps

Different trajectories of generic data center load growth will be modeled in distinct but comparable sets of portfolios

Data Center Scenarios for IRP (Peak by end of Cal-Year, MW)

	Low	Mid	High
2027	0	50	75
2028	50	231	378
2029	114	413	681
2030	179	594	984
2031	243	775	1,288
2032	307	956	1,591
2033	371	1,138	1,894
2034	436	1,319	2,197
2035	500	1,500	2,500
2036	500	1,500	2,500
2037	500	1,500	2,500
2038	500	1,500	2,500
2039	500	1,500	2,500
2040	500	1,500	2,500

NO DATA CENTER LOAD

Scenarios →

Optimized Portfolios ↓	Reference Case	Challenged Gas Infrastructure	High Env. Reg.	Stable Markets
Reference Case				
Challenged Gas Infrastructure				
High Env. Reg.				
Stable Markets				

PVRR Results

LOW DATA CENTER LOAD

Scenarios →

Optimized Portfolios ↓	Reference Case	Challenged Gas Infrastructure	High Env. Reg.	Stable Markets
Reference Case				
Challenged Gas Infrastructure				
High Env. Reg.				
Stable Markets				

PVRR Results

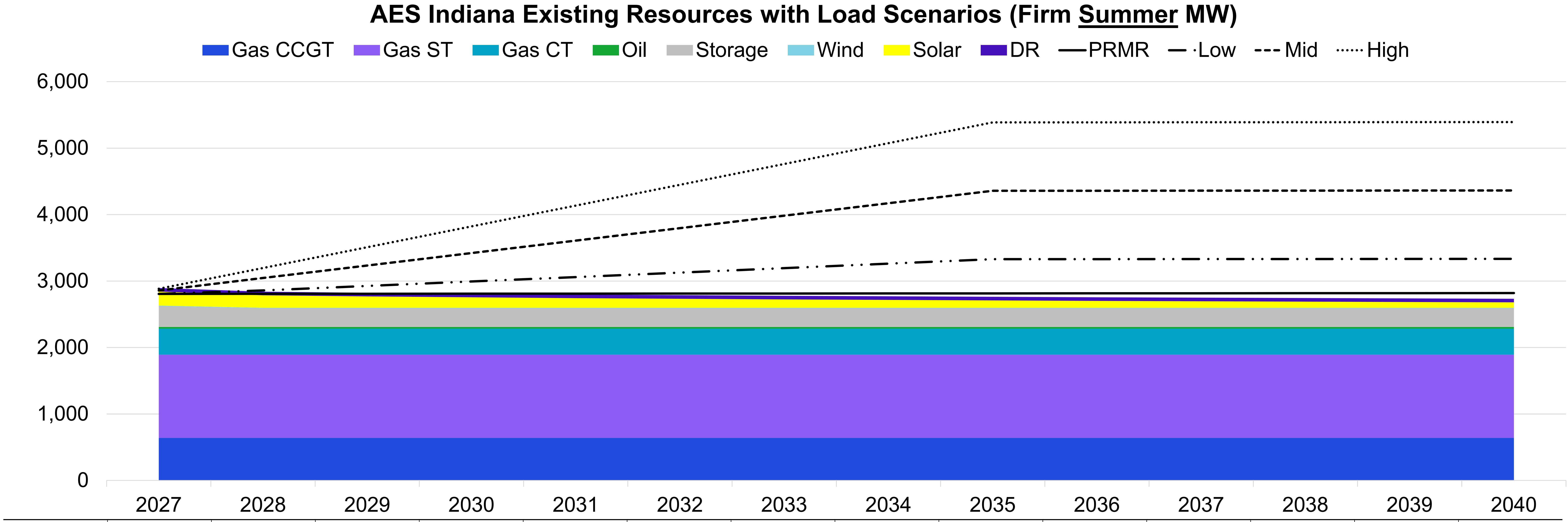
HIGH DATA CENTER LOAD

Scenarios →

Optimized Portfolios ↓	Reference Case	Challenged Gas Infrastructure	High Env. Reg.	Stable Markets
Reference Case				
Challenged Gas Infrastructure				
High Env. Reg.				
Stable Markets				

PVRR Results

Going-in capacity position: Summer



	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Base (No Data Centers)	89	33	15	0	(13)	(24)	(34)	(44)	(52)	(60)	(67)	(74)	(80)	(86)
Low	89	(18)	(103)	(184)	(263)	(340)	(417)	(492)	(566)	(574)	(581)	(588)	(594)	(600)
Mid	38	(205)	(410)	(611)	(811)	(1,008)	(1,205)	(1,401)	(1,595)	(1,603)	(1,610)	(1,617)	(1,623)	(1,629)
High	12	(356)	(686)	(1,013)	(1,338)	(1,661)	(1,983)	(2,304)	(2,624)	(2,632)	(2,639)	(2,646)	(2,652)	(2,658)

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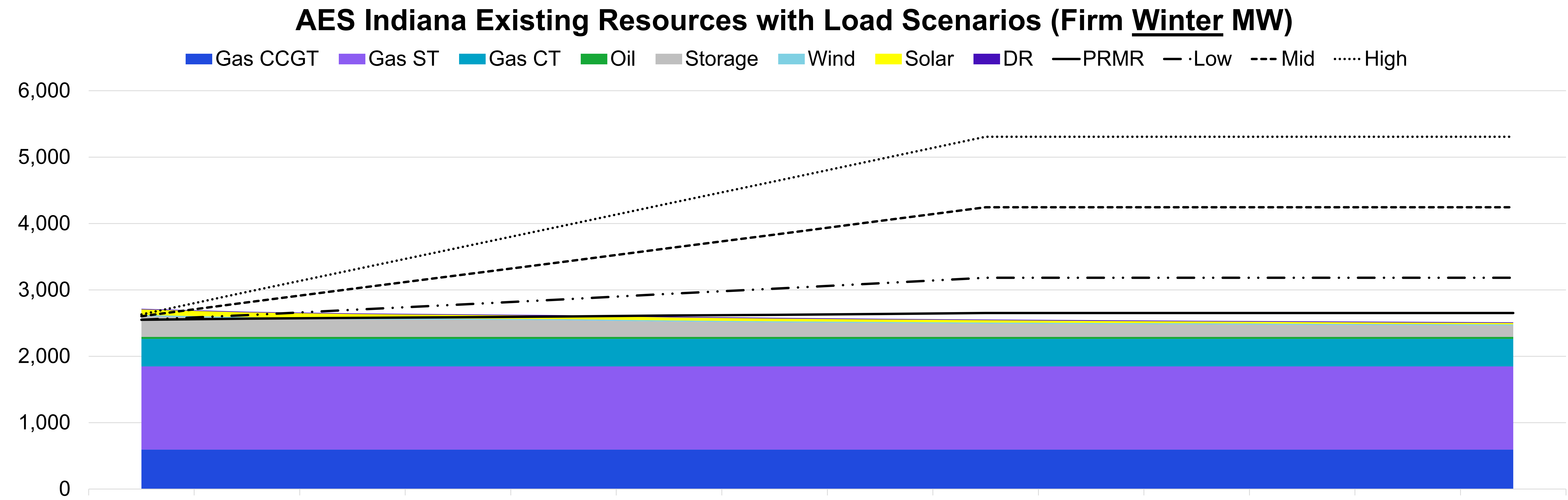
Going-in capacity position: Winter



	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Base (No Data Centers)	165	105	69	45	21	(17)	(44)	(72)	(98)	(108)	(117)	(125)	(132)	(139)
Low	165	52	(52)	(144)	(237)	(343)	(439)	(535)	(629)	(639)	(648)	(656)	(663)	(670)
Mid	112	(141)	(369)	(585)	(802)	(1,033)	(1,252)	(1,473)	(1,691)	(1,701)	(1,710)	(1,718)	(1,725)	(1,732)
High	86	(297)	(654)	(1,000)	(1,346)	(1,706)	(2,055)	(2,405)	(2,753)	(2,763)	(2,772)	(2,780)	(2,787)	(2,794)

Stochastic PVRR and risk analysis

→PVRR and risk analysis **stochastic analysis**

→Stochastic analysis will be performed to understand the risks and opportunities to each optimized portfolio from:

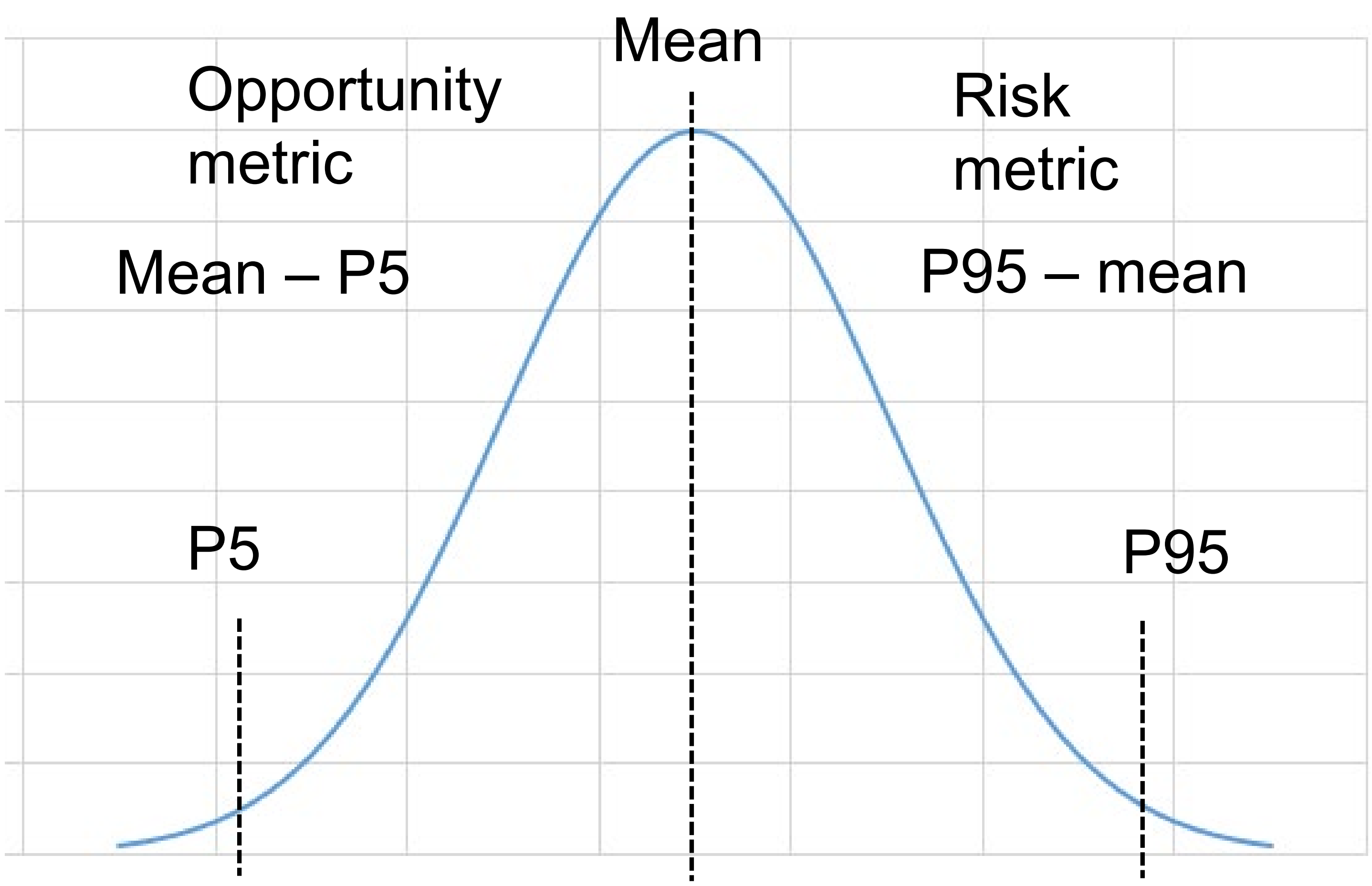
- → Gas price volatility
- → Energy price volatility
- → Load volatility
- → Renewable generation volatility

→Each variable will be varied across a full stochastic distribution using 100 iterations of potential outcomes

→Metrics to measure cost risks and cost opportunities include:

→Risk metric = P95 – mean

→Opportunity metric = mean – P5



IRP scorecard analysis and components

Scorecard that evaluates the portfolios using the five pillars of utility electric service to select the preferred resource portfolio

- Scorecard analysis will be performed on the base case set of portfolios
- Scorecard categories align with the five pillars of utility electric service as required by statute
  - Affordability
  - Environmental sustainability
  - Reliability
  - Resiliency
  - Stability
- Additional categories that measure the risk and opportunity and economic impact included to comply with IURC rules
- Scorecard evaluation used to select the preferred resource portfolio and short-term action plan

Category	Metric	Description
Affordability	30- to 50-year PVRR and 10-year PVRR	Multiple time periods allow for rate impact estimates over time
Environmental sustainability	CO2 emissions	Total CO_2 emissions over planning period
	SO2 emissions	Total SO_2 emissions over planning period
	NOx emissions	Total NOx emissions over planning period
	Water user	Total water use over planning period
	Clean energy progress	% of clean energy in portfolio by 2035
Reliability, resiliency and stability	Reliability score	Quanta Technology will perform reliability analysis on candidate portfolios
Risk and opportunity	General cost opportunity **stochastic analysis**	P5 (mean – P5)
	General cost risk **stochastic analysis**	P95 (P95 – mean)
	Market exposure	20-year sales and purchases

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Final Q&A
and next steps

2025 IRP Public Meeting & Data Release Schedule

Public Advisory Meeting Schedule

Public Advisory Meeting #1: January 29, 2025
- → Recap 2022 IRP Short-Term Action Plan
- → Introduce IRP resource planning process, key dates and topics for 2025 IRP

Public Advisory Meeting #2: July 24, 2025
- → Review assumptions including replacement resource costs and commodity prices
- → Introduce IRP analysis portfolio framework and analysis scorecard

Public Advisory Meeting #3: September 10, 2025
- → Discuss preliminary IRP scorecard results

Public Advisory Meeting #4: October 22, 2025
- → Review final IRP scorecard and reliability analysis
- → Share Preferred Resource Portfolio and Short-Term Action Plan

Dates and agendas are subject to change

IRP Assumptions & Modeling Data Release Schedule

Meeting #1 Data Available: February 12, 2025
- → Base Load Forecast
- → EV Base, High and Low Scenarios
- → PV Base, High and Low Scenarios

Meeting #2 Data Available: July 24, 2025
- → IRP Scenario Commodity Curves
- → Replacement Resource Costs and Capacity Accreditation
- → Market Potential Study Results

Meeting #3 Data Available: September 10, 2025
- → EnCompass IRP Scenario Loader
- → PVRR Summary
- → Energy Position Sheets

Meeting #4 Data Available: October 22, 2025
- → EnCompass Stochastic Scenario Loader
- → Stochastic Summary Results
- → Final IRP Scorecard

Note: The released data will be available to the technical stakeholders with a completed Non-Disclosure Agreement

Thank you

IRP acronyms

Note: A glossary of acronyms with definitions is available at https://www.aesindiana.com/integrated-resource-plan.

IRP acronyms

- ACEE: The American Council for an Energy-Efficient Economy
- AMI: Advanced Metering Infrastructure
- BESS: Battery Energy Storage System
- BNEF: Bloomberg New Energy Finance
- BTA: Build-Transfer Agreement
- C&I: Commercial and Industrial
- CAA: Clean Air Act
- CAGR: Compound Annual Growth Rate
- CCGT: Combined Cycle Gas Turbines
- CCS: Carbon Dioxide Capture and Storage
- CDD: Cooling Degree Day
- COD: Commercial Operation Date
- CONE: Cost of New Entry
- CP: Coincident Peak
- CPCN: Certificate of Public Convenience and Necessity
- CT: Combustion Turbine
- CVR: Conservation Voltage Reduction
- DER: Distributed Energy Resource
- DG: Distributed Generation
- DGPV: Distributed Generation Photovoltaic System
- DLC: Direct Load Control
- DOE: U.S. Department of Energy
- DR: Demand Response
- DRR: Demand Response Resource
- DSM: Demand-Side Management
- DSP: Distribution System Planning
- EE: Energy Efficiency
- EFORd: Equivalent Forced Outage Rate Demand
- EIA: Energy Information Administration
- ELCC: Effective Load Carrying Capability
- EM&V: Evaluation Measurement and Verification
- EV: Electric Vehicle
- GDP: Gross Domestic Product
- GT: Gas Turbine
- HDD: Heating Degree Day
- HVAC: Heating, Ventilation, and Air Conditioning
- IAC: Indiana Administrative Code
- IC: Indiana Code
- ICAP: Installed Capacity
- ICE: Internal Combustion Engine
- IRP: Integrated Resource Plan
- ITC: Investment Tax Credit
- IURC: Indiana Utility Regulatory Commission
- kW: Kilowatt
- kWh: Kilowatt-Hour
- LED: Light Emitting Diode
- LMR: Load Modifying Resource
- LNBL: Lawrence Berkeley National Laboratory
- Max Gen: Maximum Generation Emergency Warning
- MIP: Mixed Integer Programming
- MISO: Midcontinent Independent System Operator
- MPS: Market Potential Study
- MW: Megawatt
- NDA: Nondisclosure Agreement
- NOX: Nitrogen Oxides
- NREL: National Renewable Energy Laboratory
- NSPS: New Source Preformance Standards
- PPA: Power Purchase Agreement
- PRA: Planning Resource Auction
- PTC: Renewable Electricity Production Tax Credit
- PRMR: Planning Reserve Margin Requirement
- PV: Photovoltaic
- PVRR: Present Value Revenue Requirement
- PY: Planning Year
- RA: Resource Adequacy
- RAN: Resource Availability and Need
- REC: Renewable Energy Credit
- REP: Renewable Energy Production
- RFP: Request for Proposals
- RIIA: MISO’s Renewable Integration Impact Assessment
- SAC: MISO’s Seasonal Accredited Capacity
- SCR: Selective Catalytic Reduction System
- SMR: Small Modular Reactors
- ST: Steam Turbine
- SUFG: State Utility Forecasting Group
- TRM: Technical Resource Manual
- UCT: Utility Cost Test
- UCAP: Unforced Capacity
- WTP: Willingness to Participate
- XEFORd: Equivalent Forced Outage Rate Demand excluding causes of outages that are outside management control