

Electricity Supply Considerations for the City of Naperville Municipal Utility

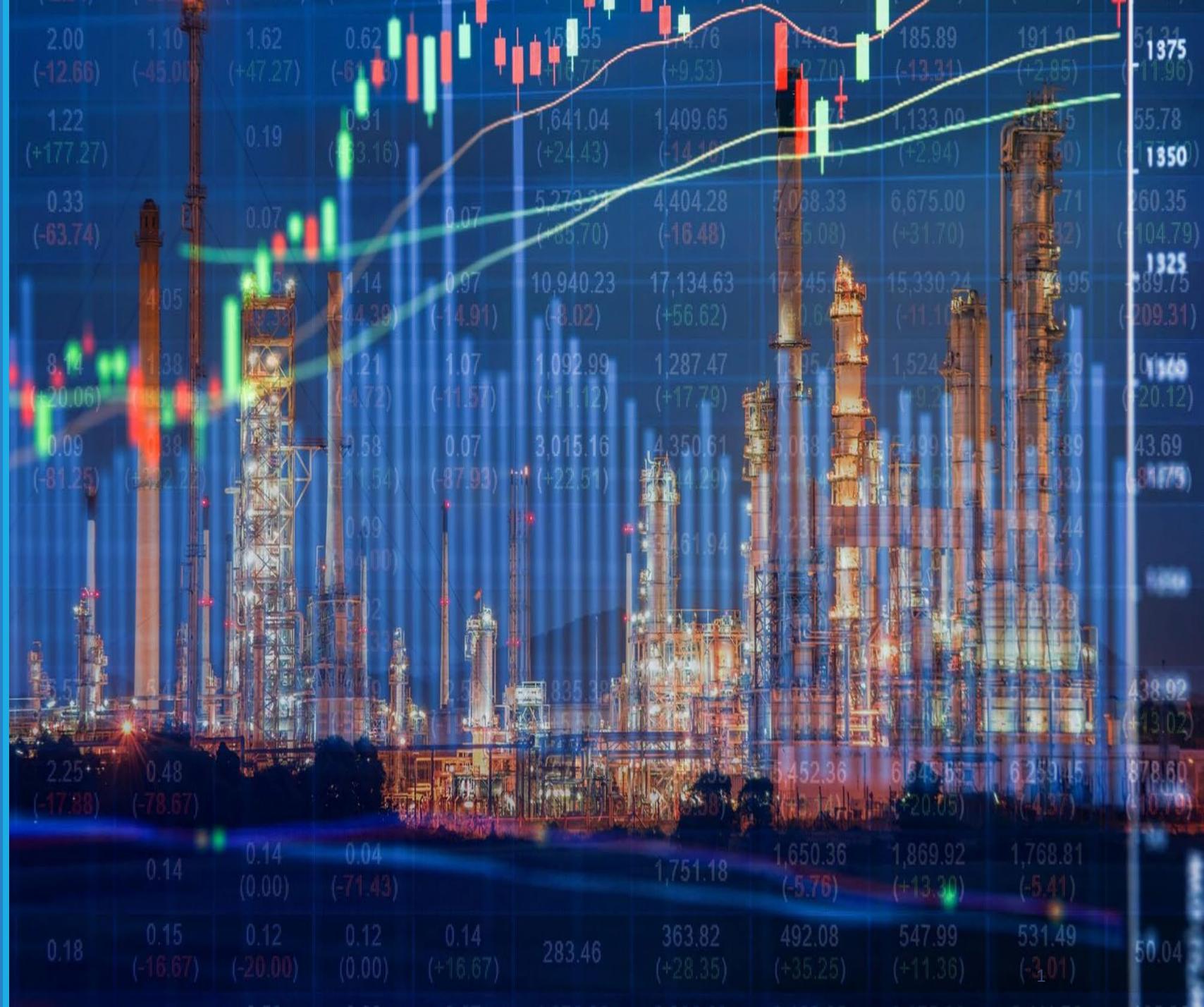
July 28, 2025

The Power Bureau, LLC

CJT Energy Law, LLC

Progressive Energy Solutions, LLC

For Presentation Purposes Only



AGENDA

Reliability

- PJM Wholesale Market Operations
- Naperville Utility System Reliability

Affordability

- PJM Market Prices
- Physical and Financial Hedging
- Naperville Electric Utility Price Performance

Sustainability

- Baseline Emissions
- Environmental Attributes
- Approaches to meet Sustainability Goals

Discussion

- Questions and Responses

OVERVIEW

Mark Pruitt
Principal | The Power Bureau, LLC
markjpruitt@thepowerbureau.com
(219) 921-3828

Chris Townsend
Attorney | CJT Energy Law, LLC
chris@cjtenergylaw.com
(312) 286-0311

Power Bureau

- Advisor on energy policy, planning, and procurement
- Retail and Wholesale energy transaction support

CJT Energy Law

- Legal analysis and advocacy supporting transactions, regulatory proceedings and legislation
- Representing entities other than the local utilities

Assignment

- Summarize Supply Considerations
 - Reliability
 - Affordability
 - Sustainability

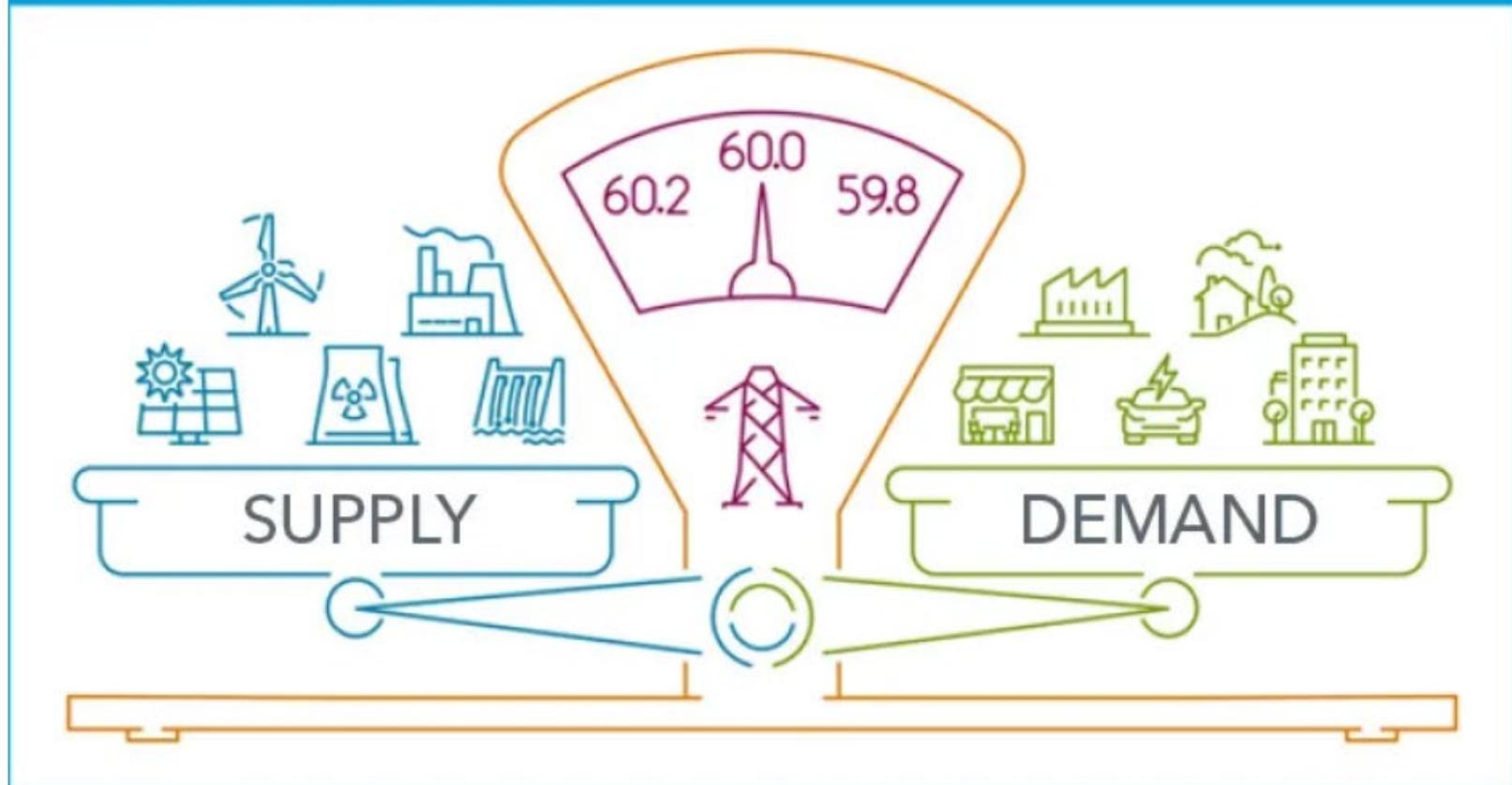
Grid Reliability Requires Maintaining Balance between Supply and Demand

RELIABILITY

PJM Wholesale Market Operations

Naperville Utility System Reliability

Balancing generation and load to maintain system frequency at all times – shown here for a 60 Hz grid

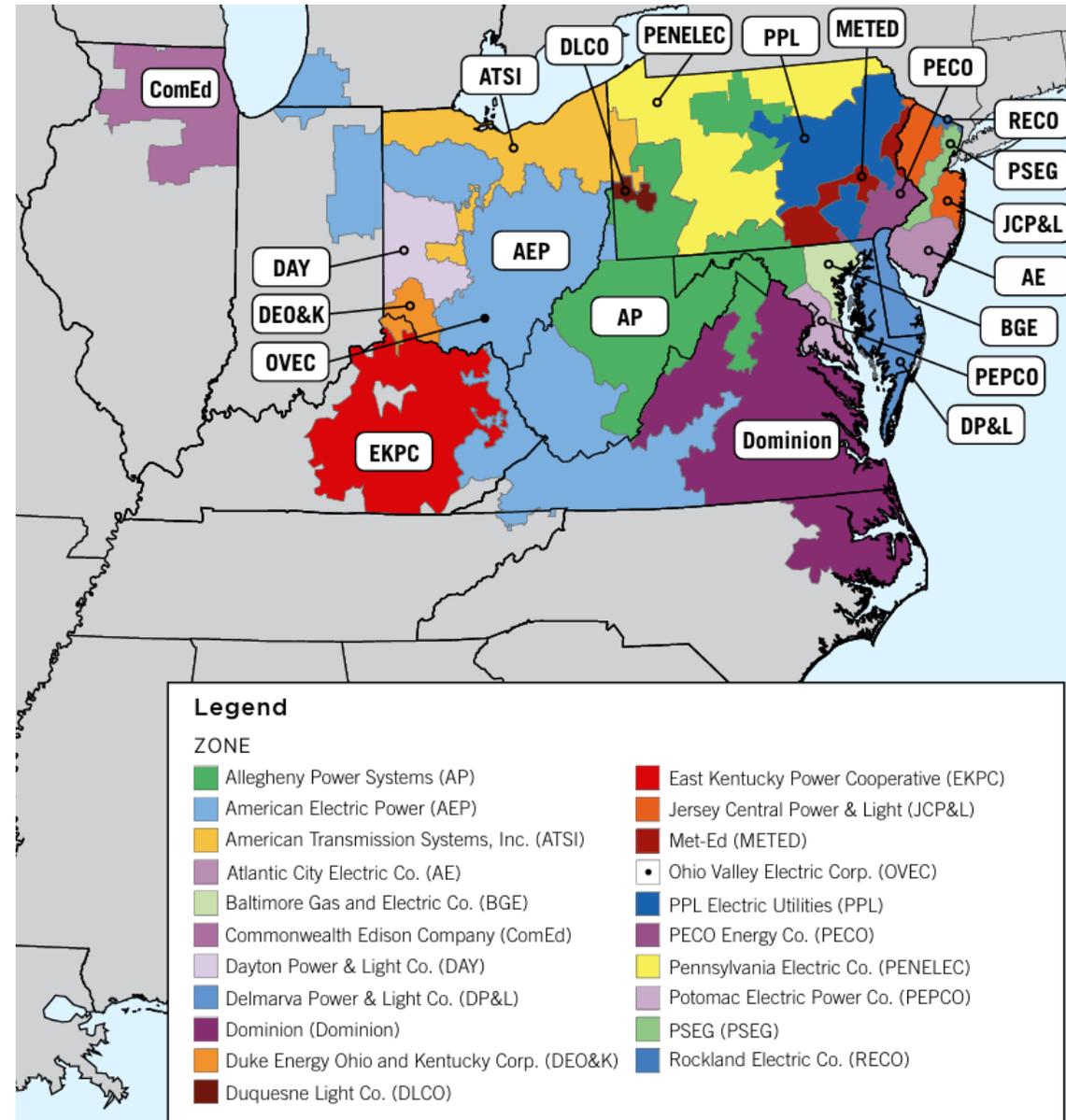


Source: [Pacific Northwest National Laboratory](#)

RELIABILITY

PJM Wholesale Market Operations
Naperville Utility System Reliability

PJM Manages Supply and Demand for XX million consumers



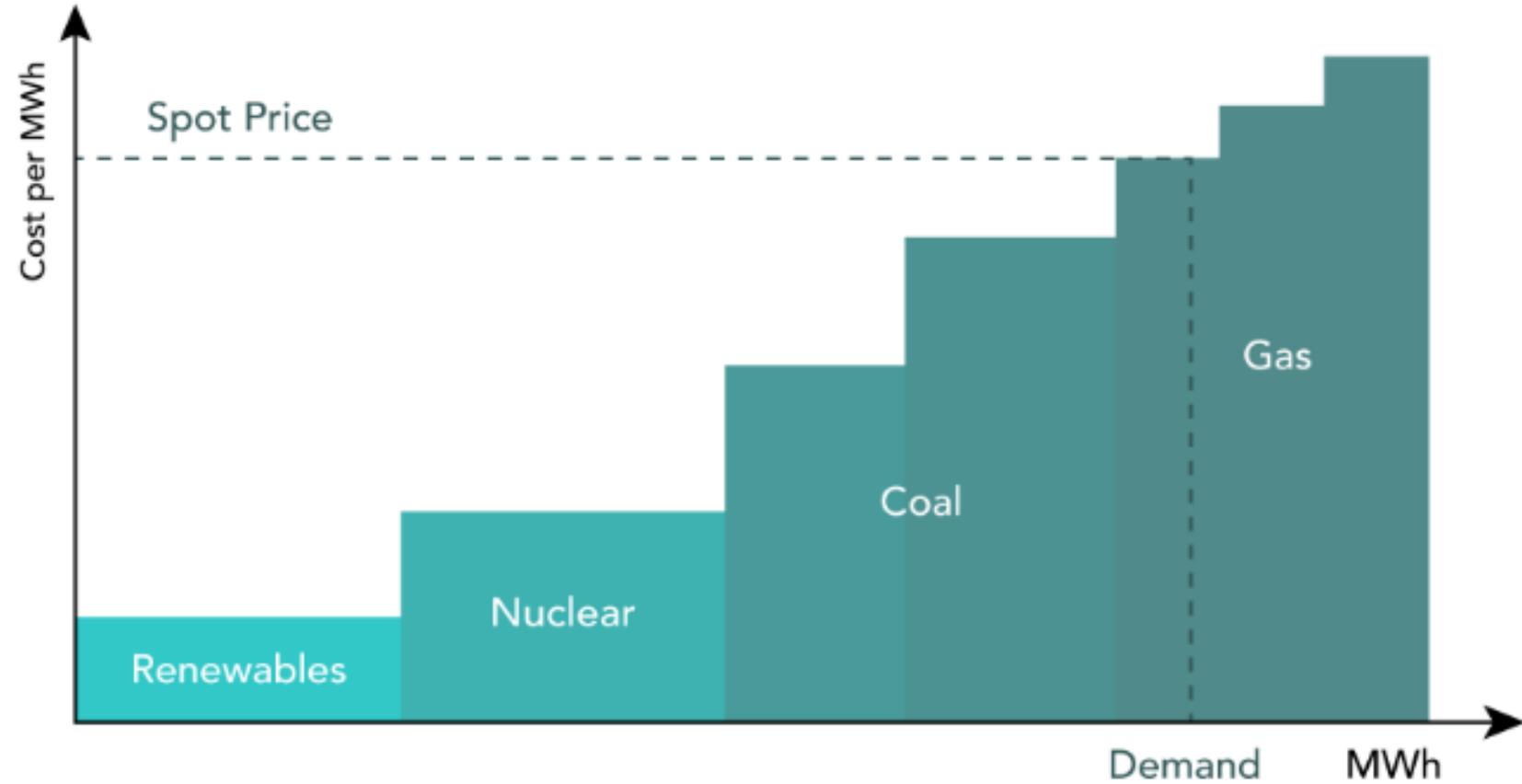
Source: [PJM Interconnection](#)

PJM Uses Clearing Price Auctions to Set Prices for Energy and Capacity

RELIABILITY

PJM Wholesale Market Operations

Naperville Utility System Reliability



Source: [RTO Insider](#)

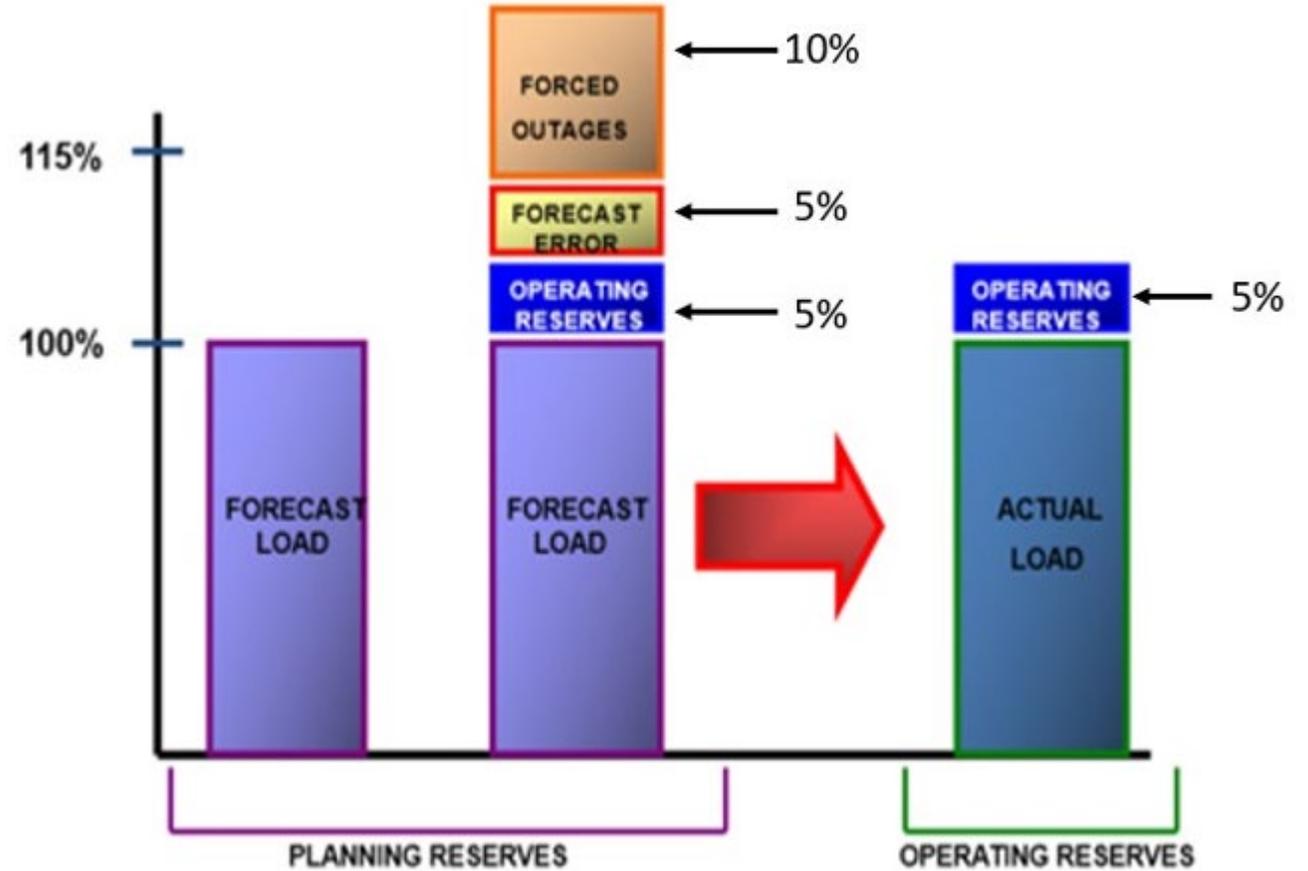
PJM Auctions Procure Planned Resources *plus* a Planning Reserve Margin

RELIABILITY

PJM Wholesale Market Operations

Naperville Utility System Reliability

Illustrative Planning Reserve Margin of 20%



Source: [Reliability First Corporation](#)

RELIABILITY: PJM is Responsible for Securing Sufficient Supply for the Naperville Municipal Utility

Table 12: Anticipated Reserve Margins with Announced Retirements

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
MISO ¹³	17.7%	10.3%	10.3%	13.2%	8.6%	7.1%	10.6%	8.2%	7.5%	4.2%	-2.5%
MRO-Manitoba	12.5%	21.3%	18.4%	18.0%	15.0%	9.8%	0.5%	-0.6%	-1.7%	-2.9%	-4.2%
MRO-SaskPower	28.9%	27.8%	26.6%	31.1%	29.4%	7.0%	28.8%	28.0%	26.7%	26.8%	1.2%
MRO-SPP	28.3%	26.7%	26.0%	25.0%	20.8%	19.1%	26.7%	24.9%	23.5%	22.4%	8.1%
NPCC-Maritimes	18.9%	20.6+	25.5%	25.1%	18.6%	3.9%	23.4%	20.7%	19.1%	17.7%	-1.5%
NPCC-New England	20.4%	25.0%	25.0%	26.3%	24.9%	23.5%	22.0%	20.1%	19.7%	17.1%	14.6%
NPCC-New York	18.4%	17.1%	21.4%	22.5%	22.4%	21.6%	20.7%	18.3%	16.7%	14.9%	13.6%
NPCC-Ontario	22.5%	20.8%	23.6%	15.7%	23.0%	9.5%	5.1%	-0.2%	-1.4%	-3.9%	-5.5%
NPCC-Quebec	12.5%	12.2%	13.1%	14.2%	12.6%	11.3%	9.8%	6.2%	3.5%	0.5%	-2.2%
PJM	29.8%	34.9%	35.7%	28.1%	21.4%	18.2%	23.1%	21.6%	20.1%	18.5%	10.3%
SERC-C	28.2%	18.9%	18.9%	15.0%	16.0%	15.2%	17.3%	17.1%	18.4%	21.1%	11.8%
SERC-E	30.4%	27.3%	25.8%	24.6%	20.6%	14.4%	14.3%	10.2%	6.3%	4.6%	-2.2%
SERC-FP	27.0%	25.4%	26.0%	23.2%	22.1%	20.9%	18.4%	22.0%	20.4%	18.2%	16.0%
SERC-SE	44.9%	39.9%	35.9%	31.5%	24.5%	21.4%	27.7%	25.8%	24.7%	23.7%	13.0%
TRE-ERCOT	24.3%	30.2%	32.5%	29.7%	25.6%	25.4%	27.8%	28.0%	28.4%	28.9%	24.9%
WECC-AB	36.3%	35.8%	35.7%	38.5%	41.7%	41.9%	35.4%	41.2%	33.6%	27.8%	27.0%
WECC-BC	20.9%	25.2%	25.2%	15.8%	15.9%	22.3%	22.1%	21.6%	21.2%	13.4%	19.9%
WECC-CA/MX	38.6%	45.5%	45.2%	38.4%	43.1%	28.8%	29.6%	23.3%	25.0%	15.2%	11.1%
WECC-NW	34.5%	40.3%	38.9%	35.6%	30.7%	24.5%	18.3%	12.2%	10.2%	8.1%	5.9%
WECC-SW	28.6%	37.0%	35.6%	31.6%	24.2%	17.4%	11.3%	7.7%	0.2%	-4.7%	-9.6%

Source: [North American Electricity Reliability Corporation](#)

AFFORDABILITY: PJM's Recent Auction Resulted in the All-Time Highest Capacity Rates

CUB STATEMENT: CAPACITY AUCTION LEADS TO RECORD PRICE SPIKE FOR SECOND STRAIGHT YEAR, THREATENS EVEN HIGHER COM ED BILLS IN 2026-27

CHICAGO, July 22, 2025

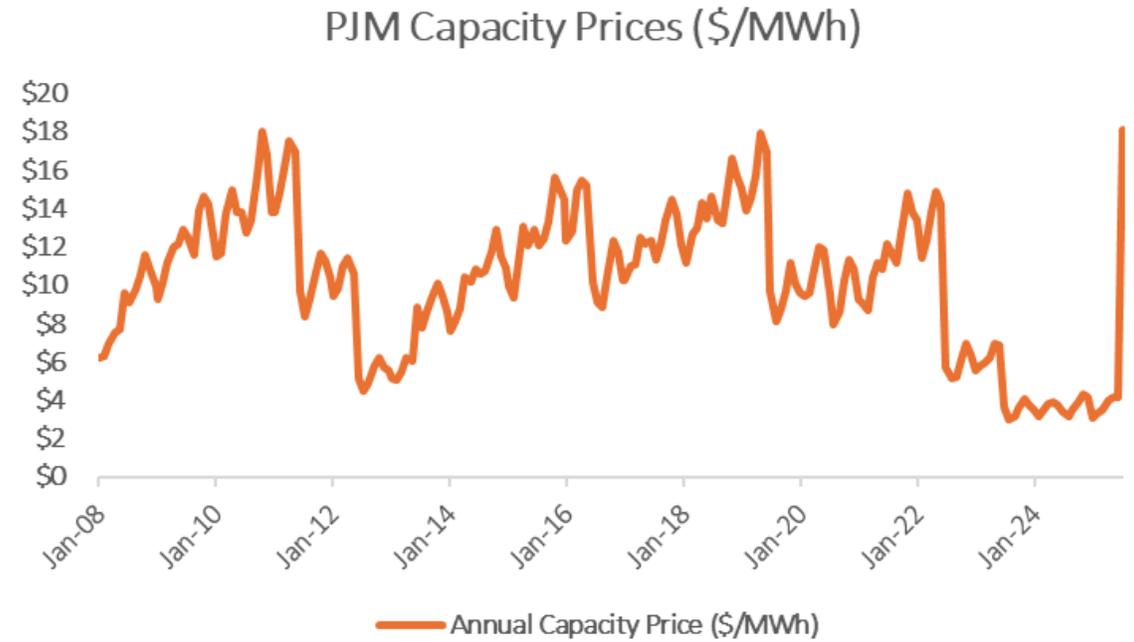
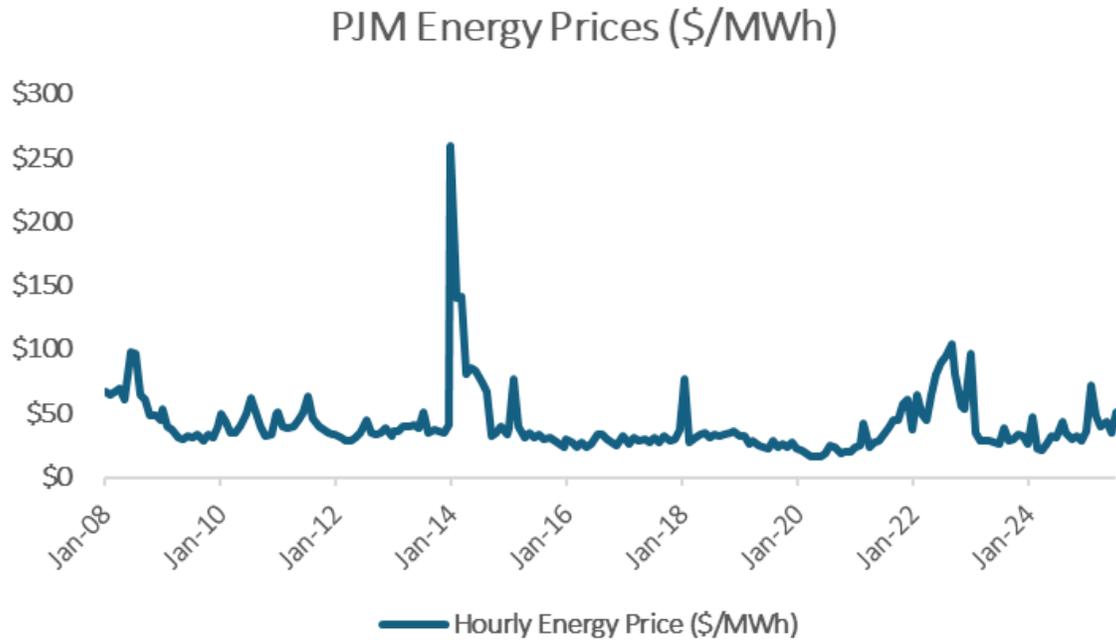
PRNewswire

"While we are relieved that the negotiated price cap prevented capacity costs from soaring even higher, this record price spike is unacceptable. CUB is deeply concerned that ComEd customers will continue to bear painfully high costs for another year, largely because of policy shortcomings from PJM. "

Capacity Prices for PJM RTO/ComEd Zone
(Auction Clearing Price - \$/MW-Day)



AFFORDABILITY: PJM Auction Prices are Volatile due to Supply and Demand Impacting the Price



Source: [Monitoring Analytics](#)

Hedging Allows Consumers the Option of Limiting the Risk of the Price Volatility

AFFORDABILITY

PJM Market Prices

Physical and Financial Hedging

Naperville Electric Utility Price Performance

Variable	Financial Hedging	Physical Hedging
Concept	Trade the variable market price for a fixed market price	Trade the variable market price for the cost to generate from a power resource
Typical Approach	Futures and options contracts	Partial or full output (ownership) of a power asset
Term	Usually 1-5 years (limited by liquidity)	10-30 years (usually the life expectancy of the power asset)
Counterparty	Banking institutions Retail energy suppliers Wholesale brokers	Power plant owners Power plant developers Distributed generation
Benefits	Book transactions Short duration Flexible	Physical Assets Long duration Quite stable
Challenges	New contracts reset at-market Counterparty risk Become "out of the money"	Minimum size Long-term commitment / Credit Become "out of the money"

Including Debt Service, the Financial and Physical Hedges Delivered Stable Net Prices that have Delivered a Slight Cost Advantage over the Period

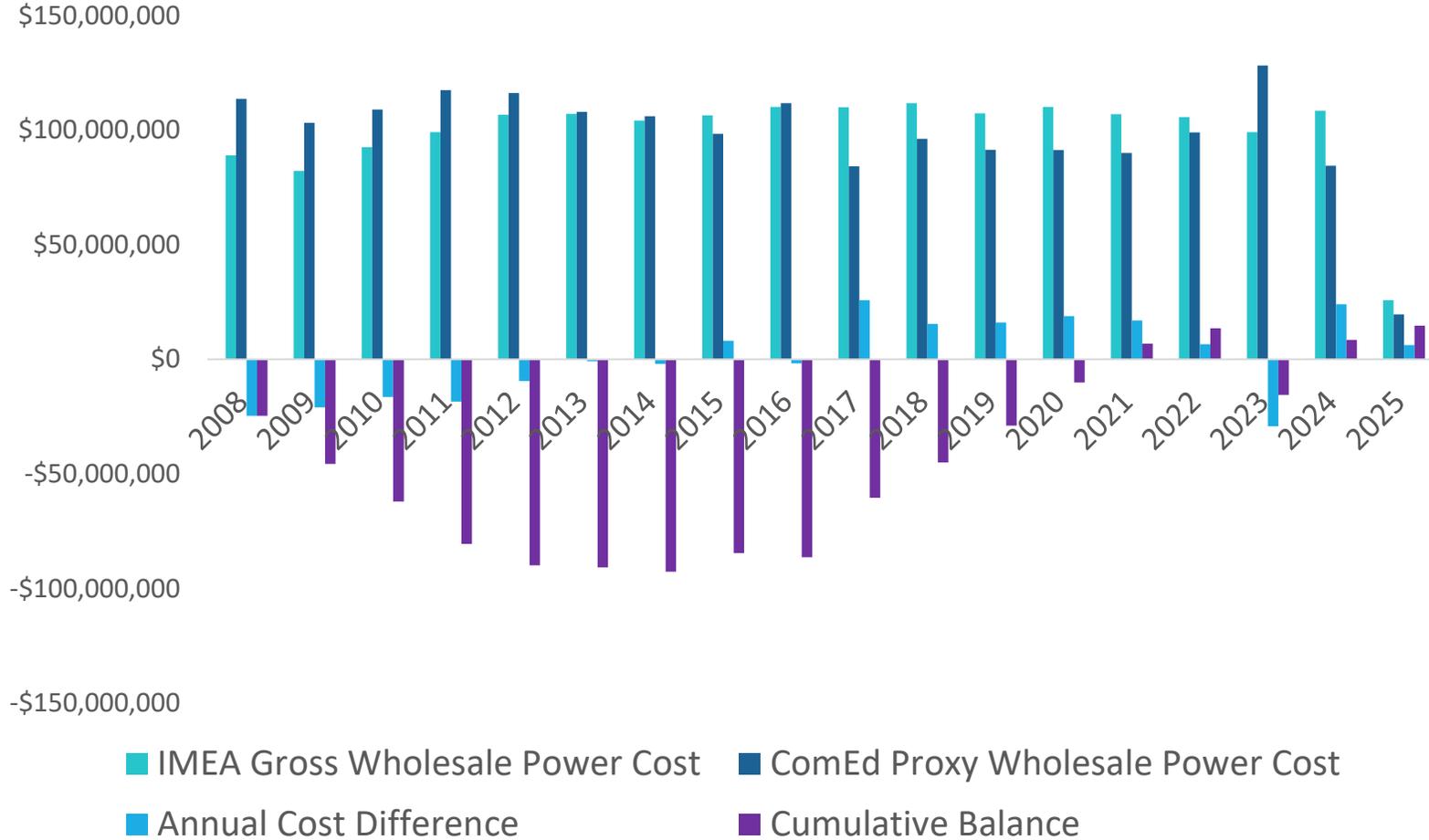
AFFORDABILITY

PJM Market Prices

Physical and Financial Hedging

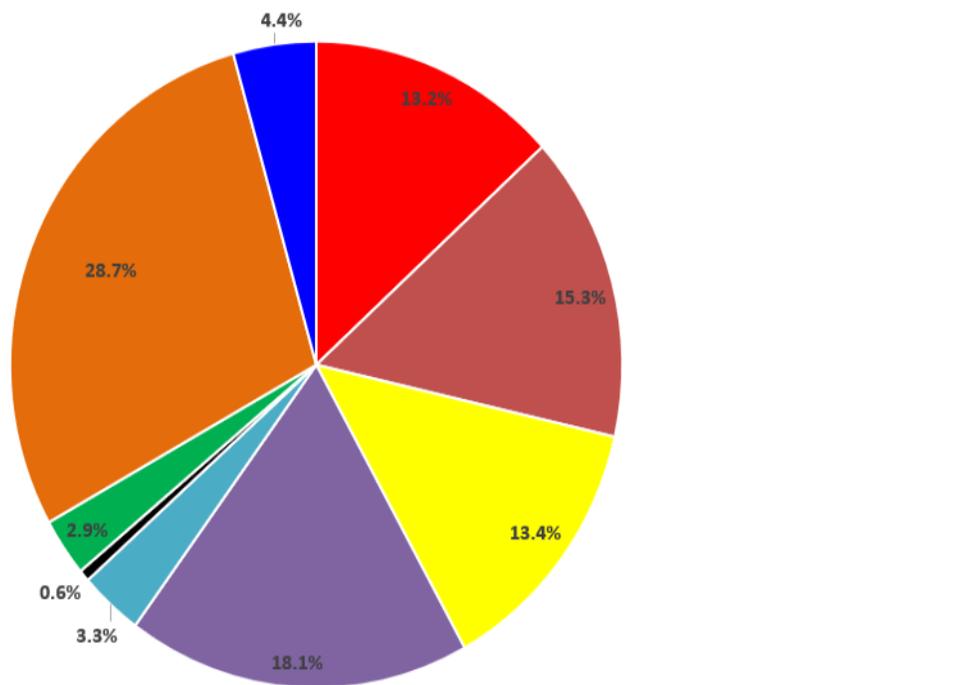
Naperville Electric Utility Price Performance

**Annual Cost Comparison
(ComEd Proxy Wholesale Price v. Gross IMEA Wholesale Price)**



AFFORDABILITY: IMEA Benchmarking Proxy: Portions of IMEA's Costs are not Supply-Related

IMEA FY2023 Member Cost Breakdown



■ Purchased Power
 ■ Fuel - TC & PS
 ■ O&M - TC & PS
 ■ Transmission
 ■ Member Payments
■ Other Utility Oper.
 ■ A&G
 ■ Debt Service
 ■ Capital Funding

IMEA COST CATEGORY	ALLOCATION		NOTES
	GROSS	NET	
Purchased Power	13.2%	13.2%	Direct cost of supply; Included
Fuel - TC & PS	15.3%	15.3%	Operating cost related to generation; Included
O&M - TC & PS	13.4%	13.4%	Operating cost related to generation; Included
Transmission	18.1%	18.1%	Wholesale cost related to supply; Included
Member Payments	3.3%	3.3%	Wholesale cost of capacity; Included
Other Utility Operations	0.6%	0.6%	Indirect cost of supply management/generation; Included
A & G	2.9%	2.9%	Indirect cost of supply management/generation; Included
Debt Service	28.7%	0.0%	Investment with expected return; Excluded
Capital Funding	4.4%	4.4%	Indirect cost of generation; Included
TOTAL	100%	71.2%	Net % of IMEA costs related to generation/supply

AFFORDABILITY

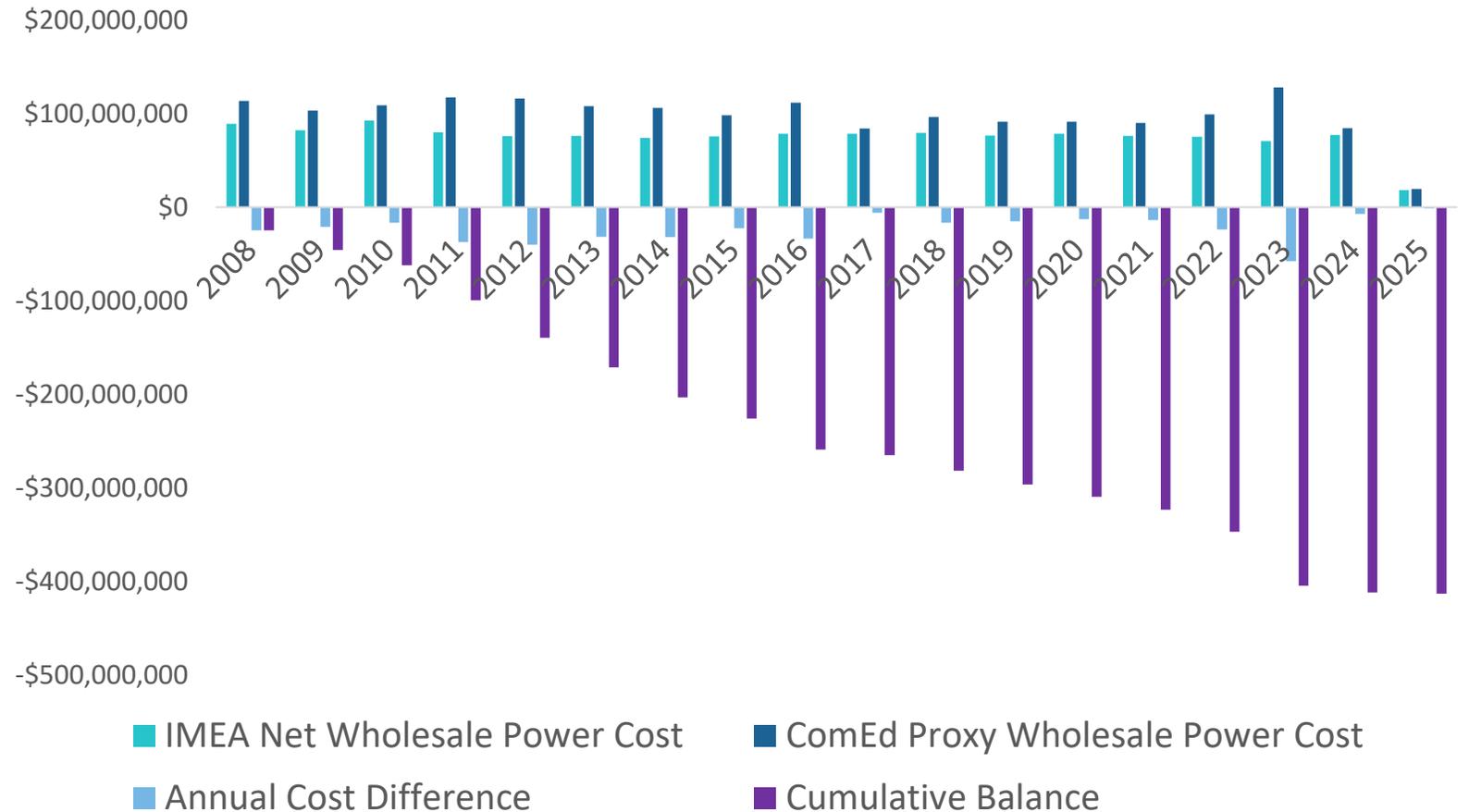
PJM Market Prices

Physical and Financial Hedging

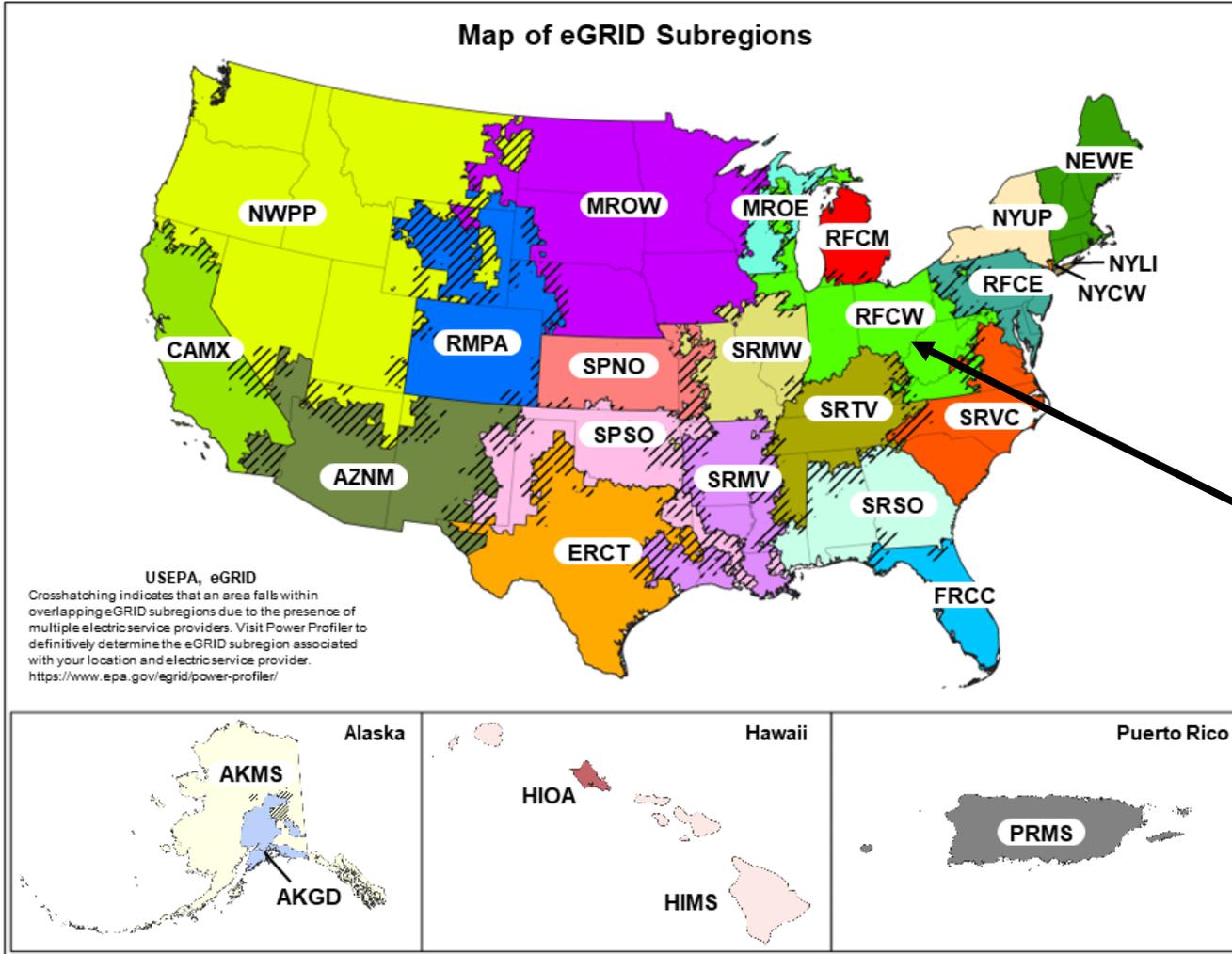
Naperville Electric Utility Price Performance

Excluding Debt Service, the Financial and Physical Hedges Delivered Stable Net Prices that have Delivered a Material Cumulative Cost Advantage

Annual Cost Comparison (ComEd Proxy Wholesale Price v. Net IMEA Wholesale Price)



SUSTAINABILITY: Baseline Emissions for Electricity Supply Vary by Region



eGRID Subregion	2023 Report Data				
	CO2	CH4	N2O	CO2e	SO2
MROE	1397.313	0.116	0.017	1404.963	0.277
MROW	920.13	0.097	0.014	926.552	0.896
RFCM	970.617	0.082	0.012	975.978	0.564
RFCW	911.424	0.071	0.01	916.054	0.412
SRMW	1239.839	0.132	0.019	1248.582	1.636
SRSO	842.329	0.056	0.008	846.007	0.162
U.S.	767.209	0.057	0.008	770.884	0.359

Source: [US EPA](https://www.epa.gov/)

SUSTAINABILITY

Baseline Emissions

Environmental Attributes

Approaches to Meeting Sustainability Goals

Environmental Attributes Represent Generation from non-Emitting Sources

Variables	Carbon Offsets	Renewable Energy Credits	Clean Energy Credits
Source	Projects that avoid or reduce greenhouse gas emissions	Renewable energy generators (e.g., wind, solar, hydro)	Nuclear
Units	Metric tons of CO ₂ or CO ₂ equivalent	Megawatt Hours (MWh)	
Purpose	Direct reduction of CO ₂ emissions	Convey use of electricity that does not produce associated emissions	
Use	Reduce Scope 1, 2, or 3 emissions	Can be used to reduce market-based Scope 2 emissions from purchased electricity	
Consumer Claims	Can claim to have reduced carbon emissions	Can claim to use “renewable” or “zero emissions” electricity supply	

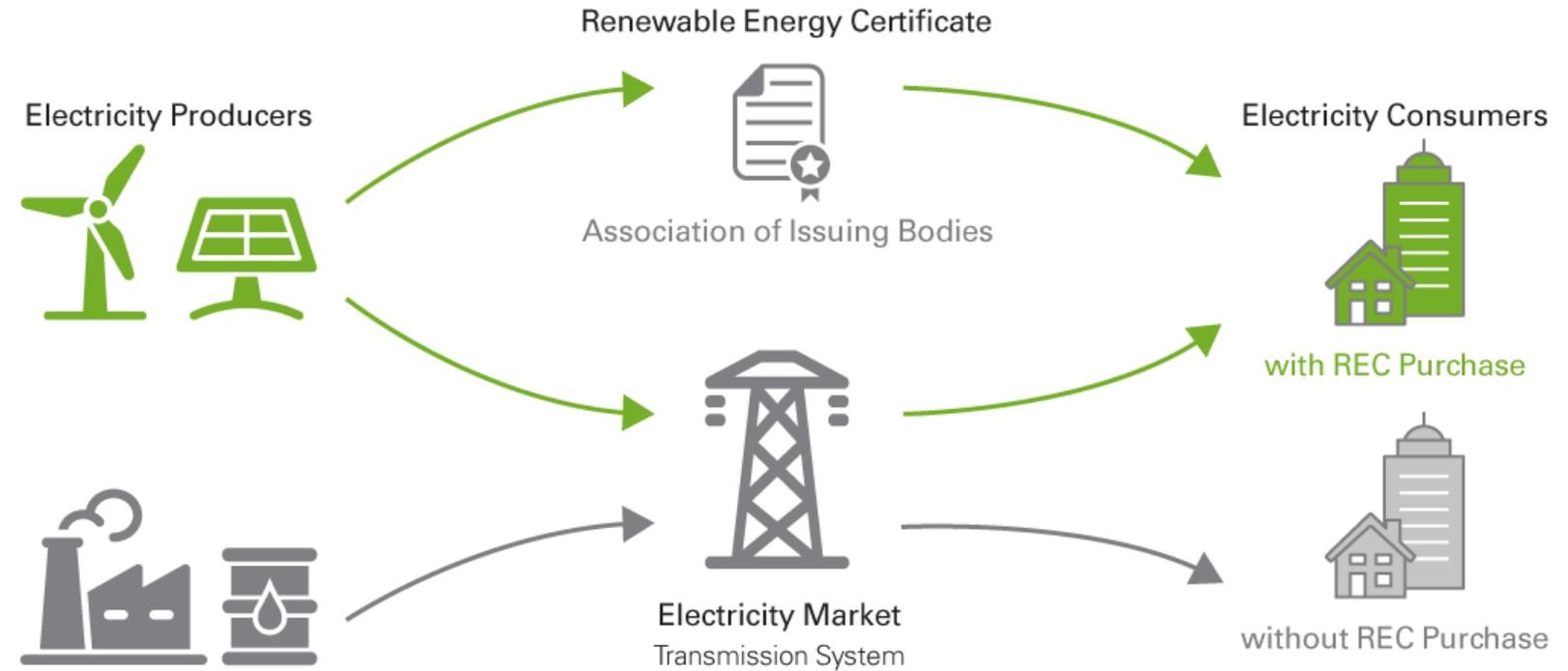
SUSTAINABILITY

Baseline Emissions

Environmental Attributes

Approaches to Meeting Sustainability Goals

Securing Environmental Attributes: Purchase Grid Supply + Renewable "Credits"



Source: [Asia CarbonX Change PLT](#)

SUSTAINABILITY: Secure Environmental Attributes through a Power Purchase Agreement

1. The energy buyer signs a PPA with a project developer for a fixed price per MWh. This allows the project to be financed and built.



Energy Buyer

3. The buyer purchases a lower volume of electricity from their utility in the usual manner.



Traditional Utility

2. The developer delivers the electricity from the generator to a “delivery point” close to the buyer’s operations. The buyer takes physical delivery of the energy and the RECs.

**Grid / Electricity
Market**

4. The utility provides grid mix electricity without RECs.

Source: [American Cities Climate Challenge](#)

SUSTAINABILITY: Secure Environmental Attributes through a Virtual Power Purchase Agreement

1. The energy buyer signs a PPA with a project developer for a fixed price per MWh. This allows the project to be financed and built.



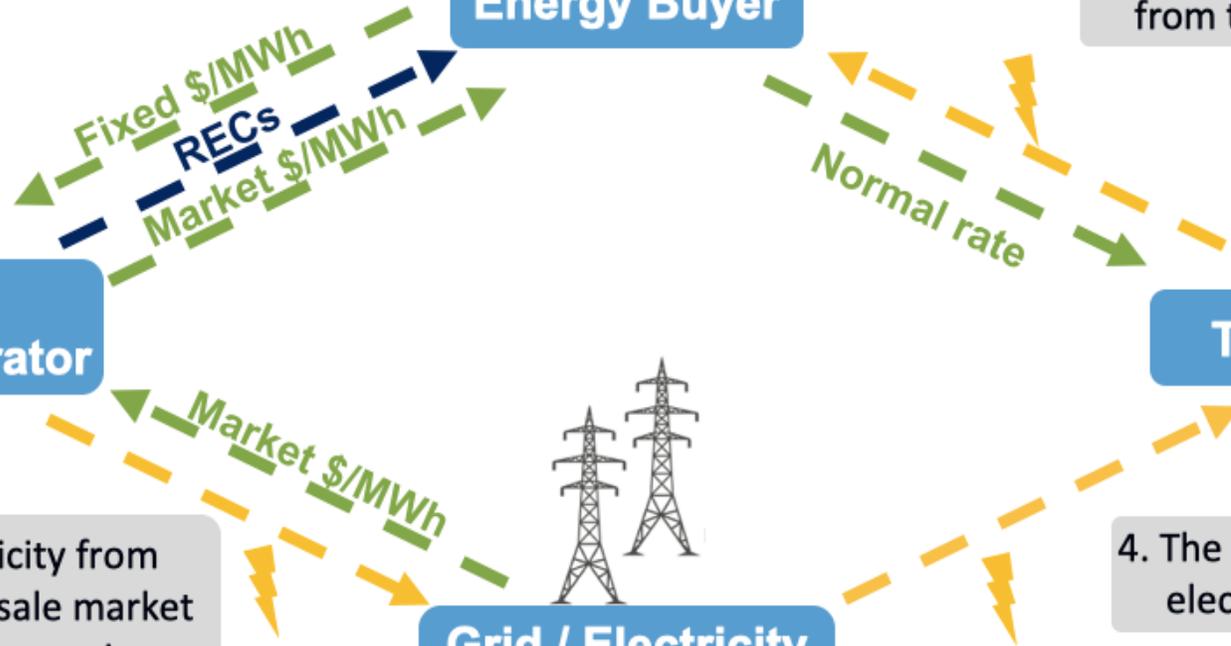
3. The buyer purchases electricity from their utility as usual.



2. The developer sells the electricity from the generator into the wholesale market at the market price. The buyer receives the market price and RECs.



4. The utility provides grid mix electricity without RECs.



Source: [American Cities Climate Challenge](#)

DISCUSSION AND THANK YOU

Mark Pruitt

Principal | The Power Bureau, LLC

markjpruitt@thepowerbureau.com

C: (219) 921-3828

Chris Townsend

Managing Partner | CJT Energy Law, LLC

chris@cjtenergylaw.com

C: (312) 286-0311