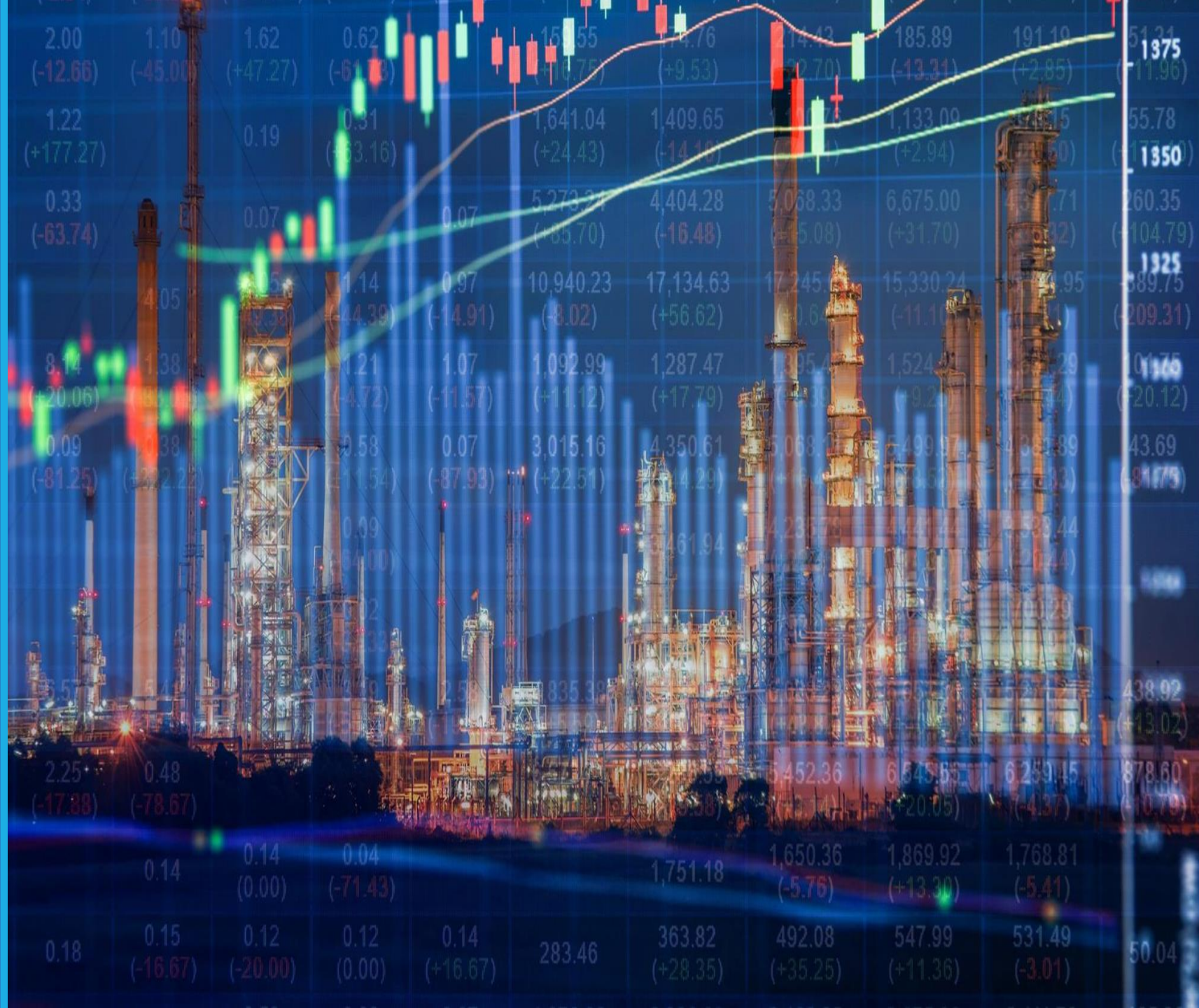
Illinois Energy Law and Wholesale Market Risks for Municipal Utilities

Presentation by

Mark Pruitt & Chris Townsend

to Naperville, Illinois

April 8, 2025



AGENDA

Context	▪ Key Energy Statutes ▪ Recent Legislation
Current Market & Outlook	▪ Energy Policy Discussions ▪ Proposed Legislation
Market Operations	▪ Energy Cost Stack ▪ Price Setting (Auctions) ▪ Supply Issues ▪ Demand Issues
Implications	▪ Energy, Capacity, Transmission ▪ Reliability ▪ Economic Development

Context

Municipal Utilities and State Law

Electric Serve Customer Choice and Rate Relief Law (Choice Act, 1997)

Electric Infrastructure & Modernization Act (EIMA, 2011)

Future Energy and Jobs Act (FEJA, 2016)

Climate & Equitable Jobs Act (CEJA, 2021)

Three Basic Types of Electric Utilities in the U.S.

Investor-Owned Utilities

- 168 separate utilities
- 110 million customers
- Rates and services subject to approval by state public utility commission
- Example: Commonwealth Edison

Publicly Owned (Municipal) Utilities

- 1,958 separate utilities
- 24 million customers
- Rates and services subject to elected officials, some filings with state public utility commission
- Example: City of Naperville

Electric Cooperatives

- 812 separate utilities
- 20 million customers
- Rates and services subject to elected officials, some filings with state public utility commission
- Example: Corn Belt Energy

Source: Energy Information Administration

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Examples of Illinois Laws and Regulations that do not directly apply to Municipals

State Laws	State Regulation
• Renewable Portfolio Standards • Energy Efficiency Portfolio Standards • Clean Energy Standards • Community Solar • Net metering • Electric Vehicle Charging Rates	• Rates • Standards of Service • Billing Practices • Metering Standards • Dist. Generation / Interconnection • On-Bill Financing

Context

Municipal Utilities and State Law

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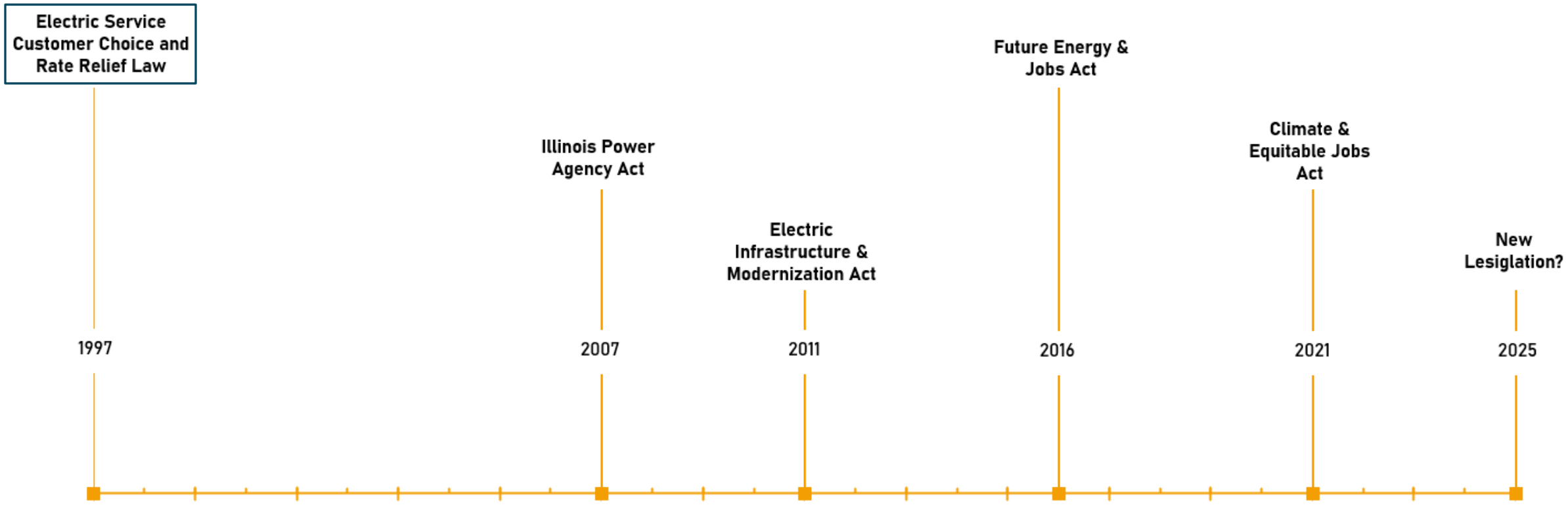
Specific Illinois Laws and Regulations that do not directly apply to Municipals

State Laws	State Regulation
• Renewable Portfolio Standards	• Rates
• Energy Efficiency Portfolio Standards	• Standards of Service
• Clean Energy Standards	• Billing Practices
• Community Solar	• Metering Standards
• Net metering	• Dist. Generation / Interconnection
• Electric Vehicle Charging Rates	• On-Bill Financing

However, Illinois Laws and Regulations Impact Wholesale Markets for Municipals

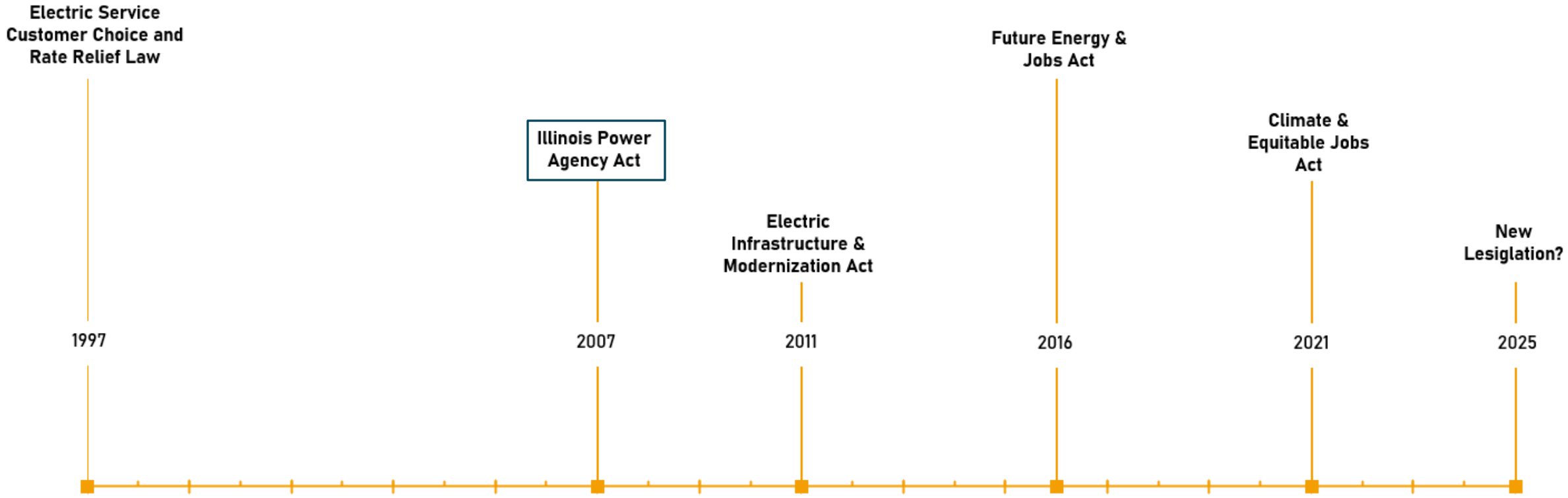
Wholesale Supply	Wholesale Demand
• Subsidies for some generation (Nuclear, Renewables, Storage)	• Subsidies for new load (EV's, Electrification)
• Limits on other generation (Coal, Natural Gas)	• Subsidies for new industries (Battery makers, Data centers)
• Limits on transmission resources (Certificate of convenience, Right of First Refusal)	• Subsidies for energy efficiency (utility programs)

Electric Service Customer Choice Act (1997): ComEd and Ameren Illinois customers allowed to contract for supply with Retail Energy Suppliers; ComEd and Ameren Illinois become "wires companies" only



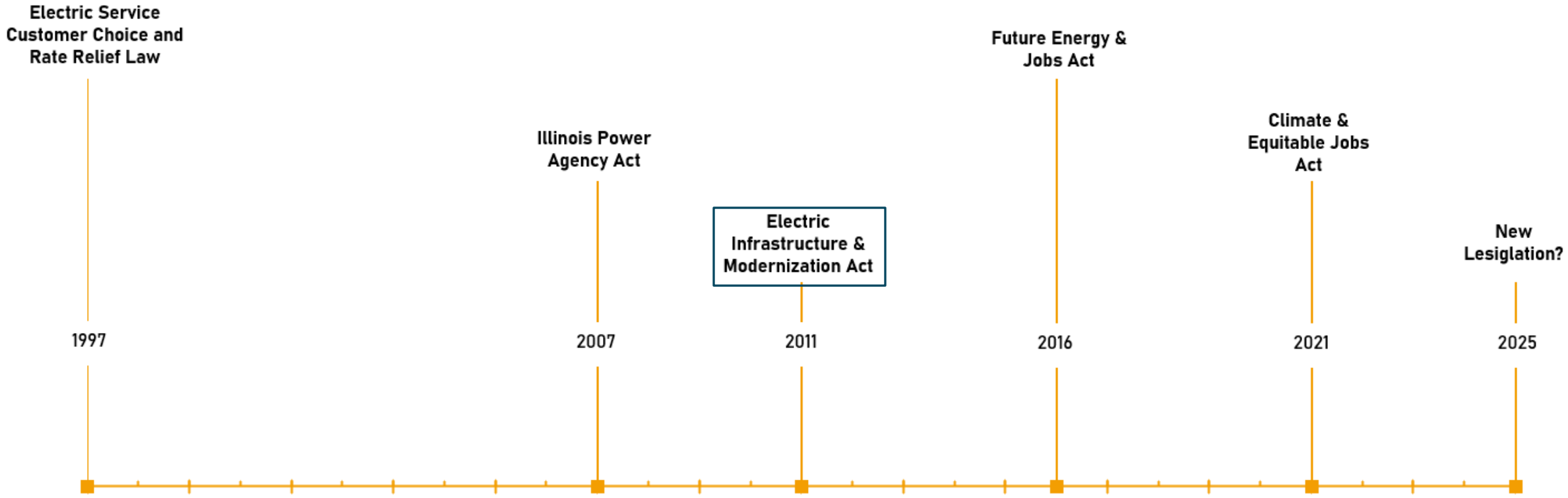
Implication for Municipals: ComEd and Ameren Illinois exited generation market, forcing municipals and cooperatives in Illinois to find new wholesale supply options.

Illinois Power Agency Act (2007): State Agency created to manage wholesale power purchasing for ComEd and Ameren Illinois, created the Illinois Renewable Portfolio Standard (RPS)



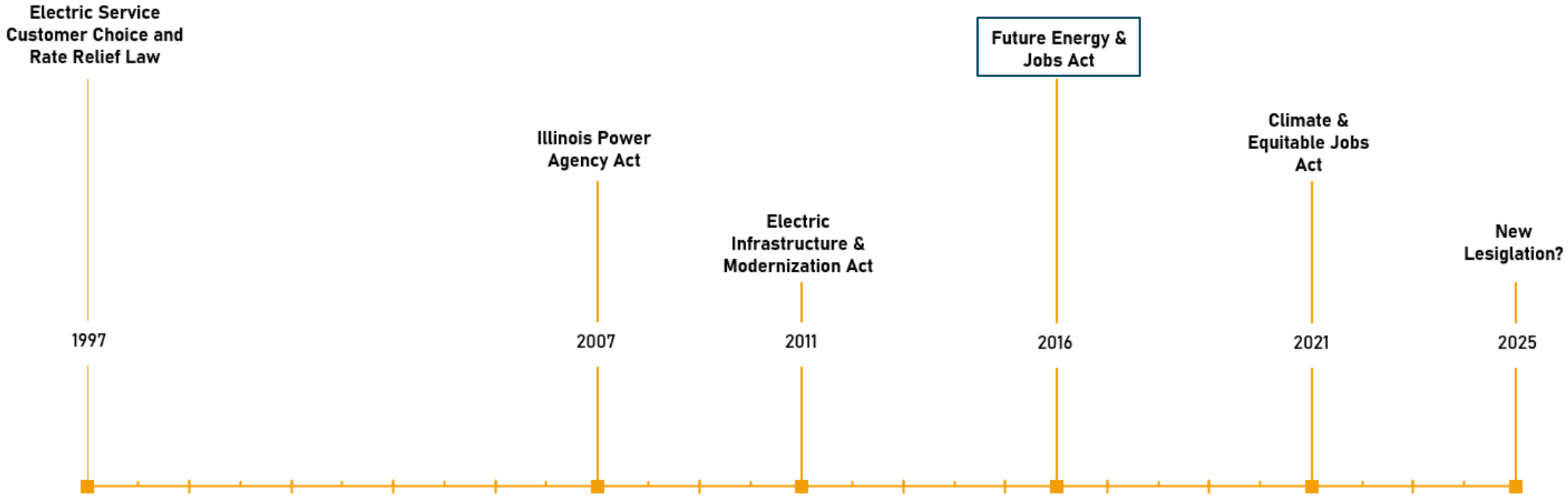
Implication for Municipals: Beginning of state intervention in wholesale markets by subsidizing preferred types of generation (e.g., wind, solar, hydro) through the purchase of Renewable Energy Credits (RECs)

Electric Infrastructure & Modernization Act (2011): ComEd and Ameren Illinois allowed to automatically increase rates ("formula rates") to recover capital costs with limited regulatory oversight, minimum investments in reliability, resiliency



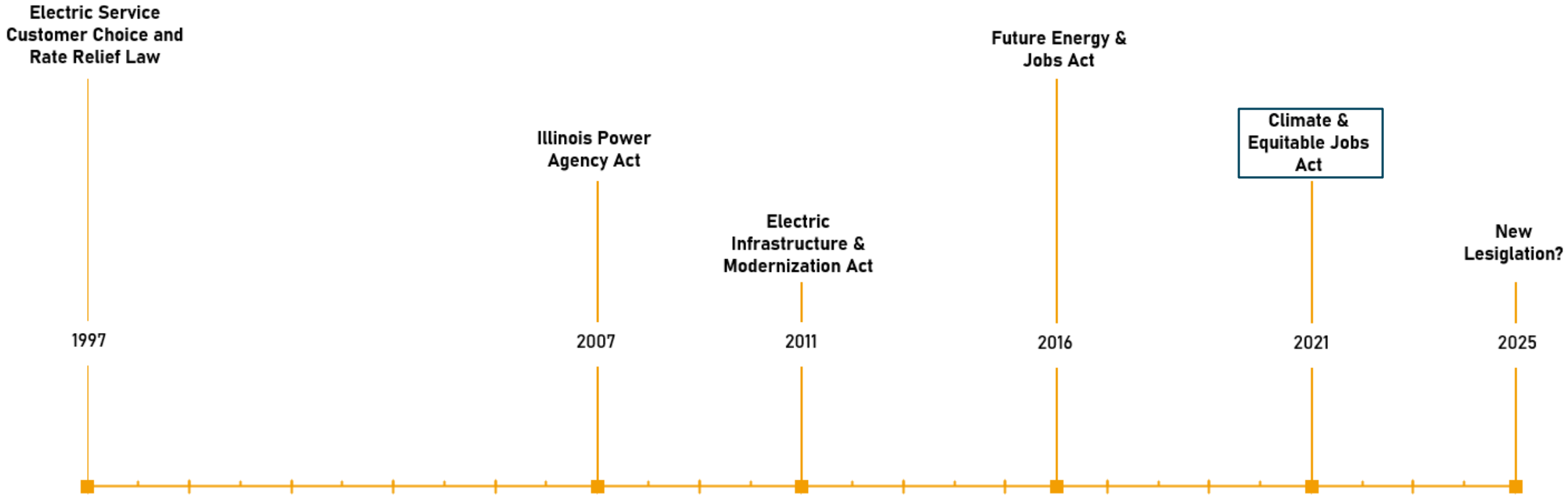
Implication for Municipals: Smart Meter deployments and upgrades of utility delivery networks impacted interconnections between municipal networks and surrounding ComEd and Ameren Illinois systems

Future Energy & Jobs Act (2016): Increase in state subsidies to renewables ($585 million/year), nuclear subsidies ($500 million/year), and energy efficiency ($500 million/year)



Implication for Municipals: Additional intervention in wholesale energy and capacity markets continued price suppression in PJM and MISO

Climate and Equitable Jobs Act (2021): Further state intervention in energy sector (renewable energy incentives, resource planning, new nuclear subsidies, "performance-based rates", utility planning cycles, EV's, phase out of fossil fuel generation)



Implication for Municipals: Sets 2045 deadline for emissions reductions for Prairie State power station, accelerates retirement for coal and natural gas capacity in the PJM and MISO regions

Long-Term Renewable Resource Procurement Plan (LTRRPP): Bi-Annual Planning Document to identify volumes and types of renewable energy resource procurements by the investor-owned utilities.

Table 3-12: RPS Funds and Expenditures

Delivery Year	Delivery Year Starting Balance	RPS Collections	Total Funds Available	Total Expenditures	Delivery Year Ending Balance
2023-24	$ 607,275,724	$ 577,421,570	$ 1,184,697,294	$ 580,458,738	$ 604,238,555
2024-25	$ 604,238,555	$ 573,280,652	$ 1,177,519,207	$ 543,705,555	$ 633,813,652
2025-26	$ 633,813,652	$ 571,096,783	$ 1,204,910,435	$ 636,324,669	$ 568,585,766
2026-27	$ 568,585,766	$ 569,114,675	$ 1,137,700,442	$ 758,021,005	$ 379,679,437
2027-28	$ 379,679,437	$ 575,511,361	$ 955,190,797	$ 904,157,409	$ 51,033,389
2028-29	$ 51,033,389	$ 585,855,179	$ 636,888,568	$ 1,067,374,771	$ (430,486,203)
2029-30	$ (430,486,203)	$ 601,020,041	$ 170,533,838	$ 1,241,438,531	$ (1,070,904,693)
2030-31	$ (1,070,904,693)	$ 622,183,799	$ (448,720,894)	$ 1,421,541,675	$ (1,870,262,569)
2031-32	$ (1,870,262,569)	$ 646,679,016	$ (1,223,583,553)	$ 1,491,768,104	$ (2,715,351,657)
2032-33	$ (2,715,351,657)	$ 672,102,059	$ (2,043,249,597)	$ 1,615,003,290	$ (3,658,252,888)
2033-34	$ (3,658,252,888)	$ 695,060,776	$ (2,963,192,112)	$ 1,552,070,958	$ (4,515,263,069)
2034-35	$ (4,515,263,069)	$ 716,360,888	$ (3,798,902,181)	$ 1,564,414,364	$ (5,363,316,545)
2035-36	$ (5,363,316,545)	$ 732,916,646	$ (4,630,399,899)	$ 1,587,678,635	$ (6,218,078,534)
2036-37	$ (6,218,078,534)	$ 745,042,154	$ (5,473,036,380)	$ 1,623,783,658	$ (7,096,820,038)
2037-38	$ (7,096,820,038)	$ 750,188,074	$ (6,346,631,964)	$ 1,721,299,214	$ (8,067,931,179)
2038-39	$ (8,067,931,179)	$ 755,119,146	$ (7,312,812,032)	$ 1,797,551,614	$ (9,110,363,646)
2039-40	$ (9,110,363,646)	$ 758,288,140	$ (8,352,075,506)	$ 1,864,952,376	$ (10,217,027,882)
2040-41	$ (10,217,027,882)	$ 762,256,504	$ (9,454,771,378)	$ 1,952,884,874	$ (11,407,656,252)
2041-42	$ (11,407,656,252)	$ 765,278,075	$ (10,642,378,177)	$ 1,980,640,441	$ (12,623,018,617)
2042-43	$ (12,623,018,617)	$ 768,387,670	$ (11,854,630,948)	$ 2,034,362,085	$ (13,888,993,033)

Source: Illinois Power Agency

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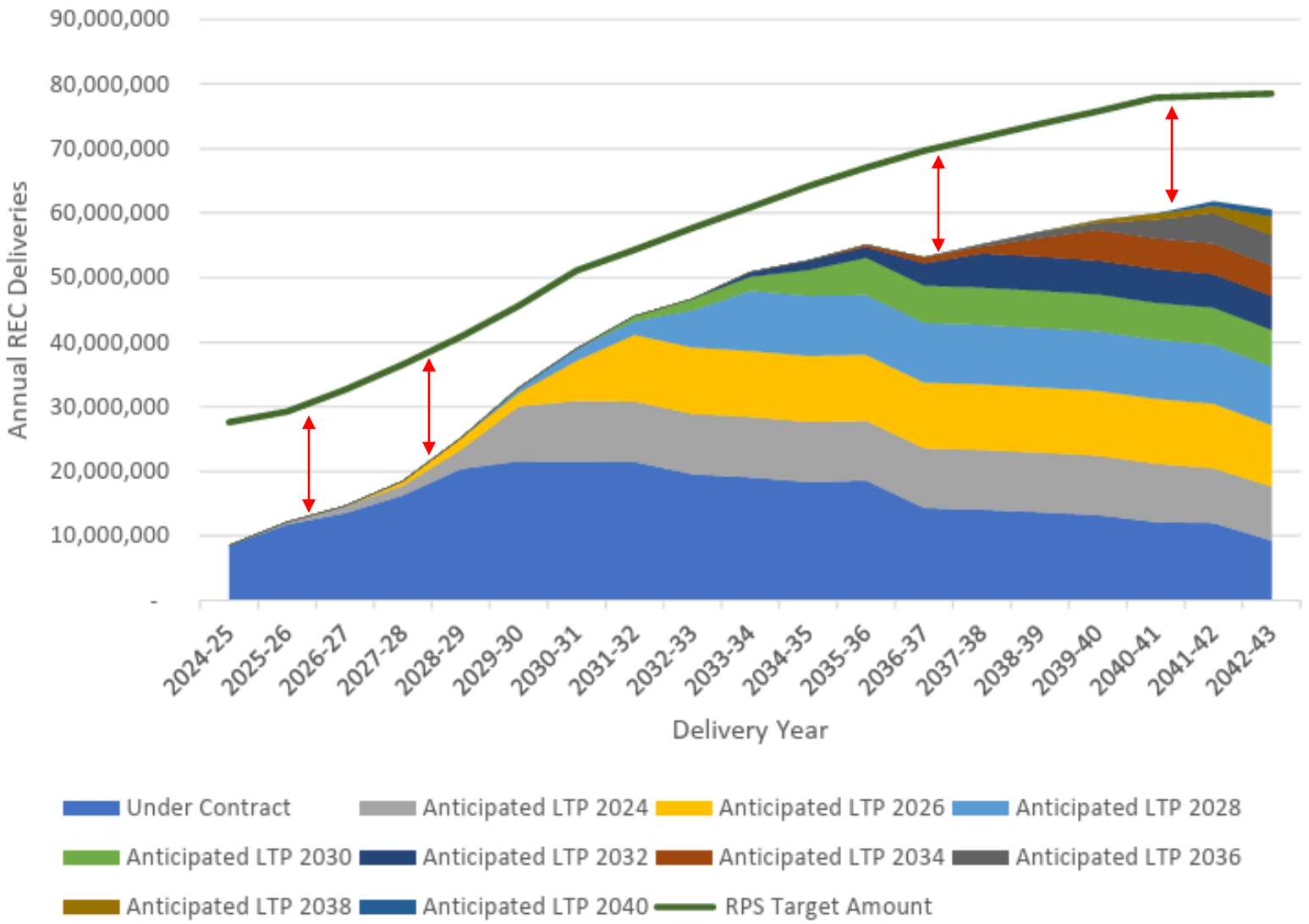
Current projections indicate insufficient funding to meet statewide RPS goals starting in 2028

Source: Illinois Power Agency

Long-Term Renewable Resource Procurement Plan (LTRRPP): No scenarios where the Illinois RPS is fulfilled



Source: Illinois Power Agency

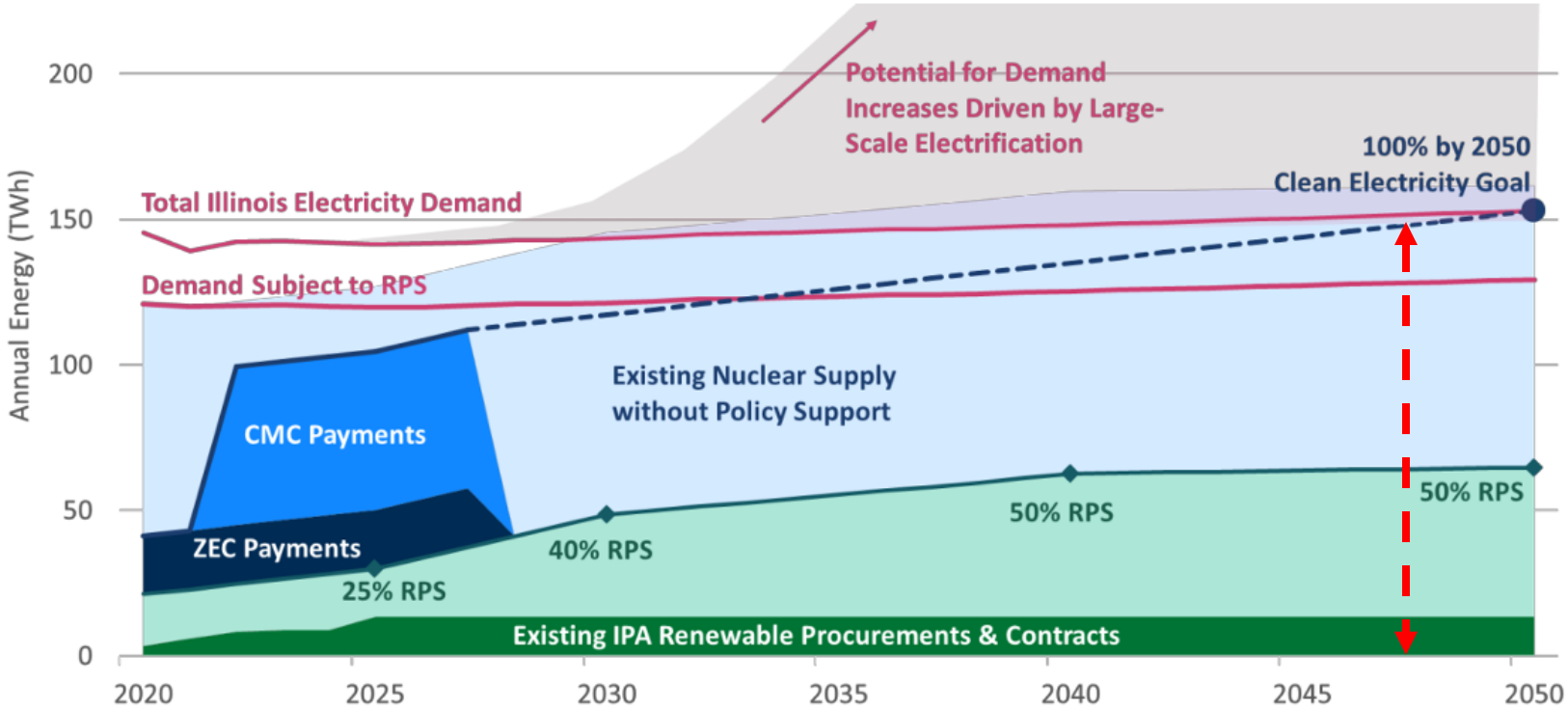
Current Market & Outlook

Energy Policy Discussions

Proposed Legislation

Renewable Energy Access Plan (REAP): Policy and Planning process to identify barriers to renewable energy resource deployments in Illinois

FIGURE 5: OUTLOOK FOR ILLINOIS CLEAN ELECTRICITY SUPPLY AND INCREASES IN CLEAN ELECTRICITY SUPPLY NEEDS

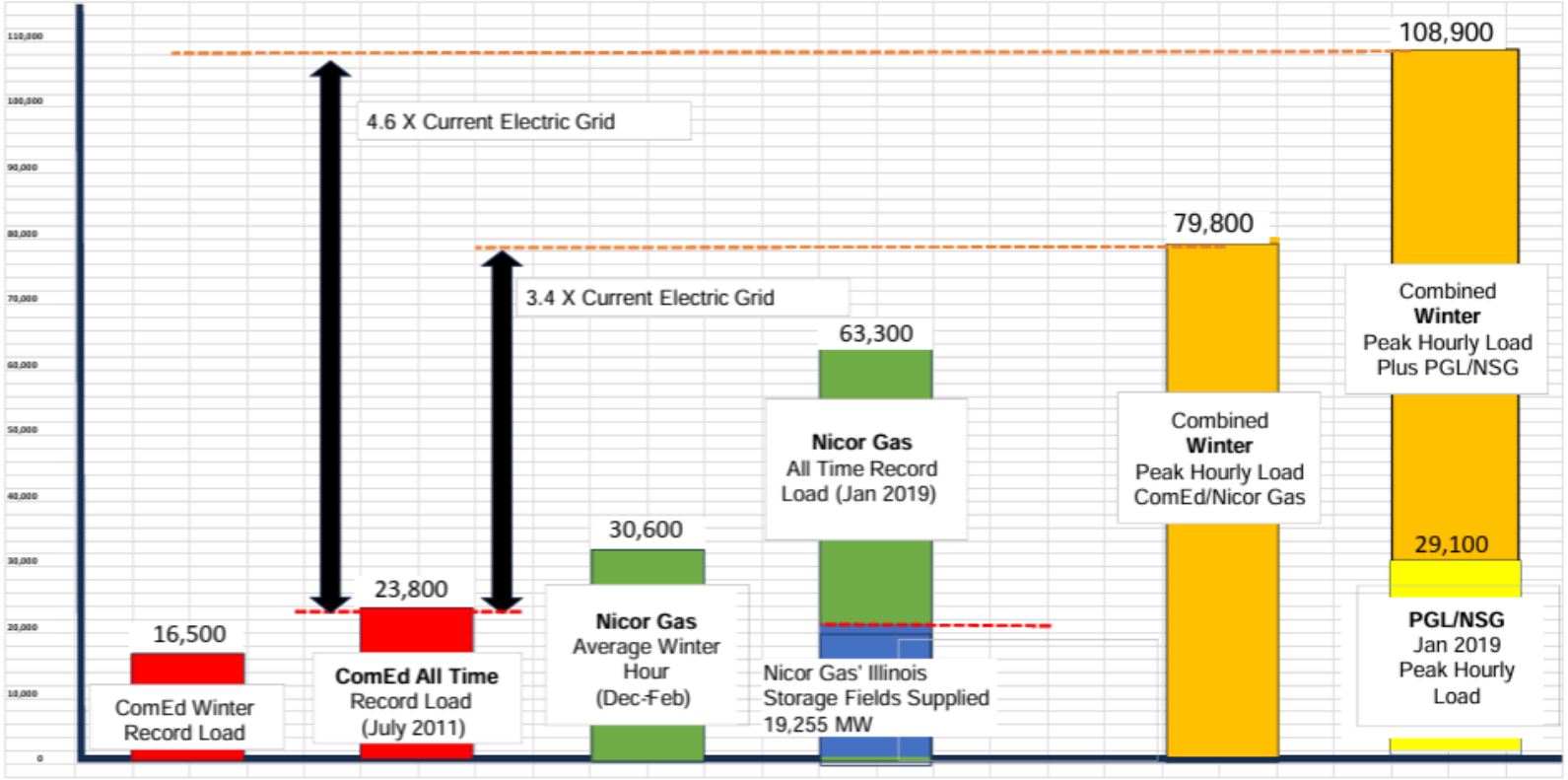


Long-term supply needs are only met if all RPS goals are met and all nuclear power plants continue to operate as planned, but no cushion for load growth

Source: Renewable Energy Access Plan

Future of Gas (FOG): Policy and Planning process to identify whether and to what extent natural gas use should exist in Illinois

Peak Hour Energy Delivery Comparison – Nicor, PGL/NSG and ComEd (Megawatts)



Source: Future of Gas Workshop materials

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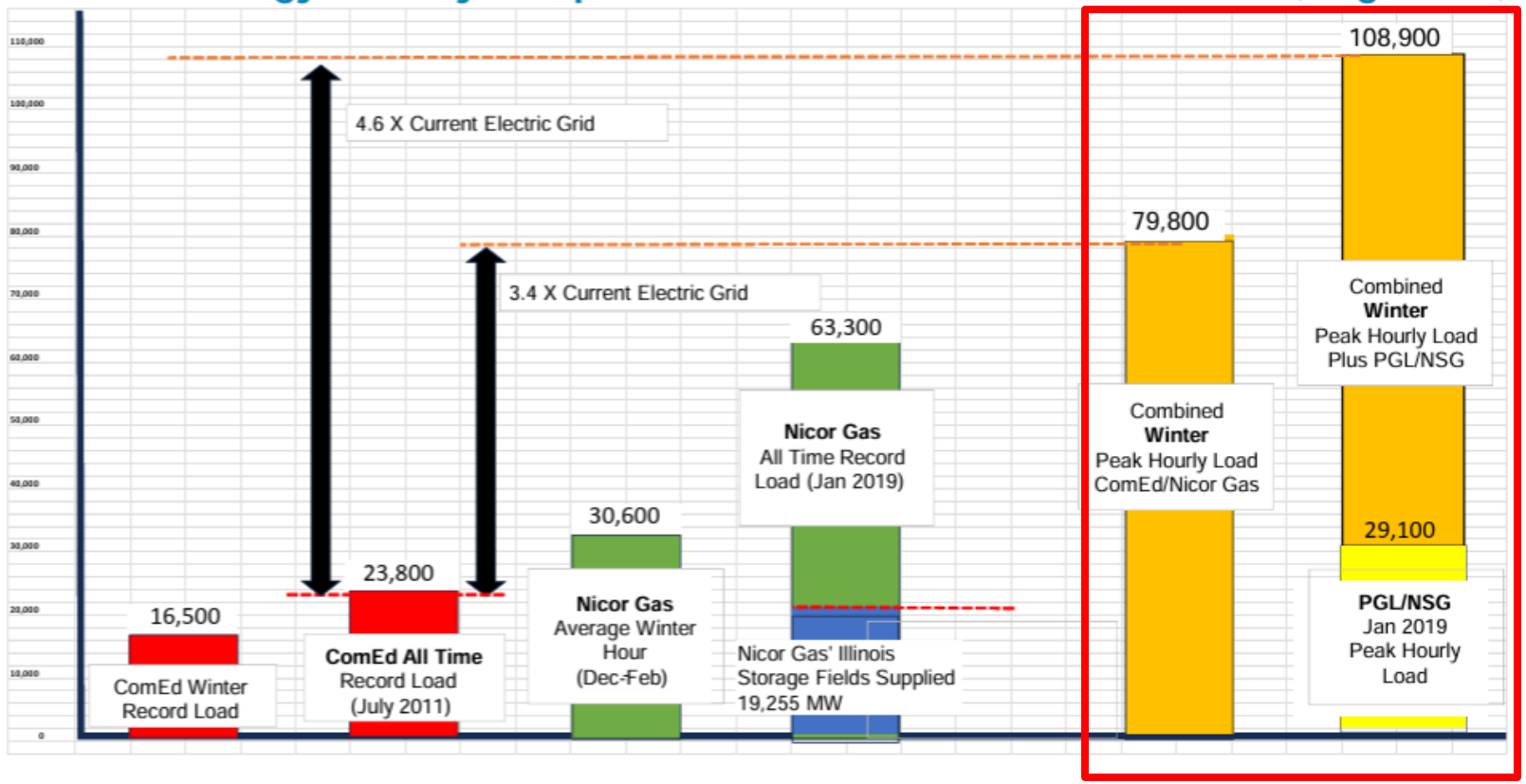


Replacing natural gas to meet winter heating needs in northern Illinois would quadruple electricity demand with unknown price impacts

Source: Future of Gas Workshop materials

Multi-Agency Report with Solutions (MARS): Policy and Planning process to identify whether Illinois will have sufficient energy supply in future years

- CEJA requires the Illinois Commerce Commission, Environmental Protection Agency, Power Agency issue a report examining
  - RPS progress
  - CO2e and copollutant emissions reductions
  - Green hydrogen technologies implementation
  - Resource adequacy and reliability throughout the State
  - Proposed solutions for any findings
- Report due by December 15, 2025
  - IEPA/ICC/IPA to consult with PJM/MISO
  - If resource adequacy is projected to be a shortfall, then Agencies can consider reduction of emissions requirements via a plan to be filed with ICC

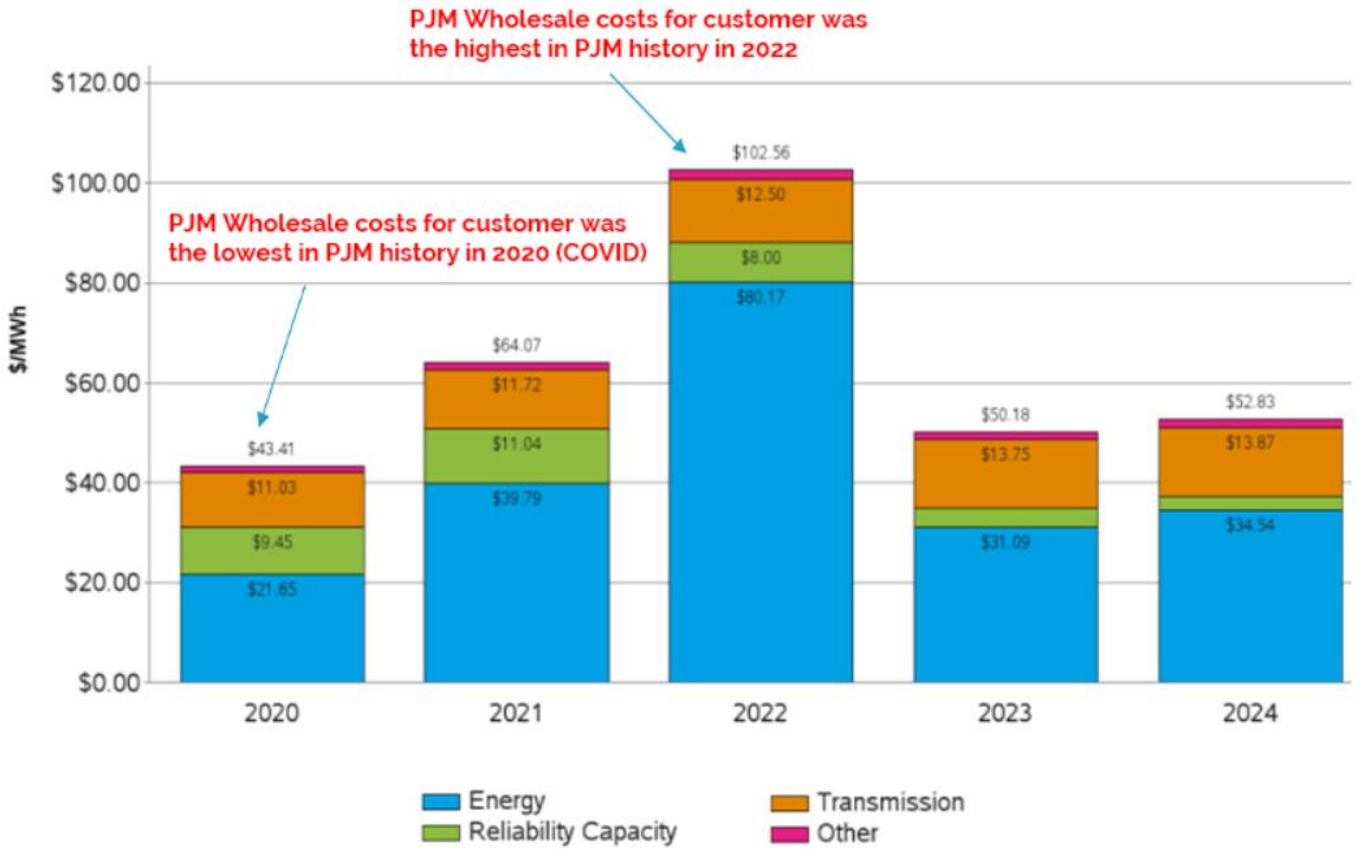
Proposed Legislation: Energy Storage, Long-Term Energy Procurement Planning, other items to be determined

Utility-Scale Battery Storage	Tariffs
Establish a goal of 15,000 MW of utility scale storage through a competitive procurement process.	Establish a new tariff framework for smaller (distributed) stand-alone systems, combined storage and solar distributed systems, and demand reduction programs.
Long-Term Energy Procurement Plan	**Community Solar**
Support a long-term energy procurement plan to incentivize smaller energy storage systems that will operate in ways that benefit regional grid reliability	Refine the practice to define net crediting in a way that allows money-saving community solar subscriptions to be deployed to low-income customers or other customers with low credit scores without risk to the community solar system owners and ratepayers.
Distributed Generation Rebate	**Virtual Power Plants**
Increase the existing distributed generation rebate for solar and storage systems to lower costs for customers with distributed generation systems, and provide greater flexibility and options for residential and small business customers.	Incentivize a range of smaller generation, energy storage, and backup power resources to inject power into the grid to reduce peak energy supply constraints and add reliability to the grid, which can result in consumer savings.

Market Operations

- Energy Cost Stack
- Price Setting (Auctions)
- Supply Issues
- Demand Issues

Energy Cost Stack: Energy costs within the PJM market are the sum of Energy Capacity, Transmission and Other (Ancillary) costs which change in response to supply, demand, and regulation



Municipal utilities will need to manage ongoing (and growing) price risk for energy, capacity and transmission

Source: RTO Insider

Market Operations

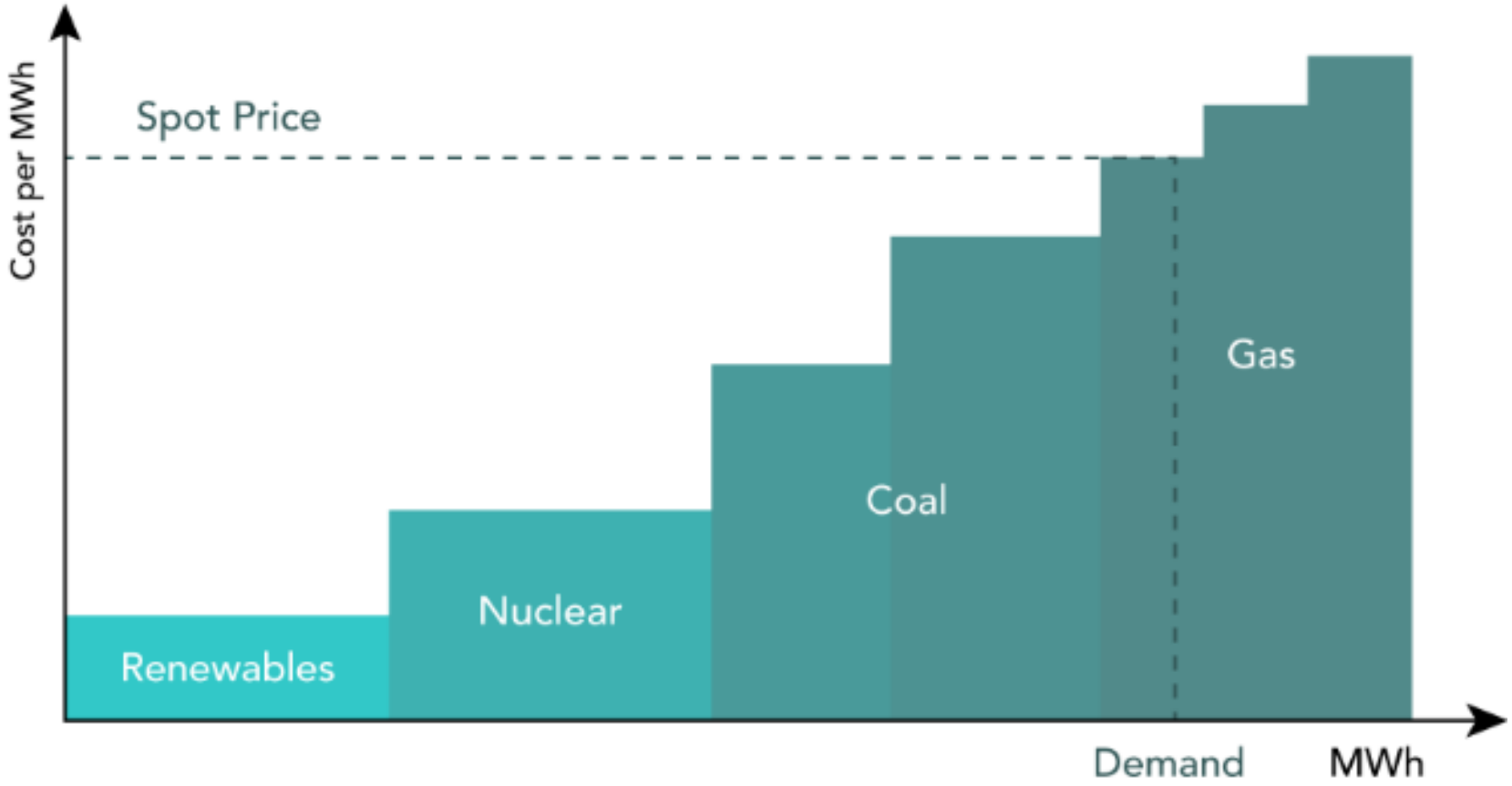
Energy Cost Stack

Price Setting (Auctions)

Supply Issues

Demand Issues

Price Setting (Auctions): Prices for energy and capacity are set through auctions which reflect the relative balance of supply and demand (lower supply or high demand increase prices, higher supply or lower demand decrease prices)



Municipal utilities can manage these price risks with hedges (e.g., power purchase agreements, power generation assets, load management, etc.)

Source: RTO Insider

Market Operations

- Energy Cost Stack
- Price Setting (Auctions)
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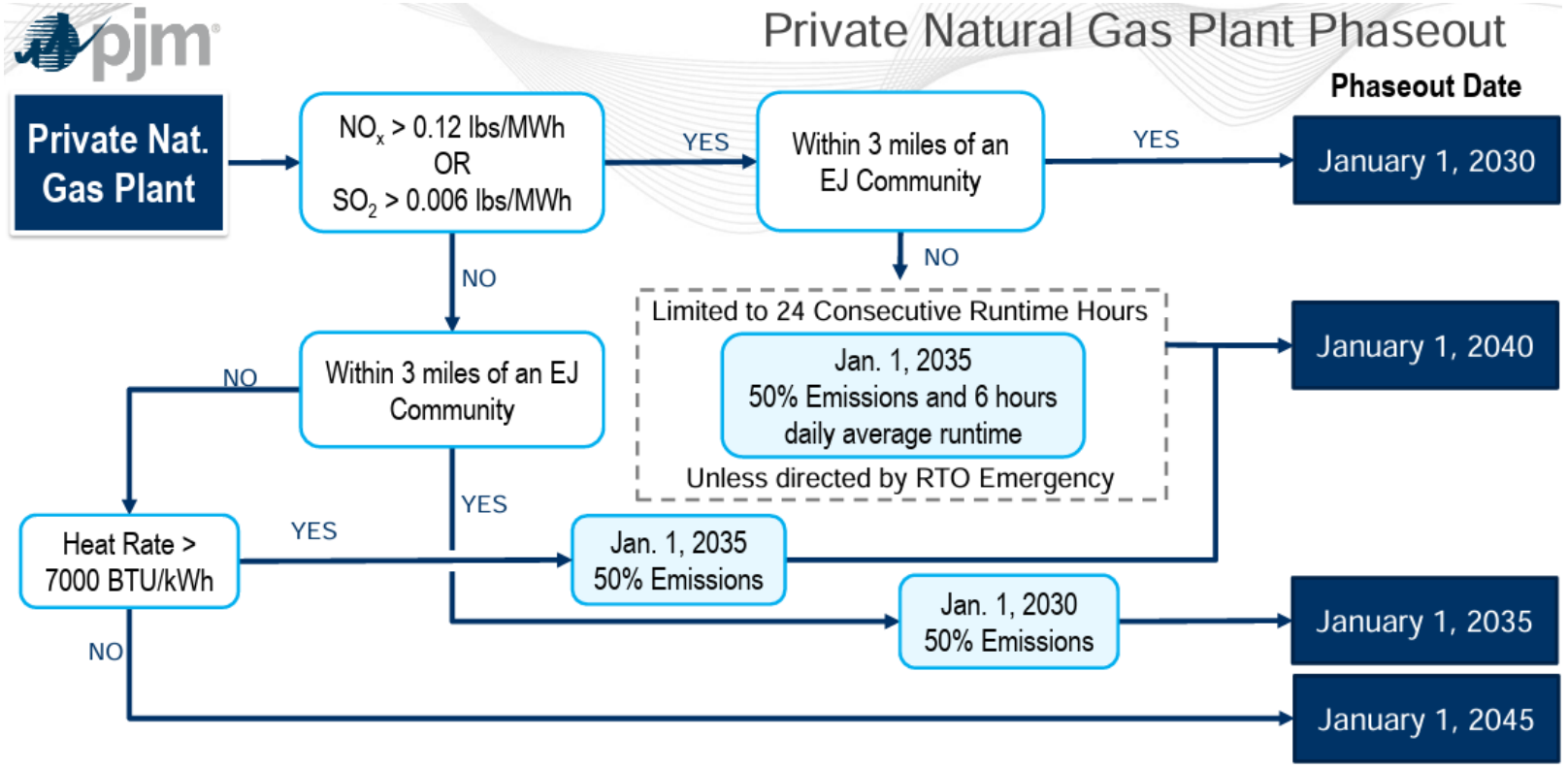
- Demand Issues

Supply Issues: Natural gas generation in Illinois must reduce emissions to zero or retire unless PJM and MISO determine that retirement will threaten grid reliability (reduced supply, increasing price pressure)



Municipal utilities will have fewer options for hedging their energy supply and capacity price risks with fewer generators in the market

Source: Illinois Clean Energy Jobs Act Fossil Fuel Generation Phaseout

Supply Issues: Natural gas represents 38% of the capacity in northern Illinois. Per CEJA, 34% is required to retire in 2030; 21% in 2035; and the remainder in 2045

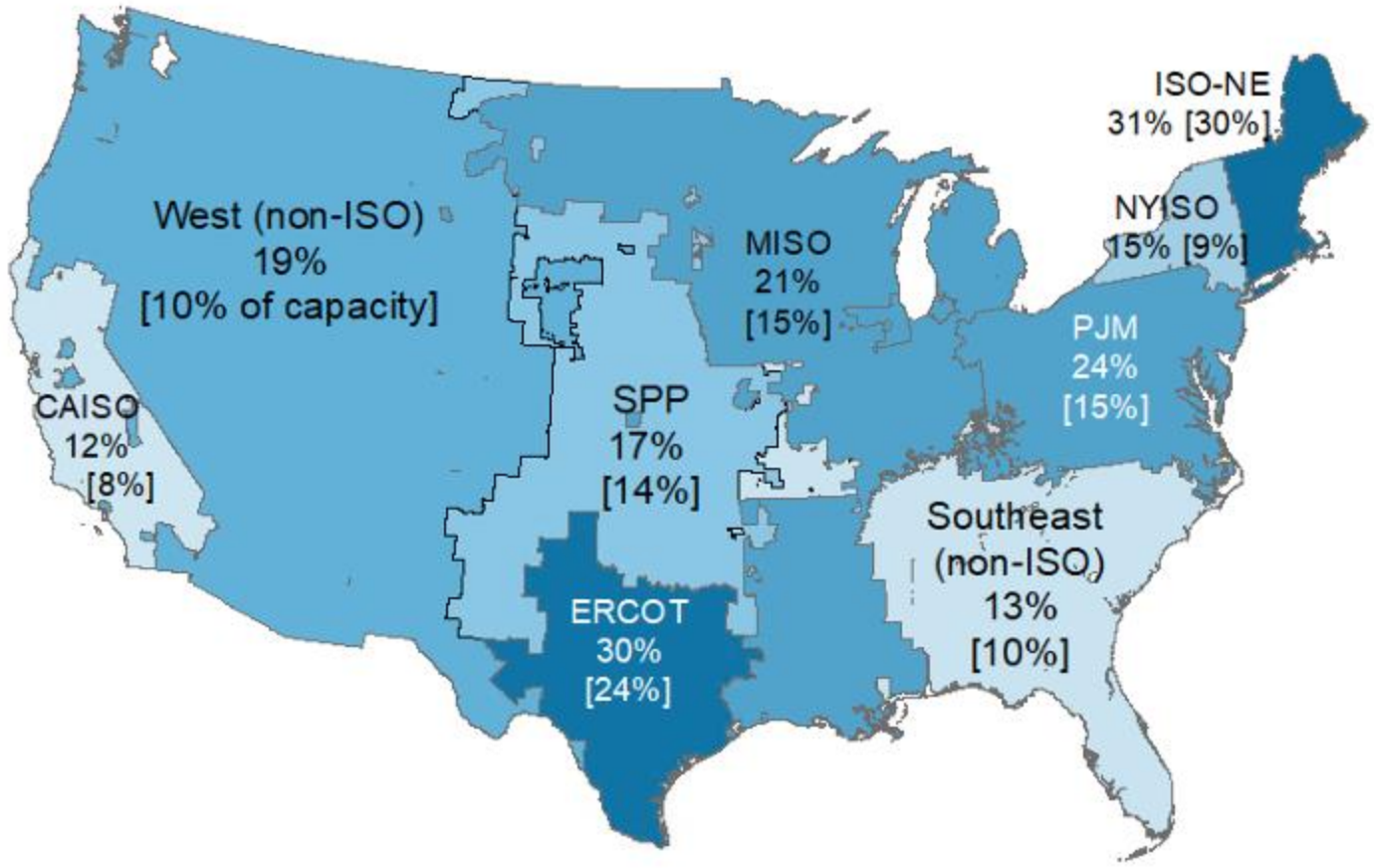
Power Plants				CHARACTERIZATION			POTENTIAL SHUTDOWN SCHEDULE			
Facility Name	# Units	MW	ISO	> Emissions Limits	< 3 MI ej	> 7000 Heat Rate	2030	2035	2040	2045
Morris Cogeneration, LLC	4	218.8	PJM	YES	NO	YES		50%	50%	
Jackson Generation, LLC		1288.6	PJM	NO	NO	NO				100%
Kendall Energy Facility	8	1538.4	PJM	NO	NO	YES		50%	50%	
Cordova Energy Company	3	611.2	PJM	NO	NO	NO				100%
Three Rivers Energy Center	2	1250	PJM	NO	NO	NO				100%
Aurora	10	1086.2	PJM	YES	YES	YES	100%			
Calumet Energy Team, LLC	2	312.8	PJM	YES	YES	YES	100%			
Elgin Energy Center, LLC	4	540	PJM	YES	YES	YES	100%			
Elwood Energy Facility	9	1728	PJM	YES	YES	YES	100%			
Rockford Energy Center	2	316	PJM	YES	YES	YES	100%			
Rockford II Energy Center	1	168	PJM	YES	YES	YES	100%			
Rocky Road Power, LLC	4	415.5	PJM	YES	YES	YES	100%			
Crete Energy Park	4	357.6	PJM	YES	NO	YES		50%	50%	
Lee County Generating Station, LLC	8	692	PJM	YES	NO	YES		50%	50%	
LSP University Park, LLC	12	726	PJM	YES	NO	YES		50%	50%	
University Park Energy	6	353	PJM	YES	NO	YES		50%	50%	
Zion Energy Center	3	596.7	PJM	YES	NO	YES		50%	50%	
Lincoln Generating Facility	8	692	PJM	NO	NO	YES		50%	50%	
Nelson Energy Center	4	380	PJM	NO	NO	YES		50%	50%	

Municipal utilities will be exposed to rising energy supply and capacity price risks unless they are otherwise hedged.

Market Operations

- Energy Cost Stack
- Price Setting (Auctions)
- Supply Issues
- Demand Issues

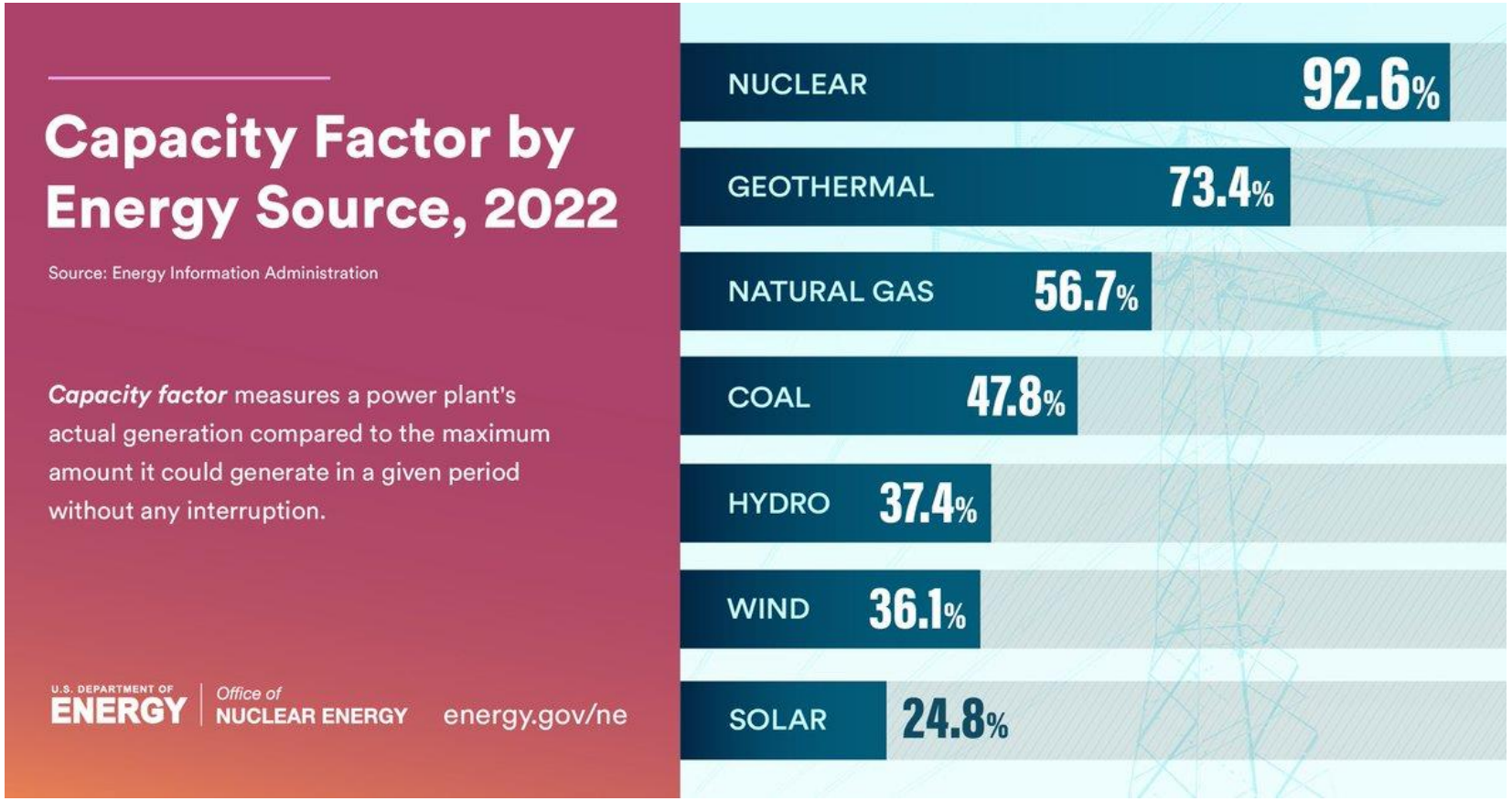
Supply Issues: However, only 15% of all new generation projects proposed between 2000-2018 in PJM were built (reduced supply, increasing price pressure)



Municipal utilities will not have many new capacity sources of capacity to rely on

Source: Queued Up: 2024 Edition (Characteristics of Power Plans Seeking Transmission Interconnection as of the End of 2023), Lawrence Berkeley Laboratory

Supply Issues: Wind and Solar are not 1:1 replacements for Coal and Natural Gas



Municipal utilities will need to secure as much as 2-4 MW of capacity from solar resources to replace 1 MW of capacity from more dispatchable resources

Source: US Department of Energy

Market Operations

Energy Cost Stack

Price Setting (Auctions)

Supply Issues

Demand Issues

Supply Issues: PJM also identifies that capacity shortages (the key metric for grid reliability) is impaired

"Taking the anticipated 2025 load forecast into account, the PJM system could see a ***capacity shortage as soon as the 2026/27 Delivery Year.***"

- Mark Takahashi, PJM Board of Managers

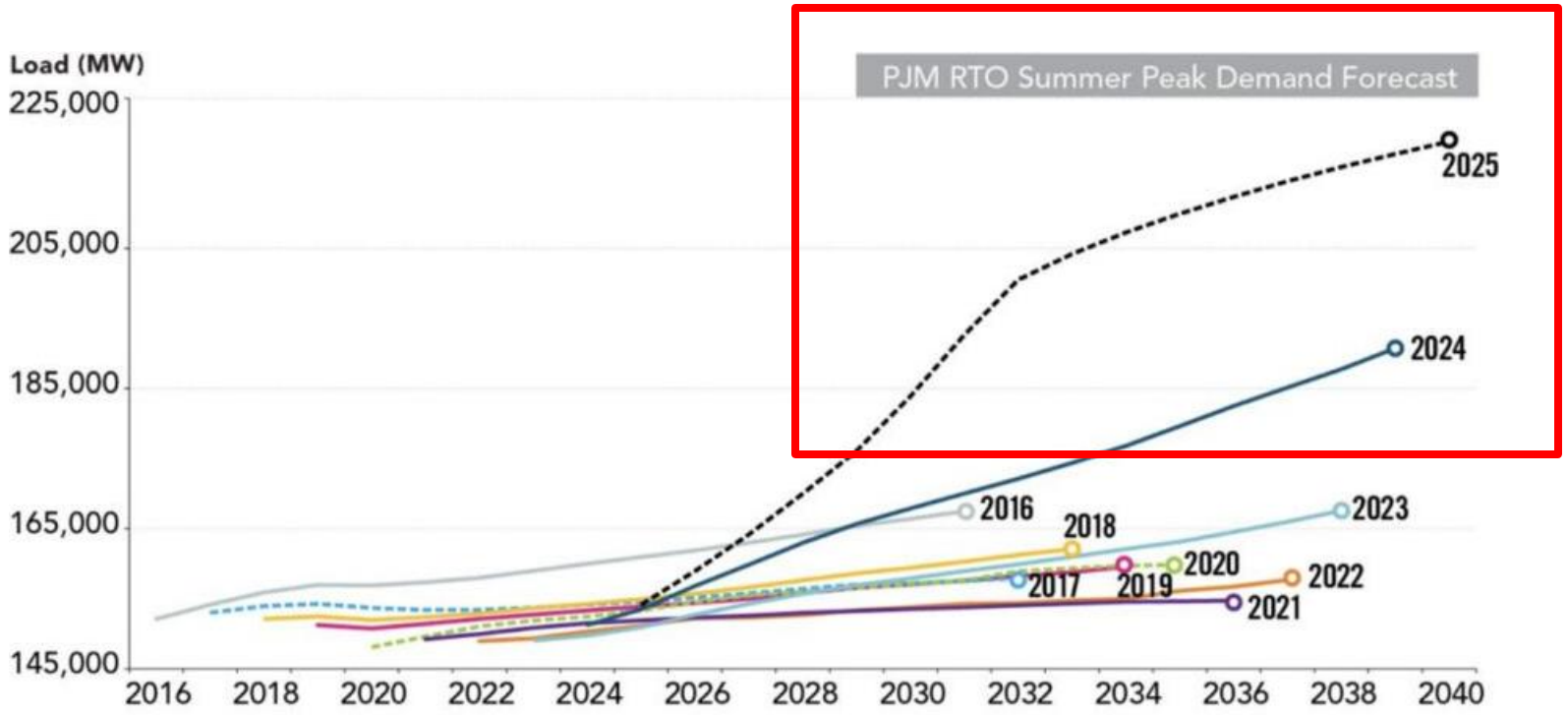
"The ComEd region currently has approximately 26,800 MW of generation capacity and approximately 1,400 MW of demand response capability, which means ComEd's current total internal capacity is approximately 28,200 MW. Subtracting the expected retirements of 9,661 MW to the approximate current capacity of ComEd, 28,200 MW, ***the ComEd region will likely face a shortfall of 680 MW by 2030 if the Reliability Requirement and CETL values remain constant***."

- PJM, FERC Docket No. ER24-462-000

Market Operations

- Energy Cost Stack
- Price Setting (Auctions)
- Supply Issues
- **Demand Issues**

Demand Issues: At the same time there is a dramatic increase in economic development and resulting demand for electricity in PJM



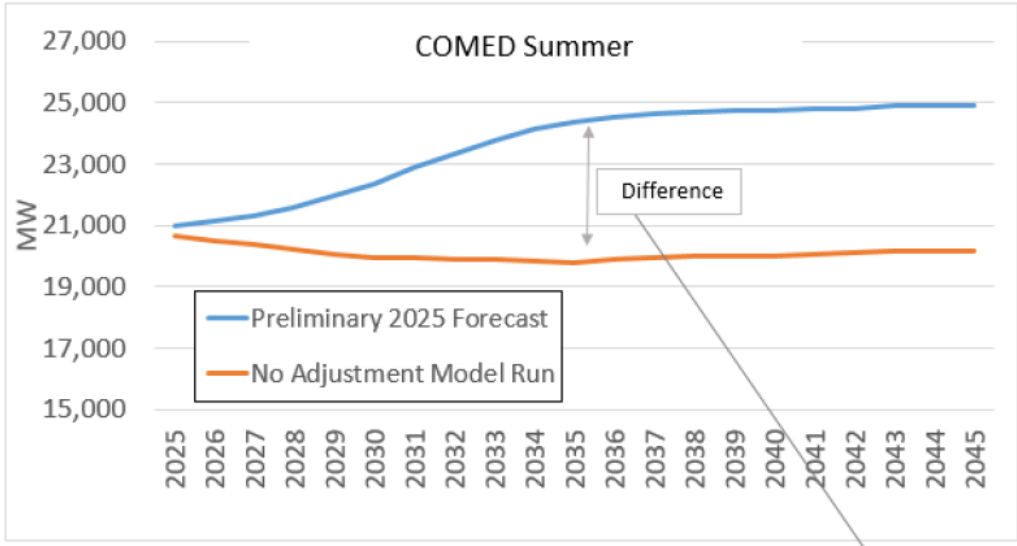
Significant increases in electricity demand correspond to potential economic growth, electrification, and other changes in the energy market

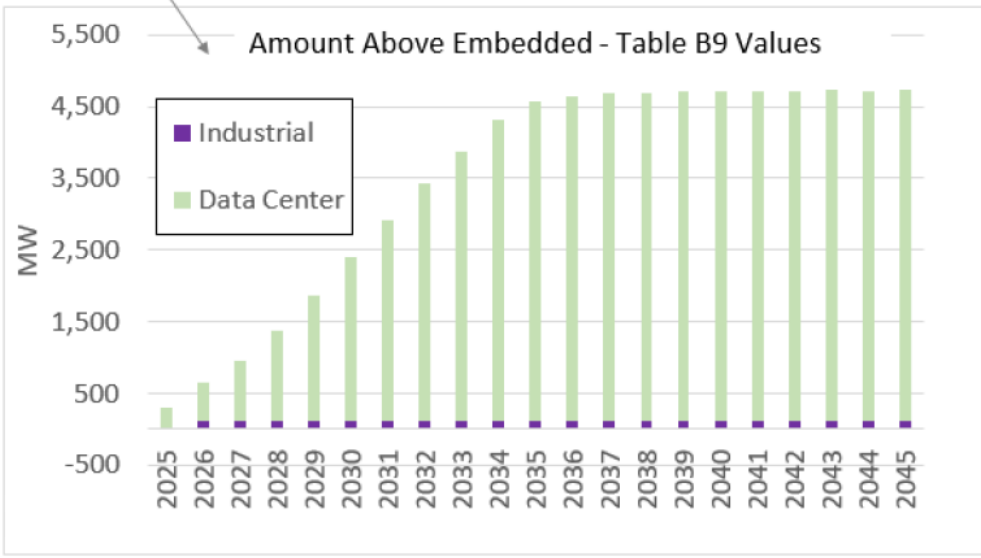
Source: Power Magazine

Market Operations

- Energy Cost Stack
- Price Setting (Auctions)
- Supply Issues
- **Demand Issues**

Demand Issues: Without sufficient and affordable energy, datacenters and other tech companies will locate elsewhere



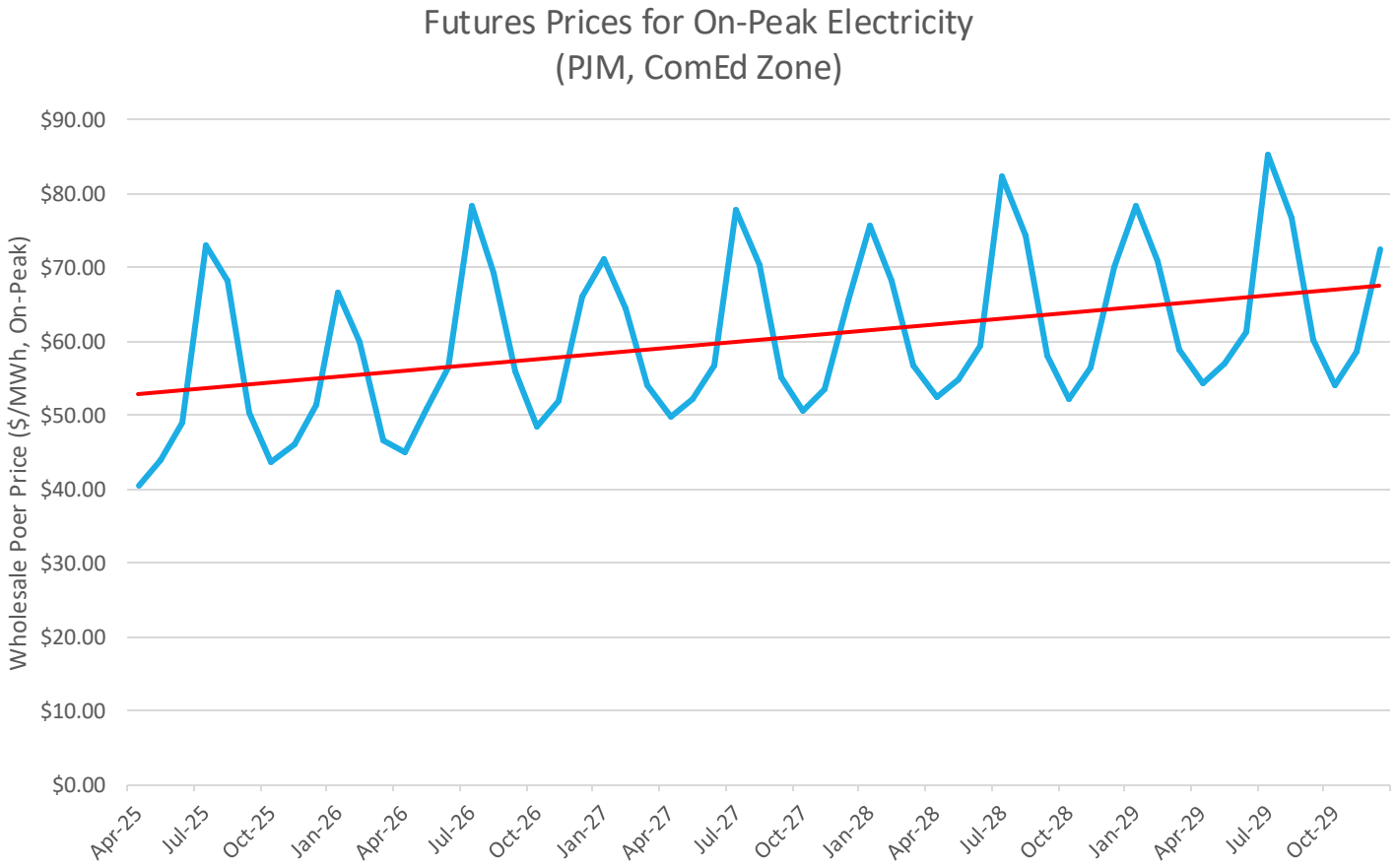


Source: 2025 Preliminary PJM Load Forecast, December 9, 2024

Implications

- **Energy Prices**
- Capacity
- Transmission
- Reliability
- Economic Growth

Generation: The futures market is already pricing in ~20% increase in On-Peak energy between 2025 and 2029 for the ComEd region



Municipal utilities will need to manage rising and more variable supply prices

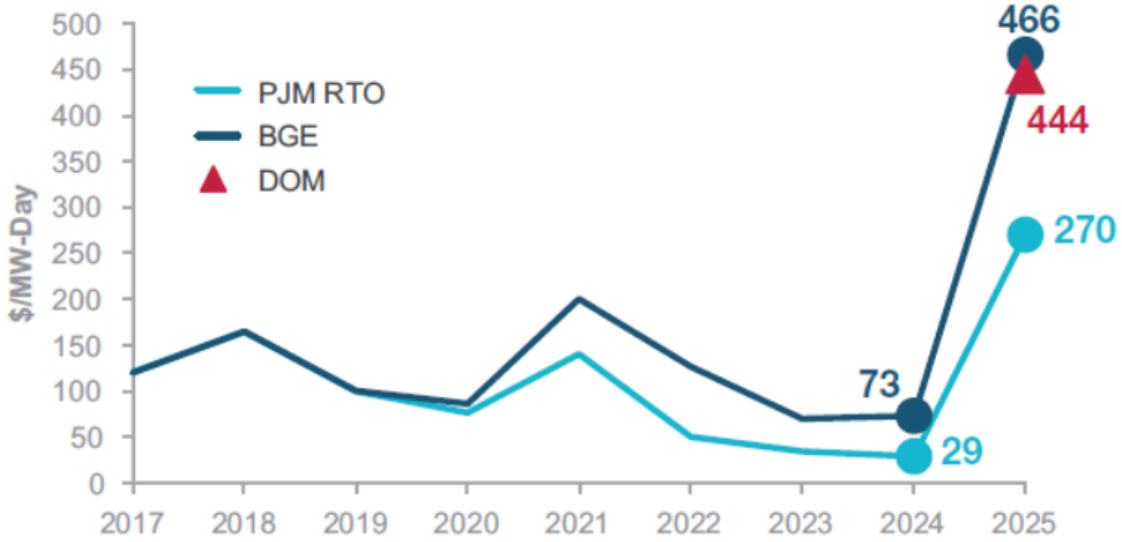
Source: CME Group

Implications

- Energy Prices
- Capacity Prices
- Transmission
- Reliability
- Economic Growth

Capacity: Capacity costs in the ComEd region will increase by $1 billion starting in June 2025; a shortage of capacity means for Peak Demand on hot summer days and cold winter nights the supply of electricity may not be assured.

The PJM capacity auction for Delivery Year 2025/26 cleared at ~9x the previous price



- Prices for the majority of PJM rose to $269.92/MW-day, compared to $28.92/MW-day for the previous auction.
- Prices were even higher for Baltimore Gas & Electric ($466.35/MW-day) and Dominion ($444.26/MW-day) zones.
- Total Cost to Load (the amount to be recovered from electricity consumers) increased from $2.2 billion to $14.7 billion.

Municipal utilities will need to secure their own capacity to protect against rising PJM capacity prices

Source: Charles River Associates

Implications

- Energy Prices
- Capacity Prices
- Transmission
- Reliability
- Economic Growth

Transmission: Without sufficient local generation or capacity, PJM will need to approve the development of new transmission upgrades that will cost $800 million and result in long-term increases in transmission rates

Table 6. PJM Illinois Generation Retirement Study Total Estimated Upgrade Costs by Study Year

TO	Thermal Upgrades		Voltage Upgrades		Overall Upgrades ($M)
	2030 ($M)	2031–2045 ($M)	2030 ($M)	2031–2045 ($M)	
ComEd	98.00	161.50	52.50	472.50	784.50
FE	320.00	180.00	0	0	500.00
DLCO	180.00	0	0	0	180.00
AEP	63.75	178.83	0	0	241.58
NIPSCO	0	125.00	19.30	173.70	318.0
Total	**661.75**	**644.33**	**71.80**	**646.20**	**2,024.02**

Municipal utilities will be exposed to rising transmission costs as all consumers in northern Illinois are allotted their share of transmission system costs

Source: Illinois Generation Retirement Study

Transmission: PJM allows ComEd to collect over $800 million in transmission charges from all customers connected to the ComEd network (ComEd customers, municipals, and cooperatives)

Annual Transmission Revenue Requirements (ATRR) and Network Integration Transmission Service (NITS) Rates

Transmission Zone	Transmission Owner	Annual Revenue Requirement	Total Zonal Annual Revenue Requirement	Network Integration Transmission Service Rate ($/MW-Year)
AECO	Atlantic City Electric Company	$ 239,334,801.00	**$ 239,334,801.00**	**$ 91,559.00**
AEP	AEP East Operating Companies	$ 1,287,054,780.00		
	AEP East Transmission Companies	$ 1,576,044,856.00		
	AMP Transmission, LLC	$ 750,621.28		
			$ 2,863,850,257.28	**$ 125,466.60**
APS	South FirstEnergy Operating Companies	$ 159,299,229.00	**$ 159,299,229.00**	**$ 17,114.75**
ATSI	American Transmission Systems, Inc.	$ 1,031,766,861.00		
	AMP Transmission, LLC	$ 16,267,846.92		
			$ 1,048,034,707.92	**$ 87,624.38**
BGE	Baltimore Gas and Electric Company	$ 302,526,020.00	**$ 302,526,020.00**	**$ 46,400.00**
ComEd	Commonwealth Edison Company	$ 846,151,471.00	**$ 846,151,471.00**	**$ 39,796.00**
DAY	The Dayton Power and Light Company	$ 105,611,813.00		
	AMP Transmission, LLC	$ 633,168.64		
			$ 106,244,981.64	**$ 32,781.54**

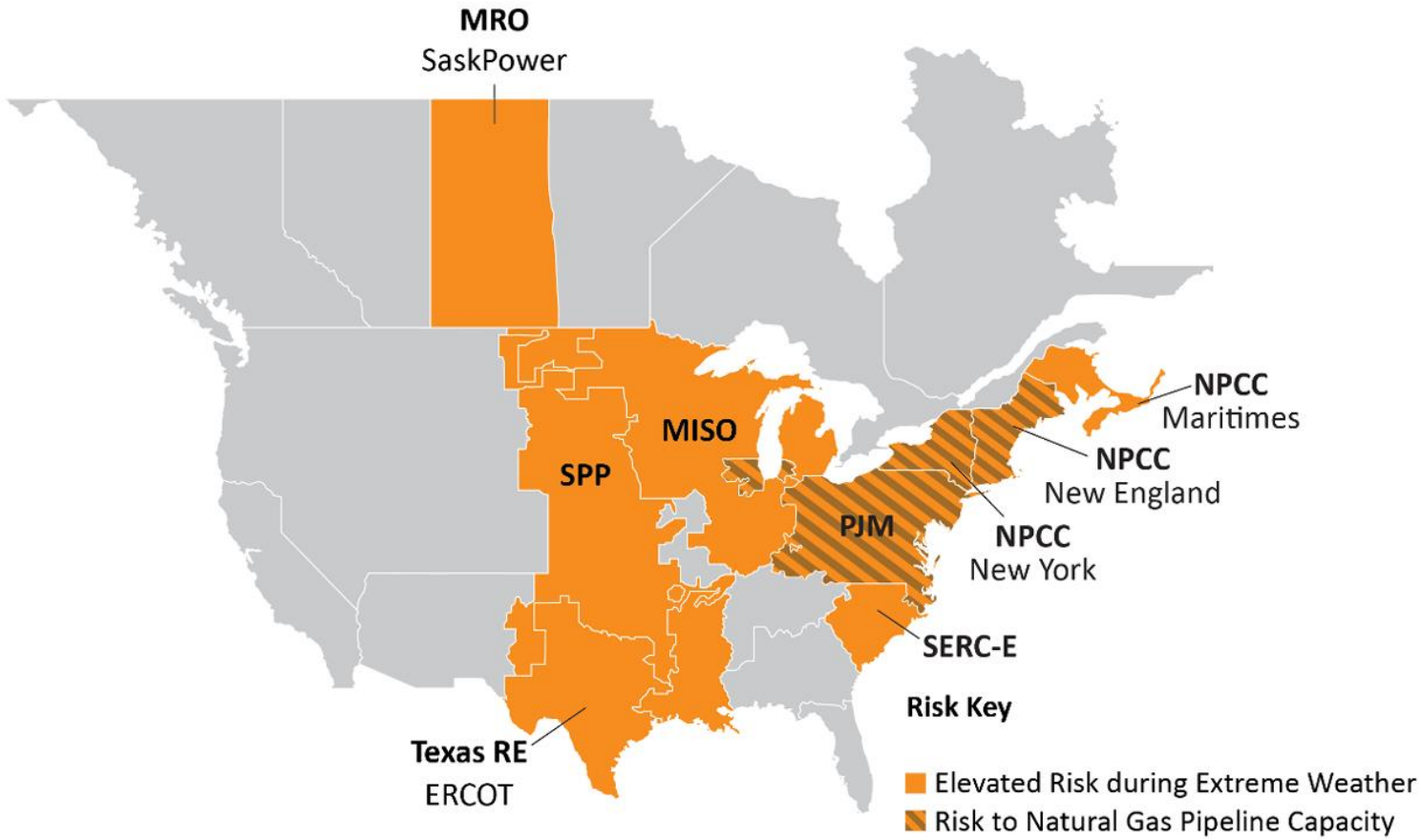
Transmission rates can be reduced for a single year by reducing demand during system peak; however, in the next year the collection rate will adjust upwards to account for the prior years' reduction and bring all consumers back to par value.

Source: PJM

Implications

- Energy Prices
- Capacity Prices
- Transmission
- **Reliability**
- Economic Growth

Reliability: North American Electric Reliability Corporation (NERC) is the federal body that assesses the reliability of regional electric grids



Municipal utilities can be fully financially hedged, but will still be exposed to regional grid instability

Source: NERC Winter Reliability Assessment, (December 2024),

Implications

- Energy Prices
- Capacity Prices
- Transmission
- Reliability
- **Economic Growth**

Economic Development: Without sufficient and affordable energy, datacenters and other tech companies will locate elsewhere

1,000 MW of datacenters

- $12 billion in development costs
- $60 billion in hardware and systems

A lack of new capacity will shift new load (and related investment) outside of Illinois

- Force continued operation of fossil generators
- Higher consumer costs (energy, capacity, transmission)
- Reduce growth in EV deployments, electrification, etc.

Municipal Microgrid

Possible Solution (Community Microgrid): Meet all local loads with local resources

Objectives	▪ Local Supply (centralized, distributed) ▪ Local Loads (industrial, commercial, residential) ▪ Continuously balance Supply and Load (60 Hz) ▪ Examples: UIC (50 MW, natural gas), IIT (11 MW, natural gas)
Constraints	▪ Redundancy needs (maintain tie to the regional grid) ▪ Balancing (emergency generation/storage/curtailment) ▪ Supply chain (turbines, panels, batteries, inverters, transformers) ▪ Emissions phase out (0% emissions by 2045)
Unknowns	▪ Capital/Operating costs ▪ Legality of fully islanded microgrid ▪ Expansion needs, sunk costs ▪ Future optionality

Recent industry trade-press headlines underscore the risks and challenges

Inside Climate News

Pulitzer Prize-winning, nonparti
the biggest crisis facing our plan

Justice & Health

As Illinois' Governor Recruits Data Centers, Chicagoans' Electricity Bills Are Getting More Expensive

Tech companies' appetites for electricity are surging, and consumers will pay for it.

By Brett Chase, Dan Gearino
November 22, 2024

News

National | Data Center

Supply Chain Bottleneck Gums Up Short-Term Answer For Data Center Energy Woes

March 26, 2025 | 6:55 p.m. ET | Dan Rabb, Data Centers

The data center industry has embraced natural gas as a near-term solution to its power shortage, but a supply chain bottleneck for gas turbines could throw a wrench in the gears.

Transformer supply bottleneck threatens power system stability as load grows

Hurricanes, wildfires and surging demand burden aging transformers, but new ones are unavailable.

Published Feb. 12, 2025

Consumers will pay billions due to "very slow" interconnection in the PJM grid, study says

Faster interconnection of generating resources waiting in PJM's queue, nearly all renewables, could have resulted in far lower capacity prices in PJM's latest auction, but instead consumers will pay for PJM's high capacity prices, says a study by Grid Strategies.

FEBRUARY 26, 2025 WILLIAM DRISCOLL

Conclusions

Baseline Premise	▪ Municipals are directly insulated from state energy policies ▪ Municipals are impacted when state energy policy interventions alter wholesale market functions - Supply: Phase out of fossil fuels, incentives for renewables and nuclear - Demand: Incentives for EV's and beneficial electrification, efficiency
Risks for Municipals	▪ Growing risks for Municipals - Energy/Capacity Cost Increases - Energy/Capacity Price Volatility - Grid Reliability
Mitigation Options for Municipals	▪ Some mitigation options for Municipals - Financial hedges: VPPA's, power purchase agreements, futures - Physical hedges: Generation, energy storage, load management ▪ Limitations - Cost: Hedges always represent a premium (like insurance) - Effectiveness: Active management required to ensure retail rate stability

Thank You!

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