New York ISO
Independent System Operator

ICAP Demand Curve Reset (DCR) Process and Methodology Improvements

Michael Ferrari
Sr. Market Design Specialist

Ben Schneider
Market Design Specialist

ICAPWG/MIWG/PRLWG

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*Reposted to include additional information on Slide 9 in response to stakeholder feedback at the 5/21/2026 ICAPWG/MIWG/PRLWG meeting

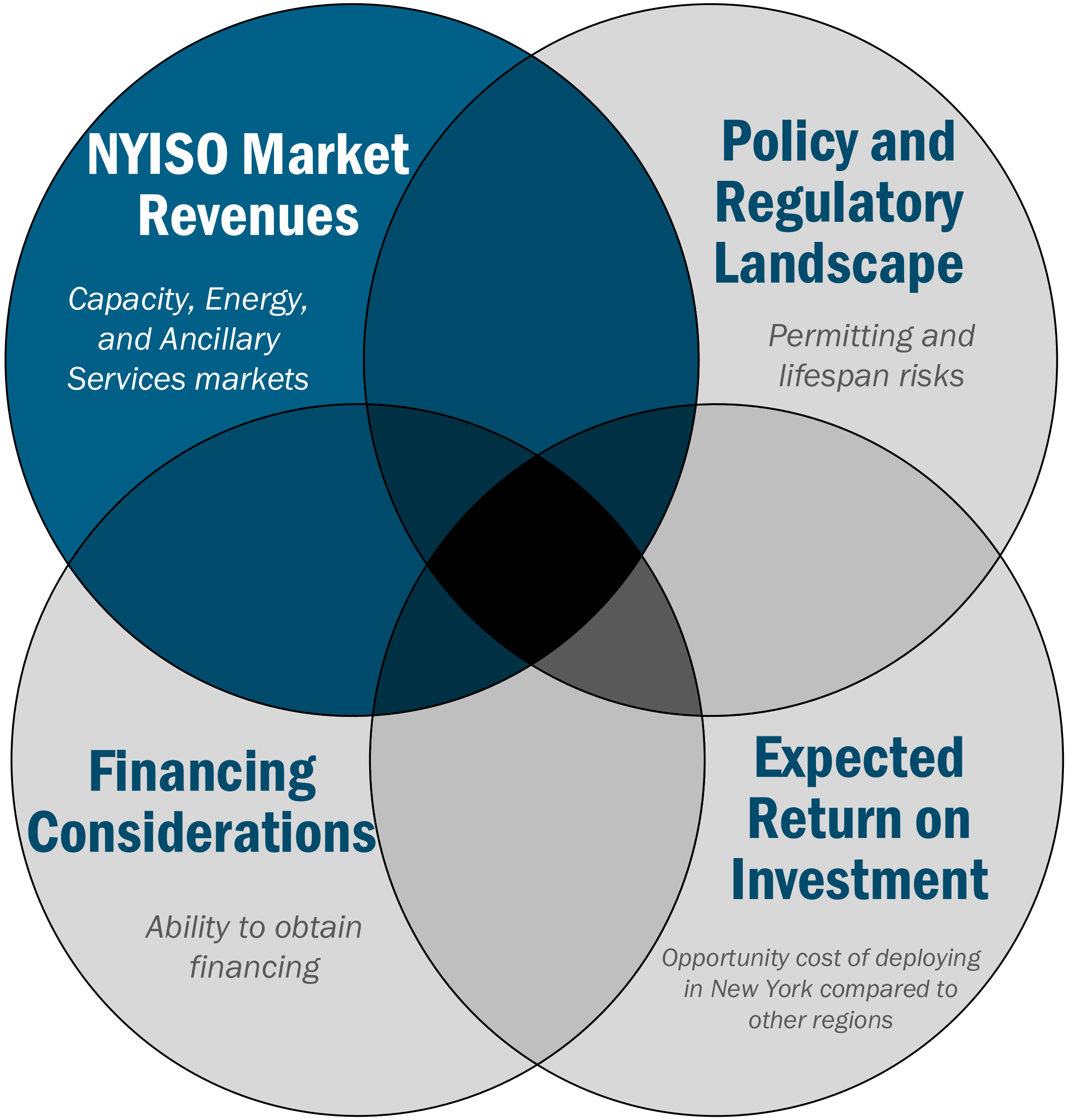
Introduction

Zach T. Smith – Director, Market Solutions

ICAP Demand Curves and the Electric Sector

- The ICAP market, along with the Energy and Ancillary Services markets, are just one portion of the total electric sector landscape in New York.
- Wholesale market signals are not the only factor that influences market participant entry and exit decisions (see next slide).

Factors Impacting Resource Development in New York



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ICAP Demand Curves

- The ICAP Demand Curves are the foundational mechanism of the ICAP market.
- The ICAP Demand Curves were introduced in 2003.
- The ICAP Demand Curves allow for procurement and valuation of additional capacity beyond the minimum required while simultaneously lowering total market costs.

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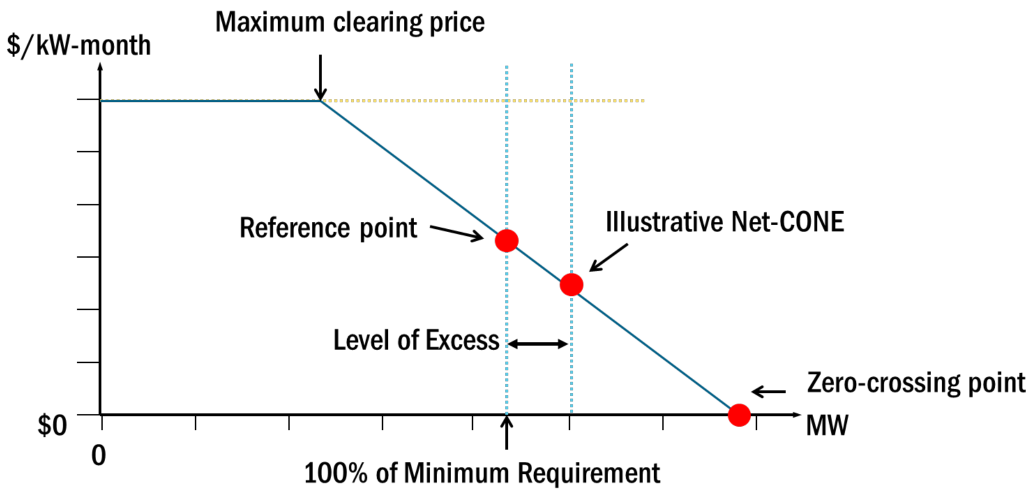
ICAP Demand Curves (cont.)

- The ICAP Demand Curves are designed to provide signals to support investment in new capacity supply and retention of existing supply needed to maintain resource adequacy.
- Core design elements of the curves include:
  - A straight downward sloping line from the maximum clearing price to the zero-crossing point that ensures total capacity market costs decrease with each additional quantity of capacity procured.
  - A reference point price that anchors the demand curve and is based on “net cost of new entry” of a peaking unit, but above net-CONE and reflecting an assumed level of excess beyond the minimum requirement.
  - A level of excess (LoE) an assumed level of excess above minimum requirements that reinforce market entry and retention signals near requirement conditions.
  - A zero-crossing point (ZCP), the point beyond which additional capacity has no value.
  - A maximum clearing price (MCP) that establishes a price ceiling for spot auction market clearing prices.
- These key elements have been refined over the years through targeted design enhancements.



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ICAP Demand Curve Reset Process

- **Every four years, the NYISO and stakeholders re-evaluate the core assumptions and inputs to the demand curves (chiefly the selection of the reference technology or proxy unit that will anchor each curve for the next 4 years).**
  - Each quadrennial reset is commonly referred to as the "ICAP Demand Curve reset process" or "DCR."
  - The proxy unit is referred to in the tariff as a "peaking unit" or "peaking plant."
  - The four years covered by each reset is commonly referred as the "reset period."
- **This process has become increasingly complex and resource-intensive over time.**

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ICAP Demand Curve Process and Methodology Improvements Initiative

- The 2025 Capacity Market Structure Review (CMSR) explored multiple ideas for potential enhancements to the current capacity market.
- The highest priority project identified in the CMSR Issue Discovery Report was the ICAP Demand Curve Reset Process and Methodology Improvements project
- This initiative seeks to assess and propose potential improvements to the DCR and ICAP Demand Curves while strengthening the durability, transparency, and efficiency of the ICAP market.

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Project Status and Core Objectives

- NYISO has evaluated a broad set of process and methodological design tracks as part of this project building off the initial recommendations from the CMSR Issue Discovery Report.
- Today's presentation will discuss these design tracks, potential enhancements, and the NYISO's initial recommendations.
- The NYISO assessed potential enhancements against certain core objectives and their respective complexity to administer (see next slide).
  - **Reliability-Based Valuation** - *How does the market value capacity?*
    - Accurately values resources according to their contribution to maintaining bulk system reliability.
  - **Transparent & Predictable Outcomes** - *Can market participants understand and anticipate results?*
    - Delivers forecastable, transparent, and predictable outcomes.
  - **Efficient Investment Frameworks** - *Do those results lead to the right investment decisions?*
    - Provides an economically efficient, durable, and stable market structure to help facilitate investment.
  - **Ease of Administration** - *How simple is it to implement?*
    - Intuitive structure for efficient execution, with relatively limited complexity in data inputs, modeling, and calculations.

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DCR Process and Methodology Improvements: Design Elements Heat Map

DCR Process and Methodology Improvements: Design Elements Heat Map	NYISO Initial Recommendations	Reliability-Based Valuation	Transparent & Predictable Outcomes	Efficient Investment Framework	Ease of Administration
1. Proxy Definition Screening Criteria					
A. Codify Existing Criteria & Consider Additional Reliability Screening Criteria	💡	3	3	3	2
B. Prescribed Technology		2	3	3	3
C. Status Quo		2	1	3	3
2. Cost To Build					
A. EIA Capital Cost Data	X	3	3	3	3
B. Residual Value in CONE	X	2	2	3	1
C. Historical Calculation		1	3	1	3
D. Status Quo		3	2	2	2
3. Demand Curves					
A. Level of Excess at Planning/Reliability Metric	X	3	3	3	2
B. Zero Crossing Point informed by MRI	X	2	2	3	2
C. Kinked Convex Curve	💡	2	2	2	1
D. Kinked Concave Curve	💡	3	2	3	1
E. Level of Excess at G-1		3	2	3	2
F. Status Quo		1	3	1	3
4. Streamlining DCR Process / Reset Periodicity					
A. Indexed and More Frequent Updates to Financial Parameters	X		3	3	2
B. 6-Year Reset Period	X		3	2	3
C. Status Quo			2	2	3
5. CAFs					
A. EUE CAFs	💡	3	2	3	2
B. Collar CAFs with upper and lower bounds		2	2	2	3
C. Lock CAFs for the duration of the reset period		1	3	3	3
D. Status Quo		2	1	1	2
6. Max Clearing Price					
A. Lower Max Clearing Price	X	3	3	3	3
B. Status Quo		3	3	3	3

Legend	
3	High
2	Medium
1	Low
X	Initial recommendation
💡	Still Evaluating

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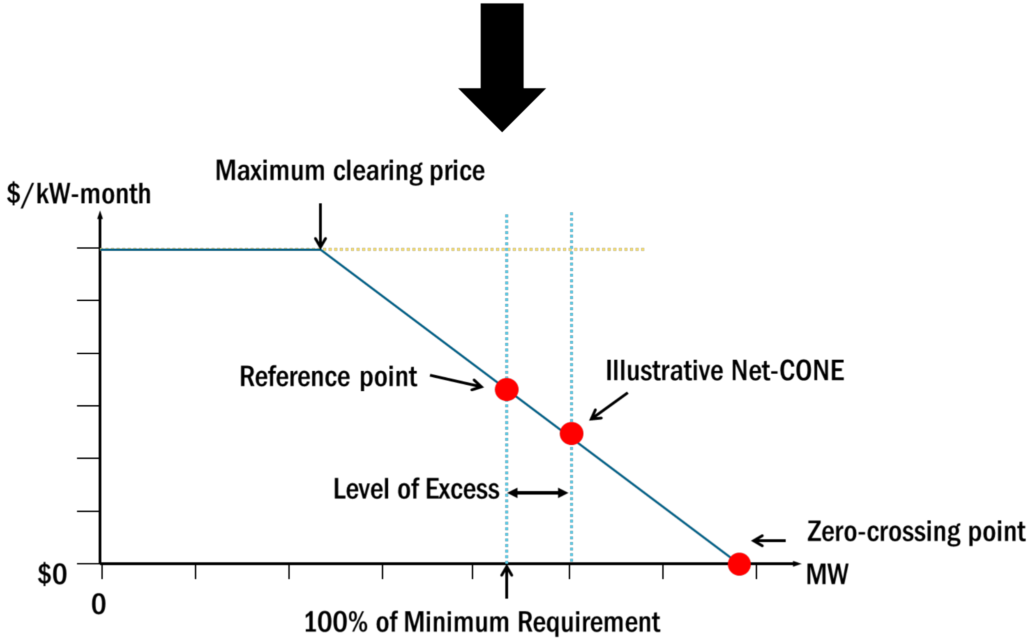
Agenda and Objective

Agenda – Initial Recommendations: Comprehensive Design Package

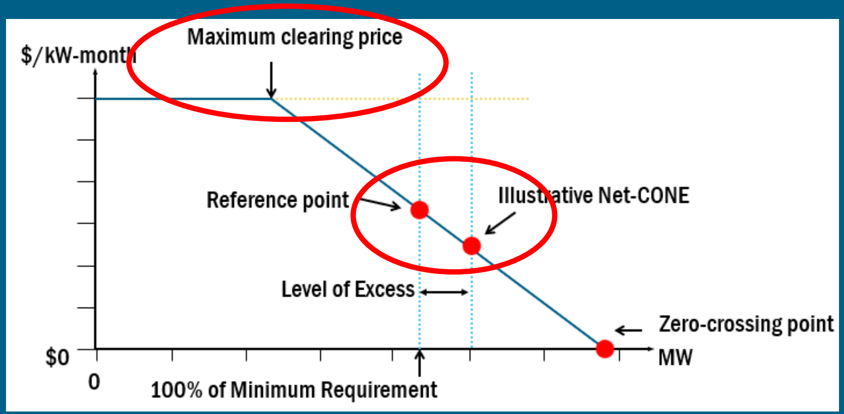
- **Project Tracks:**
  - Proxy Unit Screening Criteria
  - Proxy Unit Cost to Build
  - DCR Process Enhancements
  - ICAP Demand Curve Structures
- **Feedback & Next Steps**
- **Appendix**

Each section header will show which design element of the demand curve it affects.



Today’s Objective

- Today's presentation will discuss the various design categories and potential enhancements considered, as well as the NYISO’s initial recommendations.
- In prior discussions, stakeholders noted the difficulty in evaluating each design track in isolation and without the context of the NYISO's current thinking on each track.
- This presentation is intended to address that feedback by presenting the various design tracks in the context of the NYISO's initial recommendations for a comprehensive package of enhancements
  - The project goal is to develop a complete market design with corresponding tariff updates by the end of the year.



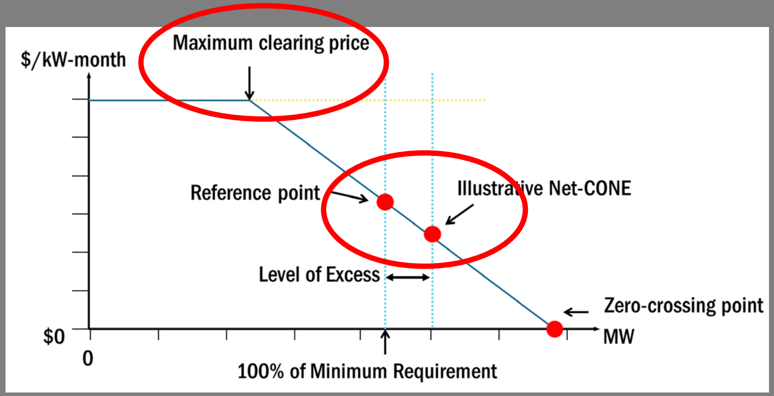
Proxy Unit Screening Criteria

Proxy Unit Screening Criteria

- The selection of the proxy unit is often one of the most challenging and controversial aspects of each DCR.
- Considering potential improvements to the proxy unit screening and selection process is a critical first step.

Proxy Unit Concept

- The proxy unit (currently referred by the tariff as a "peaking unit") is intended to represent the marginal entrant to the ICAP market that is needed to maintain resource adequacy.
  - In other words, if the NYISO is at requirement conditions and additional MW of capacity are needed to maintain reliability, new capacity supply must become available to serve this additional load.
- The ICAP market has been designed to send appropriate signals, at requirement conditions, such that a hypothetical proxy unit can feasibly enter the market through a combination of revenue from the energy and ancillary service markets and the ICAP market.



Proxy Unit Definition Enhancements

Proxy Unit Definition Potential Enhancements

- The NYISO is evaluating the potential for expanding the current tariff definition of the proxy unit to help inform/guide the technology selection process.
- Codifying criteria that have been historically used may help formalize the existing screening and selection considerations.
  - Additionally, providing the screening criteria upfront increases the transparency and predictability of the process for all stakeholders.
- Beyond codifying the historical screening criteria, the proxy unit screening criteria could be enhanced to consider additional reliability metrics.
- Alternatively, the tariff could be modified to prescribe use of a specific technology (e.g., require use of a gas turbine with a prescribed amortization period).

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Potential Proxy Unit Screening Criteria

- **The following attributes could be explicitly added to the proxy unit screening criteria in the NYISO tariffs:**
  1. Low fixed costs
  2. High variable costs
  3. Economically viable
  4. Capable of providing existing operating reserves
  5. Quick synchronization
  6. Economic viability screening criteria (availability, proven, constructability, regulatory/environmental compliance, dispatchable and capable of providing peaking service)
  7. A minimum Capacity Accreditation Factor (CAF)
  8. A minimum duration
  9. Quick cycling
  10. Firm fuel

Color Key:

- Existing Criteria in NYISO tariff (1,2,3)
- Historical proxy unit characteristics and screening criteria (4,5,6)
- Potential additional criteria (7,8,9,10)

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Current Proxy Unit Definition

EXISTING CRITERIA IN TARIFF

- **Currently, the tariff describes the proxy unit as:**
  - "For purposes of this periodic review, a peaking unit is defined as the unit with technology that results in the *lowest fixed costs* and *highest variable costs* among all other units' technology that are *economically viable*, and a peaking plant is defined as the number of units (whether one or more) that constitute the scale identified in the periodic review."
- **The current definition does not expressly address the concept that a proxy unit needs to be capable of supporting reliability.**

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Operating Reserves Capability

- **The proxy unit definition could be updated to explicitly require the capability to provide existing Operating Reserves.**
  - Historically, this capability was implied based on the characteristics of screened technologies (i.e., gas turbines and battery energy storage systems).
  - Requiring operating reserve capability for the proxy unit enhances system reliability by incenting the development of resources that can provide responsive reserves in addition to energy.
  - Provides potential revenues to be captured within the net energy and ancillary service revenue offset.

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Quick Synchronization

EXISTING • HISTORICAL REQUIREMENT

- The proxy unit definition could be updated to explicitly include the capability to be quickly synchronized to the grid from an offline state.
- This additional criterion is intended to support the concept that the proxy unit must have the capability of quickly responding to system needs.
  - Historically, the economic viability screening criteria has considered dispatchability and the capability of being cycled to provide peaking service

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Economic Viability

EXISTING • HISTORICAL REQUIREMENT •

- **In previous DCRs, the NYISO has consistently used the following screening criteria to assess the "economic viability" of a unit.**
  1. Availability of the technology to most market participants
  2. Operating experience sufficient to demonstrate that the technology is proven
  3. Capable of meeting applicable environmental requirements and can be practically constructed in the given capacity region
  4. Dispatchable and capable of being cycled to provide peaking service
- **The NYISO is considering whether the tariff should codify such criterion.**

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Minimum CAF

- **Capacity accreditation represents how much dependable capacity a resource can contribute toward meeting resource adequacy requirements.**
  - A higher CAF indicates that a resource is highly dependable for reliability, particularly in meeting the system's loss of load expectation (LOLE) criteria and supporting grid needs during peak hours and stressed operating conditions.
- **The proxy unit definition could be revised to specify a minimum CAF (e.g., 80%, 85%, 90%, etc.).**

Minimum Duration and Firm Fuel

- NYISO planning studies and reports have outlined the need to sufficiently incentivize firm capacity and the capability to perform for long durations.
- The NYISO seeks feedback on incorporating a criterion for a proxy unit to be able to reliably perform for a sufficient duration of consecutive hours (e.g., 6, 8, or 24 hour duration with firm fuel/production capability).
- Long-duration, firm capacity resources are uniquely capable of operating continuously throughout extended stress periods.
  - Reliability shortfalls often arise during multi-day heat waves or cold snaps, when resources face physical or fuel supply constraints.
- Defining explicit performance requirements may provide improved transparency and predictability compared to reliance on other factors such as CAFs that may be subject to variability over time.

Quick Cycling

- Requiring the proxy unit to be capable of rapid on/off cycling could help account for the operational flexibility needed for responding to potential increased volatility and rapid changes in load and supply.
- Incorporating a quick-cycling criterion could help ensure that the demand curve anchor reflects system needs and the importance of flexible dispatch capability to maintaining reliability.

Specified Technology

- **Alternatively, the proxy unit definition could be revised to explicitly require use of a specific technology (e.g., a single-cycle gas turbine (SCGT) potentially including a prescribed amortization period).**
  - With the exception of the last reset, gas turbines have been selected as the proxy unit for all curves
  - This alternative is similar to the original design used for implementation of the ICAP Demand Curves in 2003 that was replaced at the direction of FERC with the current "peaking unit" framework and definition
  - In requiring use of the current framework, FERC intended the "peaking unit" construct to provide flexibility and the potential for technology changes over time
- **Specifying the technology and associated amortization period could reduce volatility due to the potential for changes in technology from one reset to the next while also enhancing predictability**
- **Explicitly requiring a specified technology, however, may present alignment concerns with policy requirements and technology evolution over time**

Proxy Unit Definition Summary

- **In summary, NYISO tariffs could explicitly require that the proxy unit selection process incorporate some or all of the following screening criteria:**

1. Low fixed costs
2. High variable costs
3. Economically viable

4. Capable of providing existing operating reserves
5. Quick synchronization
6. Economic viability screening criteria

7. A minimum CAF (e.g., 80%, 85%, or 90%)
8. A minimum duration (e.g., 6, 8, or 24 hours)
9. Quick cycling
10. Firm fuel

Color Key:

- Criteria currently codified in tariff
- Historical proxy unit characteristics and screening criteria
- Potential new requirements

- **Alternatively, the tariff could require the proxy unit be a specified technology.**

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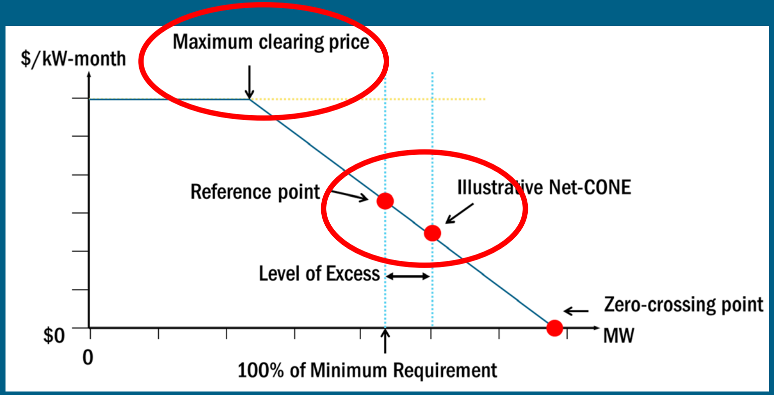

Cost to Build Assumptions

The Cost to Build the Proxy Unit

- **The determination of the cost to build the proxy unit is a central input into the cost of new entry (CONE) and therefore directly influences ICAP Demand Curve reference prices, maximum clearing prices, and investment signals in the capacity market.**
- **Historically, the cost to build determination has followed a bottom-up, consultant-driven approach, requiring detailed, project-specific estimates.**
  - Estimating these costs has been one of the more time-intensive and debated components of each DCR, reflecting both the inherent uncertainty in forecasting future construction costs and the wide range of methodological judgment required to translate project-specific inputs into a representative proxy unit.

The Cost to Build the Proxy Unit (cont.)

- The flexibility in the proxy unit's selection has allowed the NYISO and stakeholders to adapt to evolving technologies and market conditions. It has also contributed to recurring process complexity, resource burdens, and outcome uncertainty.
- To this end, the NYISO has evaluated several potential enhancements that could be made to this cost to build determination.

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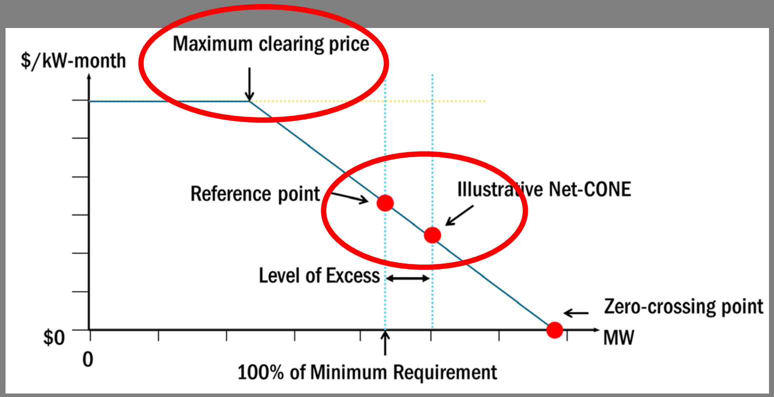

EIA Overnight Capital Costs

EIA Overnight Capital Cost Data

- The U.S. Energy Information Administration (EIA) *Capital Cost and Performance Characteristic Estimates for Utility Scale Electricity Generating Plants* has served as the foundation for MISO's CONE estimates for many years.
- The study provides a transparent and credible starting point for developing cost estimates and can potentially be leveraged for the DCR.

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EPC and Owner’s Costs

- **Engineering, Procurement, and Construction (EPC) costs represent the turnkey costs paid to an EPC contractor to design, procure materials for, and construct a resource, and generally reflect the contractor’s direct labor, materials, equipment, and overhead associated with delivering a completed facility.**
  - EPC costs are intended to reflect a reproducible and technology-specific baseline for plant construction.
- **Owner’s costs capture project expenditures that are borne directly by the asset owner and are typically excluded from EPC contracts, such as development expenses, permitting and licensing, and interconnection and transmission upgrades.**
  - Owner’s costs introduce project-specific elements that can vary based on siting, regulatory environment, and developer characteristics.
- **NYISO and the EIA both classify cost estimates in terms of EPC costs or Owner’s costs.**

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EIA Overnight Capital Costs

- The EIA overnight capital cost study provides public, standardized estimates of capital costs for new generation technologies, serving as a transparent and widely recognized industry benchmark.
- EIA currently contracts with Sargent & Lundy to develop capital cost adjustment factors for each technology studied to build a base rate for a 30-city average along with scalar (simple multiplier) adjustment factors for city specific costs.
  - City adjustment factors have been calculated for NYC and Syracuse since the report's inception in 2010.
- NYISO compared the EIA estimated EPC costs and Owner's costs to results produced for previous DCRs.

Table 4-1 — Case 4 Capital Cost Estimate

Case 4 EIA – Capital Cost Estimates – 2023 $ USD		
Configuration		CT – Simple Cycle H-Class
Combustion Emissions Controls		Dry Low Emissions Combustor
Post-Combustion Emissions Controls		SCR Catalyst, CO Catalyst
Fuel Type		Natural Gas / No. 2 Backup 1 x 430 MW rating
	Units	
Plant Characteristics		
Net Plant Capacity (60°F, 60% RH)	MW	419
Heat Rate, Higher Heating Value (HHV) Basis	Btu/kWh	9142
Capital Cost Assumptions		
EPC Contracting Fee	% of Direct and Indirect Costs	9%
EPC Contingency	% of EPC Costs	10%
Owner's Services	% of Project Costs	12%
Owner's Contingency	% of Owner's Costs	8%
Estimated Land Requirement	acres	20
Estimated Land Cost	$/acre	62,000
Interconnection Costs		
Electrical Transmission Interconnection Costs		
Transmission Line Cost	$/mile	3,040,000
Miles	miles	1.00
Substation Expansion	$	0
Gas Interconnection Costs		
Pipeline Cost	$/mile	4,800,000
Miles	miles	0.50
Metering Station	$	2,800,000
Typical Project Timelines		
Development, Permitting, Engineering	months	18
Plant Construction Time	months	22
Total Lead Time Before Commercial Operation Date (COD)	months	40
Operating Life	years	40
EPC Cost Components (Note 1)		
Major Owner-Furnished Equipment (Note 2)	$	132,800,000
Other Equipment (Note 3)	$	30,800,000
Construction Labor (Note 4)	$	57,600,000
Indirect Costs (Note 5)	$	19,908,000
Materials (Note 6)	$	9,816,000
EPC Fee	$	22,583,000
EPC Contingency	$	27,351,000
EPC Subtotal	$	300,858,000
Owner's Cost Components (Note 7)		
Owner's Services	$	36,103,000
Land	$	1,240,000
Electrical Interconnection	$	3,040,000
Gas Interconnection	$	5,200,000
Owner's Contingency	$	3,647,000
Owner's Subtotal	$	49,230,000
Total Capital Cost	$	350,088,000
	$/kW net	**835.5**

NYISO Overnight Capital Costs – 2025-2029 DCR (GE 7HA.03 Estimates)

GE 7HA.03						
PROJECT TYPE	**ZONE C**	**ZONE F**	**ZONE G - Dutchess**	**Zone G - Rockland**	**ZONE J**	**ZONE K**
ESTIMATED CAPITAL COSTS						
EPC Project Capital Costs, 2024 MM$ (w/o Owner's Costs)	**$423**	**$432**	**$435**	**$495**	**$551**	**$537**
Dual Fuel Breakout Costs, 2024 MM$ (w/o Owner's Costs)	**$26.9**	**$26.9**	**$26.9**	**Included**	**Included**	**Included**
Owner's Costs, 2024 MM$	**$150**	**$151**	**$144**	**$149**	**$209**	**$623**
Owner's Project Development	$1.2	$1.2	$1.2	$1.2	$1.6	$1.2
Owner's Operational Personnel Prior to COD	$0.3	$0.3	$0.3	$0.3	$0.4	$0.3
Owner's Engineer	$1.6	$1.6	$1.6	$1.6	$2.0	$1.6
Owner's Project Management	$1.6	$1.6	$1.6	$1.6	$2.0	$1.6
Owner's Legal Costs	$0.7	$0.7	$0.7	$0.7	$0.8	$0.7
Owner's Start-up Engineering and Commissioning	$0.1	$0.1	$0.1	$0.1	$0.1	$0.1
Land	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Construction Power and Water	$0.5	$0.5	$0.5	$0.5	$0.7	$0.5
Permitting Support	$0.7	$0.7	$0.7	$0.7	$1.0	$0.7
Switchyard	$18.19	$18.2	$18.2	$18.2	$51.0	$13.0
Transmission Line and Electrical Interconnection	$26.05	$26.0	$26.0	$26.0	$28.3	$23.0
Gas Interconnection and Reinforcement	$35.4	$35.4	$35.4	$35.4	$15.5	$36.6
System Deliverability Upgrade Costs	$0.0	$0.0	$0.0	$0.0	$0.0	$457.5
Water Supply Infrastructure	$9.6	$9.6	$3.2	$3.2	$6.8	$1.6
Emission Reduction Credits	$0.9	$0.9	$0.9	$3.4	$3.5	$3.5
Public Outreach and Area Development	$0.6	$0.6	$0.6	$0.6	$0.8	$0.6
Startup/Testing (Fuel & Consumables)	$3.2	$3.2	$3.2	$3.2	$4.1	$3.2
Initial Fuel Inventory	$6.9	$6.9	$6.9	$6.9	$6.9	$6.9
Site Security	$0.7	$0.7	$0.7	$0.7	$0.9	$0.7
Operating Spare Parts	$10.0	$10.0	$10.0	$10.0	$10.0	$10.0
Land Lease During Construction	$1.5	$1.5	$1.5	$1.5	$34.4	$1.8
Builders Risk Insurance (0.45% of Construction Costs)	$2.0	$2.1	$2.1	$2.2	$2.5	$2.4
Owner's Contingency (5% for Screening Purposes)	$28.6	$29.0	$28.9	$30.6	$36.2	$55.2
AFUDC and Mortgage Recording Tax, 2024 MM$						
EPC Portion of AFUDC	$41.6	$42.5	$42.7	$45.8	$50.2	$49.8
Non-EPC Portion of AFUDC	$13.9	$14.0	$13.4	$13.8	$19.1	$57.7
Mortgage Recording Tax (Assumes 55% Debt Financing)	$0.8	$0.8	$1.0	$1.1	$1.3	$1.9
Total Project Costs, 2024 MM$	**$656**	**$667**	**$663**	**$704**	**$831**	**$1,269**
EPC Cost Per kW, 2024 $/kW (Note 1)	**$1,156**	**$1,146**	**$1,162**	**$1,244**	**$1,363**	**$1,330**
Total Cost Per kW, 2024 $/kW (Note 1)	**$1,687**	**$1,666**	**$1,668**	**$1,771**	**$2,056**	**$3,142**

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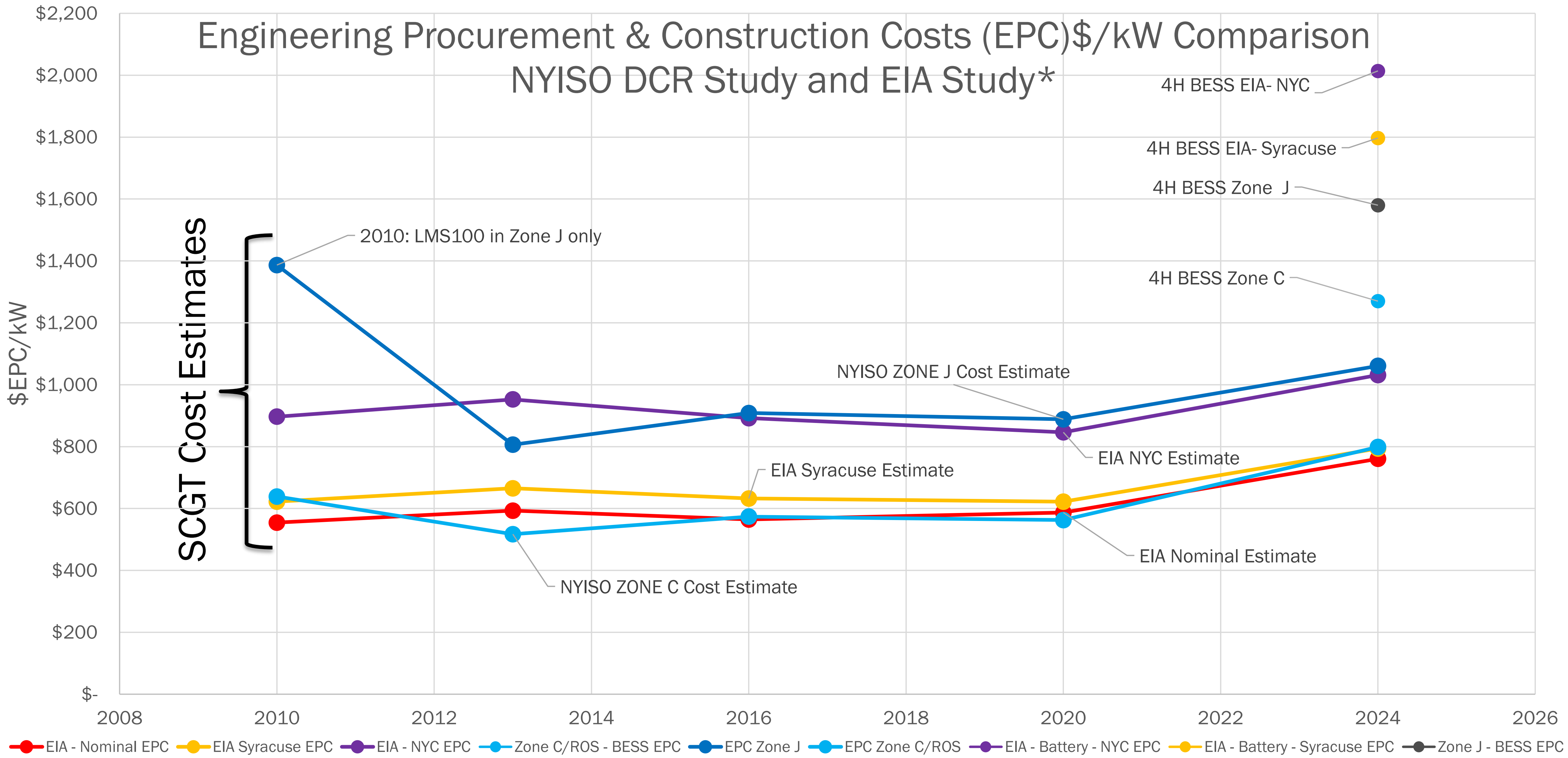

*Costs are shown in the nominal values from each DCR study dollar year. EIA costs from each study are escalated with the Handy-Whitman index of public utility construction costs to compare costs in each study year.

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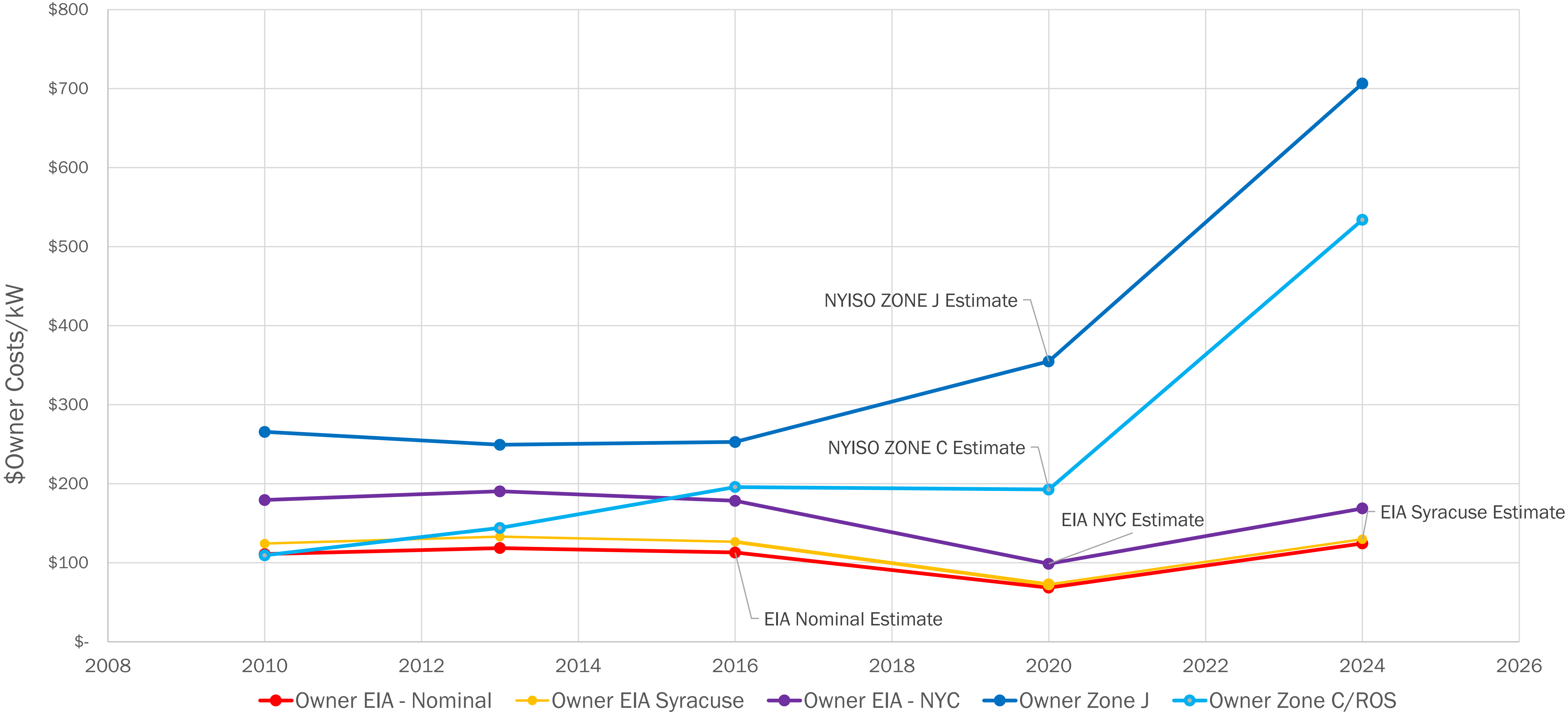
Owner's Costs $/kW Comparison NYISO DCR Study and EIA Study*



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How EIA Data Can Be Utilized

- **Stakeholders have consistently noted that the cost to build in New York is unique and the use of national data may not be representative.**
- **However, distinguishing between EPC costs and Owner’s costs appears to highlight the potential for material differences in New York.**
  - EPC costs are appreciably higher in NY than elsewhere. However, a simple scalar escalation factor, such as those developed for EIA, can provide reasonable cost estimates for the same technology design.
  - Conversely, the Owner's costs estimates developed by EIA do not appear to fully align with Owner's costs estimates for New York based on past DCR results.
    - For example, the EIA estimates for interconnection costs may not align with assumptions developed for past DCRs. Notably, the EIA estimates do not identify granular information for many of the specific Owner's costs components detailed in past DCRs
- **A potential path forward for streamlining the cost to build estimates for the DCR would be to update the scope of future DCR studies to focus primarily on estimating Owner’s costs and leveraging EPC costs from EIA data with the use of location-specific scaling/adjustment factors.**

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Potential DCR Cost to Build Assumptions Process Flow Diagram

Step 1

The NYISO will present the latest EIA overnight capital cost report to stakeholders (including any specific locational adders). These capital cost estimates will serve as the starting point for DCR discussions.

Step 2

The NYISO, in collaboration with stakeholders, will narrow the scope of the study to specific cost categories they feel are materially different for a NY proxy unit (Owner's Costs).

Step 3

The DCR independent consultant will focus on estimates for the components identified in Step 2, as well as how to translate EIA nominal cost estimates to specific NY locations.

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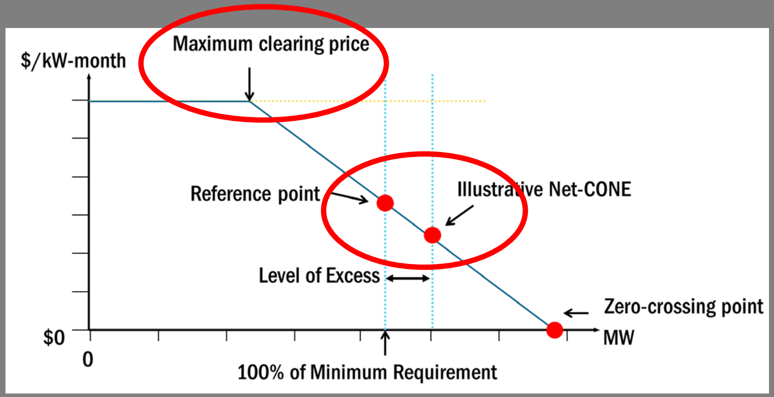

Historical CONE

Historical Net CONE

- The ICAP Demand Curve reference point prices are currently based on the net CONE of the applicable proxy unit.
- An alternative approach could use historical market clearing prices at which actual new supply has entered the market to estimate net CONE (this is sometimes referred to as “empirical net CONE”).[1]
    - Such an approach may provide the benefit of linking the assumed net CONE of the demand curves to the prices at which new capacity supply projects have opted to take on capacity obligations in New York.

[1] For discussion of empirical net CONE, see “PJM CONE 2026/2027 Report” and Complaint of Joint Consumer Advocates v. PJM Interconnection, L.L.C., FERC Docket No. EL25-18-000, Attach. A (Declaration of Marc D. Montalvo).

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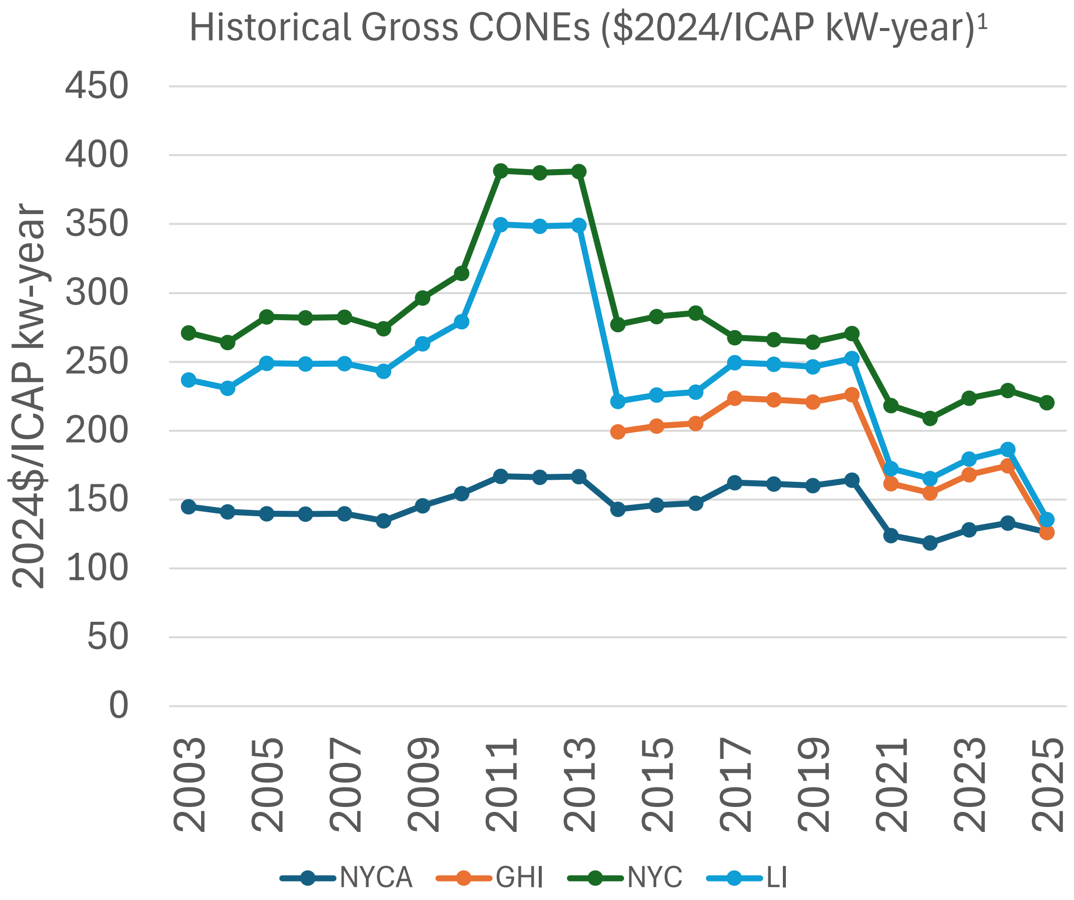
Historical Gross CONE

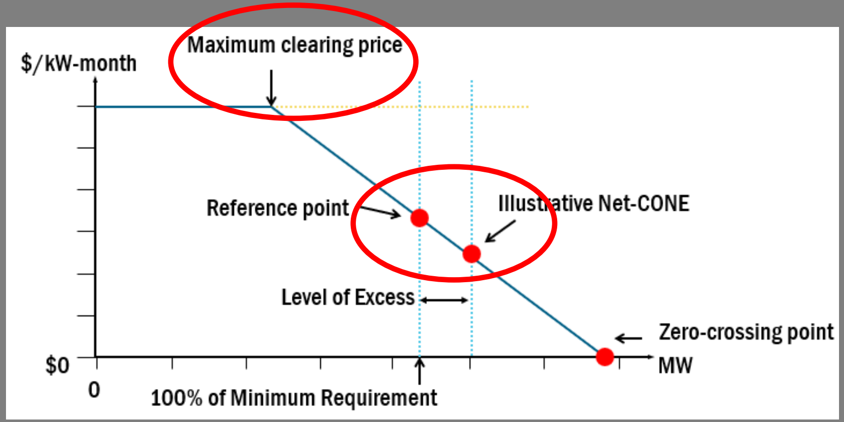
- **Compared to net CONE, gross CONE has exhibited relatively less variance over time**
  - The NYCA ICAP Demand Curve has exhibited a relatively stable gross CONE since the inception of the ICAP Demand Curves
    - The mean NYCA gross CONE from 2003 to 2025 is $145.82/kW-year (ICAP)



[1] All data is converted to 2024$ using the U.S. Bureau of Labor Statistic's Consumer Price Index

Use of Historical Gross CONE

- NYISO has evaluated the use of historical gross CONE as a basis for the estimated cost to build new capacity supply. While the stability that could be gained by such an approach provides potential benefits to escalate such historical values for use in future DCRs, the NYISO does not recommend this approach.
- Reliance on historical gross CONE values reflects the cost structure, technology assumptions, and market conditions of prior investment years, but does not to fully capture material changes in generation technology, labor markets, supply chains, or regulatory requirements over time.
  - The use of historical information risks anchoring cost estimates to sunk or legacy investment decisions and may not appropriately reflect how developers would evaluate new entry decisions under current conditions at the time of each DCR.
- Periodically refreshing gross CONE estimates allows for updating to account for conditions at the time of each DCR.



Proxy Unit Residual Value

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Residual Value

- Various stakeholders and the Market Monitoring Unit have advocated for the need to determine and account for a reasonable estimate of the proxy unit's residual value at the end of the assumed amortization period.
- Residual value includes consideration of factors such as:
  - Scrap value of the plant
  - Land value
  - Interconnection infrastructure
  - Relocation value
  - Site remediation costs

Residual Value (cont.)

- **Residual value should reflect the discounted present value of any remaining asset value at the end of the assumed amortization period, net of any remediation or retirement costs.**
  - Positive residual value would place downward pressure on the resulting gross CONE.
  - Consideration of location-specific factors, such as remediation costs, may yield substantially different residual value estimates for different locations.

Residual Value Considerations

- **The residual value may increase significantly as the amortization period shrinks**
- **Potential sources of residual value for gas plants:**
  - Site sale proceeds net of remedial costs (note: in past DCRs, embedded land lease costs are calculated as part of annual Operating and Maintenance (O&M) cost)
  - Sale of interconnection facilities and/or associated rights
  - Moveable unit value
- **Potential sources of end-of-life residual value for battery storage:**
  - Battery economics are a series of reinvestment options, and therefore it is appropriate to amortize the project over multiple cell lifetimes
  - Site sale proceeds net of remedial costs
    - Value of alternative site uses, including other generation technologies
  - Sale of interconnection facilities and/or associated rights

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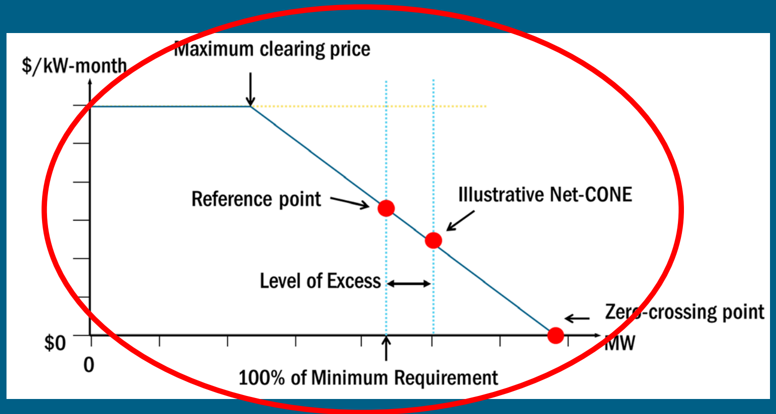
Streamlining DCR Process and Modifying Periodicity



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The Existing DCR Process

- Under the current framework, NYISO conducts a comprehensive assessment and files capacity demand curve parameters through a quadrennial DCR process.
- The current structure fixes certain key assumptions and cost inputs (including the proxy units and financial parameters) for the duration of the reset period with formulaic updates to certain components through the annual update process

DCR Process and Methodology Improvements: Design Elements Heat Map	NYISO Initial Recommendations	Reliability-Based Valuation	Transparent & Predictable Outcomes	Efficient Investment Framework	Ease of Administration
4. Streamlining DCR Process / Reset Periodicity					
A. Indexed and More Frequent Updates to Financial Parameters	X		3	3	2
B. 6-Year Reset Period	X		2	2	3
C. Status Quo			2	2	3

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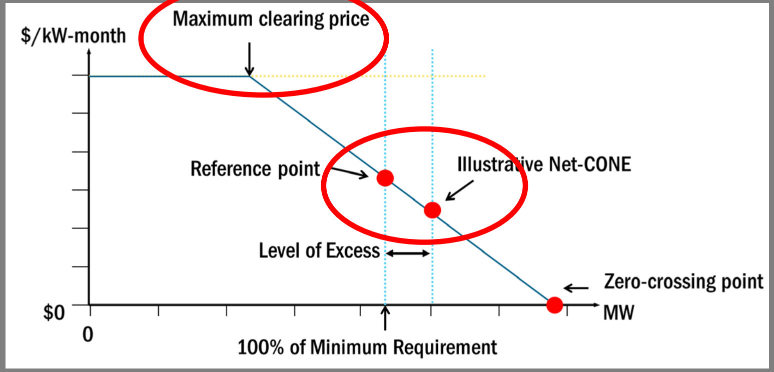
Annual Updates

- Between DCRs, NYISO performs annual updates to certain components.
- These updates include refreshed net Energy and Ancillary Services (Net EAS) revenue modeling and the use of a composite escalation factor to adjust gross CONE values.
    - These updates allow portions of curve parameters to adjust for changing conditions, while core financial assumptions remain fixed over the reset period.
- NYISO has evaluated methods and best practices to potentially improve the annual update process through indexed and more frequent updating of several financial parameters.



Indexed and More Frequent Updates to Financial Parameters

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Financial Parameters Background

- The After-Tax Weighted Average Cost of Capital (ATWACC) is the estimated discount rate applied to proxy unit cashflows over the amortization period
- Current process:
  - Financial parameters are estimated by the independent consultant during each DCR based on an analysis of market conditions and consideration of comparable-investors
  - ATWACC remains fixed for the duration of the reset period
- NYISO proposes consideration of an updated approach that:
  1. Indexes certain financial parameters, which are annually updated. Annual updates are intended to better align the estimated cost of capital with changes in financial conditions over time.
  2. Maintain the current process of determining fixed values during each DCR for certain other financial parameters that are relatively stable over time. These parameters would be updated as part of each DCR and remain fixed for the duration of each reset period

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WACC Inputs

- The framework for estimating the Weighted Average Cost of Capital ("WACC") under the indexed approach is unchanged from the existing approach:

$$\text{WACC} = g * C_D * (1 - T) + (1 - g) * C_E$$

- Capital Asset Pricing Model ("CAPM") is also retained for estimating the cost of equity:

$$C_E = RfR + \beta * (TMR - RfR)$$

- Propose that certain financial parameters (RfR, TMR, C_D, T) would be indexed and refreshed as part of the annual update process
- Propose that other financial parameters (β and g) be determined as part of each DCR and remain fixed for the reset period

Legend	
g	Debt/Equity Ratio
C_D	Cost of Debt
T	Tax Rate
t	Time period
C_E	Cost of Equity
RfR	Risk-Free Rate
TMR	Total Market Return
β	Equity Beta
(blue)	Annually Updated
(red)	Fixed for Reset Period

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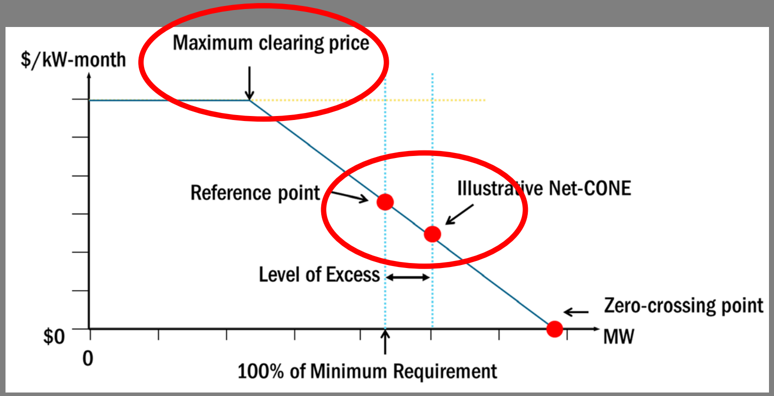
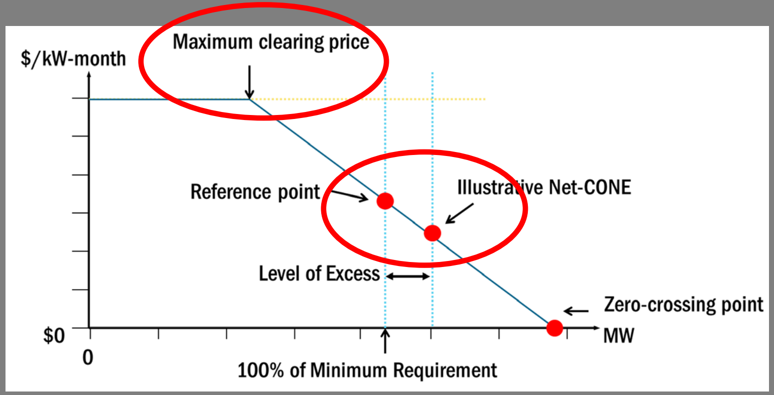


Debt-to-Equity Ratio

Debt to Equity Ratio (g) – Stable Capital Structure

- **NYISO recommends fixing the capital structure for the duration of each reset period**
- **Seek to align assumed capital structure with long-run sector average**
  - Estimate long-run average capital structure as the average capital structure across the set of comparable companies.
- **Include consideration of credit rating agency guidance**
  - Using credit rating agency guidance to assess if the assumed debt/equity ratio remains reasonable/consistent with target credit rating


$/kW-month
Maximum clearing price
Reference point
Illustrative Net-CONE
Level of Excess
Zero-crossing point
$0
0
MW
100% of Minimum Requirement

Cost of Debt

Cost of Debt (C_D) – Potential Indexed Approach

- **Today, C_D is determined as part of each DCR and remains fixed for the duration of the reset period**
  - C_D is estimated separately for BESS and SCGT technologies
  - Reflects risks associated with B-rated debt issuance
- **The NYISO recommends annually updating the cost of debt through use of an index**
  - Indexed cost of debt equals the annually updated value of the selected index in time t:

$$C_{D,t} = Index_t$$

  - An indexed 1-month trailing average could smooth out volatility compared to an indexed spot estimate
- **The NYISO is considering two potential indices:**
  - A blended index:
    - of S&P BBB Utilities 10-year and S&P BB Utilities 10-year indices under a BB/BBB credit quality assumption
  - A single index:
    - S&P utilities index (BBB or BB)
- **Potential benefits of blended index**
  - Controls for sector, maturity, & credit rating,
  - May be a better representation of comparator company bond yields than broader corporate indices
- **Benefit of a single index**
  - Simplicity and ease of use

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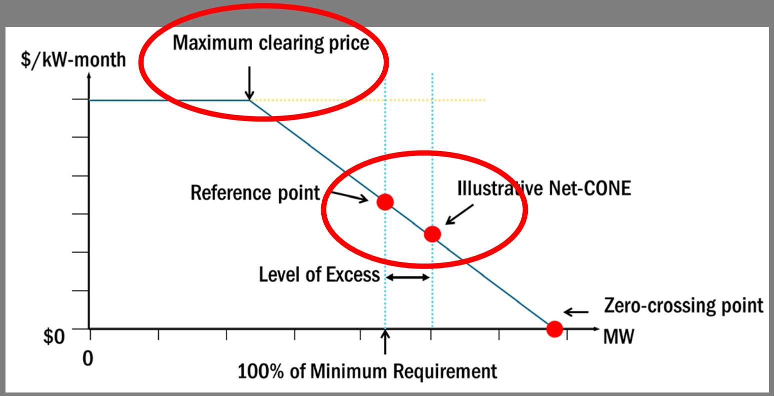
Cost of Debt – Potential Candidate Indices

- **The NYISO considered the following to assess potential indices to facilitate annual updates to the cost of debt:**
  - **Availability** — publicly accessible or consistently available to stakeholders.
  - **Index track record and robustness** — long historical series from reputable providers.
  - **Credit rating alignment** — focus on BB/Ba to BBB/Baa, consistent with prior NYISO assumptions.
  - **Sector coverage** — recognizing sector-driven variation in borrowing costs.
  - **Maturity** — targeting yields comparable to a ~10-year asset life (assumed life of proxy resource in New York.
- **The NYISO initially identified the following indices for consideration**
  - Intercontinental Exchange and Bank of America (ICE BofA) BB and BBB U.S. Corporate Bond Yields
  - Moody's Seasoned Baa Corporate Bond Yield
  - S&P 10-Year BB and BBB indices for:
    - Non-financial corporates (financials have different risks than other corporations); and
    - Utilities (includes Independent Power Producers, electric utilities, water utilities)
- **S&P Utilities index provides the most granular data across sector, maturity, and credit rating**



Maximum clearing price
$/kW-month
Reference point
Illustrative Net-CONE
Level of Excess
Zero-crossing point
$0
MW
0
100% of Minimum Requirement

Tax Rate

Tax Rate (T) Considerations

- **For the current reset period, the tax rate reflects the headline tax rate (inclusive of local, state, and federal taxes). The tax rate is currently determined as part of each DCR and remains fixed for the duration of the reset period**
  - Headline Tax Rate: The statutory tax rate set by law, applied to taxable income before accounting for deductions, credits, or timing differences
  - Effective Tax Rate: The actual tax burden expressed as a percentage of pre-tax income after accounting for deductions, credits, depreciation, and timing differences
- **NYISO is considering annual updates to the headline tax rate to reflect any changes in local, state, and/or federal tax policy that may occur during each reset period**
- **Considerations regarding the use of a static headline tax rate**
  - A truncated service life assumption with an accelerated Modified Accelerated Cost Recovery System (MACRS) depreciation treatment may cause material divergence between the headline tax rate and the effective tax rate
  - The net present value of taxable cashflows is different than the straight-line tax burden
- **The potential consideration of shifting to use of an effective tax rate may introduce impacts on complexity, transparency, and reproducibility. These impacts would need to be carefully considered and evaluated, including whether an effective tax rate would be subject to annual updating**

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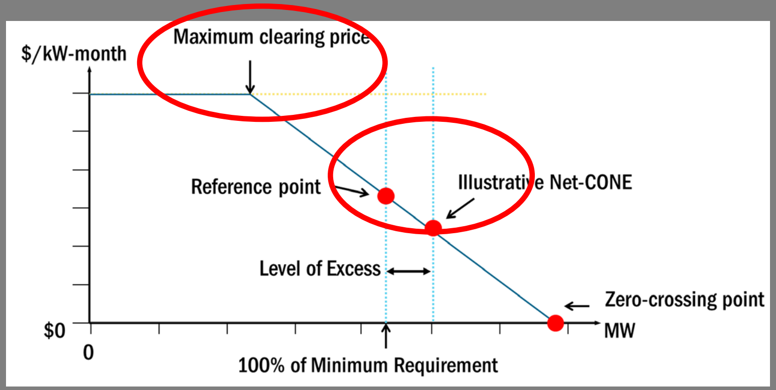

Risk-Free Rate

Risk-Free Rate (RfR)

- In the last reset, RfR was estimated as a 90-day trailing average on 20-year treasuries yields. The RfR is currently determined as part of each DCR and remains fixed for the duration of the reset period.
  - NYISO supports adopting a yield maturity that aligns with the investment environment
- NYISO considered the predictive accuracy of indexed 10-year treasury yields (RfR_t) against the actual 1-year forward yield “current risk-free rate” (RfR_c) using various trailing averages:
  - Spot Yield
  - 1-Month Trailing Average
  - 90-Day Trailing Average
- Analysis was conducted across three dimensions: bias, forecast error, and extreme errors (see Appendix for additional details)
- Based on the results of analysis to date, NYISO initially recommends annual updating of RfR based on indexing the value to the 1-month trailing average of the 10-year Treasury
  - 1-month offers slightly lower forecast error than both the spot yield and 90-day trailing average
  - 1-month trailing average is more responsive to changes in risk-free rates while avoiding excessive volatility
  - 90-day has the highest bias standard deviation, suggesting that it is smoothing out sustained changes not short-term volatility
- The proposed use of 10-Year Treasury Yield is intended to better align the risk-free maturity with the assumed life of the proxy unit
  - Provides for improved alignment between regulatory and operational considerations

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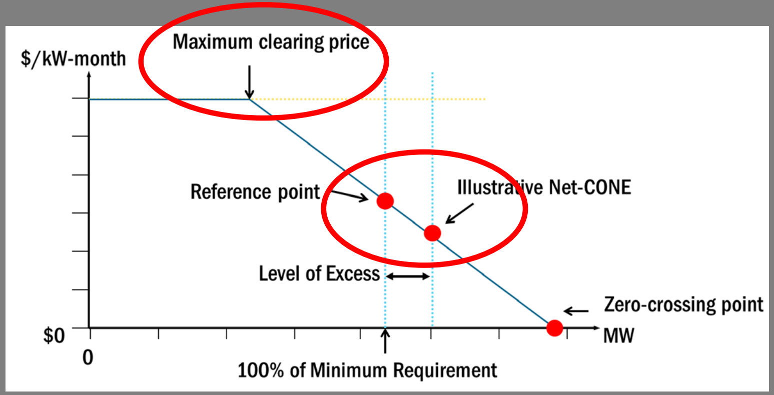

Total Market Return

Total Market Return (TMR_t)

- **TMR represents the return required by investors to hold a diversified portfolio of assets.**
  - Today, the TMR estimate reflects a blending of two equity risk premium forecasts.
- **The NYISO proposes annually updating TMR through an index approach that reflects changes in investor opportunity costs is represented by changes to the RfR:**

$$TMR_t = TMR_0 + \gamma * (RfR_t - RfR_0)$$

- **Although TMR is generally stable over time, introducing annual updates can provide improved alignment with changes in market conditions**
  - Indexed approach adjusts TMR as risk-free yields change over time
  - Gamma (γ) reflects how sensitive investor required returns are to changes in the risk-free rate
- **Indexed TMR_t requires estimating four parameters:**
  - γ – Sensitivity of TMR to changes in the risk-free rate (RfR)
  - TMR_0 – Base total market return
  - RfR_0 – Base risk-free rate
  - RfR_t – Indexed risk-free rate in year t
- **The NYISO proposes that these parameters be estimated using econometric/statistical methods**

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Total Market Return (TMR) – Gamma

- Gamma (γ) captures the sensitivity of TMR to changes in the RfR
- The NYISO proposes to determine gamma during each DCR and fixing its value for the duration of each reset period.
- Below is one potential formulation for estimating Gamma (γ)

$$TMR_t - TMR_{t-1} = a + \hat{\gamma} \times (RfR_t - RfR_{t-1}) + \varepsilon$$

  - Where $\hat{\gamma}$ denotes the estimate for Gamma (γ)

Total Market Return –TMR_0 and RfR_0

- **TMR_0 is the base expected total market return for a portfolio of assets.**
  - A potential method for estimating TMR_0 could be based on the long-run average of historical market returns
  - Compound returns from a broad market index (e.g., the S&P 500) could potentially be used to estimate long-run, unbiased returns.

$$TMR_0 = \frac{1}{n} \times \sum_{t=1}^{n} TMR_t$$

    - Where n = number of years in selected observation window.

- **RfR_0 is the base risk-free rate**
  - A potential method for estimating RfR_0 could be based on use of the long-run average historical Treasury yields

$$RfR_0 = \frac{1}{n} \times \sum_{t=1}^{n} RfR_t$$

    - Where n = number of years in selected observation window.

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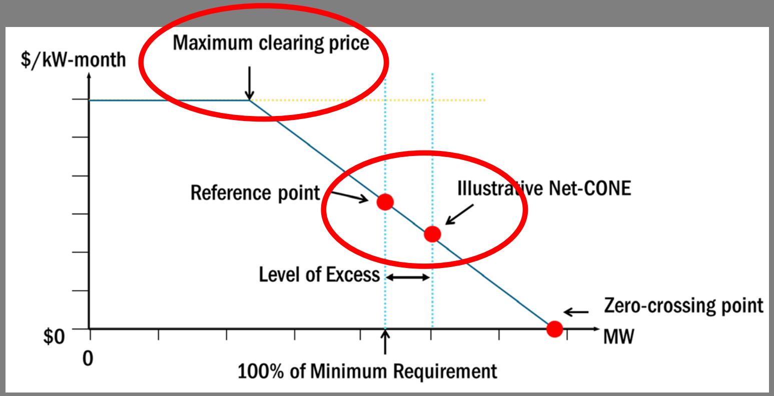

Equity Beta

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Equity Beta (β) Considerations

- Equity beta is a relative measure of risk compared to the broader market
- Prior DCRs identified a limited sample of comparables ranging between 2-4 publicly traded companies
  - A small sample size can make results highly sensitive to company-specific events
    - Events such as acquisitions can dominate price movements, especially when prices track the announced acquisition value rather than normal market behavior.
  - Consolidation risk has already reduced the set of comparables from the last DCR by one, when on March 2, 2026, a consortium of power producers announced the acquisition of AES Corporation.
- The NYISO is considering a need to expand the set of comparable companies for improved stability of results

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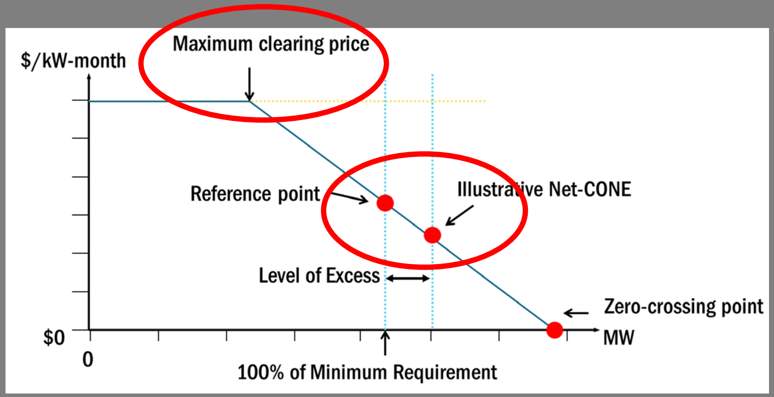
Equity Beta – General Selection Rules

- **NYISO recommends applying a set of general screening selection rules to identify comparable companies**
  - **US Exchange-Listed Equity** – International equities have currency exchange risk baked into stock-price volatility and would require adjustments to normalize betas
  - **≥5 years of trading history within prior 15 years** – Balance robustness vs. survivorship; companies could be included in comparator group up to the date of an announced acquisition or cessation
  - **Revenue-Generating** – financial profile and risk factors of development-stage companies are fundamentally different from firms with similar risks
  - **Headquartered in North America** – Appropriate comparables should have similar federal regulatory and legal environment to match embedded regulatory risk of a proxy unit developer
  - **Market Cap ≥ $1B** – Exclusion of small-cap companies could help prevent distortion resulting from idiosyncratic risk, which may be more prevalent for small-cap companies

Process Considerations



Financial Parameters Methodology and Process

- The NYISO is considering the potential to prescribe the general methodology/design for determining and updating of financial parameters in the tariff
  - Methodology and annual updating of risk-free rate, cost of debt, tax rate, and total market return
  - Methodology for screening/identifying comparables
  - Methodology for assessing debt-to-equity ratio and equity beta
- The NYISO proposes to include ongoing evaluation of the proposed financial parameters methodology to assess the need for updates over time
  - **Regular updates** of the indexed parameters and data sources should be conducted
  - **Methodology Reviews** will assess the ongoing effectiveness and appropriateness of the approach; these are expected to be conducted less frequently and could potentially be triggered by certain events/outcomes
- Details regarding the procedures, triggers, and timing for regular review of data sources and broader methodological reviews would need to be developed in collaboration with stakeholders

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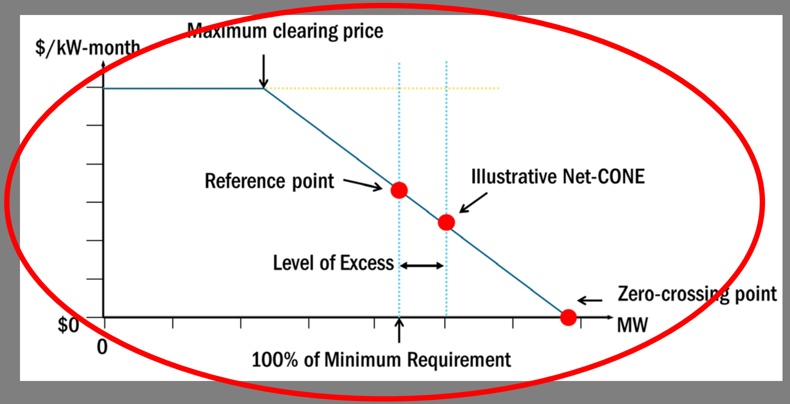

Reset Periodicity

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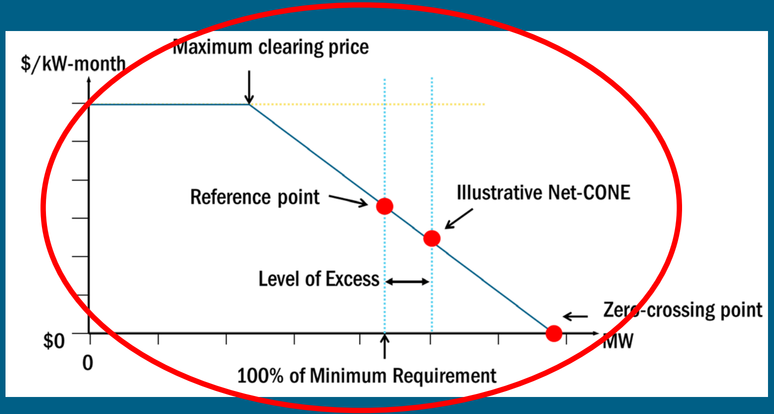
DCR Periodicity

- **The current DCR cycle is every 4 years.**
  - The tariff currently requires the DCR to be conducted every four years with an annual update process for years 2-4 of each reset period.

Modifying the Reset Periodicity

- **NYISO proposes to lessen the burden on stakeholders and the NYISO by shifting the DCR to every 6 years.**
- **Increasing the number of years between DCRs could increase ICAP market predictability by providing increased certainty with respect to certain core assumptions (e.g., proxy unit technology).**
  - The NYISO proposes that any increase in periodicity apply starting with the next DCR
    - If the periodicity was increased to 6 years, the next DCR would encompass the 2029-2035 period (i.e., May 1, 2029 through April 30, 2035)

Demand Curve Structures



Demand Curves Structures

- The ICAP Demand Curves play a critical role in translating reliability objectives into market outcomes.
- The NYISO has evaluated several targeted adjustments to their shape and underlying design elements that can modify price formation and potentially better reflect evolving system conditions.

DCR Process and Methodology Improvements: Design Elements Heat Map	NYISO Initial Recommendations	Reliability-Based Valuation	Transparent & Predictable Outcomes	Efficient Investment Framework	Ease of Administration
3. Demand Curves					
A. Level of Excess at Planning/Reliability Metric	X	3	3	3	2
B. Zero Crossing Point informed by MRI	X	2	2	3	2
C. Kinked Convex Curve	💡	2	2	2	1
D. Kinked Concave Curve	💡	3	2	3	1
E. Level of Excess at G-1		3	2	3	2
F. Status Quo		1	3	1	3

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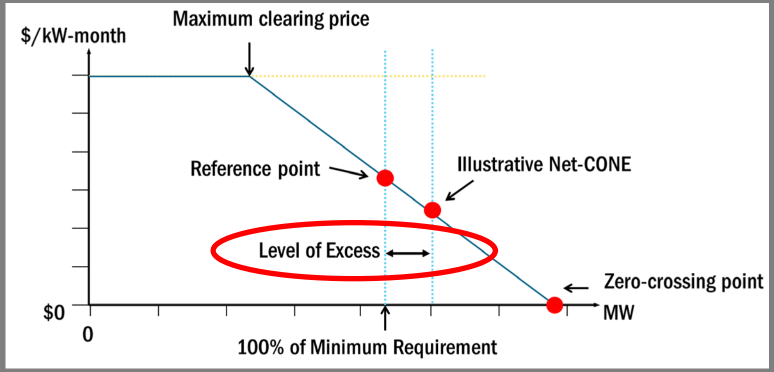
Demand Curves Structures Considerations

- **The current structure of the curves (including the assumed level of excess and zero-crossing point) may not fully reflect the underlying reliability value of capacity and can introduce overly sharp price responses to incremental changes in supply, limiting the nuance of the price signal and increasing the risk of rate volatility.**
- **This feature can potentially undermine retention incentives for existing resources and amplify price uncertainty with modest capacity surpluses.**
  - NYISO has explored the following potential demand curve design modifications:
    - Prescribing assumed level of excess (LoE) conditions based on a planning/reliability metric
      - The MMU has recommended the NYISO use transparent criteria to develop planning assumptions and calibrate the LOE conditions for alignment therewith (2025 State of the Market report Recommendation 2025-1-A).
    - Prescribing assumed LoE conditions based on the size of the largest supplier in a capacity region
    - Developing zero-crossing points (ZCPs) informed by Marginal Reliability Improvement (MRI) curves
- **A straight-line demand curve may not fully capture the nonlinear way reliability value changes as the level of available supply varies in response to resource exit and entry.**
- **NYISO is considering the following potential alternative demand curve shapes:**
    - A kinked convex demand curve
    - A kinked concave demand curve

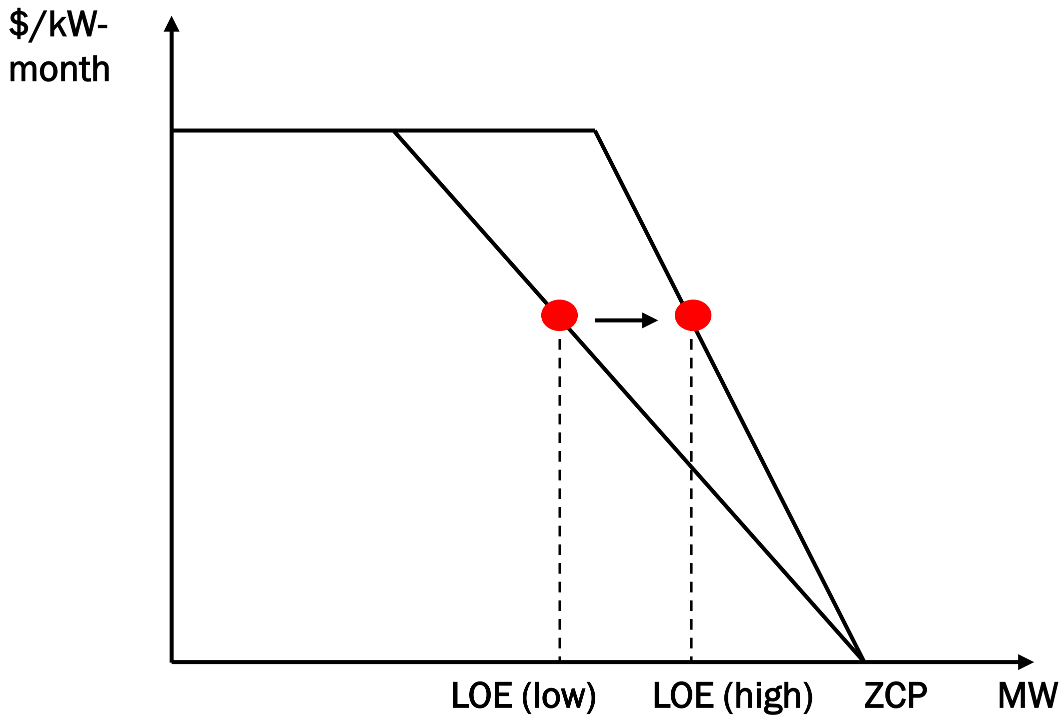


Alternative Prescribed LoE

Prescribed Level of Excess

- **The tariff currently defines the prescribed LoE conditions assumed in establishing the curves as "equal to the sum of (a) the minimum Installed Capacity requirement and (b) the peaking plant's capacity equal to the number of MW specified in the periodic review and used to determine all costs and revenues."**
- **The additional supply above minimum requirements assumed by the prescribed LoE conditions is currently set by the size of the proxy unit.**
  - For the current reset period, the excess level is 200 MW (i.e., the size of the 2-hour battery energy storage system used as the current proxy unit for each curve) above the applicable minimum requirements
  - Existing capacity supply resources in each capacity region may be materially larger than the current 200 MW proxy unit.
- **The Prescribed LoE has been designed for ensuring revenue sufficiency of the proxy unit at requirement conditions while maintaining a level of capacity above minimum requirements. However, a single large resource exiting the market could push the ICAP market below the applicable minimum requirement especially if available supply is at or near minimum requirements.**
  - Therefore, the NYISO is exploring modifying the current LoE assumptions to consider the potential impact of market entry and exit of larger resources.

Change in ICAP Demand Curve Parameters: Prescribed LoE



Note: This graph is to illustrate the change in slope from modifying the LoE and does not show any corresponding change in net CONE or reference price that a change in LoE can create.

- **All else equal, an increase in the prescribed LoE conditions results in**
  - Higher prices at a given capacity (MW) level
    - Impact: may encourage investment in additional capacity supply and help retain existing resources, therefore enhancing system reliability.
  - Steeper slope
    - Impact:
      - may cause prices to change more rapidly as capacity (MW) levels fluctuate, which may introduce greater volatility in capacity prices.
      - may increase the potential impact of exercised market power.

Level of Excess Informed by G-1

- **The NYISO previously discussed the potential option of using the largest generation (or supply resource) unit (G-1) to set the prescribed LoE for the NYCA and each Locality.**
  - This is a similar concept to the use of N-1 contingency analyses in transmission system planning assessments.
- **If the prescribed LoE is calculated as the minimum Installed Capacity requirement plus the largest generation unit (G-1),**
  - The prescribed LoE may provide improved price signals to encourage investment in additional capacity supply.
  - Such price signals may also help incentivize unit maintenance, upgrades, retention, and new entry that allows the NYCA system to continue to meet capacity requirements if the largest generation unit deactivates.

Level of Excess Informed by G-1 (cont.)

- The NYISO reviewed spot auction results for the past few years (May 2020 to December 2025) along with the largest supply resource within each capacity region to assess how often excess capacity has been less than G-1:

	NYCA	NYCA	G-J	G-I	J	K
G-1 Unit Example	Niagara	Nine Mile 2	Ravenswood 3	Bowline	Ravenswood 3	Neptune
G-1 MW (ICAP)	~2,435	~1,290	~980	~570	~980	~660
% of auction months where excess capacity is less than G-1	49%	9%	1%	0%	53%	49%

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Considerations for LoE Informed by G-1

- **Using the largest supplier in a capacity region to define the assumed LoE conditions may not align with the likelihood/probability that such resource is at risk of exiting the market during a given reset period.**
  - For example, in cases where the largest supplier is a newly constructed or recently refurbished/upgraded resource, a design assumption built upon its near-term exit may not be reasonable.
- **Calibrating excess capacity requirements to the largest supplier can result in procuring levels of surplus well beyond what may be considered as economically justified, potentially increasing consumer costs without commensurate reliability benefits.**
- **This approach risks overstating competitive exit risk and may lead to demand curve outcomes that prioritize hypothetical market departures over observed investment durability and realistic supplier behavior.**

LoE Informed by a Reliability/Planning Metric

- **Modifying the assumed LoE conditions to be informed by an explicit reliability or planning metric may better align capacity market outcomes with the planning standards used to assess resource adequacy and system needs.**
  - This approach may help address concerns regarding a "planning–market gap," where market signals may not reflect the conditions under which planning studies identify reliability risks or the need for incremental capacity.
- **Anchoring excess capacity to a reliability-based metric can improve the efficiency of price signals by more accurately incenting the retention of economically viable, existing resources and supporting additional supply entry when planning studies identify emerging needs.**
- **By explicitly linking demand curve design to planning objectives, the capacity market may more transparently and predictably reflect reliability value as reflecting in system planning studies.**
- **NYISO will continue to evaluate this design consideration in parallel with ongoing initiatives to enhance reliability planning and seeking to better align system planning and the markets.**

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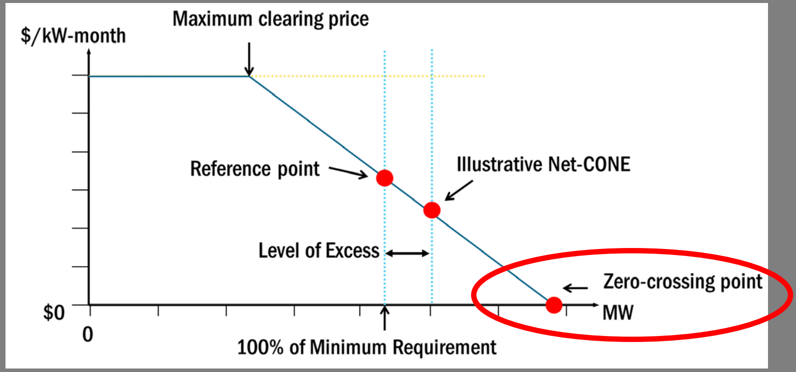
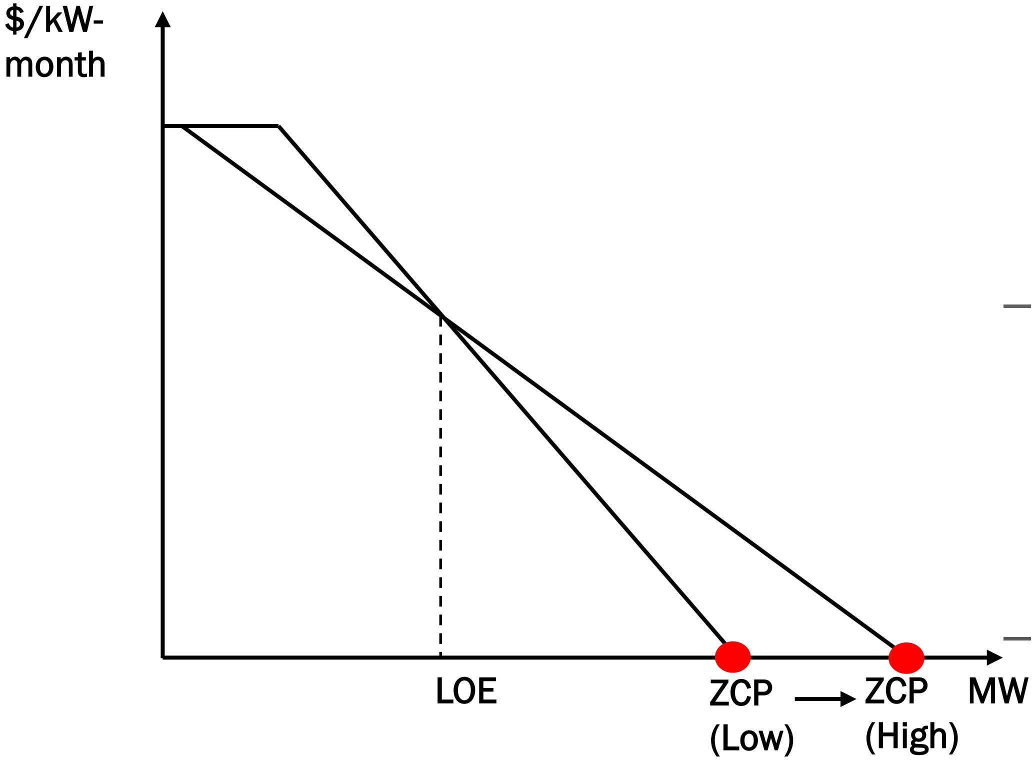


Alternative ZCP

Zero Crossing Point

- The ZCP is administratively set as the point where the marginal price for an additional MW of capacity is equal to zero.
- The existing ZCPs were established at the creation of each sloped demand curve. Assessment of the current ZCPs for continued alignment with reliability value is warranted.
  - The existing ZCPs (expressed as a percentage of excess supply beyond minimum requirements) are as follows:
    - NYCA – 112%
    - G-J Locality – 115%
    - NYC Locality – 118%
    - Long Island Locality – 118%.
- Therefore, the NYISO is exploring the potential for modifying the ZCPs to reflect updated NYCA system conditions.
- Assessment of potential impacts resulting from any proposed changes to the shape/structure of the curves should also be considered in evaluating the ZCPs.

Change in ICAP Demand Curve Parameters: ZCP



- **All else equal, an increase in the ZCP results in**
  - Higher prices when the system has excess levels greater than the prescribed LoE conditions
    - Impact:
      - may help reflect the value of additional capacity even when the system has excess beyond the prescribed LoE conditions.
  - Lower prices when the system is has less capacity supply than the prescribed LoE conditions
    - Impact:
      - may lead to lower market clearing prices even when the system is critically below minimum requirements.
  - Less steep slope of the ICAP Demand Curve:
    - Impact: prices may change less rapidly as capacity (MW) levels fluctuate, which may provide some degree of improved predictability for investors and consumers.

Alternative ZCP Considerations

- **The NYISO has previously discussed the following potential alternative for determining ZCPs:**
  - Determining ZCPs based on consideration of Marginal Reliability Impact (MRI) curves.[1] This approach seeks to provide a market signal that is consistent with a valuation of system's incremental reliability needs from a quantitative, probabilistic study based metric.
    - Before using an analysis derived from MRI curves, further consideration of the following would be needed: how to measure MRI, supply side mitigation impacts, price stability impacts, and interactions with other ICAP market design changes.
- **Aligning the ZCPs with system reliability value strengthens transparency and conceptual consistency by explicitly linking the lower bound of the demand curve to reliability metrics.**

[1] For more information on MRI curves, see slides 114-125 in the appendix.

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Alternative ZCP Considerations (cont.)

- The NYISO compared MRI curves from the past several years for each Locality and for NYCA and used these curves to inform potential alternative ZCP values (see Appendix for additional details).

	Current ZCP	MRI Implied ZCP ($0.5/kW-mth)	MRI Implied ZCP ($0/kW-mth)
G-J	115%	115%-125%	120%-130%
J	118%	130%-140%	130%-140%
K	118%	120%-140%	135%-150%
NYCA	112%	107%-112%	112%-115%

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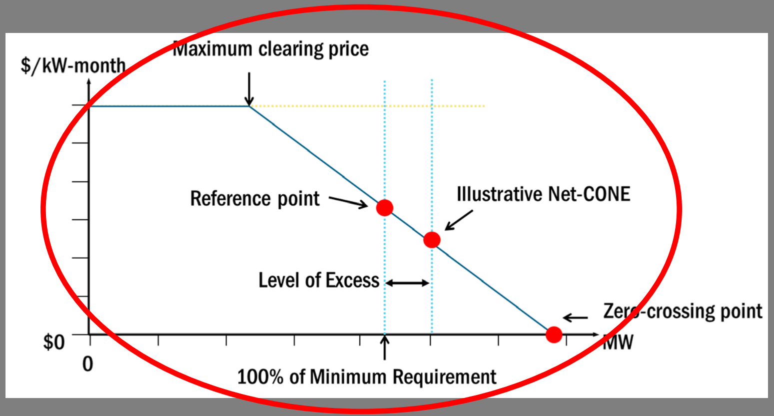
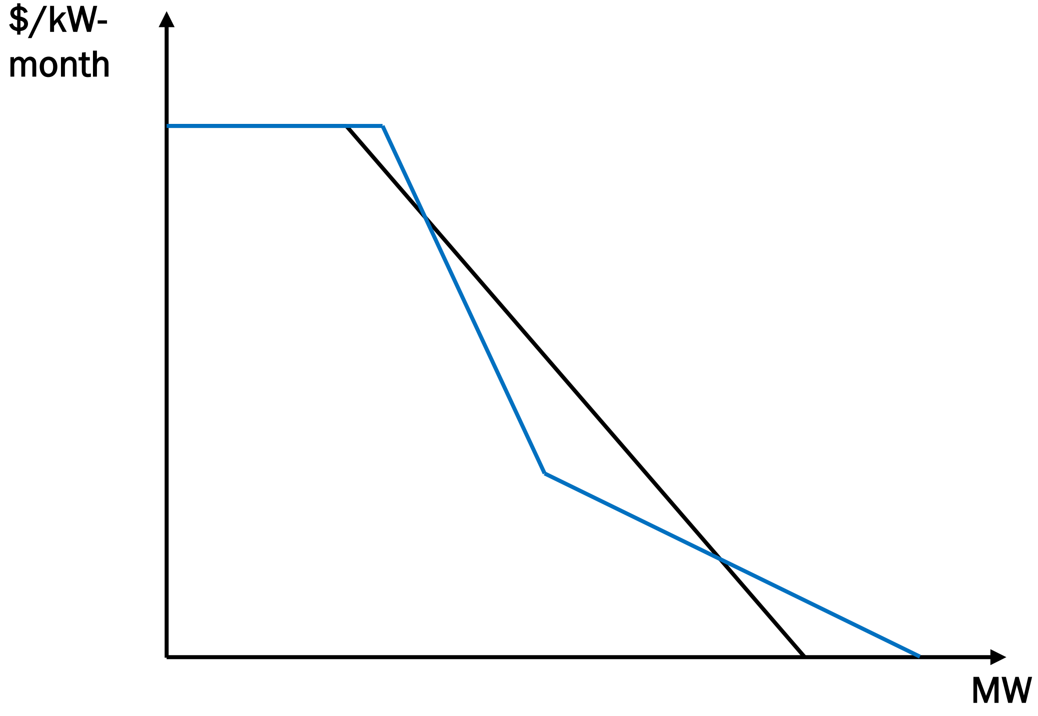
Demand Curve Shapes



Change in ICAP Demand Curve Parameters: Kinked Demand Curve



- A kinked demand curve introduces multiple slope segments, allowing the curve to convey more nuanced market signals depending on where the market clears.
- A kinked demand curve allows different slopes to be applied in surplus and shortage ranges, better reflecting how reliability value changes non-linearly as the system approaches planning and reliability targets.

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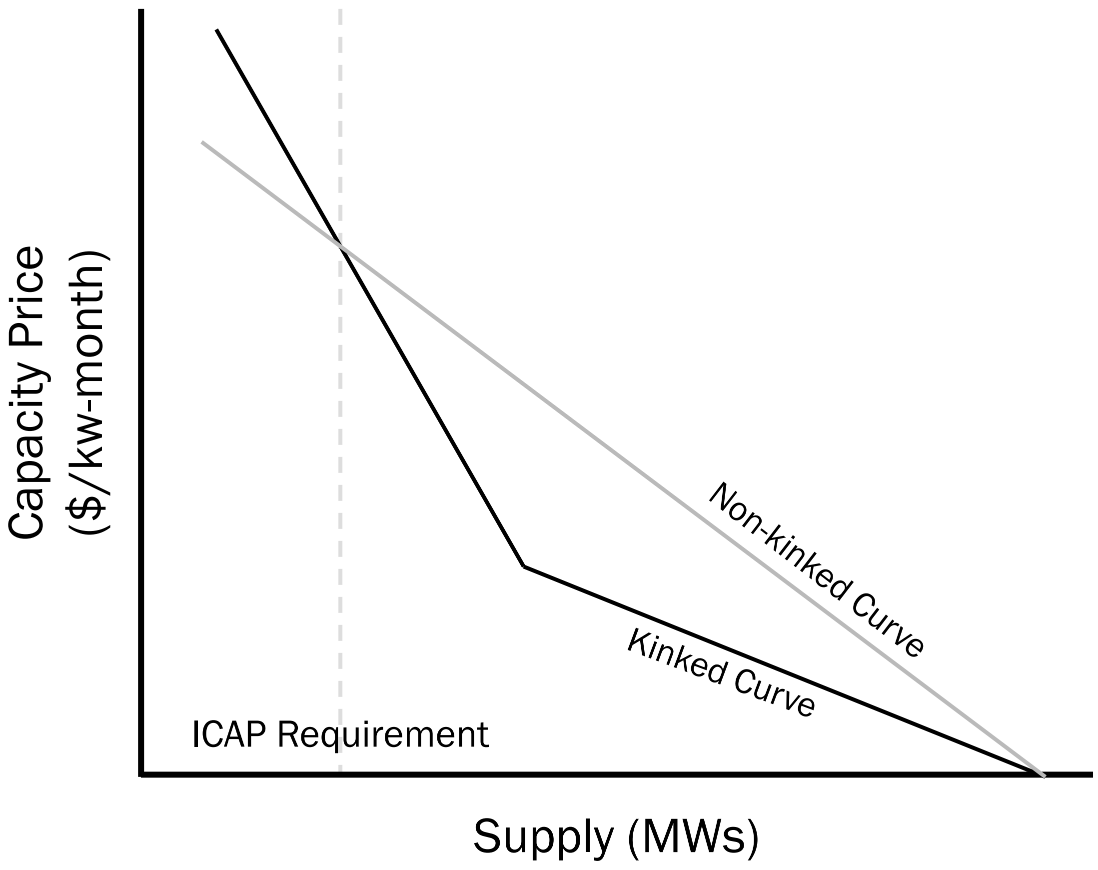
Kinked Demand Curves

- **A kinked demand curve is comprised of multiple downward sloping segments with different slopes**
  - Can be concave or convex.
  - PJM has utilized a kinked demand curve in its capacity market since 2006.
- **Convex kinked demand curves can be used to:**
  - Approximate MRI curves.
  - Provide price stability in the flatter portions of the curve where the value of additional capacity approaches zero.
  - Mitigate over-procurement risks in the face of net CONE uncertainty when the slope is steeper near the reference point.

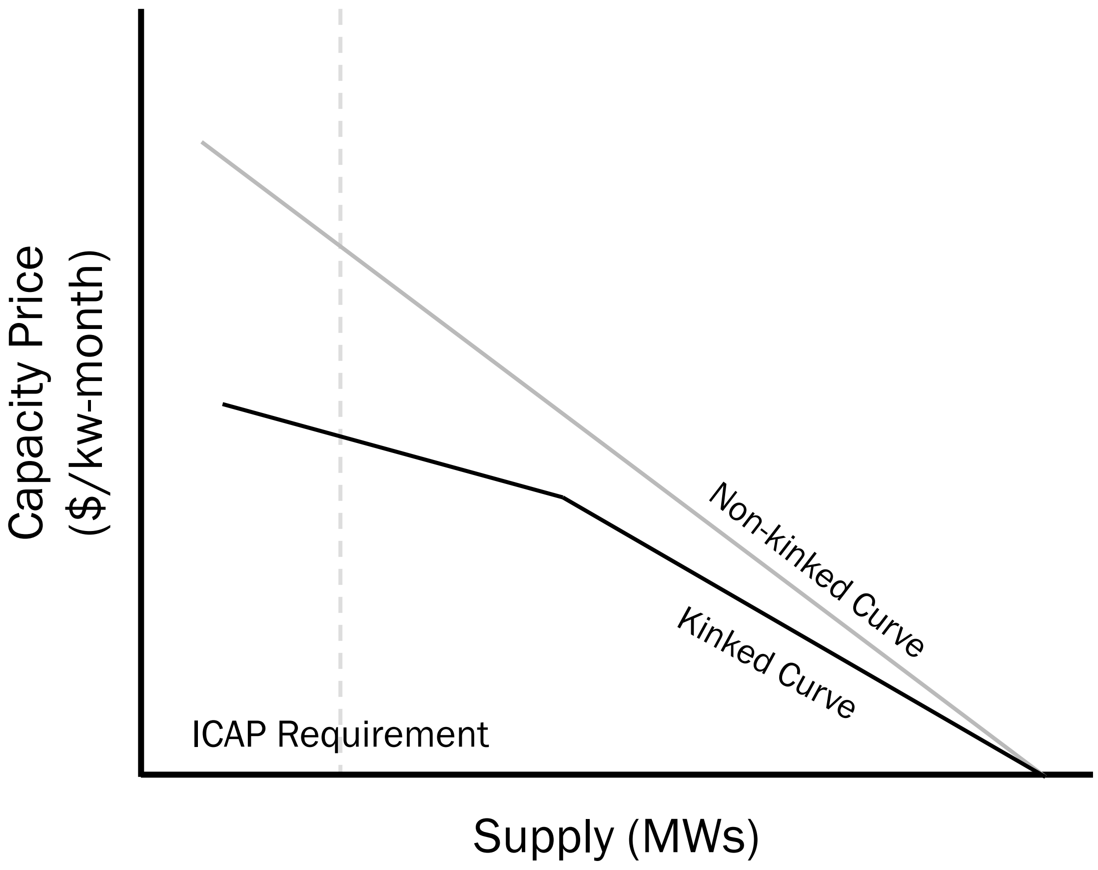
Conceptual Convex Kinked Demand Curve



Kinked Demand Curves (cont.)

- **Concave kinked demand curves can be used to:**
  - Reduce the reference point price by reducing the impact of a level of excess adjustment.
  - Provide price stability in the flatter portions of the curve near requirement conditions.
- **NERA Economic Consulting (NERA) evaluated a concave kinked demand curve as part of the 2008-2011 and 2011-2014 DCRs**
  - NERA noted the potential price stability advantages of a kinked demand curve but did not recommend use of such a curve during those DCRs due to market power and regulatory risk concerns.

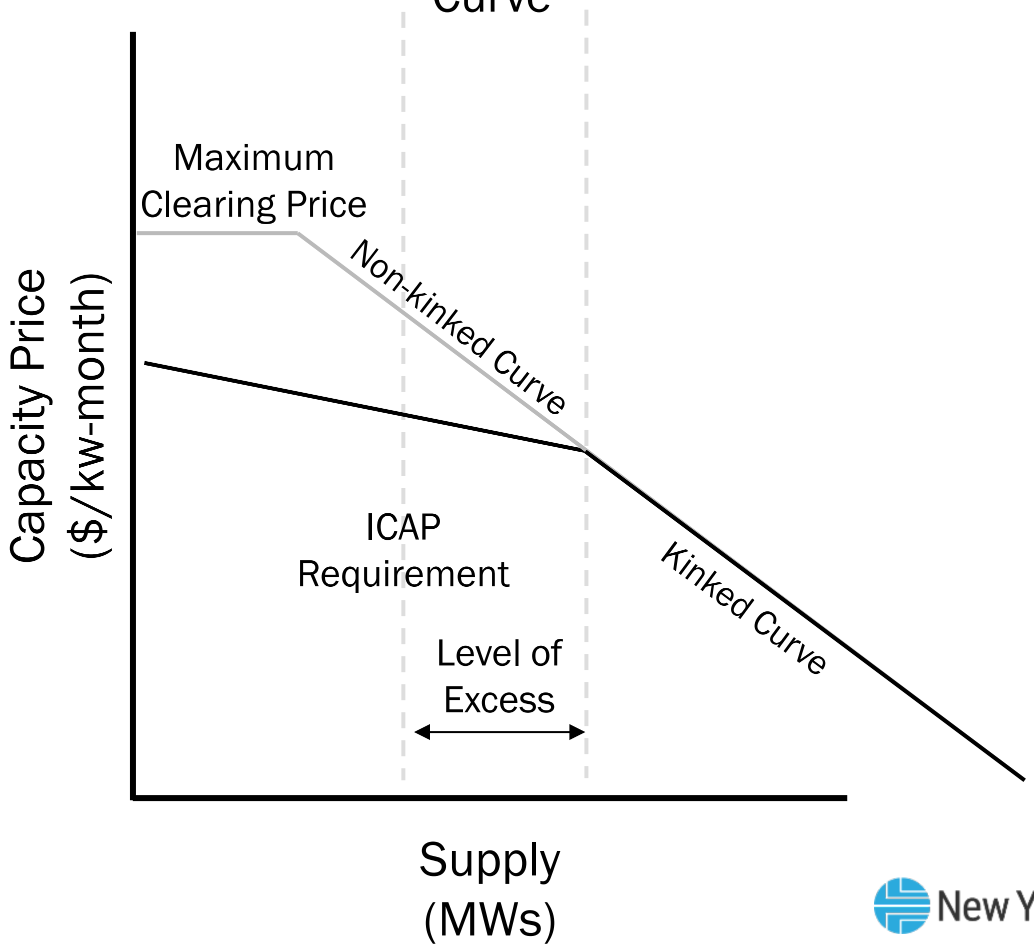
Conceptual Concave Kinked Demand Curve



Potential Kinked Demand Curve Structure

- **One potential formulation of a kinked demand curve would be a kinked, concave demand curve with a kink at the level of excess.**
  - Intended to preserve a consistent slope for capacity margins greater than the assumed LoE conditions.
  - Provides improved price stability in the flatter portions of the curve towards requirement conditions.
- **This potential structure could reduce costs for clearing short of the minimum requirement but also may adversely impact investment signals for additional capacity supply when excess is less than the assumed LoE conditions.**

Conceptual Concave Kinked Demand Curve



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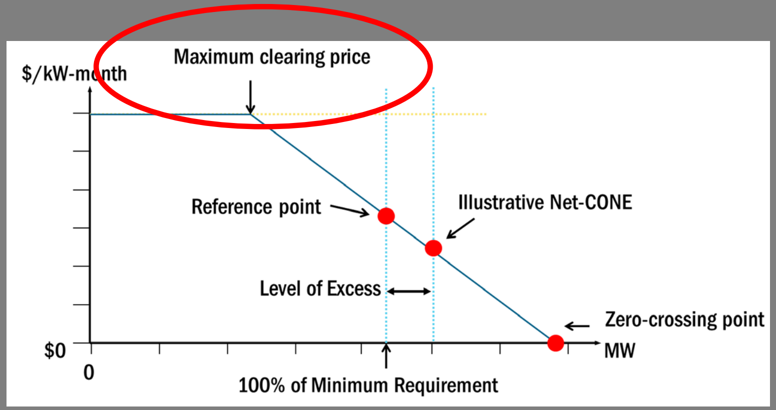

Maximum Clearing Price

Maximum Clearing Price

- The current maximum clearing price value is derived from 150% of gross CONE.
- The value seeks to provide sufficient investment signals when the market is deficient in meeting requirements while balancing potential negative consumer impacts from prices that may exceed those necessary to sufficiently attract and retain additional capacity to help resolve the deficient conditions.

DCR Process and Methodology Improvements: Project Tracks Heat Map	NYISO Initial Recommendations	Reliability-Based Valuation	Transparent & Predictable Outcomes	Efficient Investment Framework	Ease of Administration
6. Max Clearing Price					
A. Lower Max Clearing Price	x	3	3	3	3
B. Status Quo		3	3	3	3

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Lowering the Maximum Clearing Price

- **NYISO proposes to consider lowering the maximum clearing price.**
- **A lower maximum clearing price may better balance the provision of signals for investments during capacity supply shortages, while avoiding the imposition of unnecessary "penalty" costs on consumers.**
  - This change would need to balance the inherent risk that the estimated net CONE is not perfect.
  - Any proposed changes to the maximum clearing price will also need to consider potential impacts from any proposed changes to the shape and slope of the curves.
- **The NYISO is currently in the early stages of assessing potential changes to the maximum clearing price value and seeks stakeholder feedback on potential alternative derivations (e.g., 110%, 115%, 120%, etc. of Gross CONE).**

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Capacity Accreditation Factors

Capacity Accreditation Factors

- CAFs are designed to provide a measure of the marginal reliability contribution that a resource in a Capacity Accreditation Resource Class (CARC) provides in meeting resource adequacy.
- Today's methodology calculates CAFs based upon the ability of the representative unit for each CARC to resolve loss of load events compared to a "perfect" unit's ability to resolve such events.
  - These calculations are "all or nothing" meaning that for each loss of load event that the "perfect" unit resolves, the modeled representative unit can also resolve the event and receives full credit, or it doesn't resolve the event and receives no credit.
- These values have tended to vary significantly since their introduction, as changes in the underlying resource adequacy model and requirements can cause changes in CAFs year over year.
- The NYISO has initiated research into CAF stability as part of the Improving Capacity Accreditation and Resource Adequacy Modeling project.

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CAF Considerations

- **The NYISO is assessing how increasing CAF predictability may enhance market confidence by limiting parameter changes that are unrelated to fundamental shifts in system reliability risk.**
  - For example, a potential consideration to "lock" CAFs for the duration of a reset period may reduce year-to-year variability in accredited capacity values, providing more stable and predictable price signals to both existing resources and potential new entrants.
  - However, such an alternative would also need to assess the potential for CAFs to change materially from one reset to the next due to changes in system conditions and the resource adequacy model over time.
- **While CAF stability considerations are conceptually related to this project's objectives, these issues are being more holistically evaluated within the Improving Capacity Accreditation and Resource Adequacy Modeling project.**

DCR Process and Methodology Improvements: Design Elements Heat Map	NYISO Initial Recommendations	Reliability-Based Valuation	Transparent & Predictable Outcomes	Efficient Investment Framework	Ease of Administration
5. Stabilizing CAFs					
A. EUE CAFs		3	2	3	2
B. Collar CAFs with upper and lower bounds		2	2	2	3
C. Lock CAFs for the duration of the reset period		1	3	3	3
D. Status Quo		2	1	1	2

Next Steps

Feedback & Next Steps

- The NYISO seeks stakeholder feedback on all the design tracks discussed today, particularly those marked as an initial recommendation or still evaluating.
- The NYISO plans to return to an ICAPWG in June to address feedback from today's working group and provide additional design details.
- Please address feedback to Michael Ferrari – mferrari@nyiso.com

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Appendix: Previous Presentations

Previous ICAPWG Presentations

Date	Description
2026-02-17	Proxy Unit Definition
2026-01-21	ICAP Demand Curve Shape & Slope
2026-01-12	Demand Curve Reset Process and Methodology Improvements
2025-11-17	Project Kickoff

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Appendix: Financial Parameters

Risk-Free Rate – Empirical Analysis Overview

- Three RfR historical trailing average periods were evaluated across several measurements (bias, volatility, forecast accuracy, extreme forecast errors)
  - Spot
  - 1-Month
  - 90-Day
- The analysis compares the predictive capability of each averaging method on 10-year treasury yields
  - Quarterly cutoff dates were observed each year between 2010-2025
    - For example, spot, 30-day, and 90-day averages are calculated on March 31, 2010, March 31, 2011, etc.
  - RfR forecasts are compared to actual 1-year forward 10-year treasury yields

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Risk-Free Rate – Bias and Volatility Assessment

- **Standard Deviation:**
  - 90-day average is marginally smoother (lower std. deviation for dispersion)
  - This is expected, as a 90-day average somewhat smooths out differences in the estimated RfR due to the longer averaging period
- **Bias:**
  - Sums the positive and negative errors, so does not indicate accuracy of forecasts
  - None of the trailing averages (spot, 1-month, 90-day) introduce materially different directional bias relative to the 1-year forward average
- **Standard Deviation of Bias**
  - 90-day average has a higher standard deviation compared to the other averages.
  - Indicates that the 90-day average is not smoothing out short-term fluctuations in RfR but instead smoothing out changes that reflect sustained changes in RfR.

Risk-Free Rate Estimate Across Different Averaging Periods

Metric	Spot	1-Month	90-Day
Average Yield (%)	2.608%	2.609%	2.608%
Std. Deviation Yield	*1.035%*	*1.008%*	*1.005%*
Average Bias (%)	0.036%	0.035%	0.036%
Std. Deviation Bias	*0.512%*	*0.512%*	*0.584%*

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Risk-Free Rate – Forecast Error Assessment

- **Forecast Accuracy:**
  - Absolute difference between forecast and actual RfR suggests that 90-day average is slightly less accurate than other averaging periods
  - Similar pattern observed with std. deviation of absolute difference

Absolute Difference Between Actual and Forecast RfR Across Different Averaging Periods

Metric	Spot	1-Month	90-Day
Average Forecast Error (%)	0.397%	0.400%	0.457%
Std. Deviation Forecast Error	*0.312%*	*0.308%*	*0.348%*

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Risk-Free Rate – Extreme Errors Assessment

- **Number of extreme forecast errors:**
  - Suggests that forecasts based on 1-month and spot averages are better than the forecast based on 90-day average forecast
  - Forecast based on 1-month average is better than forecast based on both spot and 90-day average forecast

Number of Extreme Forecast Errors

Metric	Spot	1-Month	90-Day
# Periods w/ Forecast Error > 1%	5	3	4
# Periods w/ Forecast Error > 0.75%	6	6	10

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Cost of Debt – Empirical Analysis Overview

- **Indices were compared to bonds issued by companies that comprised the comparator group used in the last reset:**
  - BBB— AES, Constellation, and Vistra
  - BB— NRG
- **Analysis was conducted on two dimensions over 1-month, 6-month, 1-year, and 2-year periods:**
  - **Level** – Trailing average blended BB/BBB index yields were compared with trailing average yields for bonds from comparator set
  - **Trend** – Estimated correlation coefficient between changes in index yields and changes in bond issuance yields for comparator set

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Cost of Debt – Level Analysis

- **Level** – Calculated the simple average of yields across the selected bonds for each comparator company that were available for each time period
  - The average across all companies is calculated as the simple average across all companies
  - Found that a blend of BB and BBB indices closely matches observed comparator bond yields
  - Differences between blended indices and average of all comparator bonds is typically within 24 basis points across averaging periods (i.e., less than 5%)

Trailing Average Yield for Blended BB/BBB indices (%)

Company/Index	1-month	6-month	1-year	2-year
Average across all companies	5.53	5.35	5.37	5.47
Blend of S&P BB/BBB Utilities	5.59	5.46	5.60	5.59
Blend of BofA BB/BBB	5.60	5.32	5.41	5.58
Blend of S&P Non-Fin BB/BBB	5.98	5.82	5.92	5.91

Note: Blends calculated as the simple average of the relevant BB and BBB indices

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Cost of Debt – Trend Analysis

- **Trend** – Estimated correlation coefficient between changes in yield on the index and changes on the bonds considered over the past 1-month, 6-months, 1-year, and 2-years
  - Observed correlations with BBB indices tend to be higher and less sensitive to time period
  - May reflect that BB indices are more sensitive to index rebalancing or company-specific event risks

Correlation Analysis

Correlation by Company	BBB 10y non-fin	BBB 10y utilities	Moody's BAA	BoA BB	BoA BBB	BB 10y non-fin	BB 10y utilities
NRG (BB)							
1-month	0.72	0.71	0.62	0.75	0.66	0.53	0.60
6-month	0.58	0.54	0.55	0.60	0.56	0.49	0.24
1-year	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-year	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AES (BBB)							
1-month	0.64	0.63	0.59	0.56	0.67	0.58	0.60
6-month	0.50	0.49	0.50	0.38	0.54	0.40	0.16
1-year	0.50	0.52	0.49	0.28	0.53	0.25	0.24
2-year	0.48	0.48	0.45	0.26	0.48	0.17	0.31
Constellation (BBB)							
1-month	0.79	0.78	0.69	0.67	0.70	0.61	0.70
6-month	0.70	0.68	0.69	0.54	0.72	0.58	0.27
1-year	0.73	0.71	0.70	0.47	0.74	0.36	0.34
2-year	0.69	0.68	0.69	0.44	0.73	0.28	0.40
Vistra (BBB)							
1-month	0.82	0.81	0.85	0.72	0.73	0.70	0.83
6-month	0.69	0.67	0.71	0.50	0.70	0.59	0.27
1-year	0.72	0.71	0.72	0.38	0.74	0.41	0.31
2-year	N/A	N/A	N/A	N/A	N/A	N/A	N/A

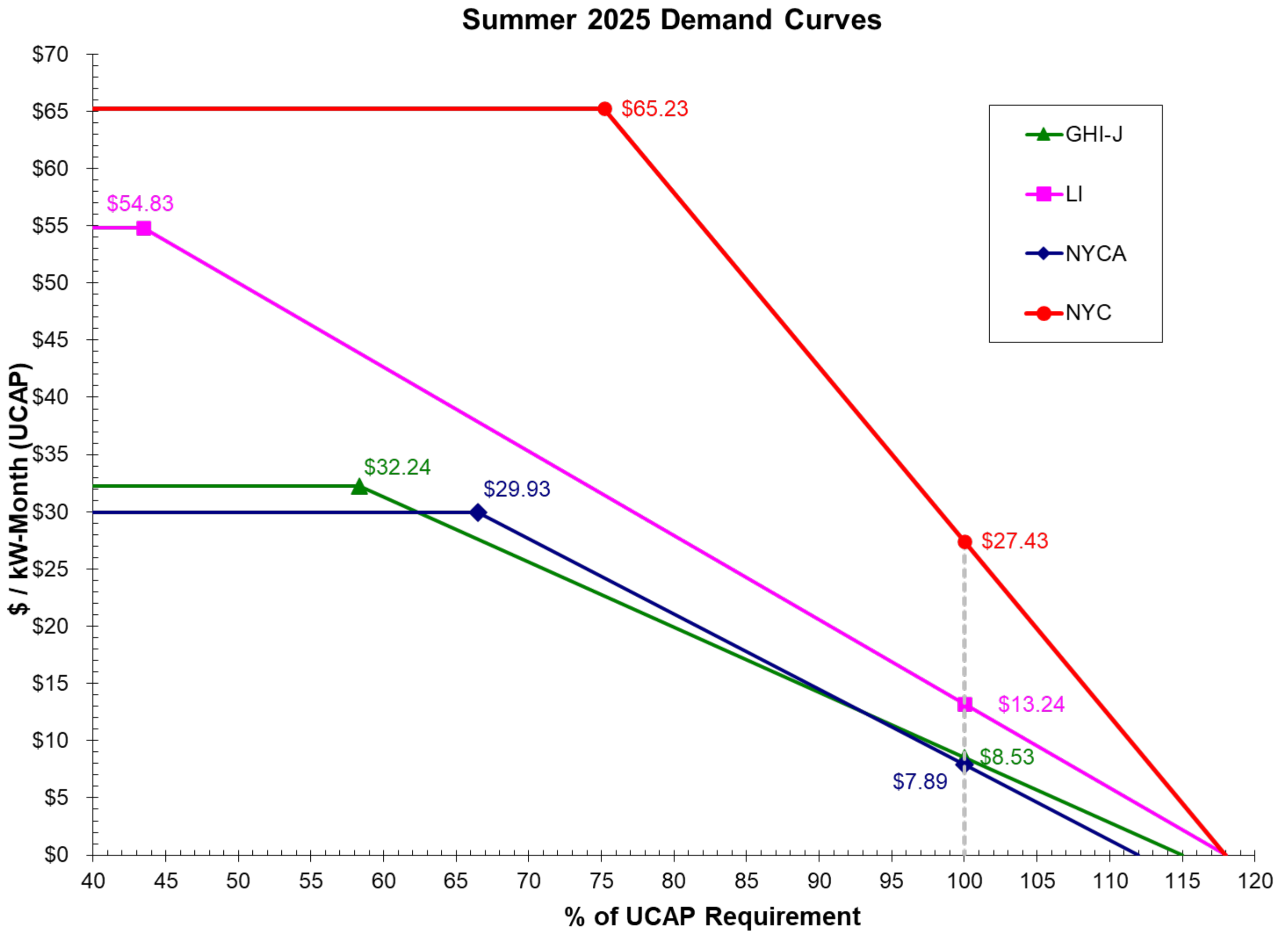
Note: Correlations above are calculated as simple average across selected bonds for the relevant company

Appendix: Demand Curve Shapes

(Slides Presented at 5/22/2025 ICAPWG)

Overview

- Each ICAP Demand Curve is comprised of a price cap, sloped section, and price floor.
  - This structure has remained unchanged since the implementation of the sloped demand curves in 2003.
- Alternative shapes and slopes may more accurately value resources according to their contribution to reliability. They may also address stakeholder concerns that the current ICAP Demand Curve structure may result in wealth transfers to incumbent resources while inadequately incentivizing new resource entry.



Overview (cont.)

- **Alternatives to explore could include leveraging a marginal reliability improvement (MRI) curve, such as used in ISO-NE and MISO and proposed for use in PJM, or a kinked curve, such as used in PJM currently.**
  - While these alternatives may more accurately value resources according to their contribution to reliability, they may also pose price predictability risks and increased investment risk due to steeper slopes.
    - These risks may vary by season and will need to be further evaluated when considering these alternatives

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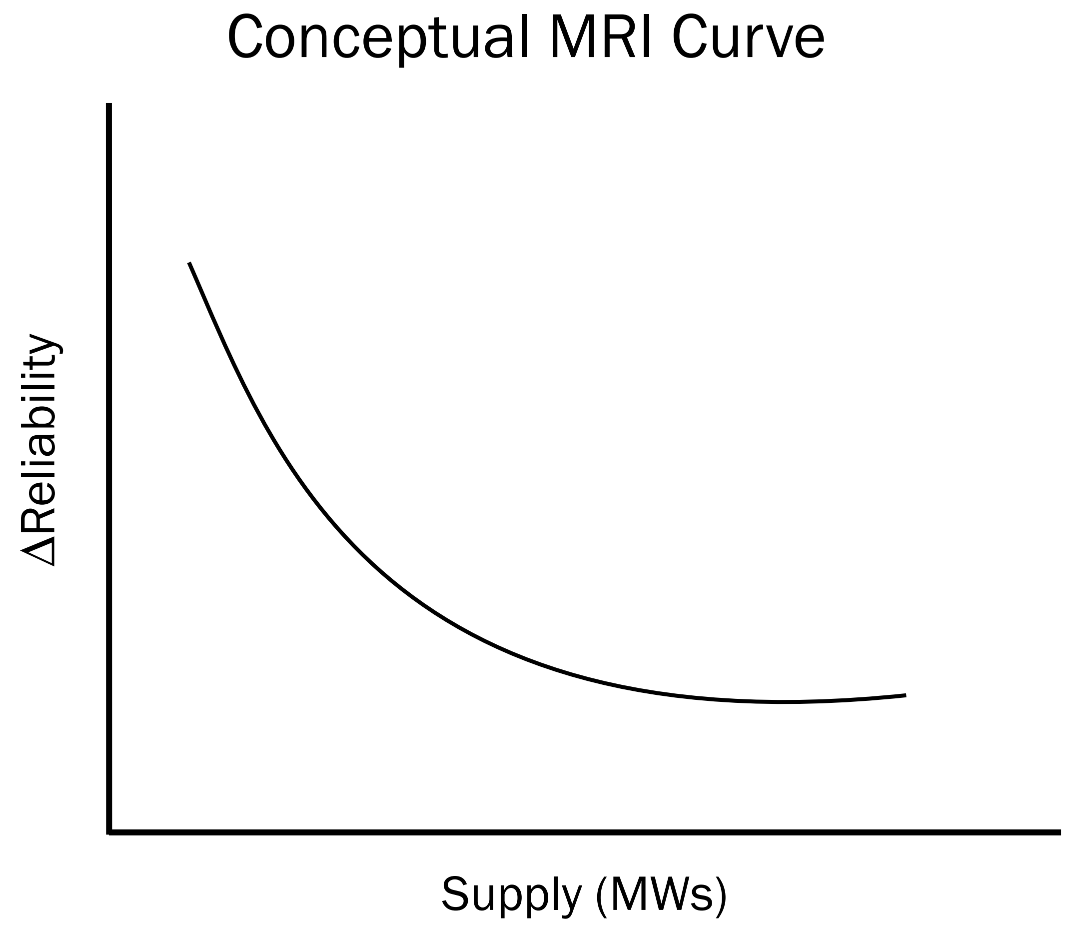
MRI Demand Curve - Overview

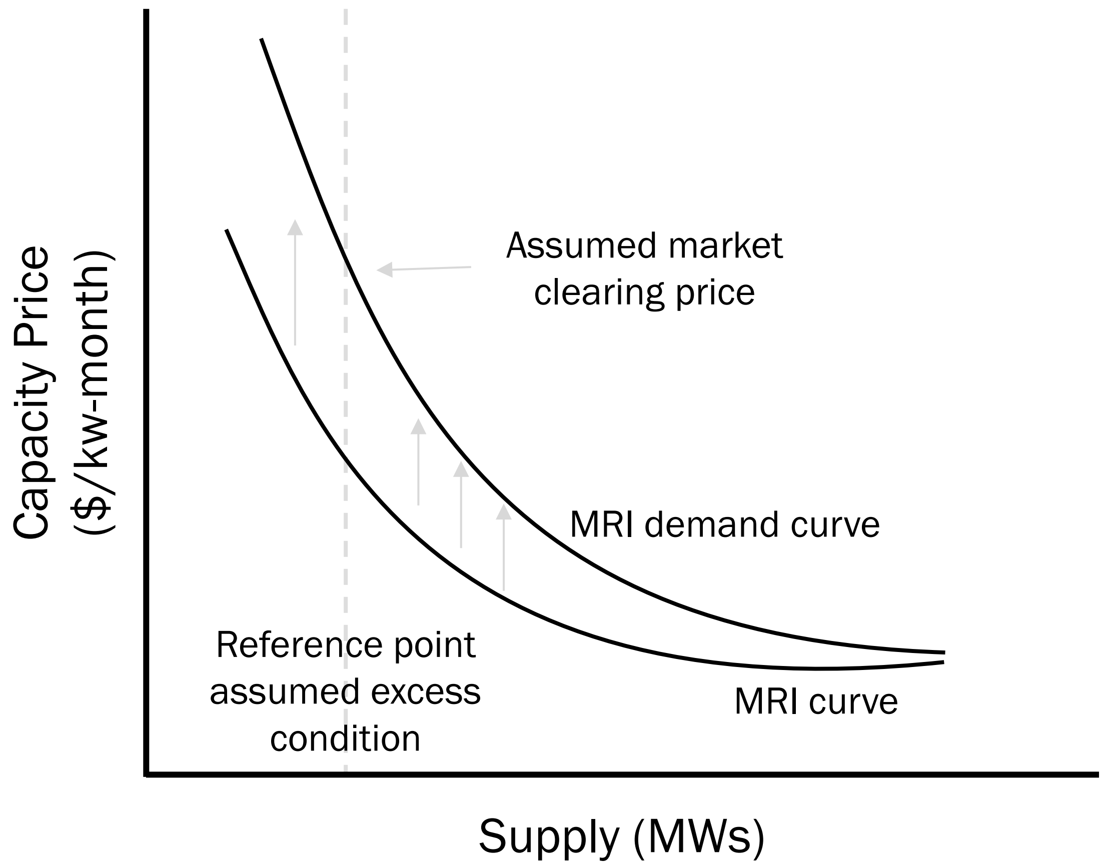
- **MRI Curve (used to derive an MRI Demand Curve)**
  - As supply is added to a system, the marginal reliability benefit provided by the next increment of supply decreases, producing a downward sloping convex MRI curve
    - Thus, as supply is added to the NYCA system, it has decreasing reliability value. This is reflected as a lower capacity price as supply increases using an MRI demand curve



MRI Demand Curve – Overview (Cont.)

- **MRI Demand Curve**
  - An MRI demand curve can be produced by multiplying each MRI point on an MRI curve by a scaling factor
    - The scaling factor can be calculated by dividing the capacity price at the reference point assumed level of excess condition, as defined in MST 5.14.1.2.2, for the applicable season by the MRI at that supply condition
      - This ensures the peaking plant underlying the ICAP Demand Curve continues to be revenue sufficient when moving to an MRI demand curve

Conceptual MRI Demand Curve

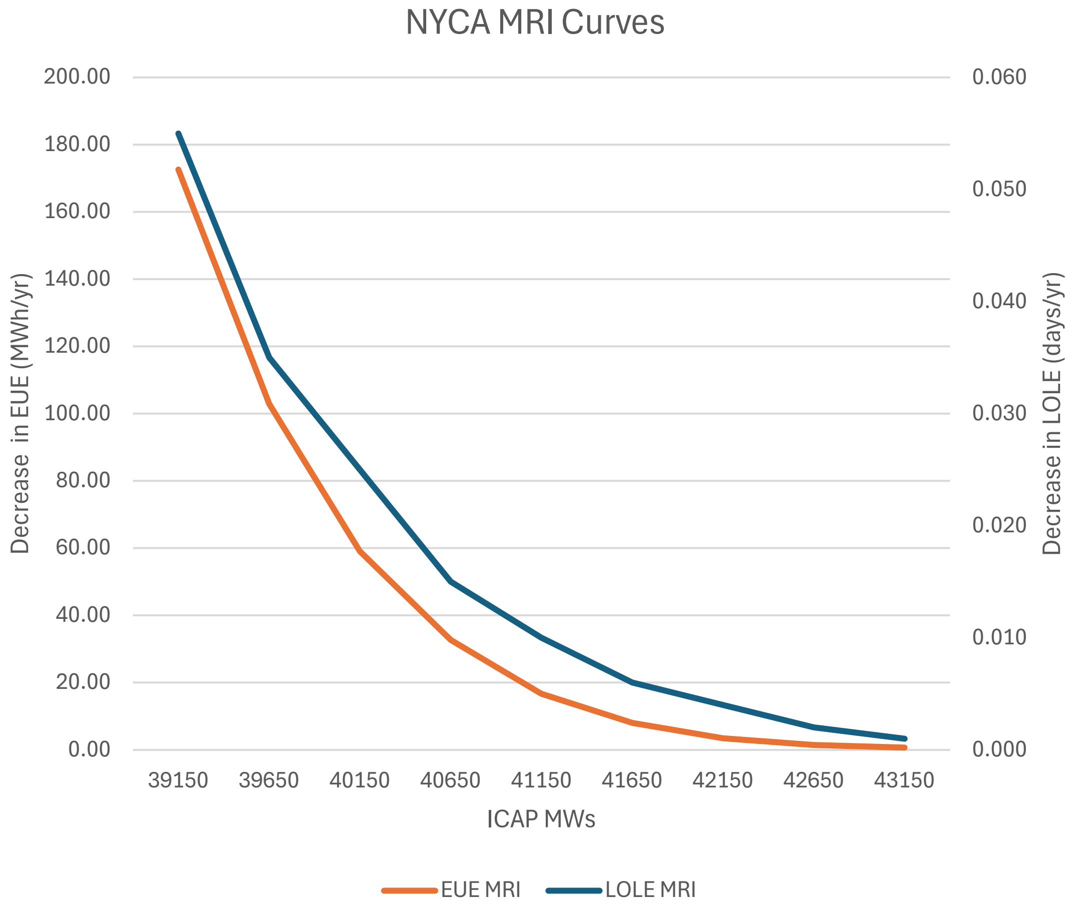


NYCA and Locality MRI Demand Curves

- **To help evaluate the potential use of MRI demand curves, the NYISO has developed example MRI curves for NYCA and the Localities utilizing the 2025-2026 Locational Minimum Installed Capacity Requirement (LCR) study model in GE MARS**
  - MRI curves were developed by adding increments of capacity to the at-criteria model and measuring the resulting Loss of Load Expectation (LOLE) and Expected Unserved Energy (EUE)
    - Other methodologies could be considered for creating MRI curves
- **The MRI curves were translated into seasonal MRI demand curves using seasonal scaling factors**
  - The scaling factor for each curve was calculated by dividing the market clearing price at the reference point assumed level of excess condition, as defined in MST 5.14.1.2.2, by the implied MRI at the reference point assumed excess condition for each season
    - The implied MRI was calculated by linearly interpolating between the MRIs on either side of the reference point assumed excess condition

Example NYCA MRI Curve

ICAP (MW)	Capacity Adjustment (MW)	LOLE (days/yr)	- Δ LOLE (days/yr) per 500 MW [LOLE MRI]	EUE (MWh/yr)	- Δ EUE (MWh/yr) per 500 MW [EUE MRI]
38,148	-1000	0.231		675.9	
38,648	-500	0.155	0.076	398.7	277.20
39,148	0	0.100	0.055	226.1	172.61
39,648	500	0.065	0.035	123.2	102.89
40,148	1,000	0.04	0.025	64.1	59.10
40,648	1,500	0.025	0.015	31.4	32.70
41,148	2,000	0.015	0.010	14.7	16.70
41,648	2,500	0.009	0.006	6.7	8.00
42,148	3,000	0.005	0.004	3.2	3.50
42,648	3,500	0.003	0.002	1.7	1.50
43,148	4,000	0.002	0.001	1	0.70



Example NYCA MRI Demand Curve Scaling Factors - LOLE

- **2025 Summer Demand Curve**

Reference Point Assumed Excess Condition (%)[1]	(a)	100.52%
ICAP Requirement (MW ICAP)	(b)	39,148
Reference Point Assumed Excess Condition (MW ICAP)	(c) = (a)*(b)	39,351
Assumed Capacity Price ($/kW-month ICAP) [2]	(d)	$5.48
Implied LOLE MRI per 500 MW ICAP (days/year) [3]	(e)	0.047
LOLE Scaling Factor	(f) = (d)/(e)	116.9

- **2025-2026 Winter Demand Curve**

Reference Point Assumed Excess Condition[4]	(a)	103.82%
ICAP Requirement (MW ICAP)	(b)	39,148
Reference Point Assumed Excess Condition (MW ICAP)	(c) = (a)*(b)	40,648
Assumed Capacity Price ($/kW-month ICAP) [2]	(d)	$2.95
Implied LOLE MRI per 500 MW ICAP (days/year) [3]	(e)	0.015
LOLE Scaling Factor	(f) = (d)/(e)	196.7

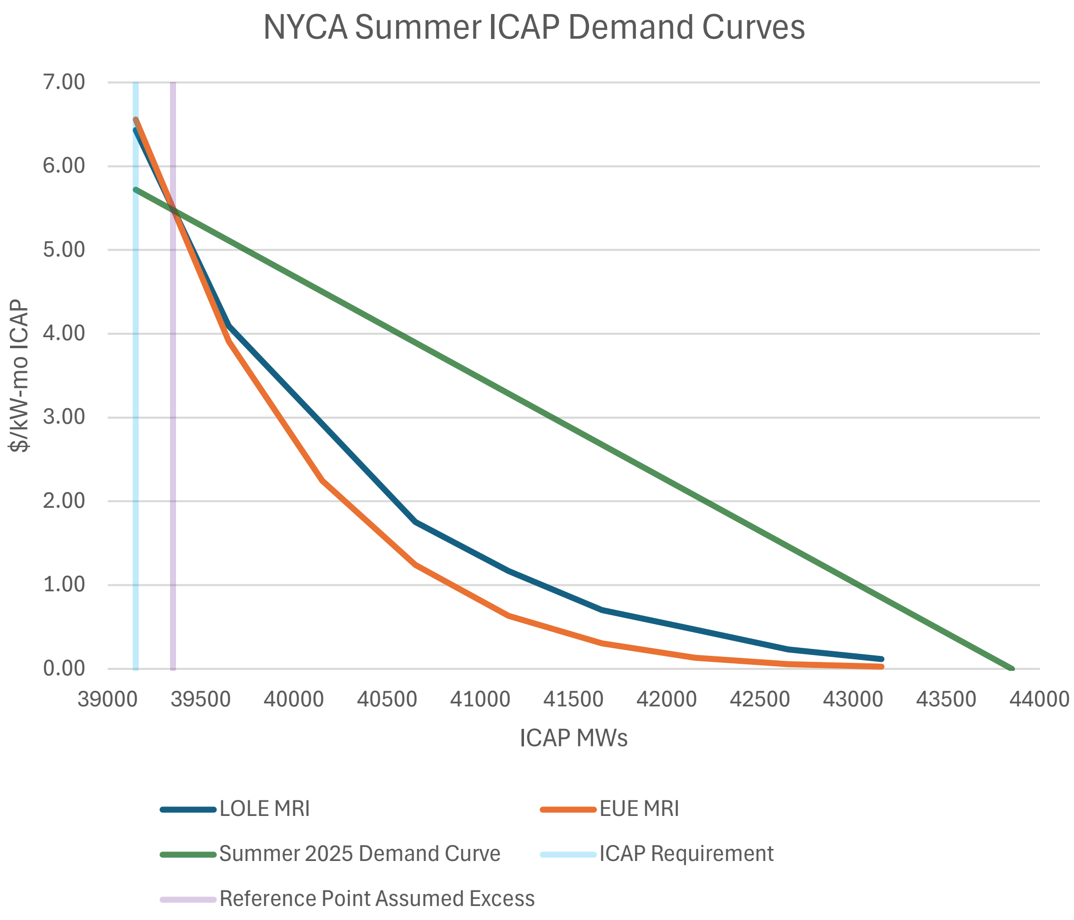
[1] Equal to “Level of Excess” for the applicable capacity zone from the 2025-2026 ICAP Demand Curve Parameters

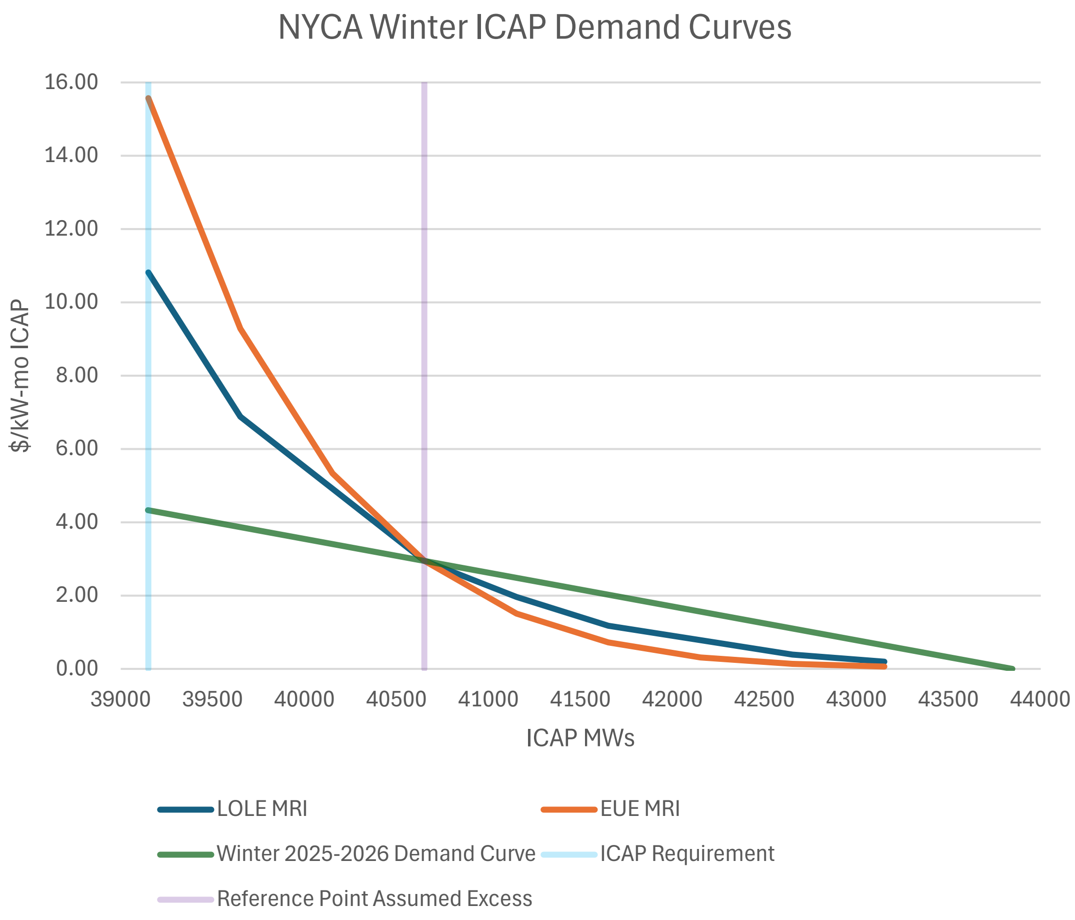
[2] See Assumed Capacity Prices at Tariff Prescribed Level of Excess Conditions” for the applicable capacity zone from the 2025-2026 ICAP Demand Curve Parameters

[3] Calculated by linear interpolation using NYCA LOLE MRI curve

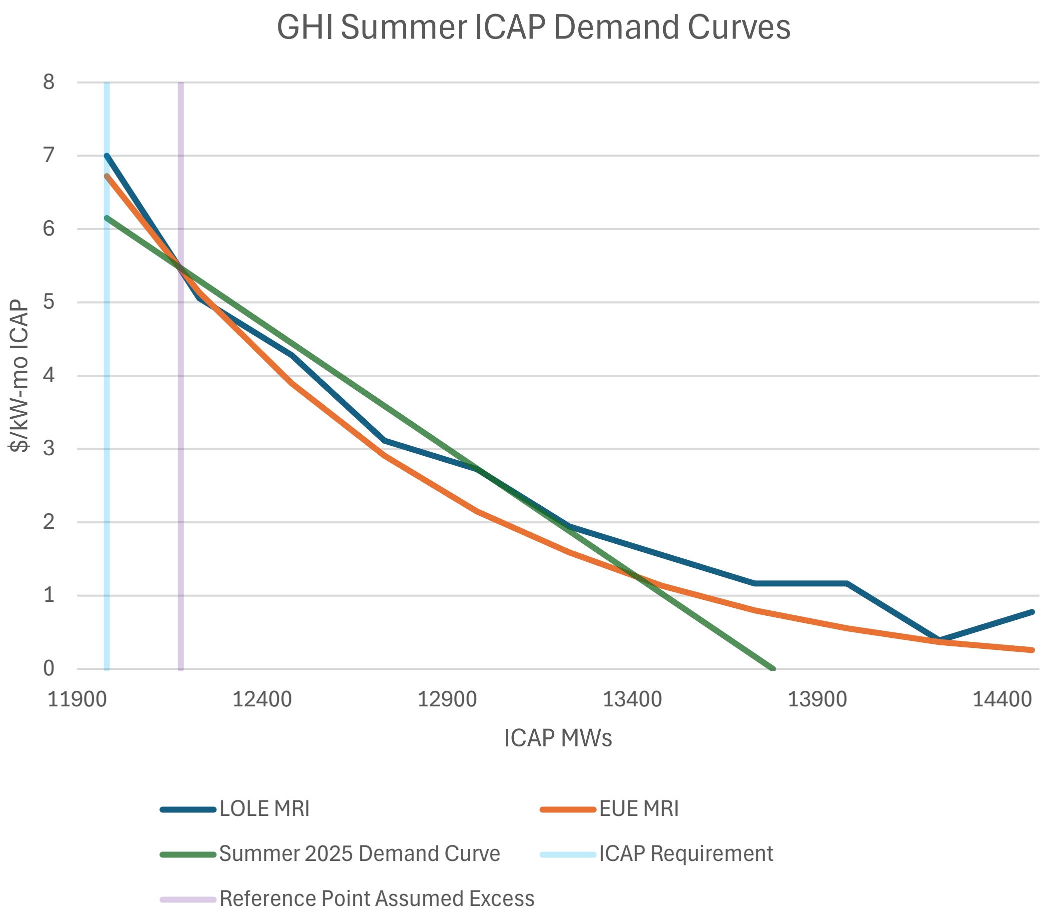
[4] Equal to “Level of Excess” plus “Ratio of Winter to Summer DMNCs” for the applicable capacity zone from the 2025-2026 ICAP Demand Curve Parameters

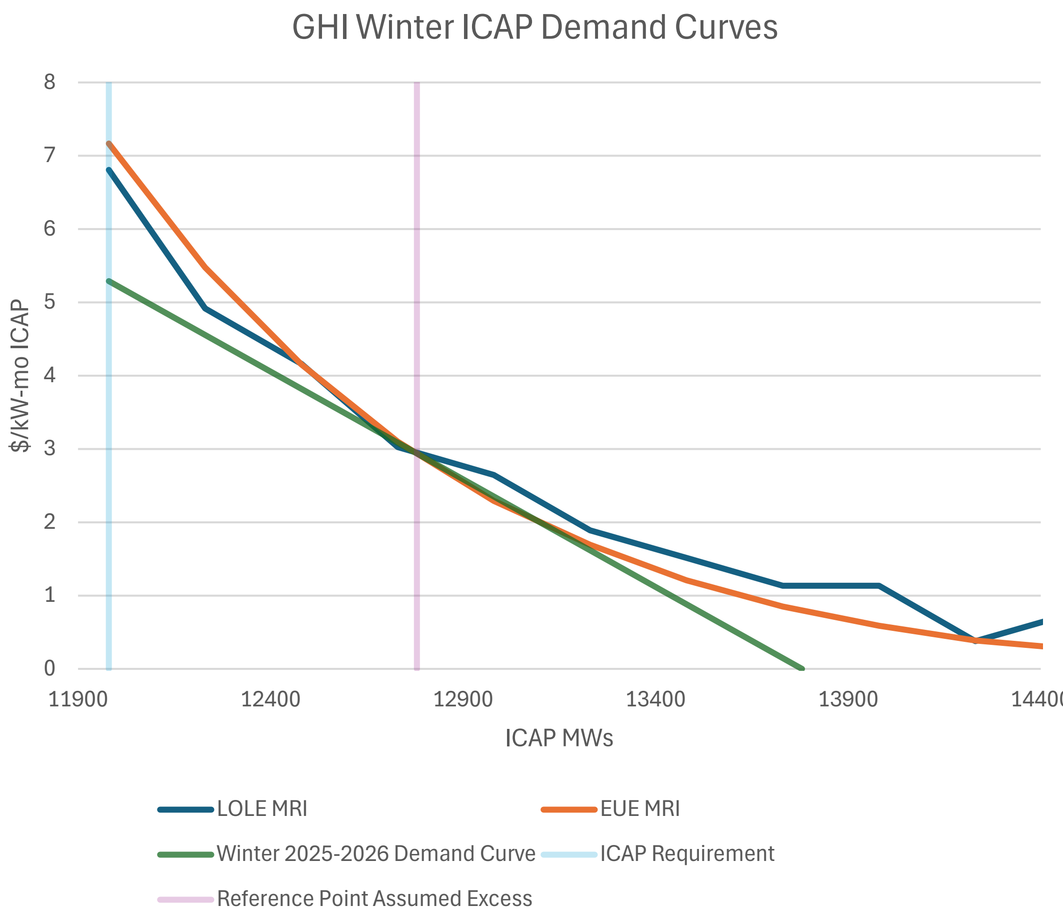
Example NYCA MRI ICAP Demand Curves





Example GHI MRI ICAP Demand Curves





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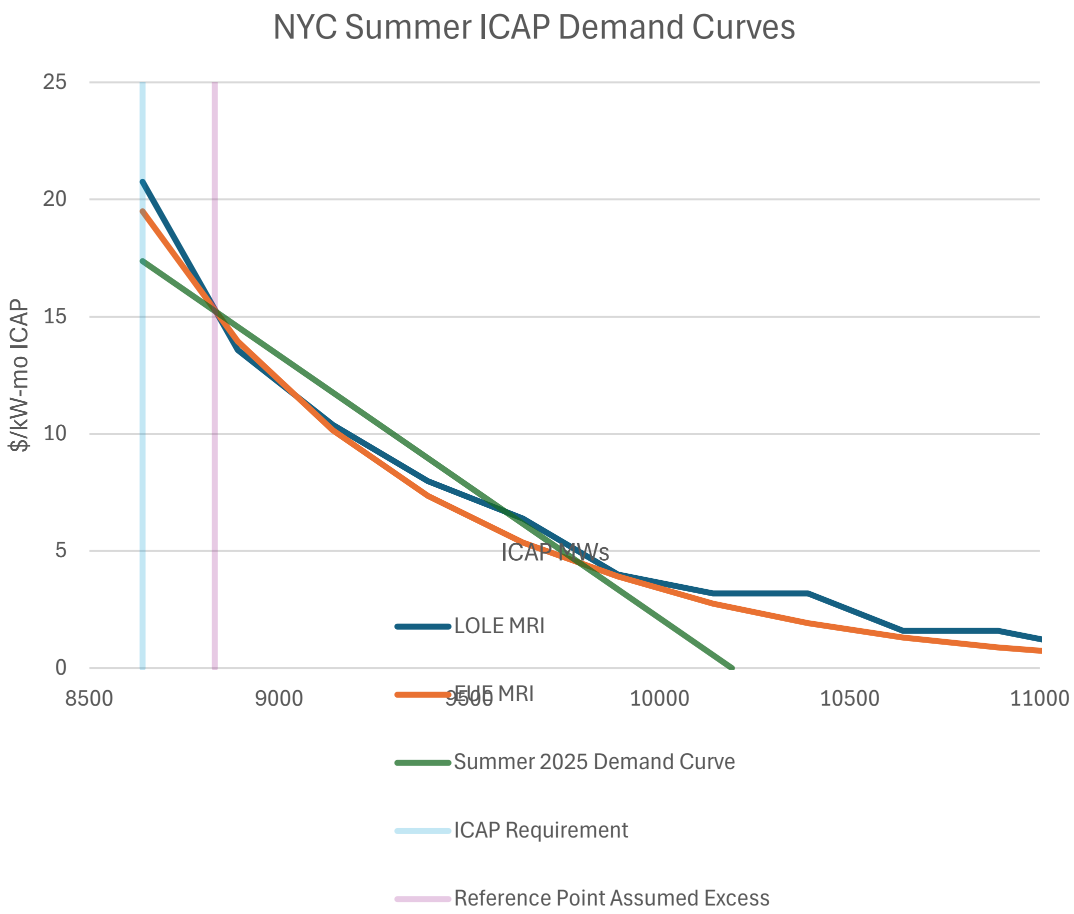
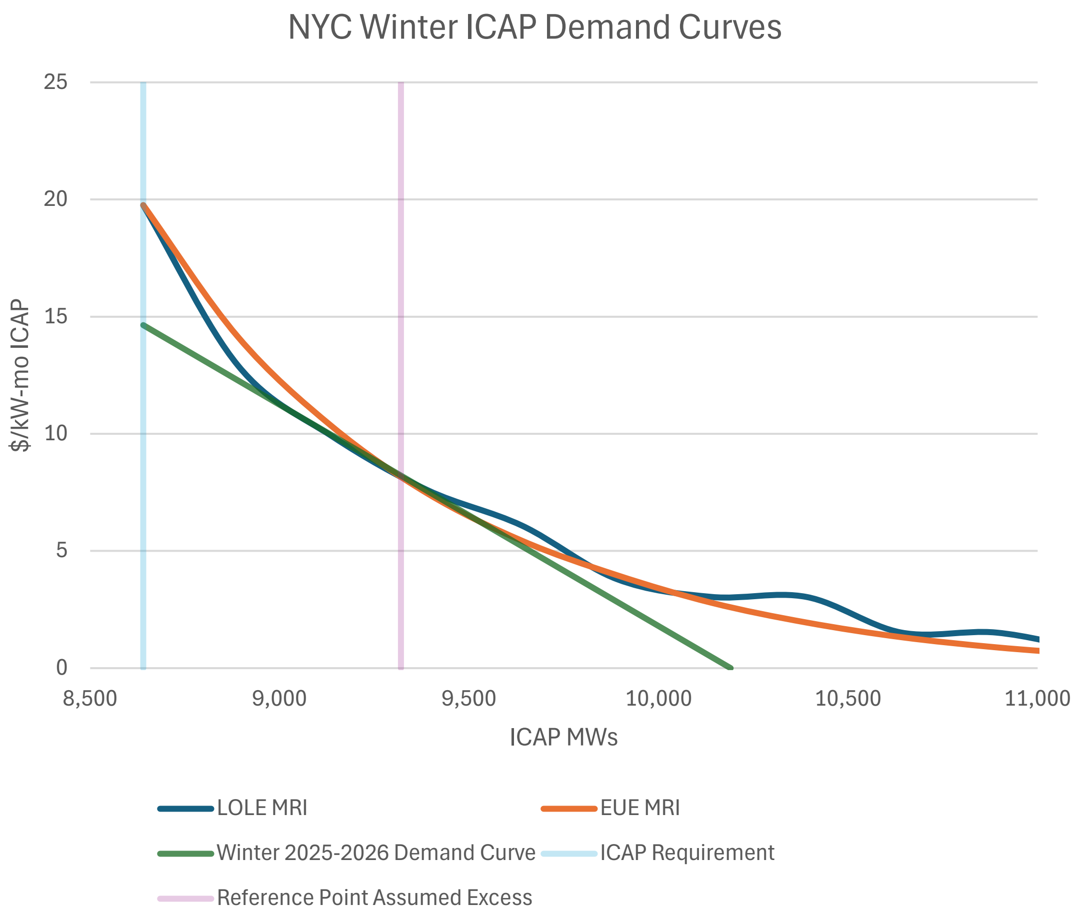
Example NYC MRI ICAP Demand Curves





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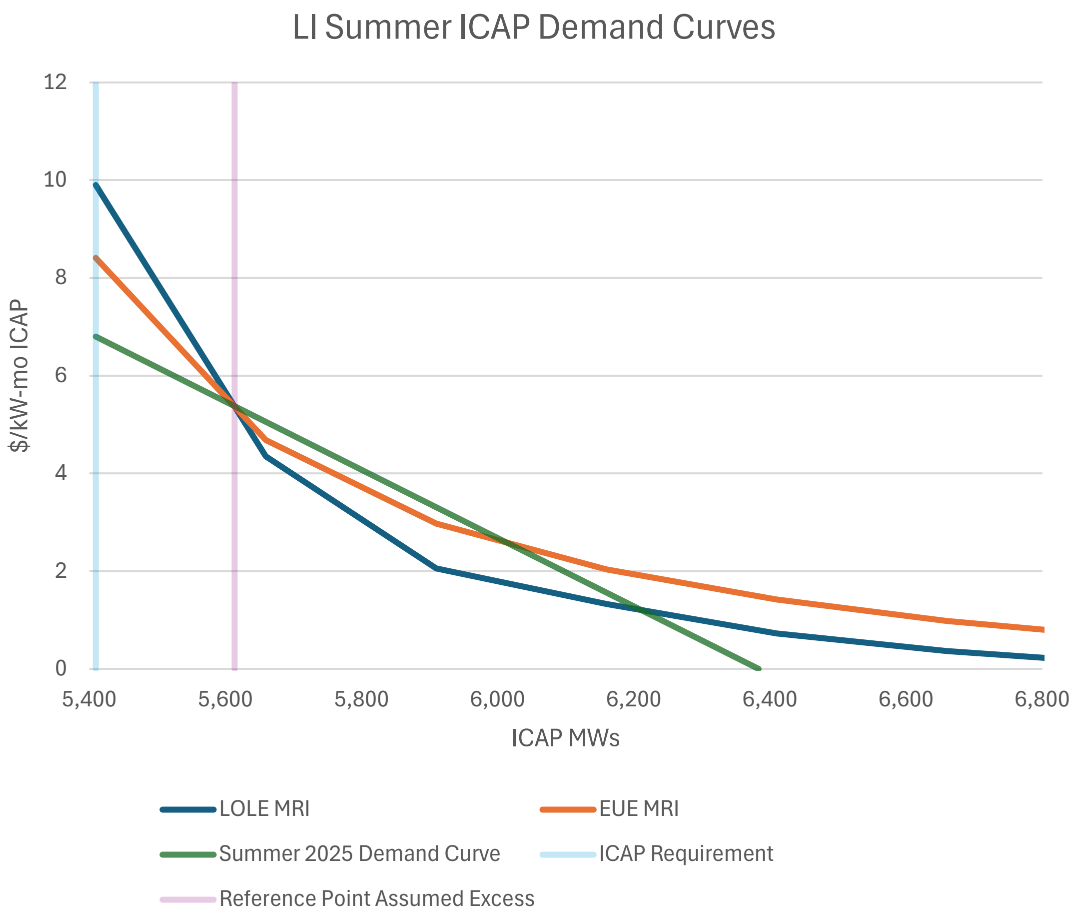
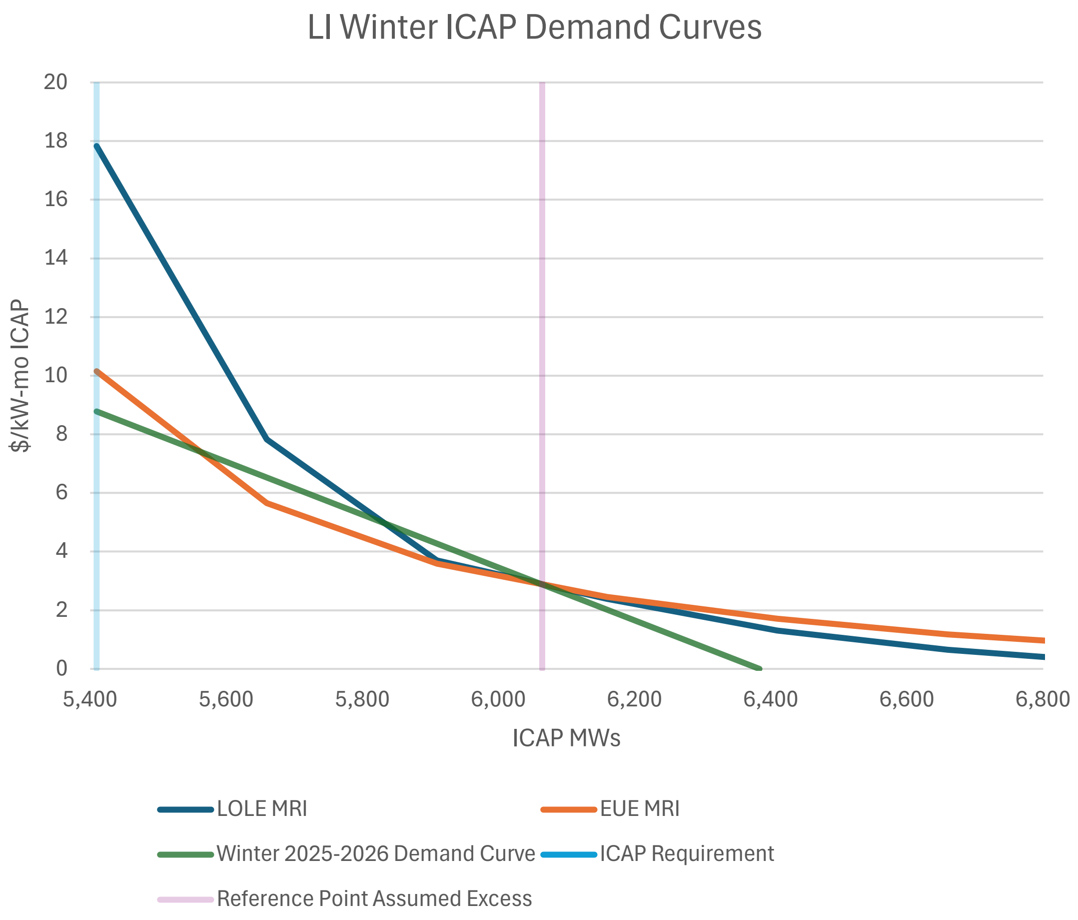
Example LI MRI ICAP Demand Curves





Our Mission and Vision

Mission

Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation