

# Load Serving Entity Capacity Obligations

## Determining the amount of Capacity to Procure

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**Intermediate ICAP Course**

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# Topics for Discussion:

- New York Control Area (NYCA) Installed Capacity Requirement
- Transmission District (TD) Capacity Requirements
- Locational Minimum Installed Capacity Requirement for a Locality
- Individual LSEs Unforced Capacity requirements
- Convert a Transmission District ICAP requirement to UCAP
- Understand LSEs Spot excess capacity purchase obligation

# **Topic 1:**

## **New York Control Area (NYCA)**

### **Installed Capacity Requirement**

# Capacity Requirements Review

## **NYCA**

ICAP & UCAP Capacity Requirements

## **Locational**

ICAP & UCAP Capacity Requirements

## **Transmission District**

ICAP & UCAP Capacity Requirements

## **Load Serving Entity**

ICAP & UCAP Capacity Requirements

# Capacity Requirements and Obligation to Procure

- Requirements are set annually for each Capability Year
  - NYCA Capacity requirements
  - Transmission District Capacity requirements
  - Locational Capacity requirements
- UCAP requirements
  - Total UCAP requirements are determined each Capability Period
  - Individual LSE UCAP requirements determined monthly

# **Topic 2:**

## **Transmission District (TD) Capacity Requirements**

# Capacity Requirements Overview

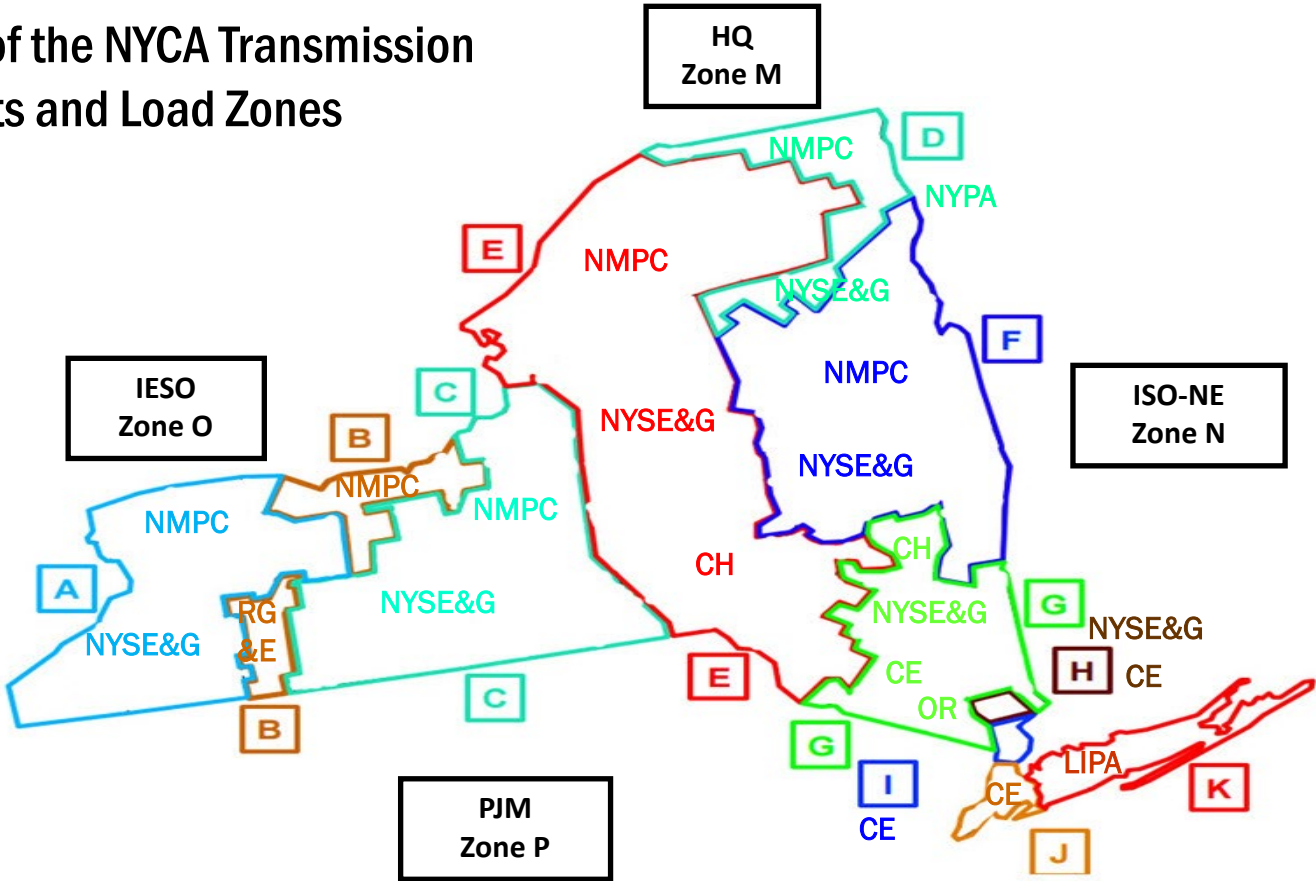
## NYCA Load Zones

- A- West
- B- Genesee
- C- Central
- D- North
- E- Mohawk Valley
- F- Capital
- G- Hudson Valley
- H- Millwood
- I- Dunwoodie
- J- NYC
- K- Long Island

## Transmission Districts

- CE - Consolidated Edison Co. of NY
- CH - Central Hudson Gas & Electric
- LIPA - Long island Power Authority
- NMPC - Niagara Mohawk Power Corp.
- NYSE&G - New York State Electric & Gas Corp.
- OR - Orange & Rockland Utilities
- NYPA - New York Power Authority
- RG&E - Rochester Gas & Electric Corp.

## Maps of the NYCA Transmission Districts and Load Zones



# Transmission District (TD) Capacity

$$\text{TD ICAP Requirement} = \text{TD Forecasted Peak Load} \times (1 + \text{NYCA IRM})$$

- **TD Minimum ICAP Requirement Example for Con Edison**
  - Con Edison of NY Forecasted Peak Load: 12,811.7 MW
  - NYCA IRM: 20.0%  
$$= 12,811.7 \times (1 + 0.20) = \mathbf{15,374.1 \text{ MW}}$$

*(Summer 2023 values)*



# TD Minimum UCAP Requirement

- Based on the annual NYCA Forecasted Peak Load and the individual TD Forecasted Peak Load
- TD Min UCAP used to calculate LSE Minimum UCAP Requirement

$$\text{TD Min UCAP Requirement} = \text{NYCA Min UCAP Requirement} \times \frac{\text{TD Forecasted Coincident Peak Load}}{\text{Sum of Forecasted Coincident Peak Loads for all TDs}}$$

\*Refer to Section 3.3 of the ICAP Manual

# TD Minimum UCAP Requirement

TD Forecasted Coincident Peak Load

Sum of Forecasted Coincident Peak Loads for all TDs

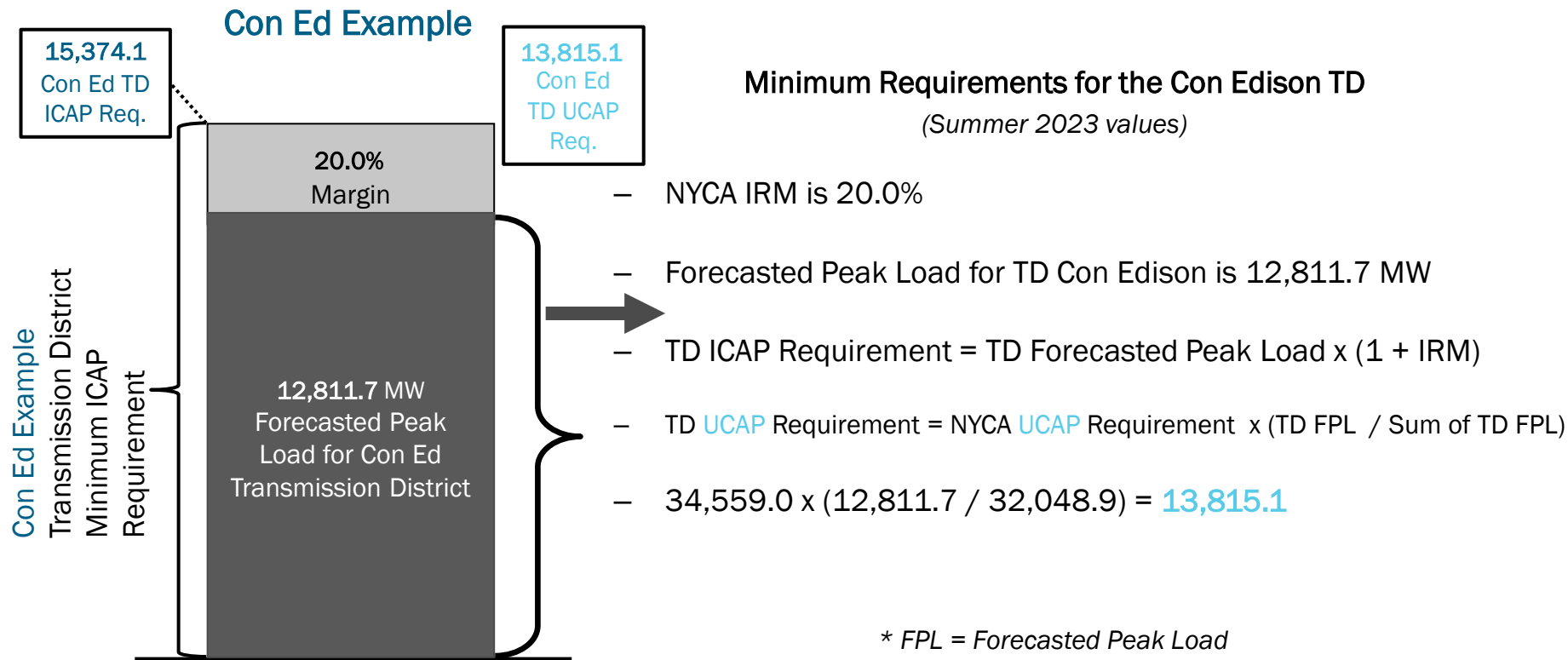
$$\text{TD Min UCAP Requirement} = \text{NYCA Min UCAP Requirement} \times \frac{\text{TD Forecasted Coincident Peak Load}}{\text{Sum of Forecasted Coincident Peak Loads for all TDs}}$$

## Con Ed Values - Summer 2023

Con Ed Forecasted Peak Load	12,811.7 MW
NYCA Min UCAP Requirement	34,599.0 MW
Sum of Forecasted Coincident Peak Loads for All TDs	32,048.9 MW
$34,599.0 \times (12,811.7 / 32,048.9) = 13,815.1$	

\*Refer to Section 3.3 of the ICAP Manual

# TD Minimum ICAP and UCAP Requirements



# ICAP and UCAP Values



Auction ▾ Mitigation ▾ Load Forecast ▾ Calendar ▾ Rights ▾ Upload/Download

Season: Summer 2023 ▾

Month: May/2023 ▾

Display

## Publish Data

Effective Month	Publish Date	Published By
May/2023	20-Mar-2023 10:02 AM	NYISO

## Locational Calculations

Location	Forecasted Peak Load MW	Requirement %	Derating Factor %	ICAP MW Requirement	UCAP MW Requirement	UCAP Effective %
G-J Locality	15,392.7	85.4000%	4.71%	13,145.4	12,526.2	81.38%
LI	5,081.8	105.2000%	7.29%	5,346.1	4,956.3	97.53%
NYC	11,239.4	81.7000%	1.64%	9,182.6	9,032.0	80.36%
NYCA	32,048.9	120.0000%	10.14%	38,458.7	34,559.0	107.83%

## Transmission District Loads NYCA

Transmission Owner	Forecasted Peak Load MW	ICAP MW Requirement	UCAP MW Requirement
Metering Authority - Central Hudson Gas and Electric	1,026.2	1,231.4	1,106.6
Metering Authority - Consolidated Edison of NY	12,811.7	15,374.1	13,815.1
Metering Authority - Long Island Power Authority	5,060.6	6,072.7	5,457.0
Metering Authority - New York Power Authority	511.9	614.3	552.0
Metering Authority - New York State Electric & Gas	3,142.4	3,770.9	3,388.5
Metering Authority - Niagara Mohawk	6,820.6	8,184.7	7,354.8
Metering Authority - Orange and Rockland Utilities	1,117.2	1,340.6	1,204.7
Metering Authority - Rochester Gas and Electric	1,558.3	1,870.0	1,680.3
Total	32,048.9	38,458.7	34,559.0

# **Topic 3:**

## **Locational Minimum Installed Capacity Requirement for a Locality**

# Load Serving Entity (LSE) Obligation to Procure

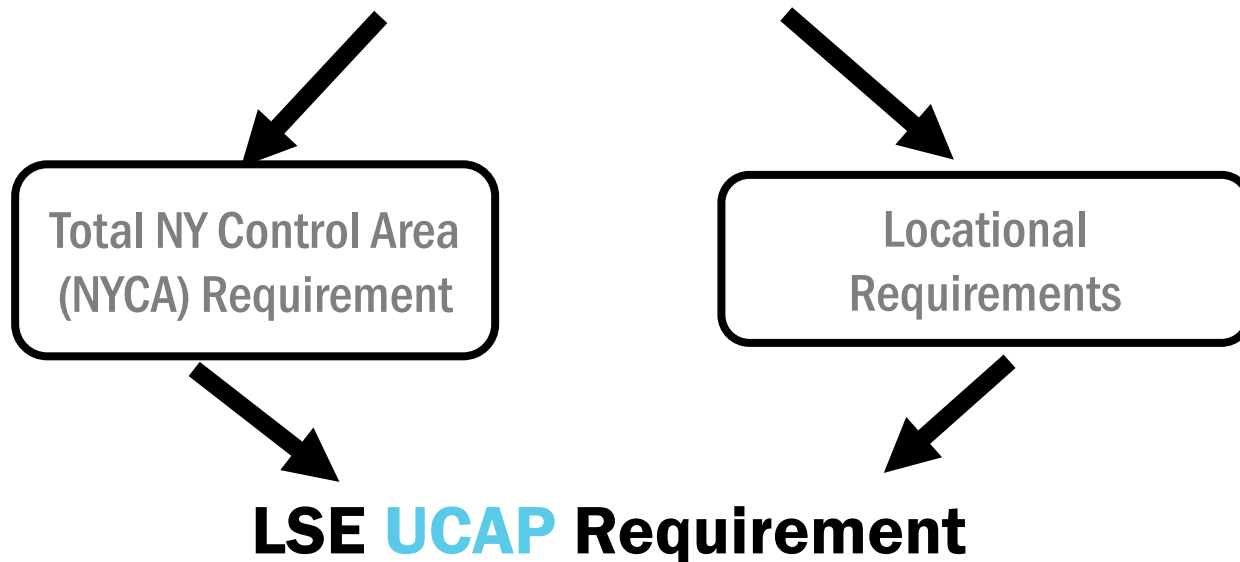
- How much must be procured?
  - All LSEs are required to purchase a portion to satisfy the NYCA UCAP requirement
  - LSEs with Load in a Locality also have a requirement to purchase a portion to satisfy the Locational UCAP requirement
    - (G-J Locality, LI and NYC)
  - Purchase obligation is adjusted for Locality Exchange MW and Spot excess purchase obligations

# LSE Obligation to Procure - Minimum Requirements

- Each LSE is required to obtain a certain amount of MW of UCAP to satisfy the NYCA Minimum UCAP Requirement
- Based on the contribution of the sum of the LSE's customers to the forecasted TD coincident peak Load calculated each Capability Period
  - For customer switching, the LSE's contribution could change from month to month

# LSE Obligation to Procure

## TD Minimum Installed Capacity Requirement





# LSE Obligation to Procure

LSEs are required to procure the Minimum **UCAP** Requirement

- Why UCAP and not ICAP?
  - Adjust requirement for historical availability of supply, incorporating derating factors

# LSE Obligation to Procure

LSEs are required to procure the Minimum **UCAP** Requirement

## ■ How much?

- Calculated by NYISO based on TO LSE load share data
- Based on TD ICAP Requirement and accounts for supply derating factors
- NYCA and Locational (G-J Locality, LI and NYC) UCAP requirements are calculated each month

# **Topic 4:**

## **Individual LSEs Unforced Capacity Requirements**

# LSE Obligation to Procure

## Locational Minimum Requirements

- **Locational Minimum Installed Capacity Requirement (“LCR”)**
  - Established for G-J Locality, NYC & LI
- **Can change each Capability Year due to, for example**
  - Locational Load forecast
  - Generating units’ derating factors
  - Performance factor changes of Special Case Resources
  - System changes due to transmission capability
- **Locational Minimum ICAP Requirement (MW) = Locality Forecasted Peak Load x Locality Requirement %**

# Capacity Requirement Percentages


## 2023/2024 Capability Year (May 1, 2023 – April 30, 2024)

NYCA	120.0% [based on IRM*]
G-J Locality Requirement	85.4% [LCR**]
Zone K (LI) Requirement	105.2% [LCR**]
Zone J (NYC) Requirement	81.7% [LCR**]

*\*Note: The NYCA requirements are established by the NYISO, based on the IRM which is set by NYSRC, and accepted by FERC and NYPSC*

*\*\*Note: Locality requirements are established by NYISO and approved by the NYISO Operating Committee*

# LSE ICAP and UCAP Values


**Installed Capacity**  
 Record LSE Load Forecasts

Auction ▾ Mitigation ▾ Certify ▾ Bids/Offers ▾ Load Forecast ▾ Calendar ▾ Rights ▾ Derating Factor ▾ DMNC ▾ SCR ▾ Billing ▾ Upload/Download

Transmission Owner: Metering Authority - Consolidated Edison of NY ▾ LSE: All ▾ Season: Summer 2021 ▾ Month: May/2021 ▾ Location: TD ▾ Type: Actual ▾ **Display**

Locational Data

Effective UCAP %

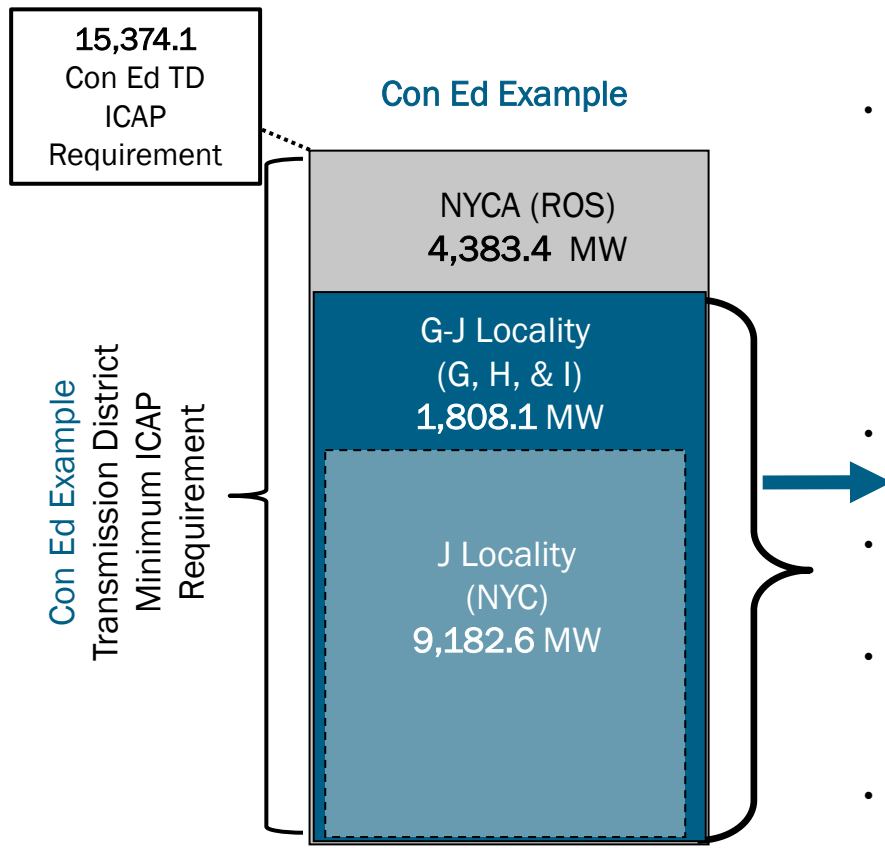
LSE Load Forecasts

LSE	Load Forecast (MW)	Fixed Load (MW)	Total Load (MW)	UCAP Requirements (MW)	Last Updated By	Last Update Date

- LSE Load Forecast in selected ‘Location:’ + Fixed Load = Total Load (ICAP)
- LSE Total Load is then converted to LSE UCAP Requirements
  - ICAP AMS screens described in the ICAP Automated Market System User’s Guide, available online

# Example: Locational Minimum ICAP Requirement

(Summer 2023 values)



For Con Ed's portion only:

- Con Ed's TD ICAP Requirement = 15,374.1

	Forecasted Peak Load (FPL)	Requirement
Con Ed TD NYCA	12,811.7	120.0%
Con Ed TD G-J	12,869.7	85.4%
Con Ed TD NYC	11,239.4	81.7%

- G-J Locational ICAP Requirement is 85.4% of G-J Locality FPL:  
 $12,869.7 \times 85.4\% = 10,990.7 \text{ MW}$
- NYC Locational ICAP Requirement is 81.7% of NYC FPL:  
 $11,239.4 \times 81.7\% = 9,182.6 \text{ MW}$
- Remaining G-J Locational Requirement after meeting the NYC requirement must be purchased in G, H, I, J:  
 $10,990.7 - 9,182.6 = 1,808.1 \text{ MW}$
- Remaining NYCA requirement can be purchased in G, H, I, J, K, or ROS:  
 $15,374.1 - 10,990.7 = 4,383.4 \text{ MW}$

# Topic 5:

## Converting Transmission District ICAP requirement to UCAP

$$\text{Locational Min UCAP} = (\text{Locational Min ICAP} - \text{LEM}) \times (1 - \text{Locational Translation Factor})$$

*[Note: In ICAP AMS, Avg. Derating Factor is shown as Derating Factor %]*



# LSE Obligation to Procure

## Locational Minimum UCAP Requirements

- ICAP requirement is translated to UCAP value

Locational Minimum UCAP =

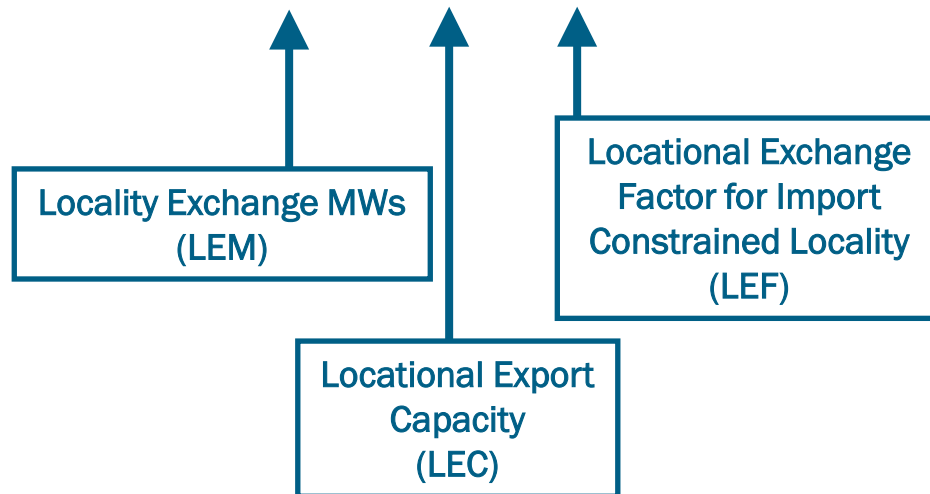
$(\text{Locational Min ICAP} - \text{Locality Exchange MWs}) \times (1 - \text{Locational Translation Factor})$

*[Note: in ICAP AMS, Avg. Derating Factor is shown as Derating Factor %]*

- LSE monthly UCAP requirement may change due to Locational Exports

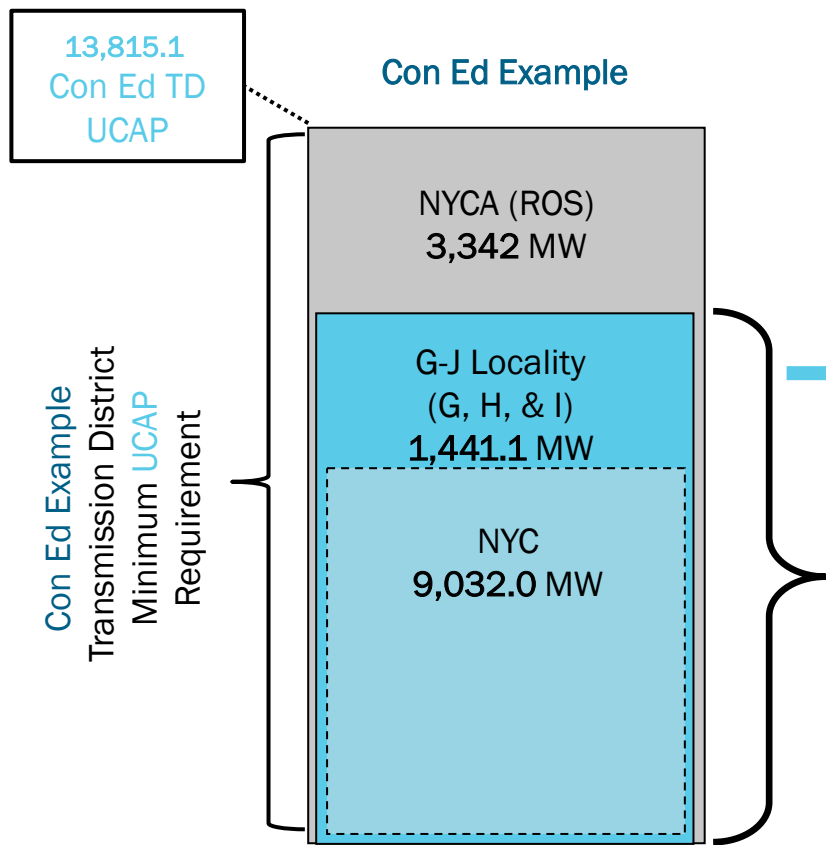
# Locality Exchange MW (LEM)

$$\text{LEM} = \text{LEC} \times \text{LEF}$$



- LEFs for a Capability Year are posted at <https://www.nyiso.com/installed-capacity-market> in the Announcements folder under Information and Announcements

# Example: Locational Minimum UCAP Requirement



(Summer 2023 values)

For Con Ed's portion only:

- Con Ed's TD UCAP Requirement = 13,815.1 MW  
 $(\text{Locational Min ICAP} - \text{LEM}) \times (1 - \text{Locational Translation Factor})$
- G-J Locational UCAP Requirement is:  
 $10,990.7 \times (1 - 4.71\%) = 10,473.1 \text{ MW}$
- NYC Locational UCAP Requirement is:  
 $9,182.6 \times (1 - 1.64\%) = 9,032.0 \text{ MW}$
- Remaining G-J Locational UCAP Requirement after meeting the NYC UCAP Requirement must be purchased in G, H, I, J:  
 $10,473.1 - 9,032.0 = 1,441.1 \text{ MW}$
- Remaining NYCA UCAP Requirement after meeting the G-J Locational UCAP Requirement can be purchased in G, H, I, J, K, or ROS:  
 $13,815.1 - 10,473.1 = 3,342 \text{ MW}$

# LSE Obligation Formula

Minimum Total **UCAP** Requirement =

Forecast Peak Load x (1 + IRM)

**NYCA Minimum ICAP Requirement** x (1 – Locational Translation Factor)

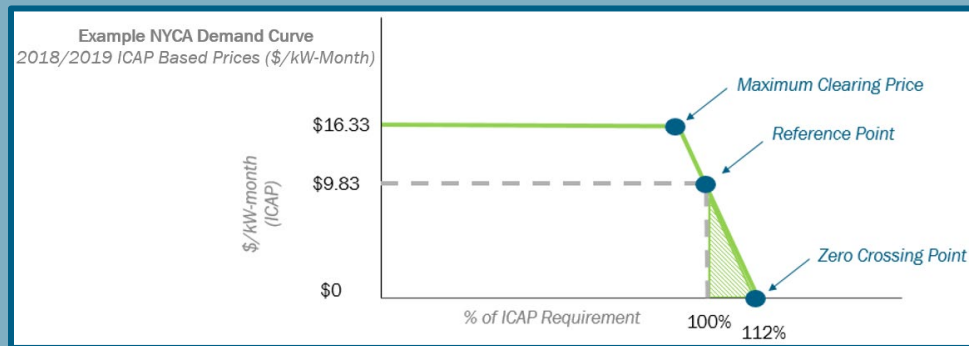
Minimum Locational **UCAP** Requirement =

Forecast Peak Load x Loc. Req.

(Minimum Locational ICAP Requirement – Locational Exchange MWs) x  
(1 - Locational Translation Factor)

# Topic 6:

## Understand LSEs Spot excess capacity purchase obligation



# LSE Additional Purchase Obligation

## ■ Purchasing Spot Excess Capacity

- Spot excess = MW offered above 100% Minimum UCAP Requirement and at a price under the Demand Curve in the ICAP Spot Market Auction
  - Increases reliability by valuing additional MW and lowers the total cost of the auction to LSEs
  - Spot excess can flow from nested locations to nesting locations
    - e.g., Spot excess purchases for NYCA can be from J, G-J, K, or ROS
  - Spot excess may be used to both:
    - Decrease LSE deficiencies in a nesting location and;
    - As additional UCAP offered under the Demand Curve in a nesting location
- Other modules will cover the Demand Curve and ICAP Spot Market Auction in more detail
  - NYISO Administered ICAP Market Auctions and Demand Curve

# LSE Additional Purchase Obligation

## ■ Purchasing Excess Capacity

- Determining amount of excess to be purchased in the ICAP Spot Market Auction and the LSE additional purchase obligation:

<b>Step 1</b>	Identify total amount of UCAP that cleared above the required amount, and deficiency awards by location
<b>Step 2</b>	Calculate portion attributed to an LSE for each location = Individual LSE Requirement / Total Locational Requirement
<b>Step 3</b>	Calculate excess to be allocated to each LSE = Portion attributed to the LSE (by location) x Excess awards (by location)

# LSE Obligation to Procure: Review

- LSEs are required to procure their portion of the Transmission District Minimum UCAP requirement
- NYISO calculates LSE minimum UCAP requirement based on TO load share data
- LSE UCAP requirement adjusted monthly for any customer switching, based on TO data and for Locality Exchange MW
- For LSEs serving load in G-J Locality, LI or NYC a specified amount of their UCAP Requirement must be purchased within the LSE's respective Locality, plus a NYCA portion
- All LSEs are obligated to purchase excess capacity that falls under the Demand Curve



# Additional Resources

- **NYISO Market Administration and Control Area Services Tariff**
- **ICAP Manual**
- **Automated Market System (ICAP AMS) User Guide**