

# Load Serving Entity Capacity Obligations

## Determining the amount of Capacity to Procure

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**Intermediate ICAP Course**

June 27-28, 2023

Remote Learning

# 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

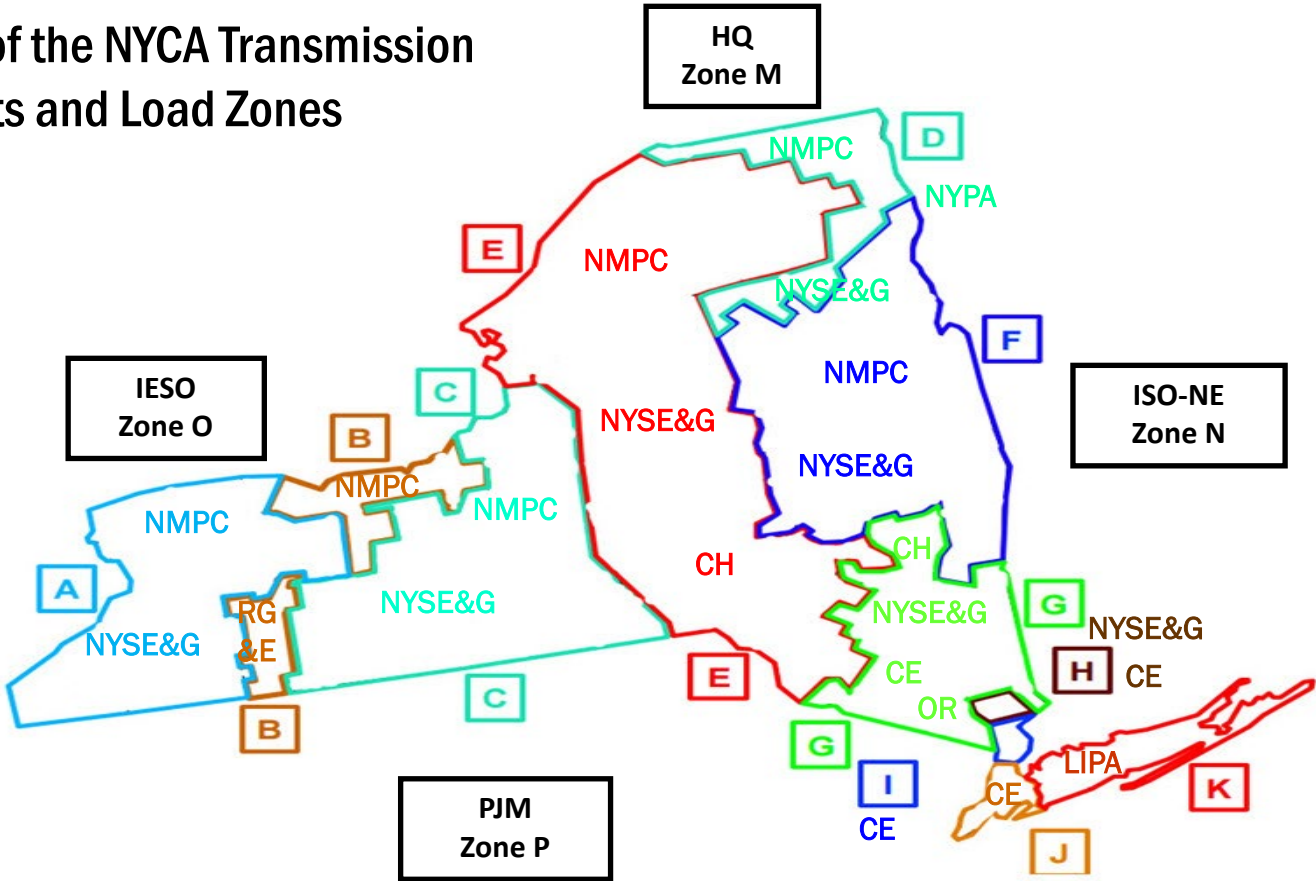
## Maps of the NYCA Transmission Districts and Load Zones

### 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.



# 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: 12,816.7 MW
  - NYCA IRM: 20.7%  
=  $12,816.7 \times (1 + 0.207) = 15,469.8 \text{ MW}$

*(Summer 2021 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

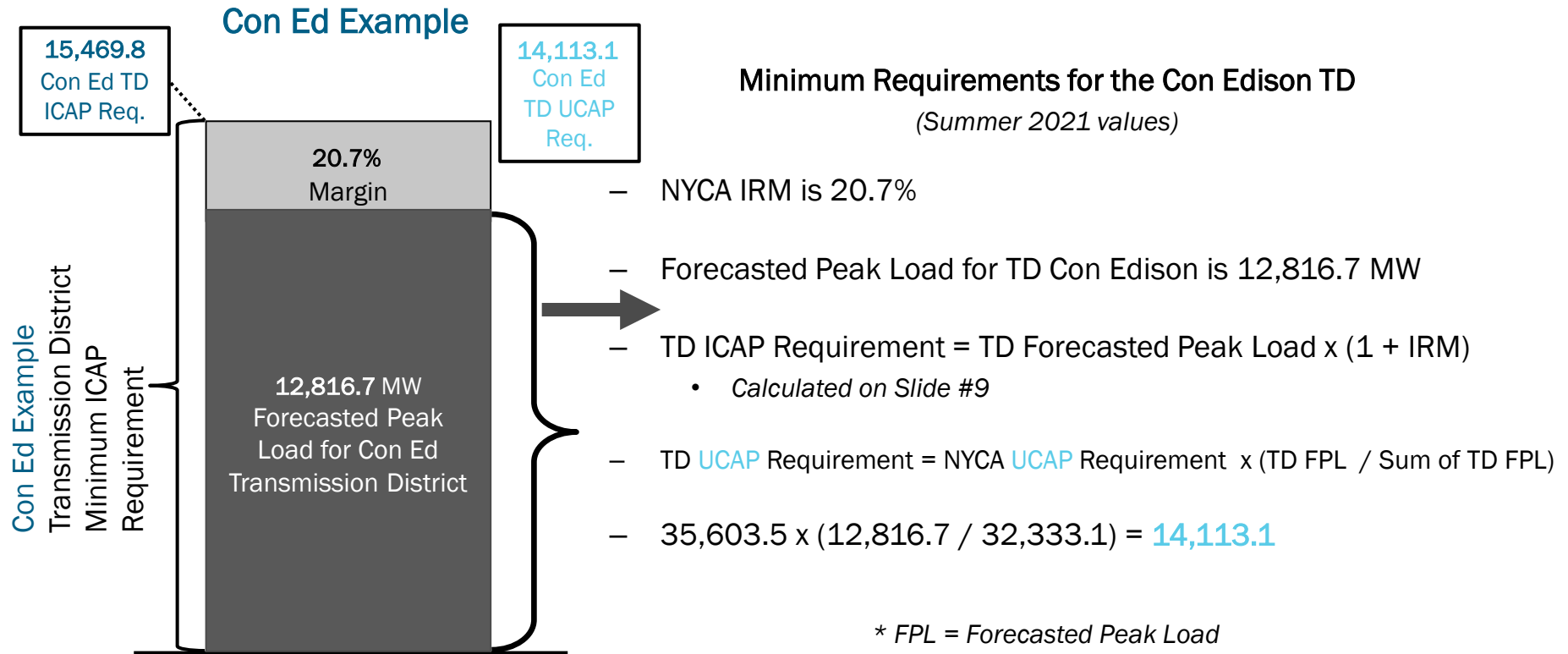
$$\text{TD Min UCAP Requirement} = \text{NYCA Min UCAP Requirement} \times \frac{\text{TD Forecasted Coincident Peak Load}}{\text{Sum of Forecasted Coincident Peak Loads for all TDs}}$$

## Con Ed Values - Summer 2021


Con Ed Forecasted Peak Load	12,816.7 MW
NYCA Min UCAP Requirement	35,603.5 MW
Sum of Forecasted Coincident Peak Loads for All TDs	32,333.1 MW
$35,603.5 \times (12,816.7 / 32,333.1) = \underline{14,113.1}$	

\*Refer to Section 3.3 of the ICAP Manual

# TD Minimum ICAP and UCAP Requirements



# ICAP and UCAP Values



**Installed Capacity**  
View ICAP and UCAP Calculations

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

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Season: Summer 2021 ▾
Month: May/2021 ▾
Display

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**Publish Data**

Effective Month	Publish Date	Published By
May/2021	06-Apr-2021 03:48 PM	NYISO

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**Locational Calculations**

Location	Forecasted Peak Load MW	Requirement %	Derating Factor %	ICAP MW Requirement	UCAP MW Requirement	UCAP Effective %
G-J Locality	15,411.3	87.5868%	3.61%	13,498.3	13,011.0	84.43%
LI	5,248.6	102.9000%	4.91%	5,400.8	5,135.6	97.85%
NYC	11,199.0	80.3000%	2.69%	8,992.8	8,750.9	78.14%
NYCA	32,333.1	120.7000%	8.77%	39,026.1	35,603.5	110.11%

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**Transmission District Loads NYCA**

Transmission Owner	Forecasted Peak Load MW	ICAP MW Requirement	UCAP MW Requirement
Metering Authority - Central Hudson Gas and Electr	1,104.5	1,333.1	1,216.2
Metering Authority - Consolidated Edison of NY	12,816.7	15,469.8	14,113.1
Metering Authority - Long Island Power Authority	5,279.7	6,372.6	5,813.7
Metering Authority - New York Power Authority	420.8	507.9	463.4
Metering Authority - New York State Electric & Gas	3,244.8	3,916.5	3,573.0
Metering Authority - Niagara Mohawk	6,793.0	8,199.2	7,480.1
Metering Authority - Orange and Rockland Utilities	1,108.4	1,337.8	1,220.5
Metering Authority - Rochester Gas and Electric	1,565.2	1,889.2	1,723.5
Total	32,333.1	39,026.1	35,603.5

# **Topic 3:**

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

# Load Serving Entity (LSE) Obligation to Procure

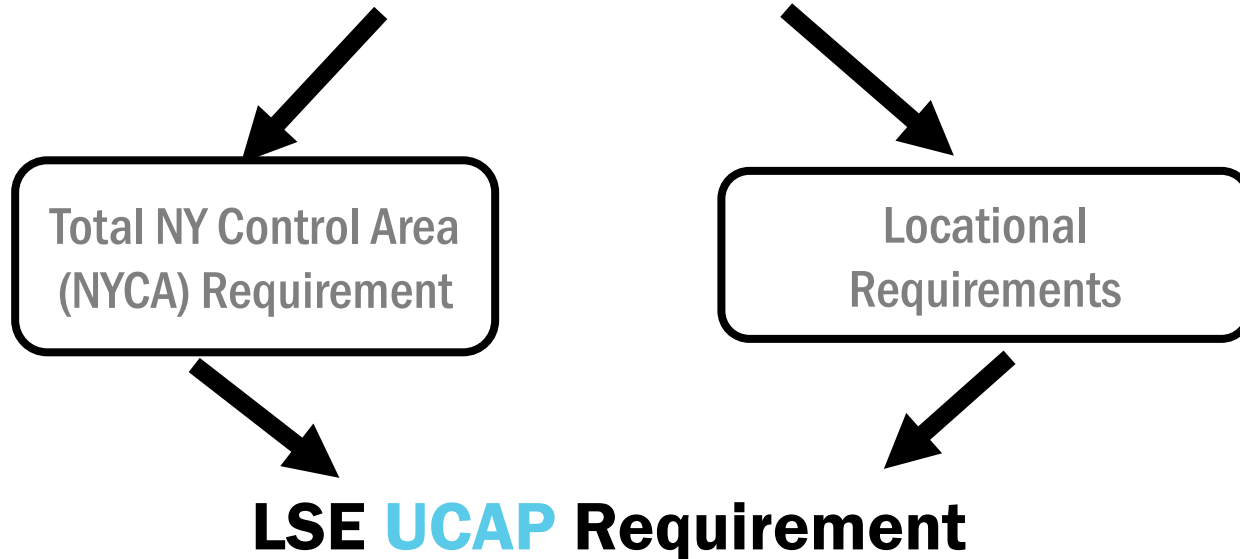
- How much must be procured?
  - All LSEs are required to purchase a portion to satisfy the NYCA UCAP requirement
  - LSEs with Load in a Locality also have a requirement to purchase a portion to satisfy the Locational UCAP requirement
    - (G-J Locality, LI and NYC)
  - Purchase obligation is adjusted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

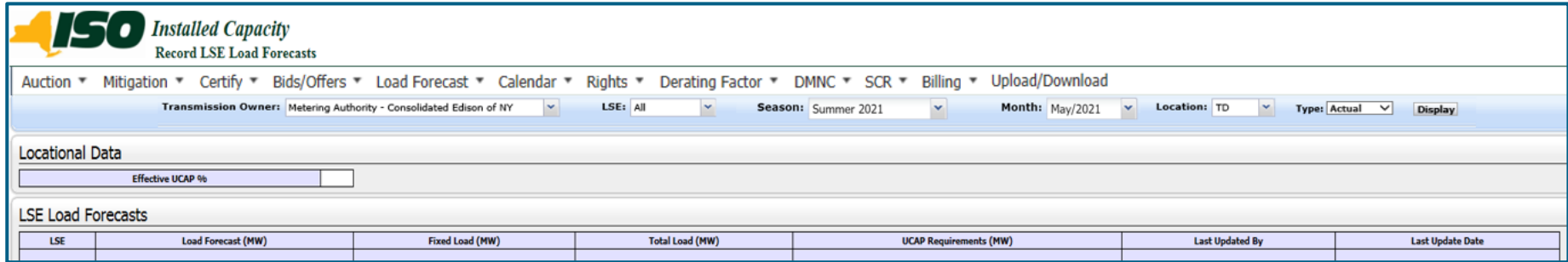
## 2021/2022 Capability Year (May 1, 2021 – April 30, 2022)

NYCA	120.7% [based on IRM*]
G-J Locality Requirement	87.6% [LCR**]
Zone K (LI) Requirement	102.9% [LCR**]
Zone J (NYC) Requirement	80.3% [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

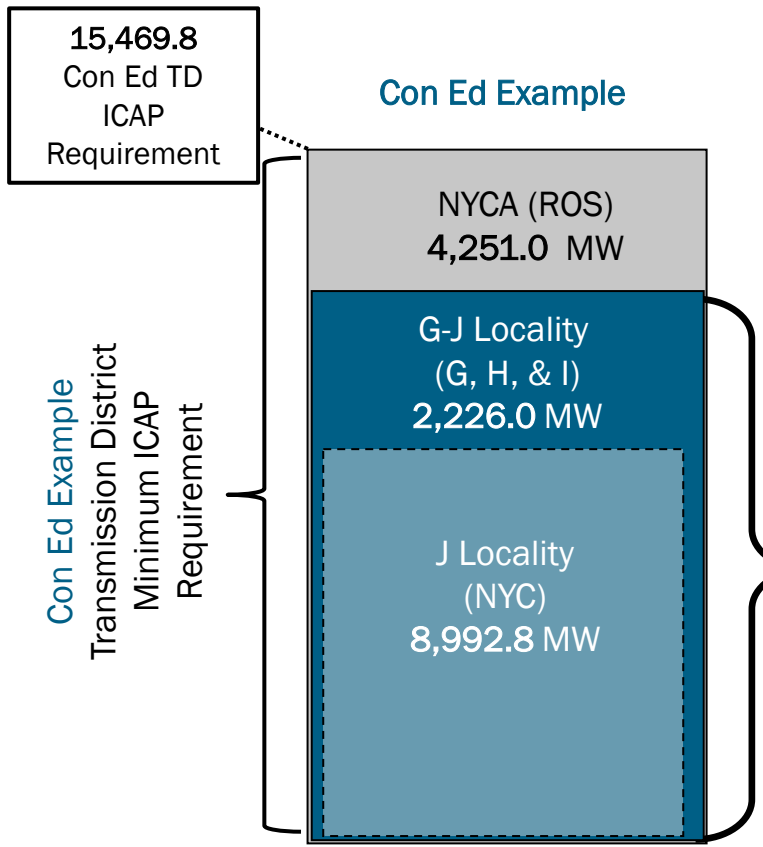


The screenshot shows the 'ISO Installed Capacity Record LSE Load Forecasts' interface. It includes a navigation menu with options like Auction, Mitigation, Certify, Bids/Offers, Load Forecast, Calendar, Rights, Derating Factor, DMNC, SCR, Billing, and Upload/Download. Below the menu are filters for Transmission Owner (Metering Authority - Consolidated Edison of NY), LSE (All), Season (Summer 2021), Month (May/2021), Location (TD), and Type (Actual). There is also a 'Display' button. Below the filters is a 'Locational Data' section with an 'Effective UCAP %' input field. At the bottom is an 'LSE Load Forecasts' table with the following columns: LSE, Load Forecast (MW), Fixed Load (MW), Total Load (MW), UCAP Requirements (MW), Last Updated By, and 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 2021 values)



## For Con Ed's portion only:

- Con Ed's TD ICAP Requirement = **15,469.8**  
- Calculated on Slide #12

	Forecasted Peak Load (FPL)	Requirement
Con Ed TD NYCA	12,816.7	120.7%
Con Ed TD G-J	12,808.8	87.6%
Con Ed TD NYC	11,199.0	80.3%

- NYC Locational ICAP Requirement is 80.3% of NYC FPL:  
 $11,199.0 \times 80.3\% = 8,992.8 \text{ MW}$
- G-J Locational ICAP Requirement is 87.6% of G-J Locality FPL:  
 $12,808.8 \times 87.6\% = 11,218.8 \text{ MW}$
- Remaining G-J Locational Requirement after meeting the NYC requirement must be purchased in G, H, I, J:  
 $11,218.8 - 8,992.8 = 2,226.0 \text{ MW}$
- Remaining NYCA requirement can be purchased in G, H, I, J, K, or ROS:  
 $15,469.8 - 11,218.8 = 4,251.0 \text{ MW}$

# Topic 5: Converting Transmission District ICAP requirement to UCAP

Locational Min UCAP = (Locational Min ICAP – LEM) x (1-Avg. Derating 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 =**

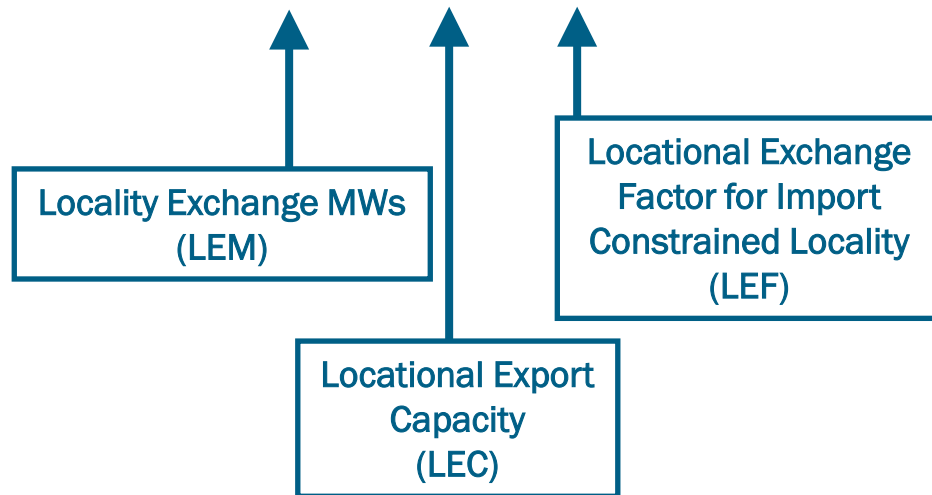
**(Locational Min ICAP – Locality Exchange MWs) x (1 - Avg. Derating Factor)**

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

- LSE monthly UCAP requirement may change due to Locational Exports

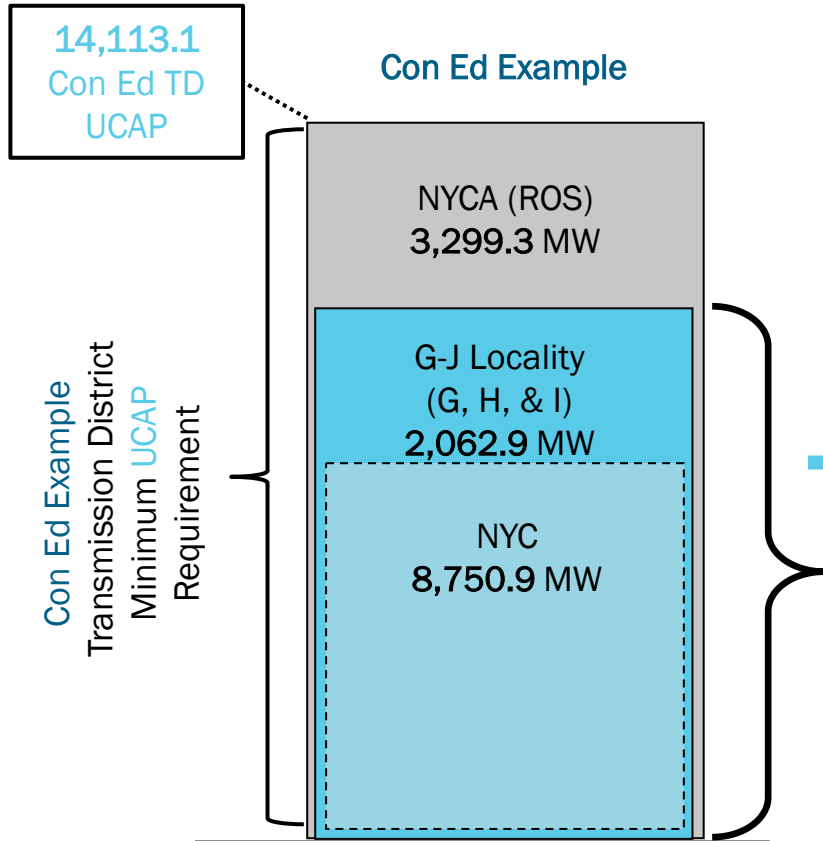
# Locality Exchange MW (LEM)

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



- 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 2021 values)

For Con Ed's portion only:

- Con Ed's TD UCAP Requirement = **14,113.1** MW
  - Calculated on Slide #13

**(Locational Min ICAP – LEM) x (1 – Avg. Derating Factor)**

- NYC Locational UCAP Requirement is:  
 $8,992.8 \times (1 - 2.69\%) = 8,750.9$  MW
- G-J Locational UCAP Requirement is:  
 $11,218.8 \times (1 - 3.61\%) = 10,813.8$  MW
- Remaining G-J Locational UCAP Requirement after meeting the NYC UCAP Requirement must be purchased in G, H, I, J:  
 $10,813.8 - 8,750.9 = 2,062.9$  MW
- Remaining NYCA UCAP Requirement after meeting the G-J Locational UCAP Requirement can be purchased in G, H, I, J, K, or ROS:  
 $14,113.1 - 10,813.8 = 3,299.3$  MW

# LSE Obligation Formula

Minimum Total **UCAP** Requirement =

Forecast Peak Load x (1 + IRM)

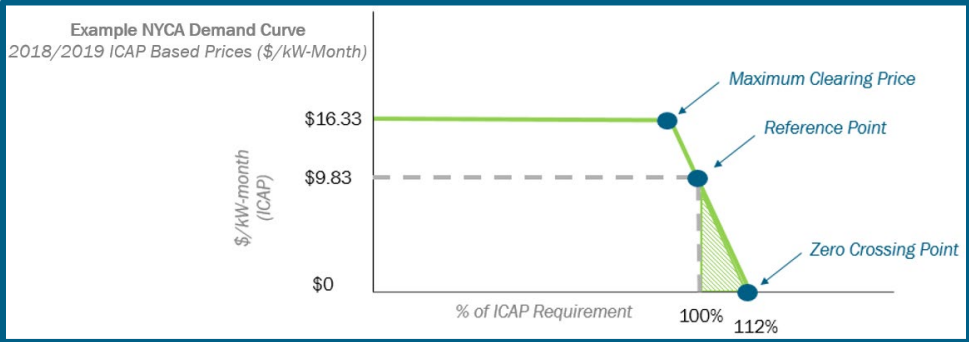
**NYCA Minimum ICAP Requirement** x (1 – NYCA Derating Factor)

Minimum Locational **UCAP** Requirement =

Forecast Peak Load x Loc. Req.

(**Minimum Locational ICAP Requirement – Locational Exchange MWs**) x  
(1 - Locational Derating 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**