

Amount of Capacity Qualified to Offer

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Intermediate ICAP Course

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Remote Learning

Topics of Discussion

- **UCAP – Amount of Capacity Suppliers are Qualified to Offer**
 - Components of UCAP
- **Deliverability**
 - Capacity Resource Interconnection Service (CRIS)
- **Duration Adjustment Factor**
- **Derating Factors**
 - Calculating EFORd
- **Calculation of UCAP for other Suppliers**

Topics of Discussion, cont.

- External Capacity Resources
- Unforced Capacity Deliverability Rights (UDRs)/ External-to-ROS
Capacity Deliverability Rights (EDRs)
- Key Responsibilities of ICAP Supplier
 - Installed Capacity Equivalent (ICE) for ICAP Suppliers

Topic 1:

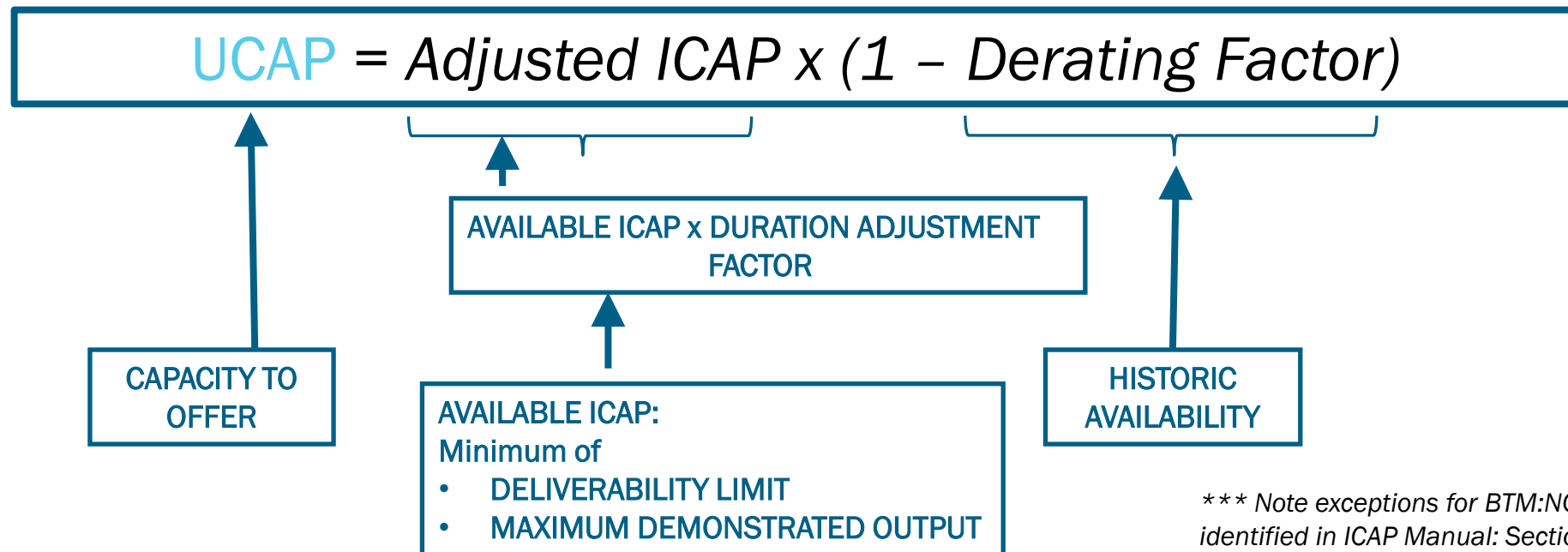
UCAP – Amount of Capacity Suppliers are Qualified to Offer

Unforced Capacity (UCAP)

- **Tariff Definition:** *The measure by which Installed Capacity Suppliers will be rated, in accordance with formulae set forth in the ISO Procedures, to quantify the extent of their contribution to satisfy the NYCA Installed Capacity Requirement, and which will be used to measure the portion of that NYCA Installed Capacity Requirement for which each LSE is responsible*
- A generator may sell Capacity equal to its maximum demonstrated output adjusted for the CRIS limit and by its historic availability
- UCAP is calculated each month for Resources qualified to supply capacity

UCAP for Resources

- In general, the following are inputs to the UCAP Calculation
 - Maximum Demonstrated Output
 - Deliverability Limit
 - Duration Adjustment Factor
 - Historic Availability



*** Note exceptions for BTM:NG Resources identified in ICAP Manual: Section 4.15

Topic 2:

Deliverability

Capacity Resource Interconnection Service (CRIS)

Deliverability Limit

- **Capacity Resource Interconnection Service (CRIS)**
 - Is a threshold requirement for an internal generator or an EDR or UDR facility with a terminus in a Locality to participate in the NYISO Installed Capacity market
 - Participation up to the extent of its CRIS
 - CRIS can be obtained through
 - A transfer at the same location
 - A transfer to a different location; subject to a deliverability evaluation in a Class Year Study
 - A Class Year Study after a NYISO determination that the capacity is deliverable without a cost allocation, or after a commitment at the completion of the Class Year to pay certain allocated costs

Class Year Study and CRIS Limitations

■ Class Year Deliverability Study

- Conducted for either:
 - New resources that request CRIS in the Interconnection Process *or*
 - Existing resources that request to increase their CRIS
- Conducted by the NYISO to:
 - Determine the amount of capacity the new or incremental project can deliver *and*
 - To identify any costs associated with such resource's ability to acquire such CRIS
- ICAP of each resource is limited by the resource's CRIS
 - ICAP of a resource is the lesser of CRIS or CRIS-adjusted DMNC

Available ICAP for Internal Resources

- Available ICAP_{Summer} =
Minimum (Summer CRIS MW Cap, Summer DMNC)

- Available ICAP_{Winter} =
Minimum (Winter CRIS MW Cap, Winter DMNC)

or

Winter CRIS % x Winter DMNC

Topic 3:

Duration Adjustment Factor

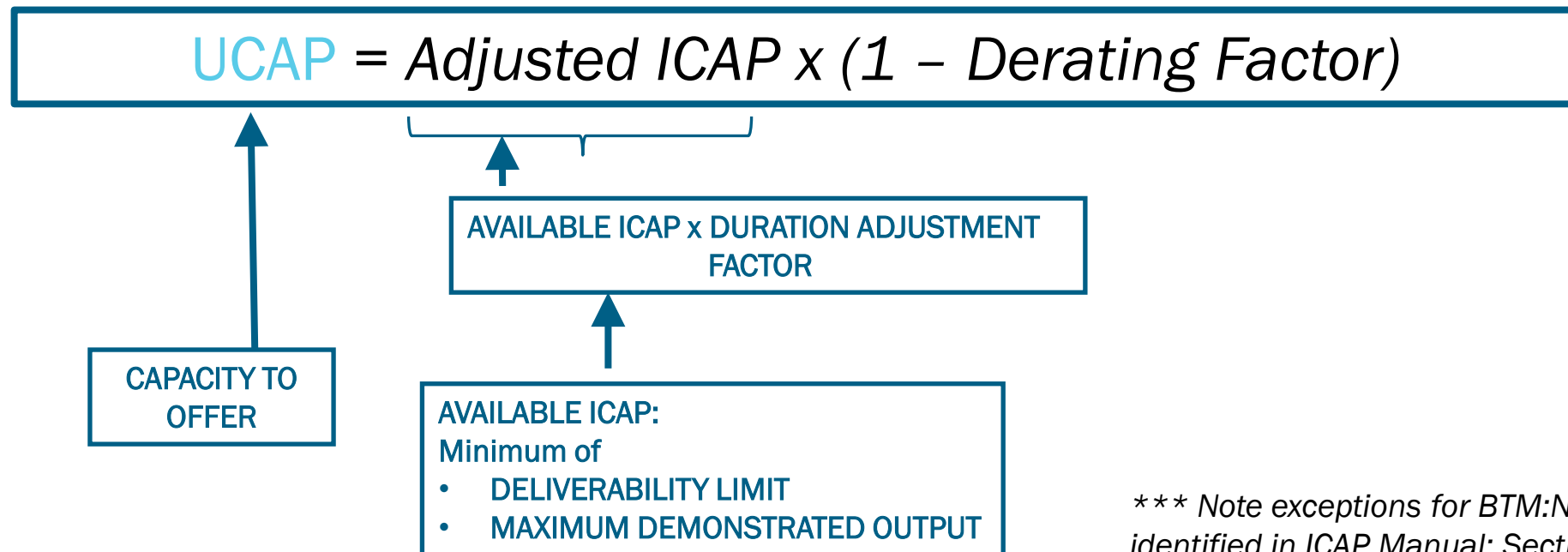
Duration Adjustment Factor

	Incremental Penetration of Resources with EDLs	
	Less than 1000 MW	1000 MW and greater
Energy Duration Limitation (hours)	Duration Adjustment Factor (%)	Duration Adjustment Factor (%)
2	45	37.5
4	90	75
6	100	90
8	100	100

- Duration Adjustment Factor:** The value of Installed Capacity, expressed as a percentage, for a Resource
 - Each Energy Duration Limitation has a corresponding Duration Adjustment Factor
 - The Duration Adjustment Factor is a component of Adjusted ICAP, UCAP, and therefore capacity payment for the resource

UCAP for Resources

- In general, the following are inputs to the UCAP Calculation
 - Maximum Demonstrated Output
 - Deliverability Limit
 - Duration Adjustment Factor
 - Historic Availability



*** Note exceptions for BTM:NG Resources identified in ICAP Manual: Section 4.15

Topic 4:

Derating Factors

UCAP for Resources

- In general, the following are inputs to the UCAP Calculation
 - Maximum Demonstrated Output
 - Deliverability Limit
 - Duration Adjustment Factor
 - Historic Availability

$$\text{UCAP} = \text{Adjusted ICAP} \times (1 - \text{Derating Factor})$$



HISTORIC
AVAILABILITY

*** Note exceptions for BTM:NG Resources identified in ICAP Manual: Section 4.15

UCAP for Resources

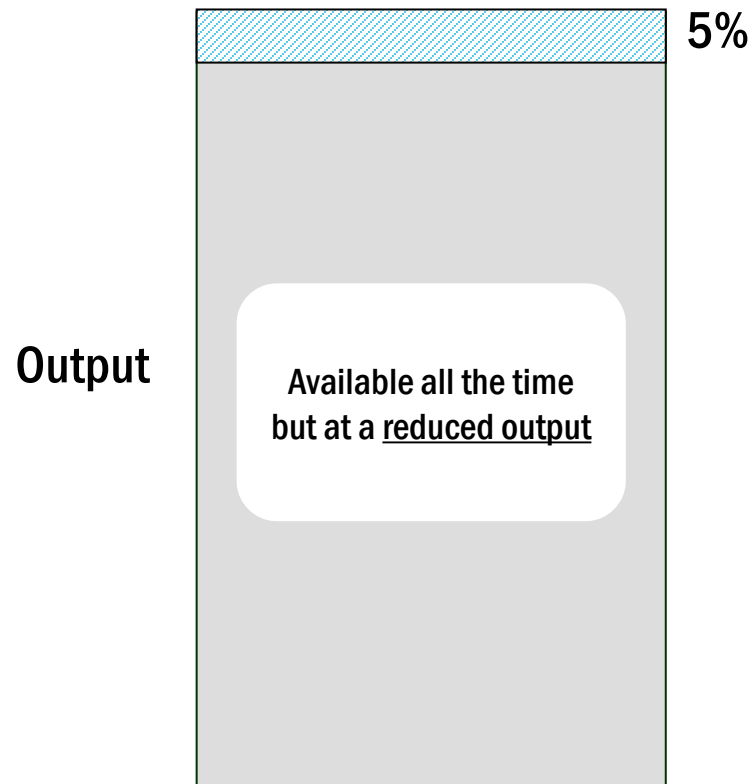
- **Historical Availability**
- **Based on derating factors**
 - Calculated using Equivalent Demand Forced Outage Rate (EFORd) or equivalent (e.g. performance factor)
- **Equivalent Demand Forced Outage Rate (EFORd)**
 - Represents the portion of time a unit is in demand, but is unavailable due to forced outages and forced derates
 - NYISO calculates EFORd for applicable generators based on GADS Data

**Refer to the Appendix regarding Generator Outage Scheduling*

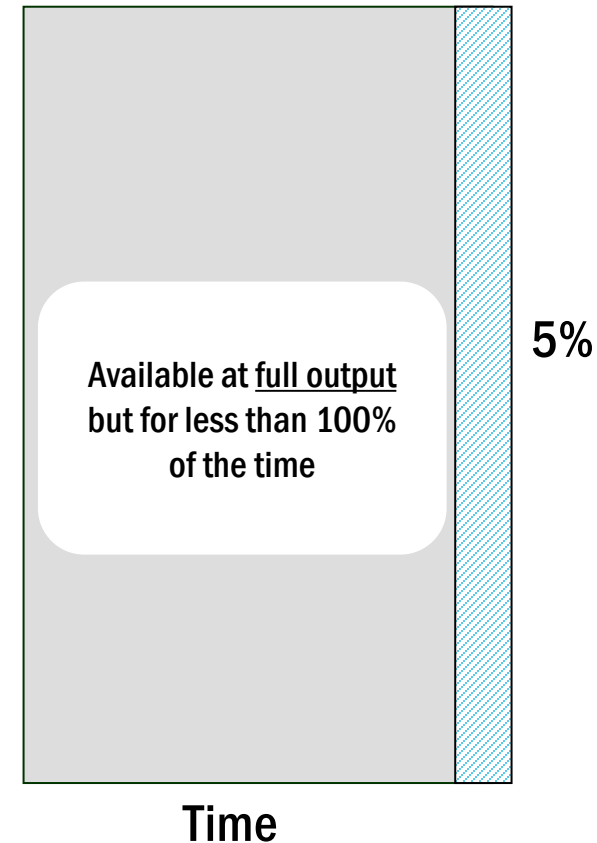
Historic Availability

Derates and Outages

Forced Derate
 $EFORd = .05$



Forced Outage
 $EFORd = .05$



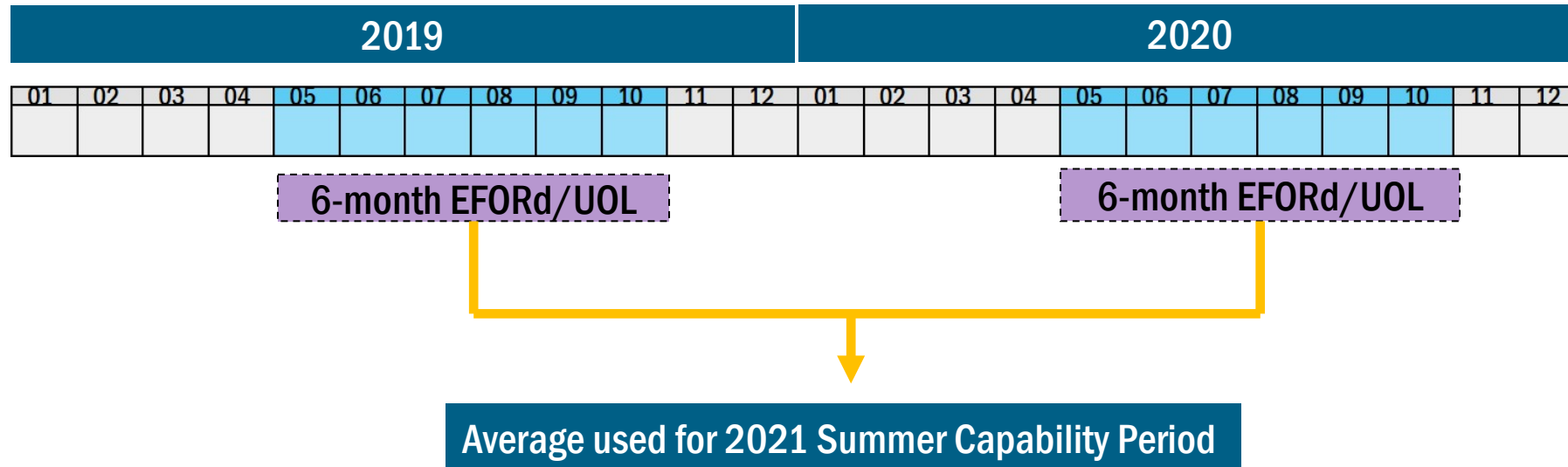
Average EFORd Derating Factors

- For resource types that are derated using an EFORd, the seasonal derating factor (AEFORd) is calculated as the average of the previous two like Capability Period EFORds

**ICAP Manual, Section 4.5*

Summer UCAP Calculation

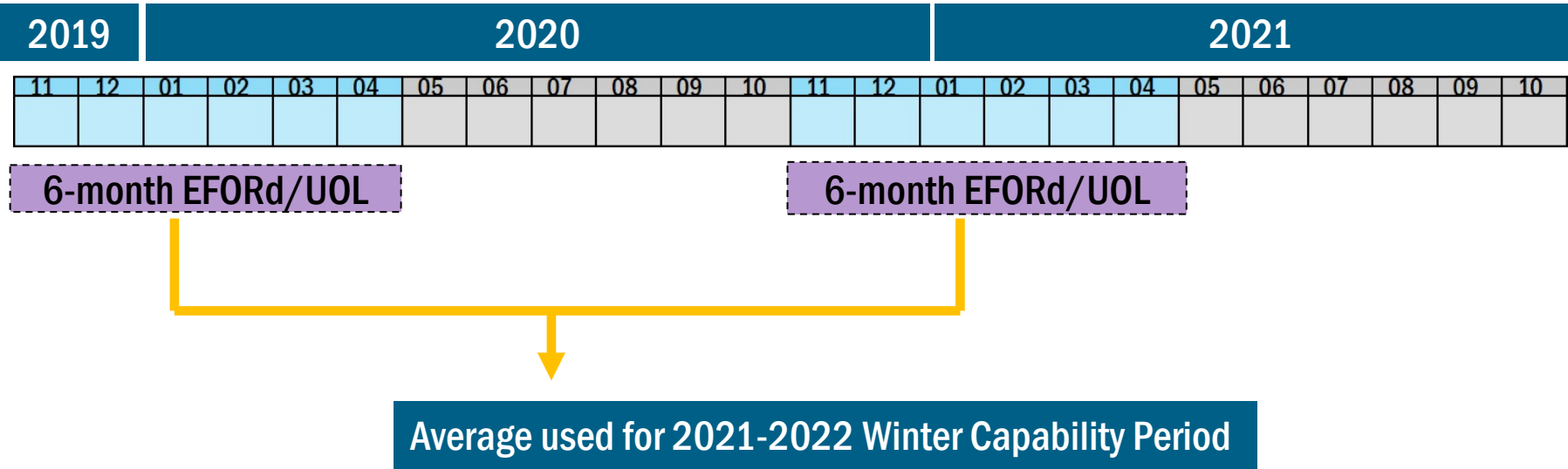
NYISO will use an average of two 6-month EFORd/UOL calculations to establish a Summer ICAP to UCAP derating factor (Avg EFORd, AEFORd_{summer})



Note: Resources with an EDL, which receive an EFORd derating factor, will have their EFORd calculated over the applicable PLW

Winter UCAP Calculation

NYISO will use an average of two 6-month EFORd/UOL calculations to establish a Winter ICAP to UCAP derating factor (Avg EFORd, $AEFORd_{winter}$)



Note: Resources with an EDL, which receive an EFORd derating factor, will have their EFORd calculated over the applicable PLW

Derating Factors

<u>Unit Type</u>	<u>Derating Factor</u>
Conventional technology Generator, Energy Limited Resource (ELR), Capacity Limited Resource (CLR)	Equivalent Demand Forced Outage Rate (EFORd)
Special Case Resources (SCR)	Historical Performance Factor: Performance Factor value calculated with data provided outside of the NERC GADS process
Intermittent Power Resources (Wind, Solar, Landfill Gas)	Actual Performance “ Production Factor ”: Actual production data during peak load periods is used to calculate derating factor
Control Area System Resources	Based on Control Area Resource and Load (CARL) Data
Limited Control Run-of-River Hydro	Actual Production Data: Performance during peak load periods is used to calculate derating factor (“Hourly Net Energy”)
Behind the Meter Net Generation	Includes: Generator component – uses EFORd Load component – uses NYCA (“system wide”) translation factor
Energy Storage Resource (ESR)	Calculated using the Average Unavailability Factor (AUF) , based on the resource’s availability to the Real Time Market System
Co-located Storage Resource (CSR)	Calculated as Derating Factor for each individual resource type (IPR and ESR), adjusted for Derating Factor for shared Point of Injection (POI)

Locational Derating Factors

- **Calculated for the following:**
 - G-J Locality – Includes only generators in Zones G-J
 - LI – Includes only generators in Zone K
 - NYC – Includes only the generators in Zone J
 - NYCA – Includes all NYS generators

Average Derating Factors		
Location	Summer 2022	Winter 2021-2022
G-J Locality	4.76%	4.46%
Long Island	6.27%	7.21%
New York City	3.26%	2.48%
NYCA	9.78%	8.40%

Topic 5: UCAP Calculations for other Suppliers

UCAP for Intermittent Power Resources

- Includes Wind, Solar and Landfill Gas
- New Resources:
 - $UCAP = \text{Nameplate Capacity} * \text{Applicable UCAP \%}$
- Existing Resources:
 - $UCAP = \text{Nameplate Capacity} * \text{Production Factor}$
- Production Factor based on historic generating data during peak load hours of previous like capability season

6- hour Peak Load Window	
Summer Capability Period	Winter Capability Period
HB 13 through HB 18	HB 16 through HB 21

8- hour Peak Load Window	
Summer Capability Period	Winter Capability Period
HB 12 through HB 19	HB 14 through HB 21

UCAP for Behind the Meter Net Generation (BTM:NG) Resources

- Consists of a Gen UCAP component and a Load UCAP component

Where:

Gen UCAP = Adjusted DMGC x (1-EFORd)

Load UCAP = Adjusted Host Load x (1 - NYCA translation factor)

- **Net-UCAP = Max (Min ([Gen UCAP] - [Load UCAP], Net-ICAP), 0)**

Where:

Net-ICAP = Adjusted DMGC - Adjusted Host Load

And: Adjusted DMGC = Min(DMGC (or DMNC), AHL + Injection Limit, AHL + CRIS)

Hydros (LCRoR)

- **Uses a rolling average of the hourly net energy provided by each resource**
 - Calculated separately for both Summer and Winter Capability Periods
 - Based on hourly average performance (MW) during the 20 highest NYCA integrated real time peak load hours in each of the five previous Summer or Winter Capability Periods (100 hours total)
 - Peak hours for Limited Control Run-of-River Hydro Resources are posted on NYISO website
 - **ICAP Info and Announcements:**

**ICAP Manual: Section 3.4 and MST 5.12.6.1*

UCAP for Control Area System Resources

- NYISO calculates net projected capacity based on forecast data submitted by the Control Area System Resource
 - Forecast is for the Capability Period; actual monthly MW amounts are reported
- Net projected capacity then adjusted based on Control Area Resource and Load (CARL) data

**MST 5.12.5.2; ICAP Manual: Section 4.4.3 and Attach. J*

UCAP for Energy Storage Resources (ESR)

- For an ESR, the UCAP for a specific capability period is calculated as:

$$\text{UCAP} = \text{Adjusted ICAP} * (1 - \text{Derating Factor})$$

- Where, the derating factor is calculated as the Average Unavailability Factor or the AUF
 - Based upon time-weighted UOL availability evaluated against the ICAP sold
- Default Derating Factors for ESRs just entering the market:
 - Until there are 3 or more ESRs, the NYISO will use the 1-year NERC reported EFORd for Pumped Storage

UCAP for Co-located Storage Resources (CSR)

- UCAP calculation methods for each CSR generator will be similar to existing methods based on resource type, with small adjustments to account for shared Point of Injection (POI) availability
 - ESR: UCAP calculations will account for any derates at the POI (due to inverter limitations), along with calculation of derating factor for the resource itself
 - While the existing ESR UCAP calculation only measures availability of the ESR itself, the proposed CSR ESR UCAP calculation will multiply the POI availability by the ESR availability
 - Wind or Solar IPR: UCAP calculations will also be limited by the POI injection capability, by taking the minimum of POI injection capability and intermittent output when calculating the Production Factor for CSR intermittent units

UCAP for Special Case Resources (SCRs)

- **SCRs (Mandatory reduction: 100kW or higher)**
 - Interruptible Loads
 - Qualified behind-the-meter Local Generator
 - SCR Aggregation

- **Pledged amount of load reduction as increased by Transmission District loss factor (TLF) as adjusted by historical performance factor**

**ICAP Manual: Section 4.12*

UCAP for Special Case Resources (SCRs)

- SCR UCAP is the Pledged amount of load reduction as increased by Transmission District loss factor (TLF) as adjusted by historical performance factor

$$\text{SCR ICAP} = \text{Pledged amount} \times (1 + \text{TLF})$$

- Use Performance Factor rather than derating factor
 - Two successive seasonal performance factors (during event and tests)
 - 1-hour performance test within Capability Period or 1-hour mandatory event data
 - Includes best 4 hours of each mandatory event within a Capability Period

$$\text{SCR UCAP} = \text{SCR ICAP} \times \text{Applicable Performance Factor}$$

**ICAP Manual: Section 4.12*

Topic 6:

External Capacity Resources

External Capacity Resources

- **External CRIS Rights: (ECRs)**
 - One time opportunity to convert Grandfathered Rights to External CRIS Rights or awarded through the Class Year process
 - Contract or Non-Contract Commitment
 - Consequences for not offering

- **Capacity associated with Existing Transmission Capacity for Native Load (“ETCNL”)**

- **Import Rights**
 - First Come First Served Basis: Subject to Import Limits

**External Installed Capacity Supplier requirements listed in ICAP Manual, Section 4.9*

External Capacity Resources and Import Limits

- Import Limits are set to determine the amount of capacity that can be imported into NYCA using the “First Come First Serve” Process

- Limit is established after considering External CRIS Rights
 - Established by NYISO
 - Based on reliability studies
 - Determined annually
 - Available Import Rights are based on Import Limits
 - Calculated for each month of upcoming Capability Period

**Import Limits: ICAP Manual, Section 4.9.6*

External Capacity Resources: Import Limits - Maximum provided by resources outside NYCA

(Excluding Resources Using UDRs, ETCNL, and External CRIS Rights)

2022-2023 Capability Year

Amount of External ICAP Permitted to be Allocated	Total (MW)	Grandfathered (MW)	Remaining (MW)
PJM	1146	38	1108
ISO-NE	122	0	122
Ontario	23	0	23
Quebec via Chateauguay	1115	1110 (Apr-Nov) 239 (Dec-Feb) 259 (Mar)	5 (Apr-Nov) 876 (Dec-Feb) 856 (Mar)
Quebec via Cedars	0	0	0
Total NYCA Interfaces	2406		

*** Neighboring Control Area rules must provide that the resource will not be recalled or curtailed to satisfy the Control Areas own load

External Capacity Resources and Import Limits

- **NYISO Allocates Import Rights accordingly**
 - First Come First Serve (FCFS) Basis
 - Import Rights from non-fully allocated External Interface are made available on a FCFS basis
- **Capacity must be deliverable to NYCA border**
- **Capacity imports offered must be associated with the individual point ID at the time of the offer**

**OATT Attachment S and ICAP Manual Section 4.9*

External Rights Availability [Import Rights] Summer 2022 Capability Period

	May	June	July	August	September	October
NYCA						
Maximum Limit	2,406.0	2,406.0	2,406.0	2,406.0	2,406.0	2,406.0
GFR/ETCNL Rights Secured	38.0	38.0	38.0	38.0	38.0	38.0
External CRIS Secured	1,110.0	1,110.0	1,110.0	1,110.0	1,110.0	1,110.0
First Come First Served Secured / Auctions	0.0	0.0	0.0	0.0	0.0	0.0
Remaining	1,258.0	1,258.0	1,258.0	1,258.0	1,258.0	1,258.0
HQ						
Maximum Limit	1,115.0	1,115.0	1,115.0	1,115.0	1,115.0	1,115.0
GFR/ETCNL Rights Secured	0.0	0.0	0.0	0.0	0.0	0.0
External CRIS Secured	1,110.0	1,110.0	1,110.0	1,110.0	1,110.0	1,110.0
First Come First Served Secured / Auctions	0.0	0.0	0.0	0.0	0.0	0.0
Remaining	5.0	5.0	5.0	5.0	5.0	5.0
IESO						
Maximum Limit	23.0	23.0	23.0	23.0	23.0	23.0
GFR/ETCNL Rights Secured	0.0	0.0	0.0	0.0	0.0	0.0
External CRIS Secured	0.0	0.0	0.0	0.0	0.0	0.0
First Come First Served Secured / Auctions	0.0	0.0	0.0	0.0	0.0	0.0
Remaining	23.0	23.0	23.0	23.0	23.0	23.0
NE						
Maximum Limit	122.0	122.0	122.0	122.0	122.0	122.0
GFR/ETCNL Rights Secured	0.0	0.0	0.0	0.0	0.0	0.0
External CRIS Secured	0.0	0.0	0.0	0.0	0.0	0.0
First Come First Served Secured / Auctions	0.0	0.0	0.0	0.0	0.0	0.0
Remaining	122.0	122.0	122.0	122.0	122.0	122.0
PJM						
Maximum Limit	1,146.0	1,146.0	1,146.0	1,146.0	1,146.0	1,146.0
GFR/ETCNL Rights Secured	38.0	38.0	38.0	38.0	38.0	38.0
External CRIS Secured	0.0	0.0	0.0	0.0	0.0	0.0
First Come First Served Secured / Auctions	0.0	0.0	0.0	0.0	0.0	0.0
Remaining	1,108.0	1,108.0	1,108.0	1,108.0	1,108.0	1,108.0

**Topic 7: Unforced Capacity
Deliverability Rights
(UDRs)/External-to-ROS
Deliverability Rights (EDRs)**

Unforced Capacity Deliverability Rights (UDRs)

- Rights associated with a specific controllable and schedulable transmission facility with a terminus in a Locality
 - Either from an External Control Area or a non-constrained region in NYCA
- Allows capacity external to the area to be treated as if it were physically located in the Locality
- Must have CRIS

External-to-ROS Deliverability Rights (EDRs)

- Rights associated with incremental transfer capability on a new or existing Scheduled Line over an External Interface, with a terminus in Rest of State
- Allows capacity external to the area to be treated as if it were physically located in ROS
- Must have CRIS

UDRs and EDRs

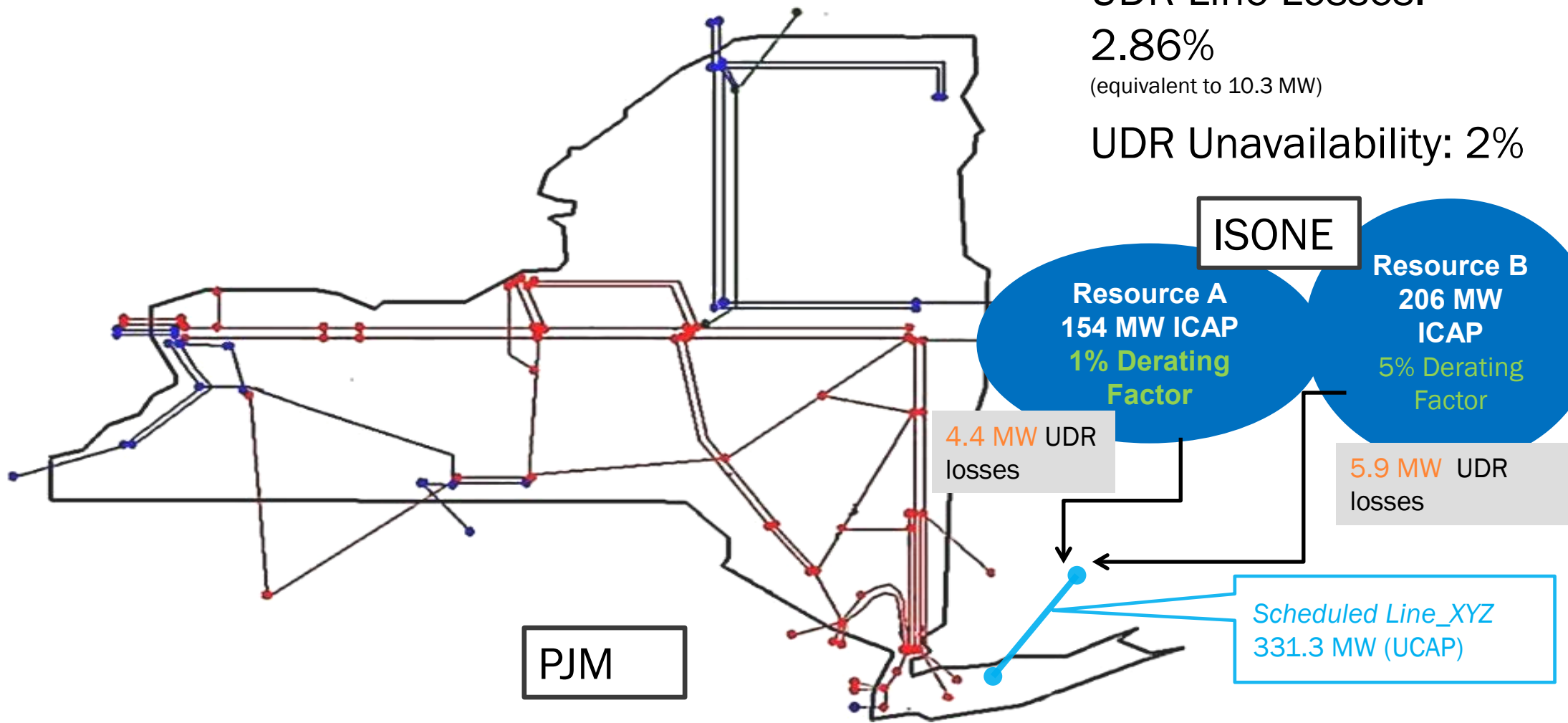
Current UDRs Awarded	
Cross Sound Cable (CSC) - New England to Long Island , Zone K	330 MW
Neptune Cable – PJM to Long Island, Zone K	660 MW
Linden VFT – PJM to New York City, Zone J	315 MW
Hudson Transmission Project (HTP) – PJM to New York City, Zone J	660 MW
Current EDRs Awarded	
Cedars – HQ to Rest-of-State (ROS), Zone D	80 MW

**ICAP Manual – Section 4.9.6*

UDRs and EDRs

- Capacity associated with UDRs and EDRs are not subject to Import Right ICAP Limits
- UDR/EDR Rights Holders can offer UCAP (must also meet the requirements to be an Installed Capacity Supplier)
- MW satisfy Locational Minimum Installed Capacity Requirement (for UDR)
- If UDR sinks in Load Zones G through J the resource is subject to a buyer-side mitigation examination and the UCAP may be subject to an Offer Floor
 - See separate capacity mitigation module

UDRs – EXAMPLE



UDR Line Losses:

2.86%
(equivalent to 10.3 MW)

UDR Unavailability: 2%

Note: EDR UCAP calculation is similar to UDRs

UCAP for UDR Example

- The UDR Rights holder/ICAP Supplier designates which generating unit(s) will be used to supply capacity via the UDR
- Each Rights holder's UDRs are further reduced by its share of UDR Losses and by the generating unit's Derating Factor using the following UCAP Calculation

$$\text{UCAP} = \text{Truncate} [(\text{Resource ICAP} - \text{Resource portion of UDR losses}) \times (1 - \text{Resource Derating Factor}) \times (1 - \text{UDR Unavailability \%}), 1]$$

**Calculation is truncated to one decimal place*

UCAP for UDR Example (cont'd)

- A UDR Line XYZ from NE to LI is configured:
 - TOTAL UDR ICAP AWARD = 360 MW
 - UDR Interface Losses = 2.86% (10.3 MW)
 - UDR Unavailability % = 2.00%

UCAP for UDR Example (cont'd)

- A UDR Line XYZ from NE to LI is configured:
 - TOTAL UDR ICAP AWARD = 360 MW
 - UDR Interface Losses = 2.86% (10.3 MW)
 - UDR Unavailability % = 2.00%

- This UDR has Resource A and Resource B
 - Resource A
 - Portion of UDR losses: $154 \times 2.86\% = 4.4$
 - UCAP is calculated for UDR PTID 345 when Resource A is designated as their Behind-the-UDR generator and their share of the Interface Losses = 4.4 MW

 - Resource B
 - Portion of UDR losses: $206 \times 2.86\% = 5.9$
 - UCAP is calculated for UDR PTID 123 when Resource B is designated as their Behind-the-UDR generator and their share of Interface Losses = 5.9 MW

UCAP for UDR Example (cont'd)

$$\text{UCAP} = \text{Truncate} [(\text{Resource ICAP} - \text{Resource portion of UDR losses}) \times (1 - \text{Resource Derating Factor}) \times (1 - \text{UDR Unavailability \%}), 1]$$

- **Resource A: UDR UCAP UDR PTID 345**
 - = $(154.0 - 4.4 \text{ MW}) * (1 - 0.01) * (1 - 0.02)$
 - = $149.6 * 0.99 * 0.98 = 145.14192 = 145.1$
 - Resource A has 145.1 UCAP Available to Offer in LI

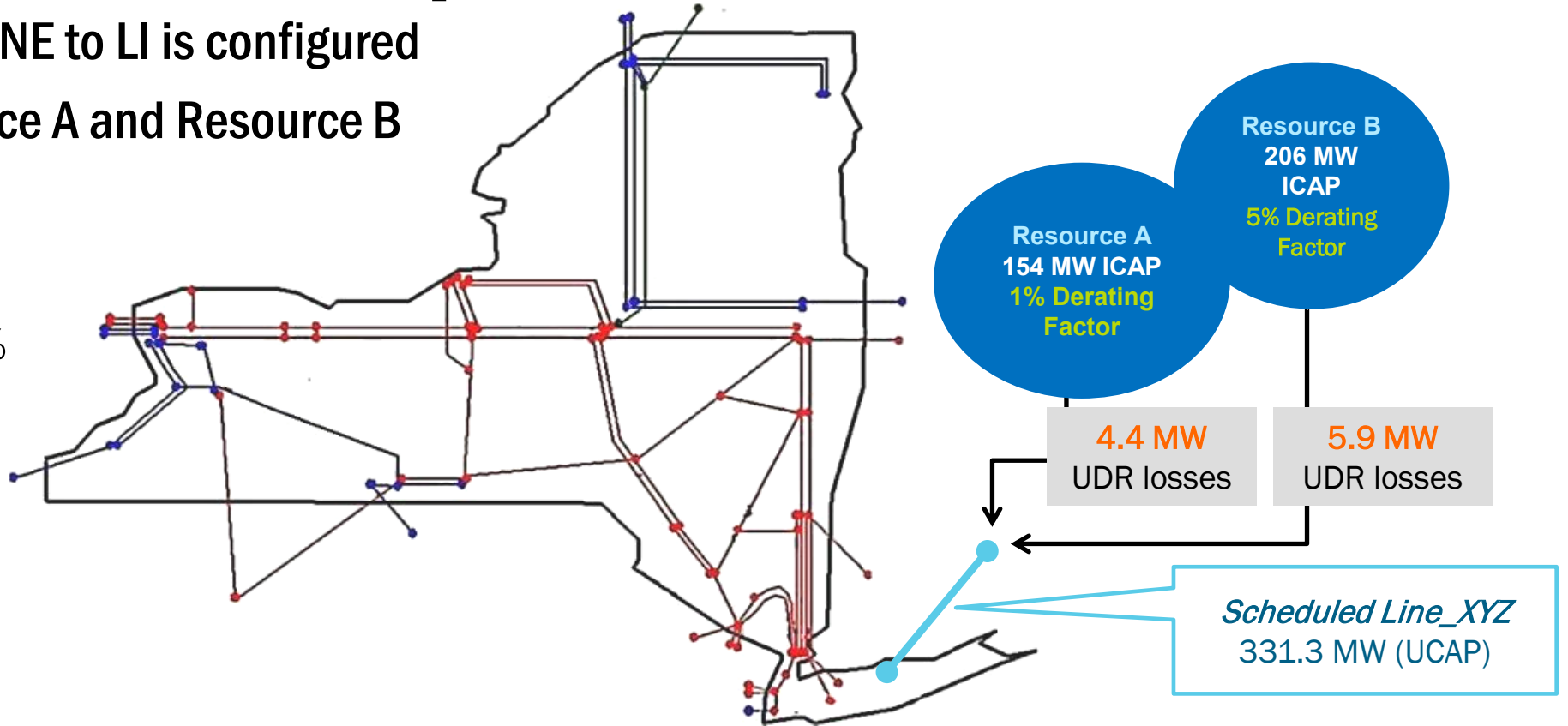
- **Resource B: UDR UCAP UDR PTID 123**
 - = $(206.0 - 5.9 \text{ MW}) * (1 - 0.05) * (1 - 0.02)$
 - = $200.1 * 0.95 * 0.98 = 186.2931 = 186.2$
 - Resource B has 186.2 UCAP Available to Offer in LI

UCAP for UDR Example

- A UDR Line XYZ from NE to LI is configured
- This UDR has Resource A and Resource B

UDR Line Losses: 2.86%
(equivalent to 10.3 MW)

UDR Unavailability: 2%



- Resource A: UDR UCAP UDR PTID 345

$$= (154.0 - 4.4 \text{ MW}) \times (1 - 0.01) \times (1 - 0.02)$$

$$= 149.6 \times 0.99 \times 0.98 = 145.14192 = 145.1$$
 Resource A has 145.1 UCAP Available to Offer in LI

- Resource B: UDR UCAP UDR PTID 123

$$= (206.0 - 5.9 \text{ MW}) \times (1 - 0.05) \times (1 - 0.02)$$

$$= 200.1 \times 0.95 \times 0.98 = 186.2931 = 186.2$$
 Resource B has 186.2 UCAP Available to Offer in LI

*Calculation is truncated to one decimal place

* EDR UCAP calculation is similar to UDRs

Topic 8: Key Responsibilities of an ICAP Supplier

ICAP Supplier Activities

- **Conduct DMNC test (or equivalent) for each Capability Period**
 - Option to provide actual data, rather than test data
- **Schedule outages**
 - Refer to Outage Scheduling Appendix, and manuals and procedures
- **Submit monthly GADS Data, or equivalent**
- **Certify prior to ICAP Spot Market Auction**
 - Allocate sales to specific resources (except certain externals already allocated)
 - Certify a bilateral transaction

ICAP Supplier Activities – Cont’d

- **If the Resource sells capacity, it has energy obligations in the Day-Ahead Market obligations**
 - Generators must “bid, schedule or notify” in Day-Ahead Market (MST - Section 5.12.7)
 - Energy Storage Resources must Bid, Schedule or Notify the full withdrawal to injection operating range of the ESR
 - Exceptions to this are SCRs, Intermittent Resources, and Municipal Utilities

“Bid, Schedule or Notify” Obligation

- **“Bid” = Offer energy**
 - Day Ahead Market
 - Installed Capacity Equivalent (ICE)
 - *In the ICAP Automated Market System (AMS), ICE is identified as ‘ICAP Sold for DAM’*

- **Schedule a Bilateral Transaction**
 - All parties must confirm the transaction

- **Notify the NYISO of any outages**
 - Unavailable due to:
 - Scheduled Maintenance (accepted by NYISO)
 - Forced Outage

“Bid, Schedule or Notify” Obligation

- Bidding Installed Capacity Equivalent (ICE)
 - ICE value is the generator’s capacity sold adjusted for availability

$$\text{ICE} = \frac{\text{UCAP Awarded}}{(1 - \text{Derating Factor}) * \text{Duration Adjustment Factor}}$$

- UCAP Awarded includes Auction MW plus Bilaterals
- Derating Factor (for most resource types, AEFORd)

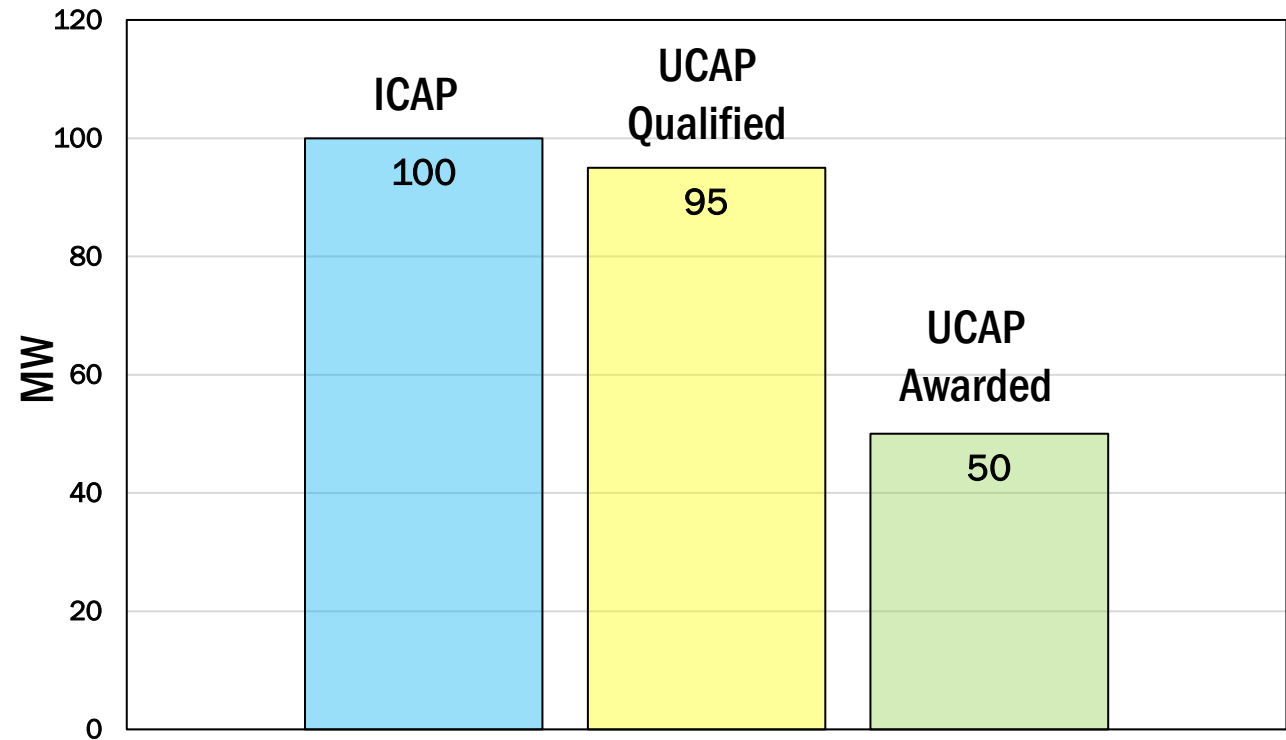
*****ICE Calculations for:**

ELRs and CLRs refer to MST Section 5.12.11 and Section 4.8.2 of ICAP manual Attachment M.

ESRs refer to MST Section 5.12.7 and Section 3, 7 of ICAP Manual Attachment J.

“Bid, Schedule or Notify” Obligation

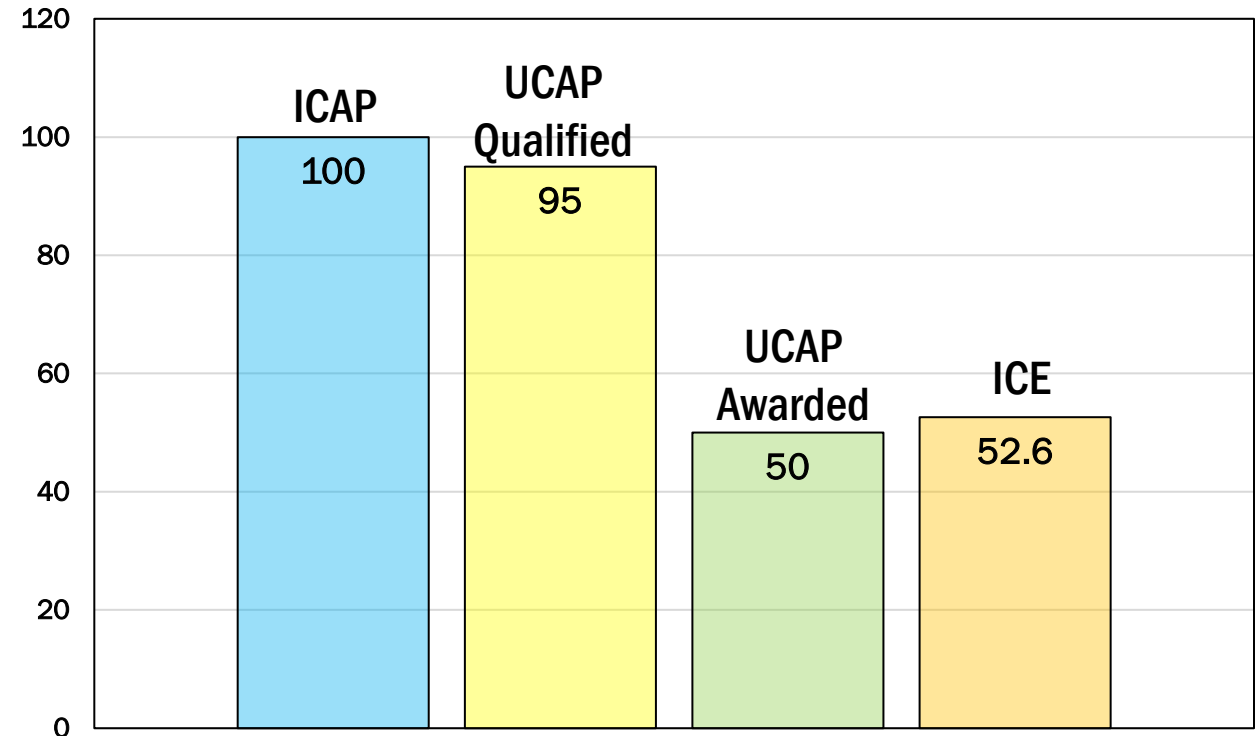
- ICAP = 100 MW
- Derating Factor = 0.05
- UCAP Qualified = 95 MW
- UCAP Awarded = 50 MW
- Duration Adjustment Factor = 1



What is the Bid/Schedule/Notify obligation for this resource?

“Bid, Schedule or Notify” Obligation

- ICAP = 100 MW
- Derating Factor = 0.05
- UCAP Qualified = 95 MW
- UCAP Awarded = 50 MW
- Duration Adjustment Factor = 1



$$\text{ICE} = \frac{50}{(1-0.05) * 1} = 52.6 \text{ MW}$$

Summary – Objectives

- Name the inputs used to calculate the UCAP value for the different capacity resource types
 - DMNC (or equivalent), CRIS, Duration Adjustment Factor, Derating factor, performance factor, production factor
- Define CRIS and its relevance to UCAP
 - Adjusts DMNC to account for deliverability of capacity
- Describe how Duration Adjustment Factor is used in UCAP calculations
- Explain the difference between Forced derates and Forced Outages and their significance
 - Forced Derate - reduced output over duration; Forced Outage - no output for a portion of time
- Describe the relationship between an EFORd and a derating factor
 - For certain generating types, EFORd used to determine derating factor (AEFORd)

Summary - Objectives

- Describe how Import Rights are different from UDRs/EDRs
 - UDRs/EDRs specific to Controllable and Scheduled Lines
 - Import Rights limited by Import Limits
- List the responsibilities of an ICAP Supplier
 - Resource Capability tests; GADS Data or equivalent; Certify; “bid, schedule or notify” for DAM
 - Note certain exceptions to “bid, schedule or notify” DAM obligation
- Calculate the Installed Capacity Equivalent (ICE) for an ICAP Supplier
 - $ICE = UCAP \text{ Sold} / (1 - \text{Derating Factor})$

References

- **Installed Capacity Manual**
- **Market Services Tariff**
- **ICAP Automated Market System User's Guide**
- **Market Participants User's Guide**
- **Market Training E-Learning Resources**

Appendix

Generator Outage Scheduling

Generator Outage Scheduling

■ Generator Outage Scheduling Description

- All Generators located in the NYCA or supplying ICAP to the NYCA must submit their proposed outage schedule to the NYISO
- “Coordination of outage schedules is desirable in order to limit the severity of impact” (NPCC, 1997)
 - Impact to:
 - NYCA
 - Neighboring Control Areas

Generator Outage Scheduling

- **Generator Outage Scheduling Submittals- Four Different Types**
 - Annual Maintenance
 - Requirements
 - Methods
 - Updates
 - Impending Scheduled Outage
 - Requirements
 - Methods
 - Unscheduled and Unplanned Outages
 - Requirements
 - Notification Upon Actual Outage

Annual Maintenance Submittals

Requirements, Methods and Updates

Annual Maintenance Submittals

■ Requirements

- Current year, plus two year projected schedule of annual scheduled outages
 - Submitted to NYISO by September 1st

■ Methods

- Manual Submittal
 - E-Mail
 - Manual entry into NYISO outage scheduler system 'iTOA'
- Automated Submittal
 - CSV Upload

Annual Maintenance Submittals

■ Updates to Two Year Projections

- Gen owner requesting outage schedule update
 - Can update as needed through iTOA
- NYISO implementing day to day changes
 - NYISO evaluates and coordinates changes on a day-to-day basis to the approved schedules
- Gen owner requesting cancellation of scheduled outage
 - Must submit justification for cancellation
 - Reviewed by NYISO Operations and Market Mitigation & Monitoring

Impending Scheduled Outage Submittals

Requirements and Methods

Impending Scheduled Outage Submittals

■ Requirements

- Generator owners submit confidential outage requests according to following time line:
 - 30 Days prior to TCC Month
 - Minimum 2 Day notice
- Outage requests approved in order received as long as local TO approves and no reliability violation exists

Impending Scheduled Outage Submittals

■ Methods

- Manual submittal
 - E-Mail
 - Phone
 - Manual entry into iTOA
- Automated Submittal
 - CSV Upload

***Requests submitted to both NYISO Generation Scheduling Desk and local TO

Unscheduled & Unplanned Outage Submittals

Requirements

Unscheduled & Unplanned Outage Submittals

■ Requirements

- Unscheduled and Unplanned outages that Do Not Meet the scheduling notification times are considered Forced Outages
 - Unscheduled outage notifications are made to the *NYISO Scheduling Department* and the *Local TO*
 - In-day Forced Outage notifications are made to the *NYISO Grid Operations Department* and the *Local TO*

Notification Upon Actual Outage

Notification Upon Actual Outage

■ Notifying NYISO

- Implementing approved scheduled outages
 - Contact NYISO Generation Operator Desk
 - Await NYISO and TO authorization
- Unscheduled generator full or partial outages
 - Contact NYISO Generation Operator Desk
 - Report reason & estimated duration
 - Await NYISO authorization
 - NYISO will coordinate new schedule with the generator operator if needed
- Forced Full or Partial Generator Outages
 - Inform NYISO and TO as soon as possible
 - Report reason
 - Report estimated duration (and/or return to service)
 - Update MIS Bids

Outage Scheduling References

- **Market Services Tariff**
 - Article 5

- **NPCC Document C-13**

- **NYISO Outage Scheduling Manual**

- **Outage Scheduler User Guide**

- **NYISO Generation Scheduling Desk**
 - Telephone; 518-356-6050
 - Fax; 518-356-6119
 - Email; genplan@nyiso.com

- **NYISO Installed Capacity Manual**
 - Section 4