ICAP/UCAP Overview

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Agenda

• What is ICAP/UCAP?
• How are ICAP and UCAP calculated?
• How are ICAP and UCAP purchased and sold?
What is ICAP?

- New York’s method to ensure that energy is available today, tomorrow and in the future.
ICAP the Planning Tool

• Suppliers who sell must **Bid** into the Day Ahead Market (DAM) – Right of First Refusal

• Suppliers who sell must **Respond** to Supplemental Resource Evaluation (SRE)
What ICAP and UCAP are Not

• ICAP is NOT
  – The energy market
  – The ancillary services market

• UCAP is NOT
  – Energy
  – Spinning reserve, frequency response, black start, or any other ancillary product
RELIABILITY
NYCA Installed Reserve Margin & NYCA Minimum ICAP Requirement

• NYCA Installed Reserve Margin (IRM)
  – NYS Reliability Council (NYSRC) establishes the annual IRM based on the NPCC Resource Adequacy Standard. The current IRM = 18% or .18

• NYCA Min. Installed Capacity Requirement (ICR)
  – Calculated by NYISO for the Capability Year
  – NYCA Min. ICR = Forecasted NYCA peak load (31,429) * (1+IRM = 1.18)
    • 2003-2004 Capability Year: NYCA Minimum ICR = 37,087 MW
Unforced Capacity

• An availability rating.
• UCAP is ICAP adjusted for performance through GADS data.
• Premise rewards the supplier who maintain machine by allowing them to sell more UCAP.
• LSE who is buying UCAP to meet their requirements is not paying as much if they had purchased the same amount of ICAP because it has been downward adjusted.
Translation From ICAP to UCAP

- **NYCA Min. Unforced Capacity Requirement (UCR)**
  - Calculated by NYISO for each Capability Period
    - Summer Capability Period: **May 1 - October 31**
    - Winter Capability Period: **November 1 - April 30**

- **NYCA Minimum UCR = NYCA Min. ICR * (1-EFORd †)**
  = Forecasted NYCA peak load * (1+IRM) * (1-EFORd †)

- Summer 2003: **NYCA Minimum UCR = 35,304 MW**
  NYCA EFORd † = 4.81%

† Average EFORd value of the 6 most recent 12-month rolling average EFORds of all NY Resources in NYCA  {EFORd = Effective Forced Outage Rate on Demand}
Minimum UCAP Requirement for Load Serving Entities

• Load Serving Entities (LSEs) are required to purchase UCAP

• LSE’s Minimum UCR \cong \text{the Load as reported by Transmission Owner} \ast (1+\text{IRM}) \ast (1-\text{NYCA EFORd})

• UCAP may be purchased either through bilateral transactions or obtained through NYISO auctions
Example

• Load reported at 100 Mw
• $1+IRM=1.18$
• NYCA EFORd=.0481
• Formula=the Load as reported by Transmission Owner * $(1+IRM) * (1-\text{NYCA EFORd})$
• $100*1.18*(1-.0481)=112.32$
Locational Minimum ICAP Requirements

• Due to transmission limitations into certain areas, LSEs serving load within these areas must procure a percentage of their total Minimum UCAP Requirements from ICAP Suppliers electrically located within the constrained areas
  - 2003-2004 Capability Year Locational Minimum ICAP Requirements for the two currently defined Localities:
    • New York City (Zone J) = 80% of forecasted NYC peak load
    • Long Island (Zone K) = 95% of forecasted LI peak load
Who Buys UCAP?

• All Load Serving Entities (LSE’s) in NYCA
  – TO serving native loads (providers of last resort)
  – Aggregators - retail access
  – Industrials with large loads
  – Municipals

• Marketers/Traders (resellers)

• ICAP Suppliers with a UCAP shortfall
Supply Side

• Generators
  – Within NYCA
  – Outside NYCA

• Special Case Resources
  – Within NYCA
Qualifications for Providers

• Generators provide Dependable Maximum Net Capability (DMNC) level for each unit
• Generators - 4 hours of testing - weather adjusted OR:
  – Generators - 4 hours of production data
  – Weather adjustments for gas turbines
  – Gas Generators -1 hour of testing
  – Interruptible Loads - 1 hour of disconnect
• Bid/Schedule/Notify
• Provide monthly GADS Data (see next slide)
Generating Availability Data System (GADS)

- Based on NERC design
- Used to calculate monthly unit EFORd
  - Monthly production data
    - Reported by the 20th of the month for the prior month’s activity
  - Outage time
  - Deratings – Equivalent outage time
  - Available hours in month
  - Rolling 12 month average

- For each Capability Period, NYISO sets the UCAP that Resources are qualified to sell = DMNC * (1-EFORd†)

† Average EFORd value of the 6 most recent 12-month rolling average EFORds for that Resource
Example

• Unit runs DMNC test and qualifies to sell 100 Mw
• The GADS data indicates a 4.7% EFORd
• The amount of UCAP this generator can sell is $100 \times (1 - 0.047) = 100 \times 0.953 = 95.3$
Mitigated In-City Generators

- Mitigate market power concerns by capping sale price of ICAP
- Yearly price cap set by the New York Public Service Commission (NYPSC) & Consolidated Edison at time of divestiture

- All mitigated capacity MUST be sold through NYISO auctions (No Bilateral Transactions)
- If auction clears above mitigated price cap...
  - ... then the excess money from the auction is rebated to all In-City LSEs (except NYPA) in proportion to their share of the NYC Locational ICAP Requirement
Three ICAP Auction Types

• Capability Period Auction ("Strip Auction")
  – Held at least 30 days before beginning of Capability Period
  – A six month price for an equal amount of monthly MWs

• Monthly Auction
  – Held at least 15 days before start of next Obligation Procurement Period
  – May purchase or sell for any month(s) remaining in the Capability Period
    • Ex: Bid/offer for August, September, and/or October Obligation Procurement Periods in August Monthly Auction (held mid-July)

• Spot Market Auction (SMA)
  – Held at least 2 days before start of next Obligation Procurement Period
  – Auction is for the upcoming month only
Non-Zero Bids and Offers

{MCP = Market Clearing Price}
Zero Dollar Offers By Suppliers

$5.00
$4.00
$2.00
$3.00
$6.00
$1.00

$0

Fully Awarded

Partially Awarded

MCP = $0.00/kW

{MCP = Market Clearing Price}
Zero Dollar Bids By LSE’s

No One Is Awarded

$0 - $6.00

$/kW

0 1 2 3 4 5 6 7

MW

Non-Convergence Area

LSE
Supplier
Tie Breaker Rule 1

$\text{MCP} = \text{Market Clearing Price}$

$LSE$

Supplier

Fully Awarded

$\text{MCP} = \$3.00/kW$

Not Awarded

$\$0\$1.00\$2.00\$3.00\$4.00\$5.00\$6.00$

$0\ 1\ 2\ 3\ 4\ 5\ 6\ 7$ 

MW

$\text{LSE}$

$\text{Supplier}$

{MCP = Market Clearing Price}
Tie Breaker Rule 2

{MCP = Market Clearing Price}
Spot Market Auction

- SMA held to secure UCAP for deficient LSEs (failure to procure) and Suppliers (inability to supply)

- NYISO submits bids on behalf of all LSEs at a level determined by applicable ICAP Demand Curve

- Offers to Sell accepted from:
  - Qualified ICAP Suppliers with UCAP not previously certified
  - LSEs with UCAP in excess of their Min. UCAP Requirements
  - Marketers
Demand Curve

• Benefits
  – Increases system & resource reliability
    • Values additional UCAP above NYCA & Locational Requirements
  – Reduces price volatility
• Demand Curve is defined by two points:
  – Reference Price: Set price point for 100% of requirement
  – Percentage of requirement for price to be $0.00
    • NYCA Demand Curve: 112%
    • LI & NYC Locational Demand Curves: 118%
  – Max. Demand Curve Clearing Price set at one and one-half times the localized levelized embedded cost of a gas turbine
Demand Curves
(for Summer 2003 Capability Period)

*all $/kW/Month values in terms of UCAP*
Demand Curve Example
(for NYC Locality)

\[ \text{MCP} = \$9.37/\text{kW/Mo} \]

Demand Curve
Supply

\{\text{MCP = Market Clearing Price}\}
Basic Requirements

• Must sign the tariffs
• Must sign UCAP agreements to participate in ISO auctions
• LSEs must be credit worthy
• Must request a password from Resource Reliability
• Must file certification form monthly
  – Submittal around the 20th of the month
How is UCAP Tracked?

- Both ICAP Suppliers, LSEs and Marketers must certify each month as to what UCAP transactions they have been a party to.

- Failure to certify will cause you to be entered into the Spot Market Auction for the amount of MW you are required to purchase (LSEs).

- Sanctions will be applied to Suppliers who fail to certify based on the DMNC value of all of the units.
How is UCAP Tracked? (continued)

• ISO Market Monitoring Unit (MMU)
  – DAM - Suppliers bidding at least up to the amount of equivalent ICAP sold

  • ICAP = 100MW, EFORd = 10%, UCAP Sold = 90MW
  • B,S,N = 90MW / (1-EFORd) or 90/.9 = 100MW
Questions??????