

# ISO New England

## Forward Capacity Market Payments, Performance and Charges

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# Settlements Timing

- The Forward Capacity Market (“FCM”) is a yearly market settled monthly
- The FCM will be settled and invoiced following each Obligation Month during the Commitment Period
- FCM will allow for resettlement due to changes in Load Obligations as well as any required adjustments to availability calculations or PER calculations

# Payments to Resources

- Payment to a Resource for the month will be the net of all credits and debits to the Resource's position for that month
  - Forward Capacity Auction (“FCA”) obligations
  - Reconfiguration Auction cleared bids/offers
  - Supply obligation bilaterals
- Payment will be further adjusted by:
  - Peak Energy Rents (“PER”)
  - Availability Penalties

# FCA Obligations

- Cleared offers always result in a positive supply obligation
- Result in a total dollar credit of FCA Clearing Price times the cleared MW amount (“FCA Supply Obligation”)
  - Total FCA Credit = FCA C.P.(\$/kW-mo) x Cleared Capacity (MW) x 1,000
- FCA Clearing Price may be the FCA Clearing Price from a previous year for New Capacity with a multi-year Commitment Period (adjusted by inflation)

# FCA Obligations (cont'd)

- Composite Offers allow Resources with a higher summer capability than winter capability to partner with Resources with excess winter capability as a part of the Qualification process
  - Payments will be made to the Resource providing capacity in each month
- Self-supplied Resources reduce Load Obligation for the Load Serving Entity designating such resource
  - Results in no dollar credit from the FCA
  - Not adjusted for Peak Energy Rents (“PER”)
  - Adjusted for performance during monthly settlement

# Reconfiguration Auction Cleared Bids/Offers

- Sellers
  - Supply offer for the resource represents a desire to acquire a supply obligation
  - Cleared offer increases the resource's supply obligation and results in "listed capacity"
  - Cleared offer receives a credit of the cleared supply offer times the applicable Reconfiguration Auction clearing price
  - The ISO may also purchase capacity if ICR increases
- Buyers
  - Demand bid for the resource represents a desire to purchase capacity and transfer supply obligation
    - Demand bids are subject to a reliability review
  - Cleared bid decreases the resource's supply obligation and results in "de-listed" capacity
  - Cleared bid incurs a charge of the cleared demand bid times the applicable Reconfiguration Auction clearing price
  - The ISO may also release capacity if ICR decreases

# Supply Obligation Bilaterals

- Sellers
  - Seller’s resource will incur a supply obligation
    - Its capacity will be “listed”
  - Results in a credit of the bilateral price multiplied by the entered bilateral transaction
- Buyers
  - Buyer’s resource will shed a supply obligation
    - Its capacity will be “de-listed”
  - Results in a charge of the bilateral price multiplied by the entered bilateral transaction
- Bilateral transactions are subject to a reliability review
- Bilateral transactions only have an impact on the parties to the transaction

# Peak Energy Rents

- Revenues earned above fuel cost by a “proxy unit” in the month
  - Heat rate equal to 22,000 BTU/kWh
  - Availability equal to 95%
  - No start-up, ramp rate or minimum run time constraints
  - Indexed daily to the marginal fuel based on the lower of day-ahead gas or No. 2 oil
- Calculated for each Capacity Zone that experienced price separation in the FCA
- Hourly PER scaled by ratio of average system load in the hour to “50/50” predicted peak system load used in ICR – capped hourly at 1.0

# Peak Energy Rents (cont'd)

- Hourly PER is summed to determine Monthly PER
- Twelve month rolling average of Monthly PERs is deducted from the payment due to capacity resources with a net positive position (positive supply obligation after all prior activity in the month)
- PER deduction in a month cannot exceed the FCA payment for the month
- Self-supplied Resources are not subject to a PER adjustment
- Hourly PER = (RT LMP – Strike Price) x (actual hrly integrated system load/“50/50” system peak load) x 0.95

# Availability Penalties

- Availability based on performance during “Shortage Events”
  - Definition of Shortage Event
  - Definition of Availability
- Availability calculated during any Shortage Events that occurred during the Obligation Month
  - Penalties for those resources with a Supply Obligation who provided fewer MWs than their obligation during Shortage Events
  - Payments for those resources with monthly Supply Obligations that met their capacity obligation during Shortage Events
  - Caps on penalties
- Penalties also apply to those resources that don’t meet their offer requirements in the energy market

# Definition of Shortage Event

- When positive System-wide Reserve Constraint Penalty Factors (“RCPFs”) are included in the LMP, or
- When OP4 Action 6, 12, 13 or OP7 is called in an import-constrained region
- Export-constrained region will be exempt if an OP4 Action 6, 12, 13 or OP7 is called in the Rest-of-Pool but not for the export-constrained zone
- Minimum duration of 30 minutes
- Discrete events must be separated by at least 2.5 hours
- Maximum of two shortage events per day

# Definition of Availability

- On-line and following dispatch instructions
  - To the extent of Resource's offered EcoMax
- Off-line but Notification time + Start time < 30 minutes
  - To the extent of Resource's offered EcoMax
- Not committed by ISO and not available in 30 minutes provided:
  - Resource offered competitively (conduct threshold in Appendix A)
  - Notification time + Start time < 12 hours
    - Grandfathered resources with 16 hour characteristics for the first five annual FCA commitment periods
  - Unit comes on-line when called

# Definition of Availability (cont'd)

- Not committed due to a transmission limitation outside the control of the Resource
  - Some specific exceptions in SA, and other exceptions for radial leads and export constrained zones
- Off-line and undergoing scheduled maintenance provided:
  - Outage was scheduled in annual maintenance scheduling process, provided
    - Outage was not scheduled December through January or June through Mid-September, and
    - Outage has not exceeded maximum number of maintenance days
- Import Capacity offered in the Day-Ahead Energy Market but can't deliver in real-time because the transmission line is full

# Availability Calculation

- Availability calculated only during Shortage Events
  - If there are no Shortage Events during a month, all units have 100% availability
- Availability based on performance in each hour of the Shortage Event
  - $\text{Availability (AV)} = \frac{\text{Time weighted average output over the hour}}{\text{Net Capacity Obligation}}$
- Net Capacity Obligation is equal to the obligation of the resource as of the end of the month prior to the Obligation month
  - For example, for the June Obligation month, the net Capacity Obligation will be determined as of the end of May and performance will be assessed during any Shortage Events that occur in June

# Examples of Availability Calculation (by Hour)

Cleared MW (FCA Obligation)	Unit Status	Output (MW)	Time (minutes)	EcoMax	ISO Redec of EcoMax	Following Dispatch Instructions	Availability	Comments
100	On-line	75	45	75MW	N	Y	AV = Weighted Avg Output/FCA Oblig 66.3%	Participant redeclared unit EcoMax so unit availability is reduced
		40	15	40MW				

Cleared MW (FCA Obligation)	Unit Status	Output (MW)	Time (minutes)	EcoMax	ISO Redec of EcoMax	Following Dispatch Instructions	Availability	Comments
100	On-line	75	45	75MW	Y	Y	AV = 100%	ISO redeclared unit EcoMax so unit is credited with availability based on EcoMax prior to reddec (assumed to be 100MW)

Cleared MW (FCA Obligation)	Unit Status	Output (MW)	Time (minutes)	EcoMax	ISO Redec of EcoMax	Following Dispatch Instructions	Availability	Comments
80	On-line	95	60	95MW	N	Y	AV = 100%	Availability capped at 100%

# Availability Penalty Amounts

- Penalties assessed for each Shortage Event that occurs in an Obligation Month based on the availability of the Resource
- Penalty per Shortage Event = 5% of the FCA Payment for the year
  - If the Shortage Event exceeds five hours, the penalty is increased by 1% per hour
- Penalty based on the FCA Payment regardless of whether the Resource obtained the capacity obligation in the FCA, via a Supply Obligation Bilateral or through a Reconfiguration Auction

# Availability Penalty Amounts (cont'd)

- Maximum Penalty Amount
  - Per day = 10% of the FCA Payment for the year
  - Per month = 2.5 times that total FCA Payment for the calendar month
  - Per year = Total FCA Payment less PER adjustments
- Example
  - Shortage Event = 3 hrs
  - Availability
    - Hr 1: 66%      Hr 2: 100%      Hr 3: 100%
    - AV = 88.67%
  - FCA Clearing Price = \$7.00/kW-mo
  - Net Capacity Supply Obligation = 50 MW
  - Penalty =  $.05 \times \$7.00/\text{kW-mo} \times 12 \times 50,000\text{KW} \times (1 - \text{AV}) = \$23,793$

# Energy Market Performance Penalties

- Listed portions of Resources (i.e. has a capacity supply obligation) must offer into the Day-Ahead and Real-Time Energy Markets
- Day-Ahead offers must have a sum of start time plus min run time plus min down time less than or equal to 72 hours
  - These Resources can also self schedule
- Resources that can't meet the 72 hour requirement must bid into the Day-Ahead market at zero or self-schedule
- Day-Ahead and Real-Time offers must reflect the operating characteristics of the Resource

# Energy Market Performance Penalties (cont'd)

- Intentional violations of this requirement will result in economic penalties in addition to performance penalties
  - See section IV.A.4 of the Settlement Agreement for penalty amounts and additional ISO-NE/Participant responsibilities

# Load Obligation Charges

- Charges to Load include:
  - Payments to Capacity Resources providing Supply Obligations
  - CTR Holders
- Load pays a “Blended Average Price” per MW of Load Obligation for each Capacity Zone equal to:
  - Net dollars paid to supply within the Capacity Zones (including adjustments from previous slides) divided by net supply obligation for supply within the Capacity Zone
- Load is credited for their assigned CTRs
  - $\text{CTR value} = \text{Blended Average FCA Price for a Capacity Zone} - \text{Blended Average FCA Price for another Capacity Zone}$  (either export constrained Capacity Zone to Rest-of-System or Rest-of-System to import constrained Capacity Zone) multiplied by the interface transfer limit

# Load Obligation Charges (cont'd)

- Peak contribution process (“Daily Tag process”) will continue to assign initial portion of Load Obligation (portion of ICR purchase) attributable to each Load Asset
- Market Participant that is a Load Asset Owner will incur the Load Obligation
- Load Obligation Bilaterals will allow for monthly adjustment of Load Obligations (seller increases/buyer decreases)
- A Self-Supplied Resource will be treated as a decrease in Load Obligation

