

Energy Efficiency's role in Pay-for-Performance

Presentation to the NEPOOL Markets Committee Stakeholders
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Acronyms used in this Presentation

ACP	Actual Capacity Performance	M&V	Measurement and Validation
CBR	Capacity Balancing Ratio	PfP	Pay-for-Performance
CMR	Current Market Rules	RT	Real Time
CSC	Capacity Scarcity Condition	RTOR	Real Time Operating Reserves
CSO	Capacity Supply Obligation		
DA	Day Ahead		
DR	Demand Resource		
EE	Energy Efficiency		
FCM	Forward Capacity Market		
LMP	Lead Market Participants		

Presentation Outline

- Recap of June Presentation
- Settlement examples corrected
- EE funding
- Tariff Redlines
- Schedule

June 2020 NEPOOL Markets Committee Recap

Conclusions and Recommendations

- Conclusions:
 - CSCs are dynamic events / triggered by minimal reserve deficiencies;
 - A re-distribution of base FCM payments from all Resources. A key principle of PfP is to reward Resources' *actual* performance during a CSC;
 - Recommend the minimum criteria for Resources to participate in PfP should include:
 - (i) Being measured, and
 - (ii) being able to reduce load in the RT, provide energy in the RT, or provide reserves in the RT.
 - EE is not measured and does not participate in the RT (e.g., gen-line or line-line contingencies);
 - EE receives higher performance payments the lower system load is; and
 - There is a cost (i.e., posting of collateral) for all Resources to participate in PfP.
- Recommendations:
 - Retain EE's base capacity payments;
 - Remove EE from the PfP settlement including the "insurance pool"; and
 - Eliminate the requirement to provide credit support for the FCM Delivery Financial Assurance.

Examples to highlight the Redistribution Effect - Revisited

Actual and hypothetical examples

- Holding the 9/3/18 CSC event conditions constant except:
 - (a) changing the PfP rate to \$5,455/MWh, and (b) applying DR On-Peak and Seasonal Peak Hours rules, EE would have received a **net payment of ~~\$10.3~~ \$13.1 million¹** funded by charges to all non-EE CSO holders, a net reduction of ~~\$0.31~~ \$0.40/kW¹ in base capacity payments to all non-EE CSO holders; and
 - (a) changing the PfP rate to \$5,455/MWh, (b) applying DR On-Peak and Seasonal Peak Hours rules, and (c) reducing system load by 10%, EE would have received a **net payment of ~~\$12.6~~ \$15.5 million¹**, a net reduction of ~~\$0.39~~ \$0.48/kW¹ in base capacity payments to all non-EE CSO holders.
 - This increase in net payments to EE as system load decreases is in direct contradiction to the evidentiary record.
- Under this proposal net charges or net payments to EE in any hour of any CSC would be ZERO.
- The ISO provided the estimated settlement values from the event, the adjustments above were made from this original workbook and reviewed by ISO staff, and the detailed calculations have been included as an appendix to the slides.

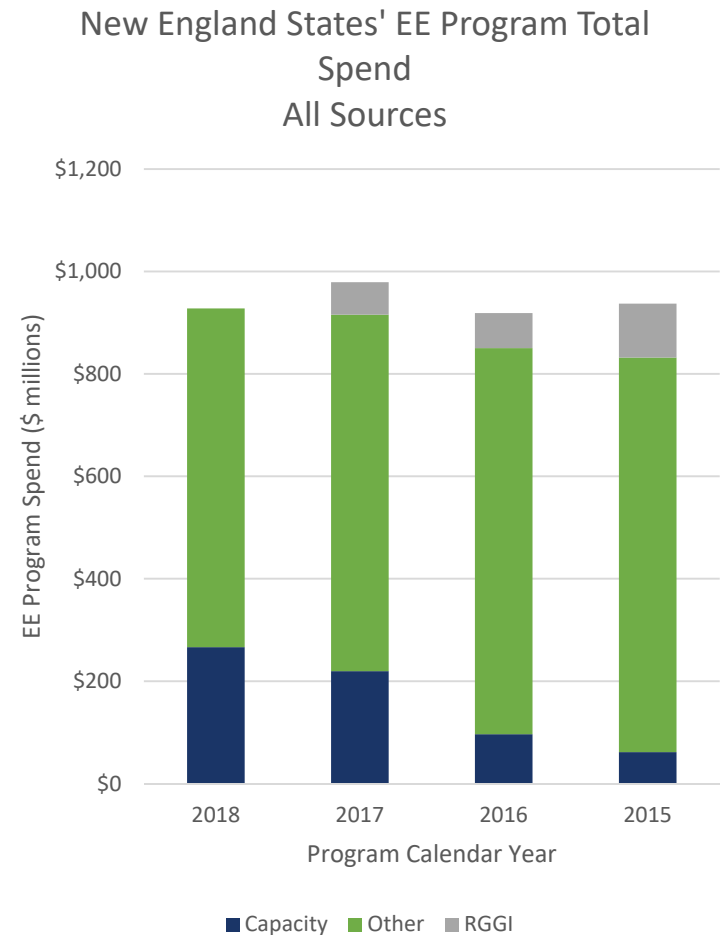
Notes:

1. June analysis failed to account for EE gross-up due to 8% T&D loss factor.

Energy Efficiency Funding Sources

Potential PfP performance payments represent a miniscule opportunity for EE

- The bulk of EE funding is derived from surcharges to retail customers (i.e., “other”) and a modest amount from RGGI revenues.
- The revenue streams from the capacity markets represent only 7-29% of the total funding streams.
- Long-run expectations of PfP performance payment contribution to total funding are likely less than <1%.



Sources: aceee.org and rggi.org

Proposed Tariff Changes – III.13.7.2.2

Redlined against ISO's filing in ER20-1967

III.13.7.2.2 Calculation of Actual Capacity Provided During a Capacity Scarcity Condition.

* * *

(c) An On-Peak Demand Resource or Seasonal Peak Demand Resource's Actual Capacity Provided during a Capacity Scarcity Condition shall be the sum of the Actual Capacity Provided for each of its components, as determined below, where the MWhs of reduction, other than MWhs associated with Net Supply, are increased by average avoided peak transmission and distribution losses.

- (i) ~~For Energy Efficiency measures, if the Capacity Scarcity Condition occurs during Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then the Actual Capacity Provided shall be equal to the applicable reported monthly performance value; if the Capacity Scarcity Condition occurs in an interval outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then~~ the Actual Capacity Provided shall be zero.
- (ii) For Distributed Generation measures submitting meter data for the full 24 hour calendar day during which the Capacity Scarcity Condition occurs, the Actual Capacity Provided shall be equal to the submitted meter data, adjusted as necessary for the five-minute interval in which the Capacity Scarcity Condition occurs.
- (iii) For Load Management measures submitting meter data for the full 24 hour calendar day during which the Capacity Scarcity Condition occurs, the Actual Capacity Provided shall be equal to the submitted demand reduction data, adjusted as necessary for the five-minute interval in which the Capacity Scarcity Condition occurs.
- (iv) Notwithstanding any other provision of this Section III.13.7.2.2(c), for any On-Peak Demand Resource or Seasonal Peak Demand Resource that fails to provide the data necessary for the ISO to determine the Actual Capacity Provided as described in this Section III.13.7.2.2(c), the Actual Capacity Provided shall be zero.

Proposed Tariff Changes – III.13.7.2.3(a)

Redlined against ISO's filing in ER20-1967

III.13.7.2.3 Capacity Balancing Ratio.

For each five-minute interval in which a Capacity Scarcity Condition exists, the ISO shall calculate a Capacity Balancing Ratio using the following formula:

$$(\text{Load} + \text{Reserve Requirement}) / \text{Total Capacity Supply Obligation}$$

(a) If the Capacity Scarcity Condition is a result of a violation of the Minimum Total Reserve Requirement such that the associated system-wide Reserve Constraint Penalty Factor pricing applies, then the terms used in the formula above shall be calculated as follows:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the New England Control Area during the interval; ~~provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then~~ the Actual Capacity Provided of ~~any applicable~~ Energy Efficiency measures shall be zero, as specified in Section III.13.7.2.2(c)(i).

Reserve Requirement = the Minimum Total Reserve Requirement during the interval.

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the New England Control Area ~~during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then, excluding~~ the Capacity Supply Obligations associated with ~~any applicable~~ Energy Efficiency measures ~~shall be excluded from the total amount of Capacity Supply Obligations, during the interval.~~

Proposed Tariff Changes – III.13.7.2.3(b)

Redlined against ISO's filing in ER20-1967

(b) If the Capacity Scarcity Condition is a result of a violation of the Ten-Minute Reserve Requirement such that the associated system-wide Reserve Constraint Penalty Factor pricing applies, then the terms used in the formula above shall be calculated as follows:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the New England Control Area during the interval; ~~provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then~~ the Actual Capacity Provided of ~~any applicable~~ Energy Efficiency measures shall be zero, as specified in Section III.13.7.2.2(c)(i).

Reserve Requirement = the Ten-Minute Reserve Requirement during the interval.

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the New England Control Area ~~during the interval; provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then, excluding~~ the Capacity Supply Obligations associated with ~~any applicable~~ Energy Efficiency measures ~~shall be excluded from the total amount of Capacity Supply Obligations, during the interval.~~

Proposed Tariff Changes – III.13.7.2.3(c)

Redlined against ISO's filing in ER20-1967

(c) If the Capacity Scarcity Condition is a result of a violation of the Zonal Reserve Requirement such that the associated Reserve Constraint Penalty Factor pricing applies, then the terms used in the formula above shall be calculated as follows:

Load = the total amount of Actual Capacity Provided (excluding applicable Real-Time Reserve Designations) from all resources in the Capacity Zone during the interval plus the net amount of energy imported into the Capacity Zone from outside the New England Control Area during the interval (but not less than zero); ~~provided, however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then~~ the Actual Capacity Provided of ~~any applicable~~ Energy Efficiency measures shall be zero, as specified in Section III.13.7.2.2(c)(i).

Reserve Requirement = the Zonal Reserve Requirement minus any reserve support coming into the Capacity Zone over the internal transmission interface.

Total Capacity Supply Obligation = the total amount of Capacity Supply Obligations in the Capacity Zone ~~during the interval; provided however, that if the interval occurs outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, then, excluding~~ the Capacity Supply Obligations associated with ~~any applicable~~ Energy Efficiency measures ~~shall be excluded from the total amount of Capacity Supply Obligations, during the interval.~~

Proposed Tariff Changes – III.13.7.2.3(d)

Redlined against ISO's filing in ER20-1967

(d) The following provisions shall be used to determine the applicable Capacity Balancing Ratio where more than one of the conditions described in subsections (a), (b), and (c) apply in a Capacity Zone.

(i) In any Capacity Zone subject to Reserve Constraint Penalty Factor pricing associated with both the Minimum Total Reserve Requirement and the Ten-Minute Reserve Requirement, but not the Zonal Reserve Requirement, the Capacity Balancing Ratio shall be calculated as described in Section III.13.7.2.3(a) for resources in that Capacity Zone.

(ii) In any Capacity Zone subject to Reserve Constraint Penalty Factor pricing associated with both the Ten-Minute Reserve Requirement and the Zonal Reserve Requirement, but not the Minimum Total Reserve Requirement, the Capacity Balancing Ratio for resources in that Capacity Zone shall be the higher of the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(b) and the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(c).

(iii) In any Capacity Zone subject to Reserve Constraint Penalty Factor pricing associated with the Minimum Total Reserve Requirement and the Zonal Reserve Requirement (regardless of whether the Capacity Zone is also subject to Reserve Constraint Penalty Factor pricing associated with the Ten-Minute Reserve Requirement), the Capacity Balancing Ratio for resources in that Capacity Zone shall be the higher of the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(a) and the Capacity Balancing Ratio calculated as described in Section III.13.7.2.3(c).

Proposed Tariff Changes – III.13.7.2.4

Redlined against ISO's filing in ER20-1967

III.13.7.2.4 Capacity Performance Score.

Each resource, ~~other than one composed exclusively of Energy Efficiency measures~~, whether or not it has a Capacity Supply Obligation, will be assigned a Capacity Performance Score for each five-minute interval in which a Capacity Scarcity Condition exists in the Capacity Zone in which the resource is located. A resource's Capacity Performance Score for the interval shall equal the resource's Actual Capacity Provided during the interval minus the product of the resource's Capacity Supply Obligation (which for this purpose shall not be less than zero) and the applicable Capacity Balancing Ratio; provided, however, that for an On-Peak Demand Resource or a Seasonal Peak Demand Resource, (i) ~~if the Capacity Scarcity Condition occurs in an interval outside of Demand Resource On-Peak Hours or Demand Resource Seasonal Peak Hours, as applicable, then~~ the Actual Capacity Provided and Capacity Supply Obligation associated with ~~any applicable~~ Energy Efficiency measures shall be excluded from the calculation of the resource's Capacity Performance Score; and (ii) for any Energy Efficiency, Load Management, or Distributed Generation measures reflected as a reduction in the load forecast as described in Section III.12.8 the Actual Capacity Provided and Capacity Supply Obligation shall be excluded from the calculation of the resource's Capacity Performance Score. The resulting Capacity Performance Score may be positive, zero, or negative.

The Proposal and Schedule

- Market's Committee schedule
 - 6/10: Introduce proposal and solicit stakeholder feedback
 - 7/14: Distribute Tariff changes and respond to stakeholder questions
 - 8/11: bring Tariff changes to the committee for a vote
- Budget & Finance Subcommittee:
 - 8/10: Introduce FAP changes and solicit stakeholder feedback
 - 8/21: Review FAP changes and respond to stakeholder questions
- Seek a vote on the Market Rule 1 and FAP changes at the 9/3 PC meeting.

Thank You for Your Time and Attention Today

Supporting Calculations – Base Case

Estimated settlement of September 3, 2018 event provided by ISO-NE

Current Rules	
Assumptions	MW
Energy Portion of ACP _{non-ee}	23,164
ACP _{ee, on-peak}	-
ACP _{ee, seasonal peak}	-
ACP _{ee}	-
Reserve Requirement (RR)	2,106
Non-EE CSO	32,543
EE CSO	2,458
Total CSO	35,001
System Load	23,164
System Reserves	1,804
Balancing Ratio (BR) *	0.722

Current Rules: PFP Settlement Example (Labor Day 2018)		
Category	Amount	Formula
(a) Charges to non-EE =	\$ (125,308,665)	PPR x BR x Non-EE CSO
(b) Charges to EE =	\$ (9,464,668)	PPR x BR x EE CSO (This amount is not billed to EE for off-peak CSCs)
(c) Payments to non-EE =	\$ 133,162,667	PPR x (ACP _{non-ee}) = PPR x (System Load + System Reserves)
(d) Payments to EE =	\$ -	PPR x (ACP _{ee})
(e) Difference in Charges and Payments	\$ 1,610,667	PPR x Reserve Deficiency = -[(a) + (b)] - [(c) + (d)]
(f) EE under-collection =	\$ (9,464,668)	(b) (Charges not billed to EE due to the EE exemption are allocated through the BF)
(g) Balancing Fund (BF) =	\$ (7,854,002)	(e) + (f)
(h) BF allocation to non-EE =	\$ (7,302,442)	(g) x non-EE CSO/Total CSO
(i) BF allocation to EE =	\$ (551,560)	(g) x EE CSO/Total CSO
(j) Final Settlement to non-EE =	\$ 551,560	(a) + (c) + (h)
(k) Final Settlement to EE =	\$ (551,560)	(d) + (i)

* BR = (Energy Portion of ACP_{non-ee} + ACP_{ee} + RR) / Total CSO

PPR \$ 5,333

Legend:

Key results

Supporting Calculations – Case #1

Base Case with Performance Payment Rate increased to \$5,455/MWh

Current Rules	
Assumptions	MW
Energy Portion of ACP _{non-ee}	23,164
ACP _{ee, on-peak}	-
ACP _{ee, seasonal peak}	-
ACP _{ee}	-
Reserve Requirement (RR)	2,106
Non-EE CSO	32,543
EE CSO	2,458
Total CSO	35,001
System Load	23,164
System Reserves	1,804
Balancing Ratio (BR) *	0.722

Current Rules: PFP Settlement Example (Labor Day 2018)			
	Category	Amount	Formula
(a)	Charges to non-EE =	\$ (341,779,384)	PPR x BR x Non-EE CSO
(b)	Charges to EE =	\$ (25,814,883)	PPR x BR x EE CSO (This amount is not billed to EE for off-peak CSCs)
(c)	Payments to non-EE =	\$ 363,201,173	PPR x (ACP _{non-ee}) = PPR x (System Load + System Reserves)
(d)	Payments to EE =	\$ -	PPR x (ACP _{ee})
(e)	Difference in Charges and Payments	\$ 4,393,093	PPR x Reserve Deficiency = -[(a) + (b)] - [(c) + (d)]
(f)	EE under-collection =	\$ (25,814,883)	(b) (Charges not billed to EE due to the EE exemption are allocated through the BF)
(g)	Balancing Fund (BF) =	\$ (21,421,789)	(e) + (f)
(h)	BF allocation to non-EE =	\$ (19,917,411)	(g) x non-EE CSO/Total CSO
(i)	BF allocation to EE =	\$ (1,504,379)	(g) x EE CSO/Total CSO
(j)	Final Settlement to non-EE =	\$ 1,504,379	(a) + (c) + (h)
(k)	Final Settlement to EE =	\$ (1,504,379)	(d) + (i)

* BR = (Energy Portion of ACP_{non-ee} + ACP_{ee} + RR) / Total CSO

PPR \$ 14,547

Legend:

	Changed assumptions from base case
	Key results

Supporting Calculations – Case #2

Base Case with (i) PPR increased to \$5,455/MWh, and (ii) applying DR On-Peak and Seasonal Peak Hours rules

Current Rules	
Assumptions	MW
Energy Portion of ACP _{non-ee}	23,164
ACP _{ee, on-peak}	2,285
ACP _{ee, seasonal peak}	569
ACP _{ee}	2,854
Reserve Requirement (RR)	2,106
Non-EE CSO	32,543
EE CSO	2,458
Total CSO	35,001
System Load	23,164
System Reserves	1,804
Balancing Ratio (BR) *	0.804

Current Rules: PFP Settlement Example (Labor Day 2018)		
Category	Amount	Formula
(a) Charges to non-EE =	\$ (380,385,983)	PPR x BR x Non-EE CSO
(b) Charges to EE =	\$ (28,730,871)	PPR x BR x EE CSO (This amount is not billed to EE for off-peak CSCs)
(c) Payments to non-EE =	\$ 363,201,173	PPR x (ACP _{non-ee}) = PPR x (System Load + System Reserves)
(d) Payments to EE =	\$ 41,522,587	PPR x (ACP _{ee})
(e) Difference in Charges and Payments	\$ 4,393,093	PPR x Reserve Deficiency = -[(a) + (b)] - [(c) + (d)]
(f) EE under-collection =	\$ -	(b) (Charges not billed to EE due to the EE exemption are allocated through the BF)
(g) Balancing Fund (BF) =	\$ 4,393,093	(e) + (f)
(h) BF allocation to non-EE =	\$ 4,084,581	(g) x non-EE CSO/Total CSO
(i) BF allocation to EE =	\$ 308,512	(g) x EE CSO/Total CSO
(j) Final Settlement to non-EE =	\$ (13,100,228)	(a) + (c) + (h)
(k) Final Settlement to EE =	\$ 13,100,228	(d) + (i)

* BR = (Energy Portion of ACP_{non-ee} + ACP_{ee} + RR) / Total CSO

PPR \$ 14,547

Legend:

	Changed assumptions from base case
	Key results

Supporting Calculations – Case #3

Base Case with (i) PPR increased to \$5,455/MWh, (ii) applying DR On-Peak and Seasonal Peak Hours rules, and (iii) reducing load by 10%

Current Rules	
Assumptions	MW
Energy Portion of ACP _{non-ee}	20,848
ACP _{ee, on-peak}	2,285
ACP _{ee, seasonal peak}	569
ACP _{ee}	2,854
Reserve Requirement (RR)	2,106
Non-EE CSO	32,543
EE CSO	2,458
Total CSO	35,001
System Load	20,848
System Reserves	1,804
Balancing Ratio (BR) *	0.737

Current Rules: PFP Settlement Example (Labor Day 2018)		
Category	Amount	Formula
(a) Charges to non-EE =	\$ (349,056,431)	PPR x BR x Non-EE CSO
(b) Charges to EE =	\$ (26,364,524)	PPR x BR x EE CSO (This amount is not billed to EE for off-peak CSCs)
(c) Payments to non-EE =	\$ 329,505,275	PPR x (ACP _{non-ee}) = PPR x (System Load + System Reserves)
(d) Payments to EE =	\$ 41,522,587	PPR x (ACP _{ee})
(e) Difference in Charges and Payments	\$ 4,393,093	PPR x Reserve Deficiency = -[(a) + (b)] - [(c) + (d)]
(f) EE under-collection =	\$ -	(b) (Charges not billed to EE due to the EE exemption are allocated through the BF)
(g) Balancing Fund (BF) =	\$ 4,393,093	(e) + (f)
(h) BF allocation to non-EE =	\$ 4,084,581	(g) x non-EE CSO/Total CSO
(i) BF allocation to EE =	\$ 308,512	(g) x EE CSO/Total CSO
(j) Final Settlement to non-EE =	\$ (15,466,575)	(a) + (c) + (h)
(k) Final Settlement to EE =	\$ 15,466,575	(d) + (i)

* BR = (Energy Portion of ACP_{non-ee} + ACP_{ee} + RR) / Total CSO

PPR

\$ 14,547

Legend:

	Changed assumptions from base case
	Key results