UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

ISO New England Inc. and New England Power Pool Participants Committee	)	Docket No. ER10-787-000
New England Power Generators Association v. ISO New England Inc.	)	Docket No. EL10-50-000
PSEG Energy Resources & Trade LLC, PSEG Power Connecticut LLC, NRG Power Marketing LLC, Connecticut Jet Power LLC, Devon Power LLC, Middletown Power LLC, Montville Power LLC, Norwalk Power LLC, and Somerset Power LLC v. ISO New England Inc.	)	Docket No. EL10-57-000

SUPPLEMENTAL TESTIMONY OF JAMES F. WILSON
IN SUPPORT OF SECOND BRIEF OF
THE JOINT FILING SUPPORTERS

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I. Introduction

Q 1: Please state your name, position and business address.

A: My name is James F. Wilson. I am an economist, principal of Wilson Energy Economics, and affiliate of LECG, LLC. My business address is 4800 Hampden Lane Suite 200, Bethesda, MD 20814.

Q 2: Have you previously submitted testimony in this proceeding?

A: Yes. I submitted direct testimony on behalf of the Connecticut Department of Public Utility Control ("DPUC") in this proceeding on March 30, 2010 (Exhibit DPUC-1) ("March Testimony") (Direct Testimony of James F. Wilson on Behalf of the Connecticut Department of Public Utility Control, Exhibit DPUC-1 to Motion to Answer and Answer of the Connecticut Department of Public Utility Control, the Vermont Public Service Board, the Vermont Department of Public Service and The Northeast Utilities Companies, *ISO New England Inc. and New England Power Pool Participants Committee,* Docket No. ER10-787-000, Mar. 30, 2010) and direct testimony in support of the Joint Filing Supporters' First Brief on July 1, 2010 ("July Testimony") (Direct Testimony of James F. Wilson in Support of the First Brief of the Joint Filing Supporters, Exhibit DPUC-3 to The Joint Filing Supporters' First Brief, *ISO New England Inc. and New England Power Pool Participants Committee*, Docket Nos. ER10-787-000, EL10-50-000, and EL10-57-000, July 1, 2010). A description of my experience and qualifications was included in the March Testimony, and my CV, listing past testimony, was attached to it.

Q 3: Please describe the purpose of this stage of the proceeding.

A: On April 23, 2010, the Federal Energy Regulatory Commission ("FERC" or the "Commission") issued an order ("April Order") with regard to the proposed revisions to the Forward Capacity Market ("FCM") capacity construct (the "Joint Filing") filed on February 22, 2010 by ISO New England, Inc. ("ISO-NE") and the New England Power Pool ("NEPOOL"). The April Order set certain issues for paper hearing and called for the parties to file First Briefs addressing those issues. The April Order also permitted any parties to file Second Briefs responding to arguments made in the First Briefs.

Q 4: What is the scope of your supplemental testimony?

A: My testimony focuses on the First Brief of ISO New England Inc.[1] ("ISO First Brief") and the proposal it describes for resolving the issues set for paper hearing ("ISO-NE's New Proposal"). I will evaluate ISO-NE's New Proposal and also respond to other parties' proposals and experts' arguments with regard to the three main groups of issues set for paper hearing: (1) the Alternative Price Rule ("APR"); (2) the provisions pertaining to definition and formation of capacity zones and market power mitigation; and (3) FCM's "Cost of New Entry" ("CONE") parameter and related parameters.

II. Summary and Conclusions

Q 5: Please summarize your supplemental testimony regarding the APR.

A: ISO-NE has proposed an entirely new APR rule.

[1] First Brief of ISO New England Inc., *ISO New England Inc. and New England Power Pool Participants Committee*, Docket Nos. ER10-787-000, EL10-50-000, and EL10-57-000, July 1, 2010.

ISO-NE recognizes that the Forward Capacity Auction ("FCA") Price, calculated based on resources' actual offer prices, reflects the demand-supply balance and is the appropriate price signal for new resources; a higher price would lead to even more excess capacity. But ISO-NE nevertheless adopts the position, contrary to the guidance in the April Order, that *all* resources categorized as OOM under the broad definition currently in the Tariff should be mitigated – not just any resources being used as a tool to attempt to suppress prices.

There is a fundamental contradiction between the FCA Price that reflects the actual demand-supply balance and provides the right price signal for the need for capacity, and the (potentially much higher) APR Price calculated based on mitigation of all offers from resources categorized as OOM. ISO-NE attempts to design its new APR proposal around this irreconcilable contradiction. This quandary led ISO-NE to propose a "two-tiered" pricing approach, under which existing resources live in the artificial world of the APR calculation and receive the APR Price, while new resources must operate in the real world and receive only the FCA Price (and are confined to the real world and permitted into the artificial APR world only after five years). While at first glance ISO-NE's proposal may seem to resolve the contradiction, I find that the proposed two-tiered pricing approach creates bad incentives and multiple opportunities for manipulation of the FCA and APR Prices. The proposed two-tiered approach also creates some difficult issues regarding the allocation of responsibility for the cost of the excess cleared capacity.

I evaluated ISO-NE's new APR proposal at two levels. First, is the new proposal guided by appropriate economic principles and objectives? And second, accepting (for the

purpose of this evaluation only) the principles and objectives ISO-NE has chosen, would the proposed mechanics apply these principles in an effective manner, and would they achieve the objectives that ISO-NE has identified? I find that ISO-NE's new APR proposal fails on both accounts.

ISO-NE's new APR proposal is founded on inappropriate principles and objectives:

1. ISO-NE's proposal to mitigate all resources classified as OOM under the current, broad definition in the Tariff is inappropriate, unnecessary, and contrary to the guidance in the April Order. Mitigating all OOM resources leads to an APR Price well above the price that clears demand and supply, creating a fundamental contradiction that makes this APR mechanism unworkable.
2. Mitigating all OOM resources will also require capacity purchasers to buy more capacity than needed to satisfy the ICR or, for zones, the LSR. ISO-NE proposes to re-price OOM resources based on benchmarks and procure additional existing capacity resources to "replace" some or all of the re-priced OOM. The amount of excess capacity above the ICR/LSR purchased every year could be as great as the total amount of new and carry-forward OOM. Given the broad definition of OOM that ISO-NE proposes to use, that could be a significant over-purchase each year.
3. ISO-NE's claim that its proposed "benchmark" prices, based on long-run average costs net of estimated market revenues excluding capacity payments, represent "competitive" offers, is incorrect. Competitive offers can be as low as going-forward cost.
4. ISO-NE's claim that the proposed APR Prices would represent the "but for" prices that would occur had OOM resources been offered "competitively" is also incorrect. As a result, even accepting the goal of holding existing resources entirely "harmless" for all entry categorized as OOM, ISO-NE's proposal would over-compensate existing resources.
5. ISO-NE's new APR proposal, in offering higher prices to existing resources and lower prices to new resources, is also inconsistent with state policies encouraging new renewable and demand response resources to replace existing resources that have less desirable environmental characteristics.

The mechanics of ISO-NE's new APR proposal, built upon the contradiction between an FCA Price that reflects the demand-supply balance and provides the right price signal, and the higher APR price reflecting mitigation of all resources categorized as OOM, introduce numerous opportunities for manipulation of one or the other price. During the

FCA, market participants will be able to estimate the corresponding APR supply curve and the likely APR Price and adjust their strategies accordingly. This arrangement – under which a single auction process determines two important prices – leads to various opportunities and incentives for manipulation. In particular, I have identified the following incentive problems, opportunities for manipulation, and other issues (supported by numerical examples, as noted):

1. While the FCA's descending clock auction process is designed to encourage competitive conduct, the proposed APR price-setting mechanism will be materially less competitive and will create strong incentives to withhold resources to increase the APR Price (Example 1).
2. The proposed mechanism creates opportunities and incentives for owners of existing resources to offer some resources at low prices in order to manipulate the FCA Prices lower so that new capacity will not clear (Example 2).
3. The mechanism creates incentives for owners of high-cost existing resources to continue to operate those resources rather than to replace them with lower-cost new resources (Example 3).
4. The mechanism creates incentives for owners of existing resources to develop higher-cost resources that would be categorized as OOM and thereby raise APR Prices instead of developing lower-cost, more efficient resources (Example 4).
5. The mechanism creates incentives for capacity sellers and buyers to attempt to influence whether new resources that may have little or no chance of clearing are offered because such resources can effect APR Prices (Example 5).
6. The mechanism creates circumstances under which the amount of cleared excess capacity can be larger due to the presence of transmission capacity between zones, raising the cost to consumers and introducing difficult cost allocation issues (Example 6).
7. The five-year mandatory obligation for new resources discourages entry and distorts offer prices.

The correct approach is to limit mitigation to resources that are being used in an attempt to manipulate prices, according to a bright-line test such as the one I proposed in my July Testimony. With this approach, ISO-NE's proposed two-tiered pricing is unnecessary

and inappropriate, because all resources – new and existing – should earn the price that reflects this mitigation.

Q 6: Please summarize your supplemental testimony with regard to capacity zones.

A: ISO-NE's proposal to model all zones all of the time and to allow all de-list bids to set price represents an unprecedented experiment with zonal capacity pricing and goes well beyond what other RTOs have attempted. New England's eight capacity zones are quite small and the ownership of capacity located in these zones is concentrated; ISO-NE has no experience with such zonal capacity pricing, and the experience in other RTOs with zonal capacity pricing in such small zones is very limited. Smaller zones are more susceptible than larger zones to extreme outcomes and market power.

In addition, aspects of the New England market rules make zonal capacity pricing in New England more likely to result in extreme and unintended outcomes compared to other RTO regions. Because the FCM is designed to always purchase the Local Sourcing Requirement ("LSR"), small changes in demand or supply conditions or participants' offer strategies can cause very large increases or decreases in FCA or APR Prices. This sensitivity increases suppliers' incentives to exercise market power and the risk of extreme outcomes. The potential implementation of a completely new APR rule would add an additional dimension of complexity and increase the potential for extreme outcomes, manipulation, and other unintended consequences. The incentive problems associated with ISO-NE's new APR proposal will be more serious in smaller zones where it would be easier to predict and influence FCA and APR Prices.

As I explained in my July Testimony, zonal capacity pricing has not achieved the objective of attracting new and retaining existing resources in higher-priced zones in PJM

where it has been applied most extensively (27:2 – 32:21), and zonal capacity pricing may reduce rather than increase the efficiency of a capacity market (25:10 – 26:23, 46:13 – 48:13). Consequently, the Commission should be cautious in expanding zonal capacity pricing. ISO-NE's proposal to model all zones all of the time and to allow all de-list bids to set price is a risky approach, especially in light of the many changes being made to the FCM rules at this time. The market modeling test proposed in the Joint Filing should be retained, at least for a transitional period. Modeling all zones all of the time – including zones that have adequate capacity – risks the exercise of market power and other unintended results.

Q 7: Please summarize your supplemental testimony with regard to market power mitigation.

A: ISO-NE proposes to strengthen market power mitigation, lowering the thresholds above which de-list bids are subject to IMM review and mitigation based on net risk-adjusted going-forward costs. This is especially important in light of the possibility of expanded zonal capacity pricing and fundamental changes to the APR. Both zonal capacity pricing, and a new APR rule, are likely to create new opportunities and stronger incentives to withhold capacity to raise FCA or APR Prices.

However, it must be recognized that the proposed mitigation would still be only partially effective. It would not affect the incentives to withhold at all, which become stronger with zonal pricing and a new APR rule. The mitigation would only partially address the ability to withhold, because, for examples, it does not apply to new resources, or to incremental capacity that could be developed at existing plants.

Under ISO-NE's proposal, unmitigated Dynamic De-List bids would be permitted below a threshold of $1/kW-month. This would allow unmitigated exercise of market power to raise prices to this level, and the threshold would be a price floor by another name. A Dynamic De-List bid threshold is not necessary. All de-list bids should be subject to IMM review based on net risk-adjusted going-forward cost.

Q 8: Please summarize your supplemental testimony with regard to FCM price parameters and "CONE."

A: The proposed changes to market power mitigation eliminate the most important linkages of FCM parameters to the FCM CONE parameter, and ISO-NE proposes that other parameters linked to CONE also be set independent of CONE. This eliminates the role of the CONE parameter and, as a result, a reset of the CONE parameter becomes pointless and unnecessary. This approach to setting FCM parameters is sound.

III. Alternative Price Rule

Q 9: What issues were set for paper hearing with regard to the APR, and what is the focus of your supplemental testimony in this regard?

A: The April Order set three APR issues for paper hearing (P 18):

1. Triggering conditions, if any, for the APR;
2. Treatment of OOM resources that create capacity surpluses for multiple years; and
3. Appropriate price adjustment under the APR.

In response, ISO-NE filed a new APR proposal that is materially different from the one it supported in the Joint Filing. My testimony focuses on ISO-NE's new APR proposal, and I also respond to some of the proposals and arguments of other parties relating to the APR.

Q 10: Please describe ISO-NE's new APR proposal.

A: ISO-NE's new APR proposal has the following key elements.

1. The FCA descending clock auction would be conducted as in the past, based on the offer prices of all resources as-bid, with no mitigation of any OOM resources. This results in a clearing price that I will refer to as the "FCA Price."
2. The definition and categorization of "Out-of-Market" ("OOM") resources would be unchanged, and the APR would be triggered whenever there is any OOM (including both new and carried-forward) according to the broad existing definition in the Tariff. All resources designated as OOM (new or carried-forward) would be re-priced for the new APR based on "benchmark" prices for each resource technology type developed by the Independent Market Monitor ("IMM"). The benchmark prices would be intended to represent the resource type's "long run average cost" net of "expected net revenues" other than capacity revenues. With these resources re-priced, the alternative clearing price would be calculated. I will refer to this price as the "APR Price."
3. Under ISO-NE's proposed "two-tiered" approach, only cleared existing resources would receive the APR Price. New resources would receive the (lower) FCA Price and, in addition, would now be required to accept a five-year commitment at this price.
4. While new resources would clear only if offered at prices no greater than the FCA Price, ISO-NE proposes that existing resources would clear if offered at prices up to the APR Price. As a result, the APR would likely result in acquiring a quantity of capacity in excess of the Installed Capacity Requirement ("ICR") or, for a capacity zone, the Local Sourcing Requirement ("LSR").
5. Imports would earn the FCA Price. New imports that require significant investment would, however, be eligible to earn the APR Price after the initial five-year commitment period.
6. The quantity of new OOM resources clearing in each auction would be added to a tally of carried-forward OOM that would be decreased by load growth and retirements. Each carried-forward OOM resource would be re-priced for the purpose of determining the APR Price using the applicable benchmark developed for the resource type in the year of entry.
7. There are various other details to the proposal, such as a sunset provision that would limit existing resources' right to receive the APR Price to 20 years.

Q 11: Have you prepared exhibits to illustrate the mechanics of ISO-NE's new APR proposal?

A: Yes I have. Exhibit DPUC-28 is a simplified example of an FCA in which existing resources (designated E1, E2, E3, and E4), one new OOM resource, and two non-OOM

new "merchant" resources (M1 and M2) are participating. The exhibit shows the "supply curve" indicating the quantities of each resource and the price at which it would exit the auction. In this example, the FCA clears at $1.80 and resources E1, E2, M1 and the OOM resource clear the FCA. The exhibit also shows the "benchmark" price that will be used for re-pricing the OOM resource in the APR calculation, but this price has no impact on the FCA.

Exhibit DPUC-29 illustrates the adjusted supply curve for the corresponding APR calculation. The OOM resource is re-priced at the benchmark price, causing the supply curve to shift to the left beginning from the point where the OOM resource had been located. Now resources M2 and E3 also "clear" in the APR calculation (*i.e.*, their capacity, based on the adjusted supply curve, is needed to meet the ICR), and the resulting APR Price is $2.20.

All of the resources that cleared the FCA (E1, E2, OOM and M1) will receive capacity supply obligations. In addition, as a result of the APR, existing resource E3 will also receive a capacity supply obligation because it cleared in the APR calculation. Resource M2, however, despite "clearing" in the APR calculation, will not receive a capacity supply obligation because it is a new resource and under ISO-NE's new APR proposal, new resources must clear in the FCA to receive a capacity supply obligation.

Cleared resources E1, E2 and E3, as existing resources, will be paid the APR Price of $2.20. The new cleared resources (the OOM resource and the cleared merchant resource M1) will be paid the FCA Price of $1.80. Merchant resource M2 and existing resource E4 do not clear and will not receive capacity payments.

Q 12: Please summarize your evaluation of ISO-NE's new APR proposal.

A: I evaluated ISO-NE's new APR proposal at two levels. First, is the new proposal guided by appropriate economic principles and objectives? And second, accepting (for the purpose of this evaluation only) the principles and objectives ISO-NE has chosen, would the proposed mechanics apply these principles in an effective manner and would they achieve the objectives that ISO-NE has identified?

I find that ISO-NE's new APR proposal fails on both accounts. It is founded on inappropriate principles and objectives and does not heed the guidance provided in the April Order. With regard to the proposed mechanics, the mechanism would create opportunities and incentives for manipulation of both FCA and APR Prices and would not achieve ISO-NE's stated objectives.

Q 13: What is the primary problem with ISO-NE's new APR proposal?

A: ISO-NE recognizes that the FCA Price, calculated based on resources' actual offer prices, "reflects the demand-supply balance" and is the "appropriate price signal for new resources." (ISO First Brief at 11) But despite this acknowledged reality, ISO-NE adopts the view that "*All* OOM resources inappropriately suppress price" (*Id.* at 37, emphasis added), and it seeks to "fully correct" for the entry of OOM resources (*Id.* at 10). There is a fundamental contradiction between a (relatively low) FCA Price that reflects the actual demand-supply balance and provides the right price signal for the need for capacity, and the (potentially much higher) APR Price intended to be an estimate of the price that would result in a hypothetical world without any OOM offers. ISO-NE's attempts to design its new APR proposal around this inherent contradiction.

Q 14: Please explain how this contradiction leads to design problems, and how ISO-NE's new APR proposal attempts to resolve them.

A: The lower FCA Price clears the ICR (or, for capacity zones, the LSR), while the higher APR Price would lead to clearing more capacity than is needed to meet reliability requirements. This quandary led ISO-NE to propose a "two-tiered" pricing approach, under which existing resources live in the artificial world of the APR calculation and receive the APR Price, while new resources must operate in the real world and receive only the FCA Price (and are confined to the real world and permitted into the artificial APR world only after five years).

While ISO-NE's proposed two-tiered pricing approach may seem to resolve the contradiction, my analysis shows that it creates bad incentives and multiple opportunities for manipulation of the FCA and APR Prices, as I will further explain in my discussion of the mechanics of the proposal. The proposed two-tiered approach also creates some very difficult issues regarding the allocation of responsibility for the cost of the excess capacity.

Q 15: Are the problems created by ISO-NE's new APR proposal likely to be significant?

A: Yes, these problems are likely to be very significant. Under just about any APR proposal, if few or no resources are subject to mitigation, the APR Price likely will be close to the FCA Price and the problems might be relatively minor. However, ISO-NE proposes to use the very broad definition of OOM currently in the Tariff and to mitigate every OOM resource without regard to whether the resource was being used to inappropriately suppress prices. If a large quantity of resources is subject to APR mitigation – as seems very probable – there is the potential for an APR Price far above

the FCA Price and a large cleared excess. (Other parties propose mitigating even more resources, which would lead to an even greater disparity between the FCA Price and the APR Price, as I will discuss later.) Under these circumstances, the harmful incentives are strong and the opportunities for manipulation are substantial. The mechanics of the APR mechanism become very important.

For my evaluation of the potential impacts of ISO-NE's new APR proposal, I assume that states will continue to encourage investments in new resources to meet states' policy objectives, and that financial markets may dictate that other new resources be supported by long-term bilateral contracts. As a result, ISO-NE may classify a substantial amount of capacity as OOM. Because this capacity would be re-priced at benchmark prices to calculate the APR Price, it would likely cause the APR Prices to be substantially higher than the FCA Prices.

Q 16: Please explain how much excess capacity may clear under ISO-NE's new APR proposal.

A: Under ISO-NE's proposal, the FCA clears a quantity of new and existing capacity equal to the ICR (or the LSR for capacity zones). However, existing capacity that did not clear in the FCA, but that offered at prices less than the APR Price, also clears. As a result, the total cleared capacity will very likely exceed the ICR/LSR when there are any OOM resources.

The amount of excess cleared capacity will equal the amount of existing capacity that was "displaced" by OOM resources in the FCA (that is, that would have cleared, had the OOM resources been offered at the higher benchmark prices). The amount of excess cleared capacity can be as high as the total amount of OOM capacity offered in the

auction, including both new and carried-forward OOM resources. The amount of excess cleared capacity would equal the total amount of OOM capacity in the auction if (1) all of the OOM capacity cleared in the FCA; (2) there is sufficient existing capacity offered at prices below the OOM benchmark prices so that the APR Price is set below the benchmark prices, and none of the OOM resources "clear" under the APR Price; and (3) there is no non-OOM new capacity priced below the APR Price that failed to clear the FCA. To the extent some of the OOM capacity or displaced new capacity "clears" under the APR Price, the cleared excess will be lower than the total amount of OOM capacity in the auction.

A. ISO-NE's New APR Proposal Focuses on Inappropriate Principles and Objectives

Q 17: You noted that ISO-NE now proposes to mitigate all OOM resources. Please describe ISO-NE's proposal with regard to the resources that will be mitigated.

A: ISO-NE proposes to retain the broad definition of OOM resources currently in the Tariff. (ISO First Brief at 32). ISO-NE proposes to designate as OOM offers less than 80% of a "benchmark" price based on the net long-run average cost for the resource technology type. (*Id.* at 32-33). ISO-NE also proposes to allow sponsors to provide project-specific long-run cost and revenue data to support offers below 80% of the benchmark price.

Q 18: Is ISO-NE's proposal to mitigate all OOM resources consistent with the guidance in the April Order?

A: No, it is not consistent with the guidance in the April Order. The April Order was clear that the APR is a buyer market power mitigation rule and an OOM resource that is being used as a "tool" to suppress prices should be mitigated:

- "APR is a market power mitigation rule intended to discourage buyers who have the incentive and ability to suppress market clearing capacity prices below a competitive level from doing so." (P 69).
- "The APR should be triggered when a buyer is in a position to exercise market power. A critical element is the determination of resources that are OOM because these are the resources that buyers might subsidize and offer non-competitively in order to suppress market-clearing prices." (P 75).
- "However, it may be reasonable to exempt OOM resources from mitigation when it is shown that they are not being used as a market power tool." (P 76).
- "It would not be reasonable to trigger APR market power mitigation for an existing OOM resource in a given year if that resource has not inappropriately suppressed the market clearing price in that year." (P 77).
- "Thus, some limitations on when an OOM resource may trigger APR mitigation may be reasonable, in order to identify situations where an OOM resource is likely to inappropriately suppress the market price." (P 77).
- "Similarly, parties should address whether or how APR mitigation might accommodate OOM capacity introduced for resource adequacy or to satisfy public policy goals, such as integration of renewable and demand response resources." (P 77)
- "In general, Commission precedent requires bright-line measures or tests to distinguish OOM capacity that should trigger APR mitigation (i.e., that used as a tool for price suppression) from capacity that should not trigger such mitigation because it does not inappropriately suppress market-clearing prices below a competitive level." (P 77) (internal citation omitted).

ISO-NE's new APR proposal that would indiscriminately mitigate all resources categorized as OOM under the current definition is not consistent with this guidance provided in the April Order.

Q 19: What is your position with regard to the OOM resources that should be mitigated and trigger the APR?

A: I agree with the guidance provided in the April Order. Because the APR is a provision for mitigating buyer market power, only the OOM resources that are being used as tools to attempt to inappropriately suppress market prices should be mitigated. In my July Testimony, I proposed a bright-line test based on the guidance provided in the April Order to identify OOM resources that should be mitigated. (July Testimony at 10:1 -

15:2, 17:4-18 (proposing a bright-line test with three elements: (1) only resources of net buyers may be classified as mitigated OOM; (2) resources that are in the FCA due to legitimate public policy purposes should not be classified as mitigated OOM, only resources being used for the purpose of suppressing the FCA price should be mitigated; and (3) resources of net buyers may be mitigated if their offers are below their net going-forward cost after reflecting subsidies or contractual revenues provided for legitimate public policy purposes)).

The proposal to mitigate all OOM resources, based on a broad definition of OOM, reflects a misguided attempt to simulate a world in which resources are developed to rely exclusively on revenues from ISO-NE's energy and ancillary services markets. This reflects a vision of how these markets would operate from early in the last decade. Instead, nearly all new resources are now developed with various incentives and/or contracts that encourage and support their development.

Indeed, it is clear from the other experts' testimony that there may be no such thing today as "in-market" resources. Dr. Bidwell believes that all of the new demand response that cleared in FCA #3 is out of market,[2] (Bidwell Affidavit at 6) while Dr. Stoddard believes all of the new generation that cleared in that auction was out of market. Discussing the results of FCA #3, Dr. Stoddard stated (Stoddard Testimony at 42),

[2] First Brief of the Boston Gen Companies, *ISO New England Inc. and New England Power Pool Participants Committee*, Docket Nos. ER10-787-000, EL10-50-000, and EL10-57-000, July 1, 2010, Attachment A, Affidavit of Miles O. Bidwell.

> "These facts raise serious questions as to whether offers from even the limited amount of purportedly "in-market" new generation that cleared the auction represent those resource's long-run average costs."[3]

Attempting to determine the capacity price that would result if all resources were "in-market," when apparently there are few if any such resources at present, is a futile exercise based on an outdated, unrealistic model, and to implement such a determination would require numerous subjective assumptions that could not be made with any reliability or accuracy.

Q 20: What other positions have the experts in this proceeding taken with regard to the purpose of the APR provision and the resources that should be mitigated as OOM?

A: Other experts have emphasized the need to mitigate possible exercise of buyer market power to raise FCM prices. Dr. Shanker, for instance, suggests that buyers have exercised market power and stresses the need to mitigate such attempts. However, he uses the term "buyer market power" very loosely and broadly, and does not specifically identify the entity or entities he accuses of exercising market power or the specific actions that he considers exercises of market power to lower FCM prices. At one point Dr. Shanker appears to recognize that intent (motives, rationales) matter (in accusing me of ignoring intent) (Shanker Testimony at 62:12 – 14):

> "Mr. Wilson's most material mistake was failing to distinguish the motives and rationales of some parties who might hold OOM contracts from the actions and incentives of those who initiated the contracts."[4]

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[3] Opening Brief of the New England Power Generators Association, Inc., *ISO New England Inc. and New England Power Pool Participants Committee*, Docket Nos. ER10-787-000, EL10-50-000, and EL10-57-000, July 1, 2010 ("NEPGA First Brief"), Exhibit 2, Testimony of Robert B. Stoddard on Behalf of New England Power Generators Association.

[4] NEPGA First Brief, Exhibit 1, Testimony of Roy J. Shanker, Ph.D on Behalf of New England Power Generators Association.

However, while the bright-line test I have proposed would identify and mitigate resources that are being used as tools to suppress prices (attempts to exercise of buyer market power), taking "motives and rationales" into consideration, ultimately Dr. Shanker abandons this concept and recommends mitigation of all resources categorized as out-of-market under a broad definition, without regard to any consideration of "motives and rationales." Dr. Shanker, like the other experts, ultimately recommends mitigating OOM resources, under a broad definition of OOM, "no matter its origin or purpose." (*Id.* at 68:10 – 12).

This is a glaring inconsistency in Dr. Shanker's and the other experts' positions: they repeatedly (and generally vaguely) claim buyer market power has been and is being exercised, but then call for mitigating a much broader class of resources without consideration of the motives or rationales that may have led to the out-of-market revenues or contracts, which in most cases had everything to do with legitimate public policy objectives and nothing to do with suppressing FCM prices.

Q 21: You noted that other experts propose to further expand the definition of OOM to include additional resources. Please respond to such proposals.

A: These proposals would result in an APR rule even less consistent than ISO-NE's with the April Order's guidance that the APR is a market power mitigation tool and should be triggered when resources are being used to suppress prices.

Q 22: What is the consequence of ISO-NE's proposal to mitigate all OOM resources?

A: This element makes the design of the APR mechanism unworkable and unreasonable. Under an appropriate bright-line test to identify resources being used to inappropriately suppress prices, only a subset of OOM resources would be mitigated. If a net buyer is

attempting to use these resources to suppress prices, it is appropriate to mitigate them and to calculate capacity prices in a manner that does not allow the attempted price suppression to occur. This approach would result in a corrected capacity price that reflects the mitigation, and this would be the right price to be paid to all resources, new and existing, OOM and non-OOM.

Because ISO-NE despairs of defining a bright-line test and, instead, proposes to mitigate all OOM resources, the resulting APR Price may be very high and may clear a quantity of capacity much greater than the ICR (or for zones, LSR). This problem leads to ISO-NE's misguided proposal for "two-tiered" pricing under which existing resources are paid the high APR Prices, but new resources are denied the APR Prices for five years, lest the mechanism attract even more excess capacity. As I will describe in the next section, the proposed two-tiered pricing creates incentives and opportunities to exercise market power and manipulate FCA and APR Prices.

Q 23: Please describe how ISO-NE proposes the "benchmark" prices, to which OOM resources would be re-priced for the APR calculation, would be determined under its new APR proposal.

A: ISO-NE states that benchmark prices will be set for several different resource types, but it does not describe the methodology, instead stating that "[t]he methodology for calculating the benchmark offers would be developed by the IMM, and the IMM will present its methodology and results to stakeholders." (ISO First Brief at 30). However, ISO-NE also states that the benchmark prices will be based on the same concept reflected in the OOM definition currently in the Tariff – "long run average costs of the resource net of expected net revenues other than capacity revenues." (*Id.* at 32-33).

Q 24: ISO-NE claims that the proposed benchmark prices are "the best estimate of a competitive offer by an OOM resource." (*Id.* at 35). Do you agree?

A: No. As I explained in the March Testimony (13:6 – 15:19) and again in the July Testimony (12:11 – 13:15, 15:3 – 12), there is no reason to expect project sponsors to offer new capacity at prices based on their long-run average cost net of anticipated market earnings. This would be neither rational conduct nor competitive conduct. Under many circumstance an entrant might rationally offer its capacity based on its expected net going-forward cost, because any capacity price above its net going-forward cost leads to some margin and a contribution toward fixed cost recovery. If an entrant offers at a price above net going-forward cost, it risks missing an opportunity for some fixed cost recovery if the capacity price turns out to be below the offer price but above the net going-forward cost.

Q 25: Do other experts filing testimony in this proceeding agree that entrants acting competitively will not determine their offer prices based on long-run average cost?

A: Yes. Prof. McAdams, on behalf of NEPGA, explains that an auction such as the FCA harnesses the power of competition and will be efficient if participants offer their resources based on "*stand-alone* economic cost". (McAdams Testimony[5] at 15:4 – 6). He defines economic cost and stand-alone economic cost as "the *unprofitability* of that decision", elaborating as follows:

> ***Economic cost***: "The 'economic cost' of an economic decision—such as the decision to enter with a new resource or continue operation with an existing resource—is, quite simply, the *unprofitability* of that decision. After all *future* benefits and costs of this decision are accounted for, including any out-of-market subsidies from third-

[5] NEPGA First Brief, Exhibit 4, Testimony of David L. McAdams Ph.D. on Behalf of New England Power Generators Association.

parties, how much money is lost by making this decision? That amount is the economic cost of the decision." (*Id.* at 5:17 – 21, emphasis in original).

Stand-alone economic cost: "The 'stand-alone economic cost' of a decision to enter or continue operation is the unprofitability of that decision, when accounting only for the revenues and costs associated with the economic operation of that resource *plus* FCA auction payments. Namely, this includes all revenues earned in energy markets, all costs of operation and (if the decision in question is whether to enter the auction before investment costs have been sunk) all costs of investment." (*Id.* at 6:10 – 15, emphasis in original)

Prof. McAdams's definitions and his description of how a participant acting competitively would rationally price its capacity into the auction are entirely in agreement with my discussion in the March and July Testimony cited above. (However, as I will describe later in this testimony, Prof. McAdams' conclusions regarding the incentives under ISO-NE's new APR proposal fail to recognize the distortions introduced by the two-tiered pricing that pays new resources less than existing resources.)

ISO-NE's External Market Monitoring Unit ("EMMU") also recognizes that participants should not be expected to offer based on long-run average costs, stating, "an economically rational participant may offer a short-run commitment below its long-run costs." (Comments of Potomac Economics[6] at 5, footnote 3).

Dr. Bidwell also agrees. While he proposes mitigating any offer below average cost, he also states, "many valid reasons exist for plants wanting to offer at less than their average costs and this should be permitted." (Bidwell Affidavit at 15).

[6] Comments of Potomac Economics, Ltd. for the Commission's Paper Hearing on Revisions to the New England Forward Capacity Market Rules, *ISO New England Inc. and New England Power Pool Participants Committee*, Docket Nos. ER10-787-000, EL10-50-000, and EL10-57-000, July 1, 2010.

To base the APR Price calculation on the notion that all resources must only accept a price equal to or greater than their net long-run average cost is incorrect from an economic perspective, and inherently anti-competitive.

Q 26: ISO-NE proposes (ISO First Brief at 31) an 80% threshold for OOM designation. Does this make the proposal reasonable?

No. The 80% threshold is arbitrary and has no rational justification. While an 80% threshold would accommodate more competitive offers than a higher threshold (some experts recommend 100% (*see* Stoddard Testimony at 19:18 – 22)), 80% of net long-run average cost is an unreasonable threshold because entrants may legitimately offer their capacity at prices based on net going-forward cost, which may be much lower.

Q 27: ISO-NE proposes to permit resources to justify their costs on an individualized basis if they intend to offer at less than 80% of the benchmark cost. (ISO First Brief at 31 – 32). Does that provision make ISO-NE's proposal reasonable?

A: No. In approving or denying such applications, the IMM will necessarily have to exercise enormous discretion. As I explained in my July Testimony (15:19 – 16:8), a project sponsor may calculate a very different net long-run average cost than the IMM, due to different views regarding project useful life, various financial parameters, future market conditions, and many other determinants of projected costs and revenues. The IMM would have to pass judgment on various forecasts, valuations, and business strategies.

It would be particularly difficult for the IMM to estimate appropriate benchmark costs or to verify individualized costs for demand response resources. Each demand response resource is unique because each industrial, commercial, or even residential customer planning to reduce consumption operates under unique circumstances. As a result, their

offers in the FCA may be well below or above any estimated "benchmark" while still being fully competitive.

Furthermore, because ISO-NE's new APR proposal would pay all new resources that clear the FCA Price, regardless of whether or not they are designated as OOM, those resources would have no reason or motivation to provide their cost data to the IMM to justify an offer of less than 80% of their benchmark costs to avoid OOM categorization. Just as the resources that the IMM classified as OOM had no incentive in the first three FCAs to justify their offers based on costs because the APR would not have been invoked in any case[7] (Ethier Testimony at 19:17 – 21), most of the resources that the IMM designates as OOM in future FCAs would not be expected to have any significant incentive to attempt to justify their costs below the benchmark threshold. As a result, ISO-NE's new APR proposal may continue to lead to resources being designated OOM – and assigned high benchmark prices for the APR calculation – that have legitimately lower costs.

Q 28: If market participants, acting rationally and competitively, might offer their capacity at a broad range of prices as low as net going-forward cost, what offer prices should be used in a mechanism intended to estimate a "competitive" clearing price?

A: To estimate a "competitive" clearing price, it is most important to reflect the lower end of the reasonable range of offer prices. To see this, consider the following simple example. Suppose in a market there are about ten new supply offers each year, and two or three of them must be accepted to balance supply and demand. Each year there is a broad range

[7] Prepared Testimony of Robert G. Ether, Ph.D. on Behalf of ISO New England Inc, Attachment 3 to Joint Filing, *ISO New England Inc. and New England Power Pool Participants Committee*, Docket Nos. ER10-787-000, EL10-50-000, and EL10-57-000, Feb. 22, 2010.

of offer prices for new supply, as low as net going-forward cost for some potential suppliers up to the highest offers that may exceed long-run average cost. The lower offers reflect resources that may already have "sunk" investment cost, or may be under contract, or whose owners may be quite optimistic about future revenue prospects and are willing to accept any price above net going-forward cost this year. At the other end of the range are entrants who may have higher costs and face substantial investment costs to be able to supply capacity; they may also be more pessimistic about future revenue opportunities.

However, because the market only needs to accept two or three offers each year, it will of course be the lowest, most competitive offers that are accepted, and the competitive price will reflect the offer price of the second or third lowest offer if only two or three offers are demanded by the market. These lowest offers contain the information that is relevant to setting the clearing price for the market. The offer prices of the other, rejected offers are not reflected in the competitive clearing price and do not provide any additional useful information with regard to the competitive market-clearing price in this particular auction. If the rejected offers are only pennies above the accepted offers, this may suggest that the market is likely to be able to clear at similar prices in the future, while if the rejected offers are well above the accepted offers, it may suggest that the market may have to clear at a much higher price in future periods unless additional lower-priced supplies are offered.

Q 29: ISO-NE states that under its proposal, the FCA Price reflects the demand-supply balance and is the appropriate price signal for new resources. (ISO First Brief at 11). Do you agree?

A: Not necessarily. The FCA Price reflects the demand-supply balance and is the appropriate price signal for new resources *if* the FCA Price has not been manipulated by sellers or buyers. If there is no manipulation, the FCA Price, based on clearing demand and supply with resources as-bid, sets a single price that accurately reflects the demand-supply balance and it is the right price signal for new resources. This is also the right price signal for existing resources. All resources face opportunities and choices, and the FCA Price is the right price signal to guide these choices as long as neither buyers nor sellers have manipulated it. In particular, older resources that are near retirement should be guided by this price.

If, instead, there has been manipulation of the FCA Price, it is not the right price to guide resource decision-making, and resource offers should be mitigated to remove the impact of the manipulation, as I proposed in the July Testimony. However, under ISO-NE's proposal, even if there has been manipulation of the FCA Price, all new resources are offered only the FCA Price.

Q 30: ISO-NE claims that its proposal "corrects" prices for the presence of OOM resources "as fully and accurately as possible" by "constructing the supply curve that would have prevailed had OOM resources offered at competitive levels." It claims that the APR Price is "the best approximation of the price that would have prevailed but for the presence of OOM resources in the FCA." (ISO First Brief at 24). Do you agree that the APR Prices are the prices that would have resulted, had OOM resources been offered competitively?

A: No, ISO-NE's new APR proposal does not accomplish this stated goal. ISO-NE's proposal sets APR Prices higher than would result under hypothetical competitive conditions. The first reason is that the proposed APR Prices are based on benchmark

prices that do not represent "competitive" offers, and resources with costs below the benchmarks have little or no incentive to file individualized data to avoid OOM categorization, as I explained above.

However, even accepting the benchmark prices, ISO-NE's proposal still sets APR Prices higher than would result under competitive conditions, for at least two additional reasons. First, in each auction, any new resources offered at prices above the FCA Price do not clear, do not receive capacity supply obligations, and, presumably, the corresponding investments will not occur. However, in the "but for" world in which the APR Prices are the "real" competitive prices, any of these new resources that offered below the APR Price would have cleared and, therefore, would be in the market in all future years. Because their costs are below the APR Prices, the presence of these resources in the market would lower future APR Prices. Because ISO-NE's proposal systematically rejects such new resources with offers above the FCA Price but below its APR Price each year, future APR Prices will be higher as a result.

ISO-NE's new APR proposal also fails to reasonably determine "but for" prices because it ignores how market participants would adjust their strategies to the higher "but for" prices. In the very different world in which the various OOM resources would have been offered at the proposed benchmark price levels, market participants would expect FCA clearing prices to be higher. Market participants would adapt to these price expectations by offering additional new resources and adjusting their strategies for offering existing resources. ISO-NE's claim assumes the prices and quantities of the various other non-OOM bids would be unchanged, but that would not be the case.

The implicit model underlying ISO-NE's claim also reflects the nonsensical result that some OOM resources with costs greater than the APR Price fail to clear, fail to receive capacity supply obligations, and have no impact on prices. This makes no sense, because these resources do exist in the market and are providing capacity and contributing to meeting resource requirements.

ISO-NE's claim, in addition to relying upon faulty benchmark prices, does not account for how the market would operate and market participants would adjust if its proposed APR Prices were the actual capacity prices year after year. Therefore, its proposed APR Prices are not the prices that would have occurred, if OOM resources had been bid "competitively", even accepting ISO-NE's incorrect assumption regarding competitive bid levels.

Q 31: Can you suggest an accurate approach for the ongoing determination of the capacity prices that would have occurred, if OOM resources had always been offered based on some cost-based concept?

A: No. In addition to being inappropriate and unnecessary (because only resources being used as tools to manipulate prices should be mitigated), it should also be clear that it is futile to attempt to determine what capacity prices would have resulted each year, year after year, had one group of resources been offered at very different prices in this and prior years, had all other market participants adapted accordingly, had clearing prices reflected these changes over time, and had additional investments in new generation and demand-side resources occurred as a result. To model such a radically different world would necessarily entail numerous arbitrary determinations.

Q 32: ISO-NE suggests that existing resources are "held harmless" for the entry of OOM resources under its proposal. (ISO First Brief at 28). Does its proposal accomplish this?

A: No, it does not. As I just explained, the APR Prices derived under ISO-NE's proposal would be higher than would have occurred had all OOM resources been offered at the benchmark prices year after year. As a result, paying such APR Prices to existing resources would over-compensate them relative to the hypothetical prices that would hold them "harmless" for OOM entry.

Furthermore, in suggesting that it seeks to hold existing resources harmless, ISO-NE applies a different criterion to existing resources than it applied in the justification of other aspects of its proposal. For new resources, ISO-NE focuses on getting the incentives correct, which leads to offering these resources the lower FCA Prices to avoid excess capacity. By contrast, for existing resources, ISO-NE sacrifices incentives – *e.g.*, incentives to retire, or to export – in favor of what it claims would be appropriate compensation (the "hold harmless" concept).

Q 33: ISO-NE also states that existing resources should receive the APR Price because "[e]xisting resources entered in a previous FCA … and could not realistically be expected to forecast the entry of OOM resources and their effect in depressing the capacity price in future FCAs." (ISO First Brief at 20). Does this argument justify paying existing resources the APR Price?

A: No. This argument, if of any relevance at all, applies to very few existing resources. The vast majority of the existing resources were already in existence before the FCM was conceived and implemented. So not only might they have failed to forecast, when they entered the market, the impact of OOM resources on FCA prices, they might also have failed to forecast that there would even be a capacity market and an FCA Price.

A small amount of resources that entered in prior FCAs may have entered on a non-OOM basis and may reasonably have expected higher FCA Prices. (According to the IMM's 2009 Annual Markets Report, May 18, 2010 at p. 113, Table 4-9, the non-OOM new entry in the first three FCAs was less than 5,000 MW.) Only these resources might have a case for being paid an artificial APR Price that attempts to estimate the price that would have occurred but for OOM. However, no promises were made to such resources when they entered the market that they would be protected against entry by other resources.

Q 34: ISO-NE (ISO First Brief at 37) and Dr. Stoddard (Stoddard Testimony at 30– 33) claim that ISO-NE's approach to APR is consistent with public policies that provide incentives for preferred types of resources or resource attributes. Is this correct?

A: No. States have made policy decisions to encourage renewables and demand response that would replace fossil-fueled generation. But under ISO-NE's proposal, capacity purchasers must buy both the desirable new capacity and much or all existing capacity, even though not all of this is needed for reliability. In fact, ISO-NE's proposal will increase the APR Price paid to existing resources, thereby giving those resources – mostly fossil-fueled generation – stronger incentives to remain as capacity resources, while offering new resources a lower FCA Price for a five-year period. ISO-NE's proposal is at cross purposes with state policies that favor resources with lower emissions and other preferred attributes.

ISO-NE and Dr. Stoddard argue that ISO-NE's new APR proposal is consistent with public policies to encourage preferred resource types because the proposal allows such resources to provide capacity. However, the proposal (1) pays such resources the lower FCA Price, which is not even corrected for any attempts to suppress the price; (2) pays less preferred types of resources the higher APR Price, favoring them and discouraging

their retirement; and (3) denies all capacity buyers the benefit of the price-moderating impact of additional supply.

Q 35: Can you provide an example to clarify how ISO-NE's new APR proposal is contrary to public policies encouraging certain types of resources?

A: Yes. In my March Testimony (42:14 – 43:21) I gave an example of a market in which there are just two types of resources, called Brown and Green. This example can be updated to reflect ISO-NE's new APR proposal.

Assume Brown resources cost $5 while Green resources cost $7. However, state and/or federal policies offer incentives to encourage certain non-price resource attributes, and Green resources receive $3 in such incentive payments, resulting in a net cost of $4. Brown resources lack the attributes and do not receive the incentives. The $3 incentive payment can be understood to reflect a valuation of the resource attributes that are not valued in ISO-NE's energy, ancillary services, or capacity markets. Accepting this valuation, the net social cost of Brown resources is $5 and of Green resources is $4.

As a result of these policies, Green resources are more attractive than Brown when the differences in non-price attributes and net social cost are considered ($4 compared to $5). Therefore, the capacity market should prefer Green resources to Brown.

However, under ISO-NE's proposed new APR, some or all Green resources might be re-priced at "benchmark" prices that may remove some or all of the incentive payments for such resources, and also set offer prices based on net long-run average cost rather than permitting competitive bids. As a result, the APR Price could be set by existing resources (at $5) or by Green resources absent the incentive payments (as high as $7). Such APR Prices would encourage Brown resources to remain in the market despite the

availability of resources with lower net social cost (Green resources, at $4). Retaining the higher-cost Brown resources would also tend to depress the energy and ancillary services prices earned by the Green resources, raising their net cost and further discouraging their development.

Q 36: Please summarize your conclusions regarding the principles and objectives reflected in the design of ISO-NE's new APR proposal.

A: My main conclusions can be summarized as follows.

1. ISO-NE's proposal to mitigate all resources classified as OOM under the current, broad definition in the Tariff is inappropriate, unnecessary, and contrary to the guidance in the April Order. ISO-NE's new APR proposal – as well as the variations proposed by generation interests – would likely result in the APR being triggered every year with existing resources consistently receiving the administrative APR Price, not the FCA Price that reflects the actual demand-supply balance.

2. Mitigating all OOM resources would lead to an APR Price well above the price that clears demand and supply, creating a fundamental contradiction that makes this APR mechanism unworkable. ISO-NE's attempt to resolve this contradiction leads it to propose "two-tiered" pricing that pays new resources less than existing resources, which, as I will describe in the next section, is fraught with multiple opportunities and incentives for manipulation.

3. Mitigating all OOM resources will also require capacity purchasers to buy more capacity than needed to satisfy the ICR or, for zones, the LSR. ISO-NE would re-price OOM resources based on benchmarks and procure additional existing capacity resources to "replace" some or all of the re-priced OOM. Consequently, ISO-NE

could purchase an amount of excess capacity above the ICR/LSR every year as great as the total amount of new and carry-forward OOM. Given the broad definition of OOM that ISO-NE proposes to use, that could be a significant over-purchase each year.

4. ISO-NE's claim that its proposed "benchmark" prices, based on net long-run average costs, represent "competitive" offers, is incorrect. Competitive offers can be as low as net going-forward cost.

5. ISO-NE's claim that the proposed APR Prices would represent the "but for" prices that would occur had OOM resources been offered "competitively" is also incorrect. As a result, even accepting the goal of holding existing resources entirely "harmless" for all entry categorized as OOM, ISO-NE's proposal would over-compensate existing resources.

6. ISO-NE's new APR proposal, in offering higher prices to existing resources and lower prices to new resources, is inconsistent with state policies encouraging new renewable and demand response resources to replace existing resources with less desirable environmental characteristics.

The correct approach is to limit mitigation to resources that are being used in an attempt to manipulate prices. With this approach, two-tiered pricing is unnecessary and inappropriate, because all resources should earn the price that reflects this mitigation. In the next section of this supplemental testimony, I will explain how ISO-NE"s two-tiered pricing approach creates bad incentives and multiple opportunities for manipulating prices.

B. ISO-NE's New APR Proposal Creates Opportunities and Incentives for Manipulation and Would Not Achieve ISO-NE's Stated Objectives

Q 37: Turning now to the mechanics of ISO-NE's proposal, please describe how you performed your evaluation.

A: For the purpose of evaluating the mechanics of ISO-NE's APR proposal, I take the principles and objectives described in the previous section as given. In particular, my evaluation takes as given (1) the mitigation of all resources designated OOM under the definition currently in the Tariff; (2) use of benchmark prices based on net long-run average cost; and (3) ISO-NE's proposed two-tiered pricing approach. While I disagree with these concepts, the focus of this section is to ask whether, given the selected principles and objectives, the proposed mechanism will operate as ISO-NE envisions.

Q 38: Which elements of ISO-NE's new APR proposal create the problems?

A: The key problem is ISO-NE's proposed two-tiered pricing. The mandatory five-year obligation for new resources, which is only proposed to address problems resulting from the two-tiered approach, is also unreasonable and unnecessary.

Q 39: Please explain why ISO-NE's proposed two-tiered pricing approach leads to problems.

A: Under ISO-NE's proposal, it is likely that the APR will be triggered every year, and existing resources (representing well over 90 percent of the resources receiving Capacity Supply Obligations in any FCA) will be paid the APR Price, not the FCA Price. While the descending clock auction process focuses on determining the FCA clearing price and cleared quantities, most market participants will be more concerned with the APR Price that will result from the same auction process. And, as I will explain below, during the

auction, market participants will be able to estimate the corresponding APR supply curve and the likely APR Price.

This arrangement, under which a single auction process determines two important prices, leads to various opportunities and incentives to manipulate one or the other price.

Q 40: Please summarize the opportunities and incentives for manipulation and other issues you have identified with the mechanics of ISO-NE's new APR proposal.

I have identified the following incentive problems, opportunities for manipulation, and other issues (supported by numerical examples, as noted, in the paragraphs that follow):

1. While the FCA's descending clock auction process is designed to encourage competitive conduct, the proposed APR price-setting mechanism will be materially less competitive and will create strong incentives to withhold resources to increase the APR Price (Example 1; Exhibit DPUC-32).
2. The proposed mechanism creates opportunities and incentives for owners of existing resources to offer some resources at low prices in order to manipulate the FCA Prices lower so that new capacity will not clear (Example 2; Exhibits DPUC-33 and DPUC-34).
3. The mechanism creates incentives for owners of high-cost existing resources to continue to operate those resources rather than to replace them with lower-cost new resources (Example 3; Exhibits DPUC-35, DPUC-36, DPUC-37).
4. The mechanism creates incentives for owners of existing resources to develop higher-cost resources that would be categorized as OOM and thereby raise APR Prices instead of developing lower-cost, more efficient resources (Example 4; Exhibit DPUC-38).
5. The mechanism creates incentives for capacity sellers and buyers to attempt to influence whether new resources that may have little or no chance of clearing are offered because such resources can effect APR Prices (Example 5; Exhibit DPUC-39).
6. The mechanism creates circumstances under which the amount of cleared excess capacity can be larger due to the presence of transmission capacity between zones, raising the cost to consumers and introducing some difficult cost allocation issues (Example 6; Exhibits DPUC-40, DPUC-41, DPUC-42).
7. The five-year mandatory obligation for new resources discourages entry and distorts offer prices.

Q 41: Why does ISO-NE's proposed two-tiered pricing approach create opportunities and incentives for manipulation?

A: Simply put, because all resources participate in both the FCA and also in the APR Price determination, their offer prices can influence both prices, and this creates new opportunities and incentives. This is the key problem introduced by ISO-NE's proposed two-tiered approach that holds potential for harm to the markets.

Q 42: Why does it matter that participants' offer prices can influence both the FCA Price and also the APR Price?

A: In essence, while the auction process focuses on the FCA Price and the quantity of excess supply remaining in each round, most market participants will be focusing on what is, in essence, a parallel, simultaneous *APR* auction process that will determine the APR Price that the overwhelming majority of resources will be paid. To understand and evaluate ISO-NE's proposal it is critically important to appreciate this dual, parallel auction aspect of it.

While the descending clock auction is underway, the FCA is executed as in the past, with the excess capacity and the price range announced at each round until the auction clears or hits the floor price, if any. However, under ISO-NE's proposal, the FCA would produce a price that only a small fraction of the resources would be paid – the new resources that clear, if any.

In parallel with the FCA, the important APR auction will be occurring, that for all existing resources will determine whether they will clear and what they will be paid. The APR is a parallel auction, not just a pricing rule, because existing resources that remain in the APR auction "long enough" will clear while others that exit sooner will not clear (but

their early exit will contribute to a higher APR clearing price). In conducting the APR auction in parallel with the FCA, ISO-NE will not announce when the APR auction clears or provide information on how much excess capacity there is at each round of the APR auction, because it will not have the precise information at the time. However, market participants will be able to estimate the APR supply curve and excess capacity, and will be able to adjust their offer strategies accordingly.

Q 43: Please explain how market participants will be able to estimate the APR supply curve and the APR Price during the FCA.

A: Before the auction, market participants will know the OOM benchmark prices for each resource technology type – ISO-NE states that the benchmarks "will be fully known to participants ahead of the FCA." (ISO First Brief at 13) Market participants will also know how much OOM capacity there will be of each resource type and the corresponding benchmark price, including both new OOM and carried-forward OOM, based on ISO-NE's informational filing before the auction. Market participants will, therefore, be able to estimate how much OOM supply will be re-priced to each price level, and, as a result, how much less supply there will be in the APR calculation at each price level than in the FCA.

ISO-NE's informational filing also identifies the qualified existing capacity and accepted de-list bids (quantity and price) for all bids except dynamic de-list bids. Based on this information and the results by round of prior FCAs, market participants will be able to estimate how much non-OOM capacity may exit the auction at each price level.

At the end of each round of the FCA, ISO-NE announces the excess FCA supply and the range of prices for the next round. Market participants will be able to estimate how much

lower this excess will be in the APR calculation at this price level due to re-pricing of OOM resources, and how the excess supply will further decline as the price declines and crosses the various OOM benchmark prices. As a result, market participants will be able to estimate where the APR Price will likely be set and how much additional de-listing of existing resources or withdrawal of new resources would be needed to reduce the excess in the APR calculation to zero and set the APR Price at a higher level.

Q 44: Is there relevant data from prior FCAs that shows the amount of supply exiting the auction at various price levels?

A: Yes. Exhibit DPUC-30 shows the FCA supply curves (excess capacity by round) for the three most recent FCAs. This figure shows that the supply curves have very similar shapes, suggesting that the amount of capacity exiting and the amount remaining in the auction in each round has been fairly predictable. While this pattern may change with new market rules, it is likely that the new pattern will also be quite stable and predictable from auction to auction.

Exhibit DPUC-31 shows the amount of capacity exiting in each round in the past three FCAs. The amount exiting in each round typically is quite small, 100 or 200 MW, with the exception of the round during which the threshold for dynamic de-list bids is reached; in that round, typically 400 to 600 MW exits the auction. This suggests – not surprisingly – that the amount of supply exiting each round is fairly consistent from auction to auction. The net going-forward costs of existing resources are likely to remain relatively constant from year to year and should lead to reasonably stable bids from one FCA to the next.

Q 45: Please illustrate how market participants would be able to construct the APR supply curve and estimate the APR clearing price.

A: An illustrative example – which is not intended to be predictive of the results for any future auction – should help to make this clear. Suppose market participants know there are roughly 4,000 MW of new and carried-forward OOM resources in the FCA supply curve that will be re-priced for the APR calculation at a benchmark price of $5.90/kW-month, and another 1,300 MW of such OOM resources that will be re-priced at $4.90/kW-month. Exhibit DPUC-32 shows how the APR supply curve can be constructed based on the supply curve from the fourth FCA (for 2013/2014). This example suggests that the APR clearing price would likely be approximately $3.90/kW-month, the price where the supply curve adjusted for OOM shows the capacity remaining in the auction in excess of the ICR declining to zero.

Q 46: What are the implications of the fact that market participants will be able to estimate the APR supply curve and APR Price?

A: If market participants can estimate the APR supply curve, they will be able to manage their resources to maximize the APR Price earned by their existing resources.

Example 1 (Exhibit DPUC-32) illustrates how a market participant's ability to estimate the APR supply curve and APR Price could influence its bidding behavior. The exhibit suggests that if roughly an additional 250 MW of new or existing resources were to withdraw or de-list at any price above $4.90/kW-month, the APR price would be set at that level rather than falling to $3.90/kW-month. For an entity with a substantial quantity of existing capacity that will be cleared in the auction and earn the APR Price, there is a strong incentive to withdraw or de-list additional resources to contribute to setting the higher APR Price.

Q 47: How will the competitiveness of the APR auction compare to the competitiveness of the FCA?

A: The APR auction will be materially less competitive than the FCA.

One of the key reasons for using the descending clock auction process is to foster a degree of competition between resources. As the price declines, it approaches levels at which various new and existing resources no longer find the capacity supply obligation attractive, and consider de-listing. There is uncertainty about what other market participants will do and just how much further the price will fall before the excess supply declines to zero and the auction price is set. Some owners may hope that if they remain in the auction just a bit longer, perhaps other participants will de-list resources and the auction will clear at a marginally acceptable price. In essence, there is competition between the owners of resources that are marginally economic at the current price level to see which are willing to accept a lower price and which are not. Thus, the dynamic in a descending clock auction process encourages competitive bidding.

However, in the parallel APR auction, this competitive dynamic will largely be missing. As described above, the resources designated OOM and the benchmarks to which they will be re-priced are known in advance, as are the prices and quantities of all accepted de-list bids. So not only will there be very little "competition" at the price levels where the APR is likely to clear, the primary "competitors" at these price levels will be the re-priced OOM resources and de-list bids for which the prices and quantities are fixed. There are likely to be few non-OOM resources with costs at these levels. However, market participants with portfolios of existing capacity that will earn the APR Price will have strong incentives to de-list any capacity they can (or withdraw new capacity) in

order to clear the APR auction at as high a price as possible. While the relatively competitive FCA may press some owners to accept lower prices for some higher-cost resources than they would prefer, the uncompetitive APR auction process will create incentives for them to de-list resources at high prices to contribute to clearing the APR auction at the highest price possible.

Q 48: ISO-NE (ISO First Brief at 27) and NEPGA's witness McAdams (McAdams Testimony at 21) claim that suppliers will have incentives to offer at prices reflecting their costs under ISO-NE's two-tiered pricing proposal. Please summarize the argument for why single-price auctions generally create incentives for participants to offer based on cost.

A: The argument is very simple. A resource has an incremental cost to produce whatever is being sold in the auction. If a resource offers at this cost, it will clear if and only if the clearing price is higher. If it clears, it will earn at least its cost, and make a profit to the extent the clearing price exceeds its cost. If the auction clears at a price less than this cost, the resource will not clear, but the owner will have no regrets, because it would have lost money had it cleared and had to sell for less than cost. Thus, the incremental or marginal cost is the right offer price that guarantees a profit is earned if a profit is available, and does not risk losses, assuming the only consequence of the offer price is to determine whether or not the resource clears in the auction.

Q 49: Please explain how the incentive to offer based on cost changes if there is market power.

A: The explanation I just gave focuses on a single resource. If the resource's owner is offering other resources in the same auction, the incentives may change. The owner may expect that the clearing price would be somewhat higher if some of this capacity failed to clear, and this might increase overall profits. In that case, it may seek to withhold some

of the capacity from the auction or dynamically de-list at prices above incremental cost in an attempt to raise the clearing price.

Q 50: Please explain how the dual auction approach under ISO-NE's proposal can lead to incentives to offer at prices other than incremental cost.

A: As I described above, the best offer price reflects incremental cost if there is no market power and, in addition, it is assumed that the only consequence of the offer price is to determine whether or not the resource clears. The dual auction approach changes this dynamic. While every resource is entered into both auctions, each is eligible to clear in only one auction. But a resource's offer price may affect the clearing price in the "other" auction.

For many resources, the owner knows before the auction with a high level of confidence whether or not the resource will clear; its incremental cost and offer price are well below or well above the likely applicable clearing price. Such resources could be offered based on their cost, and the result would be predictable. However, the resource's offer price may affect the results of the *other* auction (FCA or APR) that is not applicable to it, and this introduces a new aspect of the choice of offer price, one ISO-NE and Professor McAdams overlook. Under ISO-NE's proposal, even the offer price of a resource that has no real stake in *either* auction can have a large impact on the APR Price.

Q 51: Please elaborate on how a resource's offer price can affect the "other" auction, and how this can change the owner's incentives regarding the offer price.

A: Consider an owner of existing resources who has no new resource projects. Because existing resources must clear against the APR Price and will earn the APR Price if they clear, this owner should not care about the FCA Price.

However, suppose the owner is confident that the APR auction will clear at a price well above the cost of many of its lower-cost resources, which would generally be very likely. The owner may consider that if these existing resources are offered at lower prices (even below cost), this could cause the FCA to clear at a lower price. That could cause new resources offered by other auction participants to fail to clear and to not be developed, while having no impact on the APR Price. If fewer new resources clear it would reduce future supply and contribute to higher prices in future energy, ancillary services, and FCM capacity markets, benefitting the owners of existing resources. While the magnitude of these impacts may be uncertain and likely not large, the owners of existing resources may have little or no reason not to offer their existing resources at very low prices in pursuit of this result, under the assumption that these resources are sure to clear and earn the higher APR Price.

Q 52: Can you provide a numerical example showing how offering existing resources at lower prices could cause new resources to not clear, while leaving the APR Price unchanged?

A: Yes. Example 2, which consists of cases 2A and 2B, illustrates this possible bidding strategy. The details of the assumptions and results are presented in Exhibits DPUC-33 and 34. Exhibit DPUC-33, and the next several exhibits, are divided into five panels.

Q 53: Please describe the five panels in Exhibit DPUC-33 and the following exhibits.

A: Panel 1 describes the resources included in the example (resource name, owner, Existing or New resource, megawatts, resource "cost," FCA offer price, APR Price). These examples include OOM resources. For the purpose of these examples, it is assumed that each resource, including the OOM resources, has an identifiable incremental cost. To keep the examples simple, it is also assumed (contrary to ISO-NE's proposal) that for

OOM resources, the benchmark prices used in the APR calculation are equal to the resources' incremental costs. For these examples, there will be existing and new resources owned by "Supplier 1", other suppliers, a merchant entrant, and some demand response resources that are categorized as OOM.

Panel 2 shows the resources ranked by offer price for the FCA, the cleared quantities, and the resulting FCA Price. Panel 3 shows the resources ranked by the applicable prices for the APR calculation, with OOM resources re-priced based on benchmark prices (assumed equal to their costs for these examples), and the resulting APR Price.

Panel 4 shows the market-wide results, including total capacity cost and the amount of excess capacity cleared due to the APR rule, if any.

Panel 5 in each of these exhibits summarizes the results for "Supplier 1," including its total net capacity revenue (cleared MW times net revenue, which equals price minus resource "cost").

Q 54: Now please continue with Example 2, showing how offering existing resources at lower prices could cause new resources to not clear, while leaving the APR Price unchanged.

A: Case 2A (Exhibit DPUC-33) presents a baseline case. In this case a "Merchant" resource clears the FCA, and Supplier 1 clears all of its "Mid Cost" resource and 200 MW of its "High Cost" resource which will receive the APR Price.

In Case 2B (Exhibit DPUC-34), Supplier 1 offers its Mid Cost resource at a somewhat lower price that undercuts the Merchant resource (this is the only change in assumption, and it is highlighted in the exhibit). This causes the Merchant resource to fail to clear the FCA, as shown in Panel 2, and, accordingly, to fail to receive a capacity supply

obligation. However, the APR Price is unchanged, as shown in Panel 3, because the Merchant resource is still counted in the APR calculation. Therefore, Supplier 1's outcome is unchanged – it still earns $3.4 million/month. Offering its Mid Cost resource at a lower price carried no risk or other downside and served to prevent the entry of the Merchant resource.

Q 55: Why is the merchant resource, that failed to clear in the FCA, included in the APR calculation?

A: It is essential that the merchant resource be included in the APR calculation; the APR rule would make even less sense without it. ISO-NE's objective in its proposed APR calculation is to estimate the price that would have occurred, had OOM resources been offered at "competitive" prices. While I disagree with this objective and many of the details of the proposed implementation, including the benchmark prices, as I have described earlier in this testimony, the merchant resource must be included in the APR calculation because it was offered at a price lower than the APR Price, and would have cleared, had the APR Price been the true clearing price. If the merchant resource were excluded, the APR Price would be even higher, and ISO-NE's claim that it represents a "but for" price would be even more flawed.

Q 56: You testified that the dual auction approach also creates incentives to maintain existing capacity rather than to develop newer, lower cost capacity. Please explain how this occurs.

A: Consider an existing supplier that has developed a new, efficient resource to replace some of its old, inefficient capacity in the same zone. Suppose the efficient new resource has a lower cost than the older resource.

In a single auction if the supplier lacks market power, it would offer both resources at cost; the lower-cost new resource would be more likely to clear, and the higher-cost existing resource might also clear. However, under ISO-NE's proposal, the inefficient existing resource, if it clears, will earn the APR Price, while the new resource is only eligible for the lower FCA Price. If the cost difference between the two resources is less than the difference between the APR and FCA Prices, the supplier earns more net revenue by clearing the inefficient existing resource rather than the lower-cost new resource.

Furthermore, whether or not the new resource clears the FCA, it will be in the APR supply curve and may contribute to a lower APR Price and lower revenues for the supplier's other resources. If the new resource is offered and does not clear in the FCA, offering it will have only reduced the APR Price and the supplier's profit. Aware of these downsides, the supplier might elect to not offer the more efficient new resource at all to prevent this likely negative impact.

Q 57: Please provide a numerical example showing the existing supplier's incentive to maintain existing capacity rather than to develop lower-cost new capacity.

A: This is Example 3, presented in Exhibits DPUC-35, 36 and 37. As in Example 2, the first exhibit page presents a baseline case, Case 3A. For this example, the Merchant resource has been eliminated and the quantity of Supplier 1's Mid Cost capacity has been reduced so that Supplier 1's High Cost capacity must clear in order to meet the ICR. The High Cost capacity earns the APR Price, and Supplier 1 earns $5.4 million/month in this example.

Now suppose Supplier 1 offers a new resource that is lower cost than its High Cost existing capacity, and de-lists the High Cost capacity (Case 3B, Exhibit DPUC-36). The new resource clears the FCA and receives a capacity supply obligation. However, the new resource earns the lower FCA Price. Supplier 1's overall profit declines from $5.38 million/month to $5.1 million/month. In this auction it is more advantageous for Supplier 1 to offer and clear the existing capacity than the lower-cost new capacity, because the existing capacity earns the higher APR Price.

Q 58: In this example, Supplier 1 could also offer both the existing and the new resource. Would it have an incentive to do that?

A: The results of this strategy are Case 3C, shown in Exhibit DPUC-37. Both resources clear and receive capacity supply obligations. However, clearing both resources lowers the APR Price from $3.20/kW-month to $3.00/kW-month, and, as a result, Supplier 1's profit declines further, from $5.4 million/month to $4.7 million/month.

This example shows that ISO-NE's proposal creates incentives for existing suppliers to continue to operate plants that should be retired and to not develop and not offer new resources even if they are lower cost. New resources earn the lower FCA Price and also contribute to lower APR Prices; it will generally be more advantageous for suppliers with multiple resources to clear existing capacity rather than new capacity. These incentives will be stronger the larger a supplier's portfolio of existing capacity that earns the APR Price.

Q 59: You also stated that ISO-NE's new APR proposal creates incentives for existing suppliers to develop higher-cost resources that will be designated as OOM. Please explain why this is so.

A: Suppose an owner of existing resources has developed two new projects, one whose cost is in a range that might clear in the FCA, and the other higher cost that could only be cleared if offered below cost, which would result in an OOM designation. (For the purpose of this example, the higher-cost project might be higher cost due to fuel supply or other disadvantages that are not offset by environmental or other advantages). If either project clears it will earn the FCA Price as a new project. However, if the higher-cost project clears it will be designated OOM and re-priced at a benchmark price for APR purposes, potentially contributing to a higher APR clearing price. If the supplier has other existing resources clearing at the APR Price, it might be to its advantage to clear the higher-cost resource and have it designated OOM rather than to clear the more efficient resource. Indeed, the higher the benchmark price for the resource, the more likely it will exceed and have no impact on the APR Price that the supplier's other resources will earn.

Q 60: Please provide a numerical example showing how a supplier can benefit from clearing a higher-cost OOM resource rather than a lower-cost in-market resource.

A: This is Example 4, shown in Exhibit DPUC-38. This model is the same as shown in Case 3B (Exhibit DPUC-36, wherein Supplier 1 cleared a new resource and retired its High Cost existing resource), but with one change: Supplier 1's new resource has a "cost" of $3.50/kW-month instead of $2.20/kW-month. However, this resource is still offered at $2.20/kW-month, so it clears the FCA and receives a capacity supply obligation. Because it is offered at a price below cost, it is designated OOM and, for the APR calculation, its offer price is replaced by its cost, $3.50/kW-month.

Panel 5 shows that Supplier 1 loses money on the OOM resource that it offered below its "cost." However, comparing Panel 5 from Exhibit DPUC-38 to Exhibit DPUC 36, Supplier 1's total profit increases from $5.1 million/month to $5.5 million/month as a result of clearing the higher-cost resource, because it results in a higher APR Price earned by Supplier 1's existing resources.

This example shows that owners of existing resources can have incentives to clear higher-cost resources in favor of lower-cost resources, because the higher-cost resources can be designated OOM and contribute to setting higher APR Prices. Again, this incentive will be stronger for suppliers with larger portfolios of existing resources.

Q 61: You also stated that the APR Price can be dependent upon the offer price of a resource that is not a serious contender in either auction. Please explain how this could occur.

A: Suppose a new capacity resource is eligible for the FCA, but appears to be very unlikely to clear. The owner believes that if the project is offered into the auction at the price it needs to earn to be profitable, it will not clear because the FCA (the auction applicable to new resources) will clear at a lower price. Based on this projection, the owner may consider not participating in the auction.

However, if the project's potential offer price is below the range of the likely clearing price for the APR, offering the project would contribute to a lower APR Price even though the project would not clear or receive a capacity supply obligation through this auction. Therefore, while the resource may not have a reasonable chance of receiving a capacity supply obligation, whether or not it is offered at all can make a material difference to the APR Price.

Q 62: What incentives result from circumstances under which offering a resource that has no realistic chance of clearing can affect the APR Price?

A: A load-serving entity might have an incentive to obtain the right to offer the resource into the auction to ensure that it is at least counted in the calculation of the APR Price. On the other hand, capacity sellers would also have incentives to influence whether the resource is offered, preferring that it not be offered, or is offered at a high enough price that it would not lower the APR Price.

Q 63: Please provide a numerical example showing how the offer price of a new resource that will not clear can nevertheless affect the APR Price.

A: This is Example 5, Exhibit DPUC-39. This model is the same as in Example 4 (Exhibit DPUC-38), except that the Merchant resource is again offered, but at a price that fails to clear the FCA. The FCA is unchanged, but the presence of the Merchant resource for the APR calculation leads to a lower APR Price and, accordingly, Supplier 1's profit declines from $5.5 million/month in Example 4 to $4.6 million/month.

This example demonstrates that the presence of new capacity that fails to clear the FCA can have an impact on the APR Price that is earned by the majority of resources. While a sponsor that owns no existing resources may be indifferent as to whether or not to offer a new resource that is very unlikely to clear in the FCA, other market participants will not be indifferent.

Q 64: You also mentioned an issue having to do with the amount of cleared excess capacity, transmission capacity between zones, and cost allocation. Please describe this issue.

A: ISO-NE proposes to expand zonal capacity pricing, as I will discuss in a later section of this testimony. ISO-NE explained to stakeholders at a June 15, 2010 meeting that some

of the potential capacity zones are interconnected with bidirectional transmission capacity. (ISO New England Inc., Draft Response to FERC Order of April 23, 2010, June 15, 2010 at slide 49). With bidirectional transmission under ISO-NE's new APR proposal, the solution in the FCA may reflect capacity transfers to Zone B from Zone A, while under the APR, the solution may reflect capacity transfers in the other direction, to Zone A from Zone B. This would occur if resources in Zone A were relatively inexpensive in the FCA but relatively expensive in the APR auction, as could result if Zone A had more higher-cost OOM resources than Zone B.

If capacity flows reverse direction, in effect, between the FCA and APR solutions, the total amount of cleared excess capacity will increase due to the presence of the transmission capacity between the zones. This will raise the total cost of capacity, and the extra cost must be allocated to consumers on some basis.

Q 65: Please provide an example of how transmission interconnections between zones can increase the cleared excess capacity and associated capacity cost.

A: Example 6 illustrates this issue with three cases, Case 6A, 6B and 6C (Exhibits DPUC-40, 41, 42). This example entails two zones, Zone A and Zone B, each with LSR equal to 3,000 MW. Zone A has OOM and existing non-OOM resources, while Zone B has only existing resources at two price levels. Exhibit DPUC-40 shows the FCA offer prices and, for the OOM capacity, the APR offer price (the benchmark price).

To provide a baseline for this example, "Case 6A" in the first exhibit shows the results of the FCA if the OOM capacity is offered at cost (contrary to its OOM status and the FCA offer price shown in the exhibit, which will be used in later cases) so there is no need for an APR, and the two zones are separate with no transmission capacity linking them. In

Case 6A, Zone A's total cost is $7.8 million/month and Zone B's total cost is $7.5 million/month.

Q 66: Please describe Case 6B and what it illustrates.

A: Exhibit DPUC-41 shows Case 6B, under which the OOM capacity in Zone A is offered below cost, so there is an APR. The APR, under ISO-NE's proposal, leads to clearing an additional 1,000 MW of the existing capacity in Zone A (where OOM capacity is present and displaced existing capacity in the FCA), raising Zone A's total cost from $7.8 million/month in Case 6A to $9.2 million/month in Case 6B. Zone B, which has no OOM, has the same cost as under the Case 6A assumptions, $7.5 million/month. This case shows the impact of the APR on the two zones when there is no transmission link between them.

Q 67: Now please describe Case 6C and what it illustrates.

A: Case 6C, Exhibit DPUC-42, now introduces 1,000 MW of bidirectional transmission capacity between the two zones. In the FCA, 1,000 MW of capacity flows from Zone A to Zone B because the Zone A resources are offered at lower prices than the Zone B resources (refer back to Exhibit DPUC-40 for the resource costs). In the APR calculation, however, the OOM capacity in Zone A is re-priced, and now capacity flows from Zone B to Zone A because "ExistingB2" is lower cost than the re-priced Zone A OOM capacity.

Comparing Cases 6B and 6C, it can be seen that the existence of inter-zonal transmission capacity results in an increase in excess cleared capacity of 1,000 MW and an increase in

total capacity cost between the two zones from $16.7 million/month to $19.0 million/month.

Q 68: Please describe how the cost of the additional cleared excess capacity in Case 6C, resulting from the transmission interconnection, would be allocated.

A: ISO-NE's proposal does not address how the cost of cleared excess capacity resulting from the new APR rule would be allocated. However, because Zone B has no OOM capacity and, therefore, no need for an APR, it is reasonable to assume that capacity purchasers in Zone B might be "held harmless" for the impact of the APR. Therefore, the cost of the additional cleared excess capacity has been allocated to Zone A in Case 6C, with Zone B's cost unchanged at $7.5 million/month. Zone A's cost now rises further, due to the additional cleared excess capacity that results from the transmission interconnection, from $9.2 million/month in Case 6B to $11.5 million/month.

However, capacity purchasers in Zone A also have a strong case that the additional cost resulting from the excess capacity cleared by the APR due to the transmission interconnection should not be allocated to them. Their capacity cost rises from $7.8 million/month to $9.2 million/month due to clearing excess intra-zonal capacity under ISO-NE's APR proposal due to the OOM capacity in Zone A, assuming there is no transmission interconnection (comparing Cases 6A and 6B). The further increase to $11.5 million/month results solely from the existence of the transmission interconnection with Zone B. Indeed, if the additional cost is allocated in this manner, capacity purchasers in Zone A are better off without the transmission, at least with respect to capacity costs.

Q 69: What consequences might result from perceived unfairness in the allocation of the cost of excess cleared capacity?

A: As these examples illustrate, ISO-NE's new APR proposal can lead to a substantial amount of excess cleared capacity and associated cost. The amount of excess capacity that buyers must purchase will be maximized when there are no transmission constraints and no zonal capacity pricing; transmission constraints can reduce the amount of excess capacity to be purchased under the proposed rule, as seen in this example, by preventing OOM resources from displacing existing resources in interconnected zones.

These circumstances could materially distort the benefits of transmission from the perspective of capacity purchasers and the consumers they represent in various New England zones. If interconnections between zones can lead to large increases in capacity costs in some zones, capacity purchasers in those zones may oppose transmission enhancements.

Q 70: You also stated that the mandatory five year obligation for new resources can discourage entry and distort offer prices. First, why did ISO-NE include this provision in its proposal?

A: ISO-NE explains (ISO First Brief at 16) that it included this provision to prevent new resources from offering below cost in their year of entry in anticipation of earning the high APR Prices in future years. ISO-NE recognizes that compensation under the APR Price is excessive and would signal the need for new entry when no additional capacity is needed (*Id.* at 24 – 25). Therefore, ISO-NE proposes to deny new resources the APR Price not only in the year of entry, but for four additional years, so that excess entry will not be attracted by the prospect of receiving the higher APR Prices after only one year.

Q 71: Please describe the problem that results from the mandatory five-year commitment provision.

A: The FCA and the APR auctions clear capacity demand for a single year against offers to supply capacity for the same year; therefore, the resulting prices reflect demand and supply conditions only for that one year. For instance, in FCA #4 that was recently completed, the demand was for the 2013/2014 delivery year, the resources that were offered were resources expected to be available in the 2013/2014 delivery year, and the prices at which they were offered were prices at which the owners were willing to provide the capacity in the 2013/2014 delivery year. The resulting clearing price was in principle a market-clearing price for the 2013/2014 delivery year based on 2013/2014 demand and supply conditions. The auction mechanism does not receive and is not able to use any information about demand or supply conditions in the years following the delivery year for which the auction is being held. If, for instance, all market participants expected demand to skyrocket or some large resource to be added or retired the following year, this information would not be reflected in the auction demand, supply, or clearing price for 2013/2014 (unless and to the extent that some market participants choose to adjust their offers based on anticipated conditions in these later years). Because each auction's resulting prices reflect demand and supply conditions for a single year, they are not appropriate prices for five-year commitments.

For the first four FCAs, new entrants have had the option of electing multi-year commitments. The impact of the *option* to receive a capacity price for multiple years would be to make entry somewhat more attractive. However, the fact that the option has been used only rarely (in the first two FCAs, only 15.5% of new demand response and

4.5% of new generating capacity took advantage of the multi-year option; March Testimony at 13, footnote 6) suggests that this provision's impact has been relatively insignificant.

Under ISO-NE's proposal, new resources clearing in the FCA would have no choice but to accept the resulting FCA Price for five years. In a period when FCA Prices are temporarily quite low due to excess capacity, this would be an unattractive prospect for new resources. It is also unfair to long lead-time resources that have less ability to control their year of entry. It is especially unfair and inefficient if, in the same time period, high APR Prices discourage retirement of existing resources, including inefficient older plants. Those existing resources will have incentives to continue operating while the FCM will signal new, efficient resources that they are not wanted as capacity resources.

Q 72: How might this provision influence the prices at which new resources are offered into the FCA?

A: The provision has the potential to increase the offer prices of new resources. For instance, suppose the owner of a potential new resource has the flexibility to offer the resource now or to delay a year, and expects FCA Prices to be higher next year. If the owner offers the resource this year at all, it might offer it at a higher price than it would otherwise, to compensate for the expected lower price that it would be required to accept, with a five-year commitment, if it cleared this year. When this occurs, the five-year obligation has distorted the offer price strategy of a new resource, reducing the efficiency of the auction result.

Q 73: Overall, how would you summarize how different types of resources are treated under ISO-NE's APR proposal?

A: ISO-NE's proposal is very friendly to existing resources, including old, inefficient resources, because these resources will receive the high APR Price that, as ISO-NE recognizes, does not reflect the demand-supply balance.

By contrast, new, merchant resources are forced to compete in the FCA, not the APR auction, and are then locked in to the resulting price for five years. So while the need to reform the APR was purportedly driven by the desire to provide accurate price signals for merchant generation, ISO-NE's new APR proposal is hostile to and discriminates against such resources.

As I stated earlier, if there has been an attempt to distort capacity prices by an exercise of seller or buyer market power, the corresponding offers should be mitigated, and the resulting price should be paid to all resources, existing and new. Under ISO-NE's proposal, if there has been an exercise of market power by a buyer, this is not corrected in the FCA Price that is paid to new resources. ISO-NE does not explain why all new resources deserve to be paid a price that, under ISO-NE's new APR proposal, may reflect an exercise of buyer market power.

Q 74: New resources will be able to earn the higher APR Price after the initial five year period expires. Will this be attractive to merchant resources?

A: I would not expect the prospect of eventually earning the APR Price to have much influence on developers of new capacity. A new resource would earn the APR Price only after the initial five-year commitment expires, that is, in the eighth year following the FCA. For the FCA to be held in 2011 for the 2014/2015 delivery year, a new resource

clearing in the auction would receive a higher APR Price starting in the 2019/2020 delivery year (assuming, of course, there is still an FCM and an APR, and still enough OOM resources to set a high APR Price, at that time). While a large differential between the APR Price and the FCA Price would be attractive, market participants may consider a large differential unlikely to persist. I would not expect the quite distant and highly uncertain prospect of earning a higher APR Price to have much influence on the offer prices of new resources.

Q 75: ISO-NE claims that ISO-NE and the consulting firm NERA have evaluated the offer incentives for both new and existing resources under its proposed two-tiered approach, and "believe that suppliers generally will be incented to offer their resources at marginal costs." (ISO First Brief at 27) Do you agree with this reported belief?

A: No. As the above examples show, there are multiple circumstances leading to incentives to offer resources at prices that reflect considerations other than a resource's cost.

Q 76: Professor McAdams testifies that ISO-NE's two-tiered pricing structure is "sound and sensible" (McAdams Testimony at 25:9-10) and "provides sound incentives for entry and exit." (*Id.* at 23:17-20). What justification does he provide for these conclusions?

A: He summarizes the basis for this position as follows.

> "[ISO-NE's] June APR's approach of paying new resources the FCA clearing price and paying existing resources the APR price is sound and sensible, for several reasons. First, should there be no OOM capacity, the FCA clearing price will be equal to the APR price and there will be no distortion of new in-merit bidders' incentives to enter. Second, when the presence of OOM depresses the FCA clearing price below the APR price, [ISO-NE's] June APR still provides some incentive for new in-merit resources to enter, but only if their cost of new entry is sufficiently low. Such reduced new entry incentives are appropriate to more efficiently rationalize the capacity mix in the FCM. Finally, when the presence of OOM depresses the FCA clearing price below the APR price, paying the FCA clearing price could dissuade some high-cost OOM resources from inefficiently entering." (*Id.* 25:7-18).

Q 77: Do these reasons support Prof. McAdams' conclusion that ISO-NE's proposed two-tiered pricing approach is sound and sensible?

A: No. The first reason is no reason at all; it simply says that if the FCA and APR prices are the same there is no issue. The second reason appears to suggest that because the FCA Price may be something greater than zero, there will still be "some incentive" for new entry, and if the FCA Price is low, this is appropriate to "rationalize" the capacity mix. He provides no quantitative or qualitative analysis to support this proposition. The third "reason" suggests that the low FCA Price could dissuade some OOM resource from entering. In fact, many OOM resources are price-takers and are unlikely to be dissuaded by low FCA Prices; and if such prices did dissuade them, it would interfere with state programs that were adopted to promote legitimate public policies. Thus, none of Prof. McAdams' reasons is based on the careful discussion of incentives and costs that preceded it in his testimony.

Q 78: Please respond to Prof. McAdams' conclusions that ISO-NE's new APR proposal is "sound and sensible" and "provides sound incentives for entry and exit."

A: Prof. McAdams' conclusions regarding ISO-NE's new APR proposal are incorrect due to three significant errors in his discussion.

First, he recognizes the dual-auction nature of ISO-NE's new APR proposal but then fails to explore the impacts of that key element. His conclusion that bidders would bid based on economic cost assumes the only consequence of their bid is to determine whether or not they clear in the auction that is applicable to them (the FCA for new resources, the APR for existing resources). Prof. McAdams fails to discuss or evaluate the impacts of the dual auction nature of ISO-NE's new APR proposal. Rather than concluding that the dual auction in ISO-NE's new APR proposal does not create opportunities for

manipulation or bad incentives, Prof. McAdams did not even consider whether ISO-NE's approach might create such opportunities and incentives.

Second, Prof. McAdams incorrectly concluded that ISO-NE's proposed benchmark prices are consistent with the economic concept underlying a competitive offer price that he defined ("economic cost" and "stand-alone economic cost", which I quoted and discussed earlier in this testimony). Prof. McAdams states his understanding that under ISO-NE's proposal, "the APR price is computed by replacing the FCA bids of all OOM resources with administratively-determined estimates of their stand-alone economic costs." (McAdams Testimony at 20:20 – 21:6) This is incorrect. The benchmark prices are proposed to be based on long-run average costs, which are annualized values. In addition, the proposed benchmarks are net of market revenues other than capacity revenues. By contrast, "stand-alone economic costs" under Prof. McAdams' definition are not annualized values, but full (present value) costs, and explicitly include expected future capacity revenues. Prof. McAdams' conclusions about ISO-NE's new APR proposal are invalidated by this very significant misunderstanding of the proposal.

Third, Prof. McAdams also fails to recognize that many "third party" incentives and payments are the result of public policies that place value on environmental and other attributes that otherwise would not be reflected in auction offer prices and results. Prof. McAdams does not dispute these public policies or take the position that they assign excessive value to environmental or other attributes; he simply does not recognize that these incentives and payments may be serving a legitimate economic function, and one that should be reflected in the auctions. He assumed that all "third party" payments and

incentives received by any resources categorized as OOM, including any long-term contracts, distort the auction, when in fact they may contribute to a more efficient result.

Q 79: You have identified several problems resulting from ISO-NE's new APR proposal. Can ISO-NE's proposal be adjusted to address many of these problems?

A: No, not as long as the proposal to mitigate all OOM capacity using an overly broad definition of OOM – the fundamental flaw – is retained. This leads to the prospect of setting an APR Price that is considerably higher than the FCA Price that reflects the demand-supply balance. If a high APR Price is paid to all resources, it will lead to more and more excess capacity, as ISO-NE acknowledges (ISO First Brief at 24 – 25); this led ISO-NE to propose the two-tiered pricing scheme. But, as I have shown, ISO-NE's proposed two-tiered pricing scheme introduces many opportunities and incentives for manipulation.

A reasonable APR mechanism must be founded on the principle identified in the April Order: the APR is a buyer market power mitigation provision, and OOM capacity that is being used as a tool to inappropriately suppress prices should be mitigated. All resources should be paid the same price, and that price should be corrected for any attempted manipulation.

Q 80: Dr. Stoddard suggests (Stoddard Testimony at 28) that payments offered to resources with certain attributes desired for meeting policy goals could be permitted and not lead to OOM designation, but only if the payments are available to all resources (and in particular, existing resources) that have the attributes. Would it be reasonable to impose this requirement?

A: No, it would not be reasonable to impose such a requirement. The purpose of offering incentives is to elicit conduct, in particular, investment to provide additional resources. If a resource has already been built, the conduct has already occurred at some past time.

Offering a payment to such a resource would not lead to any desired conduct and would be wasteful of public funds. Furthermore, an existing resource with a desired attribute may have already benefited from some earlier program to encourage investment in the resource; if so, offering a new incentive payment could be duplicative. Or, the resource may have been built at a time when incentives were not needed for the investment to appear economic, and an incentive now would again serve no purpose. Furthermore, it could be very difficult administratively to determine whether existing resources benefited from any earlier programs that offered incentives for the desired attributes.

Imposing a requirement that any program to offer incentives for certain attributes would have to offer the incentives to all resources, new and existing, that might have the attributes, would, under many circumstances, render the program ineffective and administratively unworkable. It would be ineffective because the requirement would be duplicative and wasteful if the existing resource received other incentives of some kind earlier or if the existing generator entered at a time when the market was sufficiently attractive to warrant entry but is now offered more money. It would be administratively unworkable because it would likely be administratively very difficult to try to distinguish which existing resources received what other incentives or to try to determine which resources actually need and deserve the new program and which do not.

IV. Modeling of Capacity Zones

Q 81: Please summarize the changes with regard to capacity zones proposed in the Joint Filing.

A: The Joint Filing proposed to use the eight existing energy market load zones as the potential capacity zones for FCM, to set the Local Sourcing Requirements for each zone

based on the value resulting from the Transmission Security Analysis ("TSA") or the Local Resource Adequacy Requirement ("LRA"), whichever is greater, and to allow additional de-list bids to set zonal prices. The April Order accepted these proposals. The Joint Filing retains a pre-auction test for the zones to be modeled and proposes a pivotal supplier test to determine which suppliers' de-list bids could cause zone formation.

Q 82: Please summarize the issues set for the paper hearing with regard to capacity zones.

A: The April Order set the following issues for the paper hearing (P 18):

1. Whether zones should always be modeled;
2. Whether all de-list bids should be considered in the modeling of zones;
3. Whether a pivotal supplier test is necessary; and
4. Whether revisions to the current mitigation rules would be necessary in order to model all zones.

Q 83: Please summarize ISO-NE's New Proposal as it relates to modeling capacity zones.

A: ISO-NE proposes the following additional changes with regard to capacity zones:

1. The pre-auction test to determine which capacity zones should be modeled would be eliminated, and all identified capacity zones would be modeled in every auction.
2. The same eight capacity zones as proposed in the Joint Filing would be used through FCA #6, and the zones to be used in subsequent FCAs would be determined through ISO-NE's stakeholder process.
3. All de-list bids would be allowed to set the zonal FCA Prices and APR Prices in every auction, with no pivotal supplier test or market share threshold.
4. A new objective function and clearing mechanism for the descending clock auction process would be implemented to address the more complicated network structure that results from zonal capacity pricing, although ISO-NE provided few details of the changes that would be necessary.
5. ISO-NE also proposes changes to supplier market power mitigation, discussed in the next section of this testimony.

Q 84: Please summarize your response to ISO-NE's new proposal regarding modeling of capacity zones.

A: ISO-NE's proposal to model all zones all of the time and to allow all de-list bids to set price represents an unprecedented experiment with zonal capacity pricing and goes well beyond what other RTOs have attempted. In addition, aspects of the New England market rules make zonal capacity pricing in New England more likely to result in extreme and unintended outcomes compared to other RTO regions.

As I explained in my July Testimony, zonal capacity pricing in PJM, where it has been applied most extensively, has not achieved the objective of attracting new and retaining existing capacity to the zones where prices have been much higher (27:2– 32:21), and zonal capacity pricing may reduce rather than increase the efficiency of a capacity market (25:10 – 26:23, 46:13 – 48:13). Consequently, the Commission should be cautious in expanding zonal capacity pricing. ISO-NE's proposal to model all zones all of the time and to allow all de-list bids to set price is a risky approach, especially considering (1) the context of New England's market rules, the size of the zones, and the concentration of generation ownership, and (2) the fundamental changes that ISO-NE also proposes to the APR mechanism and to market power mitigation.

Q 85: Please summarize your findings regarding the experience with zonal capacity pricing in PJM.

A: I reviewed in detail the experience with zonal capacity pricing in PJM, where zonal prices have occurred in six of seven delivery years and where as many as six zones have been modeled. (July Testimony at 27:2 – 32:21). I compared capacity increases and decreases, and planned future capacity, between zones where capacity prices have been consistently high and the "Rest of RTO" region where prices have been much lower. I

found that the higher zonal prices had failed to attract relatively more new capacity or retain more existing capacity. Instead, market participants had offered and cleared more new capacity, imported more capacity, and retired less capacity in the Rest of RTO region than in zones with much higher prices. Nor does the planned generation in PJM's interconnection queues suggest that this pattern will change.

Q 86: Please summarize your conclusions as to why zonal capacity pricing in PJM has not achieved the intended objective.

A: I described three principal reasons why zonal capacity pricing in PJM had failed to achieve the objective of attracting relatively more new and retaining relatively more existing capacity in PJM. (July Testimony at 33:1 – 34:20).

1. First, the market apparently does not find the zonal price signals credible and is largely ignoring them. There are many reasons for this. The zonal prices are set for a single year at a time and have been highly volatile. Market participants know that the RTO plans to build transmission capacity that may eliminate the zonal price differentials, and other changes in supply and demand can also affect the prices. They also know that the zonal prices likely overstate the true need for capacity due to very conservative assumptions that underlay the calculations of zonal capacity requirements. Market participants also know that capacity market rules, which affect whether zones are defined and the prices that occur, are frequently changed.

2. Second, while some market participants may ignore the zonal price signals, others with portfolios of capacity located in the zones will not be ignoring them. Such sellers know that incremental capacity offered in the zones will lower the prices earned by their portfolios of resources. While such sellers might have incentives to

offer incremental capacity if selling into a large, competitive zone where the incremental capacity would have little or no impact on price, when selling into a smaller zone they may have a strong disincentive to offer the capacity due to the much larger impact it might have on the zonal price.

3. Third, the lack of impact of high zonal prices on capacity additions may reflect the fact that the zones tend to be developed areas where it can be more difficult to identify suitable sites to build, and to obtain all regulatory approvals. High but volatile zonal prices may not be much help in overcoming such impediments. In addition, the most suitable sites may be the locations of existing plants whose owners may, as noted above, face disincentives to expand capacity if capacity pricing is zonal.

Q 87: Please summarize the basis for your conclusion that zonal capacity pricing can decrease rather than increase the efficiency of a capacity market.

A: I base my conclusion on three primary factors.

1. Zonal pricing creates, for suppliers with portfolios of capacity located in the zones, incentives to withhold capacity and disincentives to expand capacity (described in my July Testimony at 37:19 – 38:16, and quantified in the July Testimony at 34:21 – 37:17 for PJM and at 39:21 – 45:7 for New England).

2. If the Local Sourcing Requirements to be purchased in the zones are determined based on overly conservative assumptions and, therefore, are higher than necessary to meet reliability criteria, it will raise prices in the zones above efficient levels and depress prices in the unconstrained areas below efficient levels. (July Testimony at 46:20 – 47:6)

3. Zonal capacity pricing also holds the potential to reduce efficiency if, in its implementation, various complexities peculiar to the New England transmission grid and markets are not adequately addressed. In particular, the "mesh" network structure with bidirectional transmission and the descending clock auction to acquire the specific quantity of capacity needed for reliability pose significant challenges, as ISO-NE recognizes (ISO First Brief at 57-58). (July Testimony at 47:7 – 48:13).

Q 88: Please explain why the New England market rules could make zonal capacity pricing more likely to result in extreme and unintended outcomes in New England than in other RTO regions.

A: Three characteristics of the New England market could increase the potential for unintended and undesirable outcomes from zonal capacity pricing.

1. Because the FCM is designed to purchase only the ICR (LSR in zones), small changes in demand or supply conditions or participants' offer strategies can create very large increases or decreases in FCA and APR prices. This sensitivity increases suppliers' incentives to exercise market power and the risk of extreme outcomes.

2. The potential implementation of a completely new APR rule, which under ISO-NE's new APR proposal would include two-tiered pricing, would add an additional dimension of complexity and increase the potential for extreme outcomes, manipulation and other unintended consequences.

3. The eight proposed capacity zones in New England that the Commission accepted from the Joint Filing are quite small and capacity ownership in them is quite concentrated; ISO-NE has no experience with zonal capacity pricing, and the experience in other RTOs with zonal capacity pricing in such small zones is very

limited. Smaller zones are more susceptible than larger zones to extreme outcomes and market power.

Q 89: Please compare the number and size of the capacity zones in New England to those used in PJM.

A: Exhibit DPUC-43 shows the 2013/2014 peak loads for the proposed capacity zones in New England and for the capacity zones used in the most recent PJM capacity auction (for 2013/2014). The exhibit shows that, in terms of peak loads, the New England zones are generally much smaller than the zones used in PJM.

Q 90: How often have smaller zones in PJM had separate zonal capacity prices?

A: The smaller zones in PJM have rarely had separate prices. The larger MAAC, EMAAC, and SWMAAC zones have had separate prices three or four times each. But zones smaller than SWMAAC (which is almost twice the size of any of the proposed New England zones) have had separate prices only four times: PEPCO and PS North once each, and DPL South twice. There is very little experience with zonal capacity pricing for zones as small as the eight New England zones.

Q 91: Please describe how a revised APR process, in combination with expanded zonal pricing, would increase the potential for extreme outcomes, the exercise of market power, and other unintended consequences.

A: The proposed dual auction process under ISO-NE's proposed two-tiered pricing, applied to small, concentrated zones, would result in FCA and APR Prices that are extremely sensitive to small changes in demand or supply. The incentive problems associated with ISO-NE's new APR proposal will be more serious in smaller zones where it would be easier to predict and influence FCA and APR Prices. The New England zones are highly concentrated, as I described in my July Testimony (39:21 – 41:3).

Q 92: ISO-NE proposes to expand mitigation based on net risk-adjusted going-forward costs. Does this proposal address concerns about the concentration of capacity ownership in smaller zones and the market power incentives that this concentration creates?

A: No. As I explained in my July Testimony (38:17 – 39:19), mitigation does nothing to reduce the incentives to withhold, and only partially mitigates the ability to withhold. Suppliers with portfolios of existing resources are still able to withhold incremental capacity that they could otherwise offer into the FCA, and to submit Non-Price Retirement Requests that do not require IMM review for plants that may still be economical to operate.

Q 93: The April Order accepted ISO-NE's proposal to set the LSRs based on the TSA or the LRA, whichever is greater. To what extent does this resolve concerns about rejected de-list bids?

A: This will reduce the likelihood of having to reject de-list bids for reliability reasons. But there will remain a possibility that a de-list bid for a high-cost existing plant will be submitted and clear, and ISO-NE will reject it for reliability reasons. For instance, ISO-NE may have to reject a de-list bid from a generator that is needed to maintain security at a specific location on a transmission owner's distribution system, and it would not be appropriate to set a zonal price based on what might be a unit-specific constraint.

Modeling more zones reduces the likelihood of rejected de-list bids but does not eliminate it. ISO-NE does not claim that its new proposal will eliminate rejection of de-list bids or provide any data or analysis suggesting that de-list bids would be rejected more often if a market modeling test such as the one included in the Joint Filing were retained.

Q 94: What is your conclusion regarding ISO-NE's proposal to eliminate the market modeling test?

A: In light of the many changes being made to the FCM rules at this time and the reasons for concern about the potential volatility of zonal pricing, the market modeling test proposed in the Joint Filing should be retained, at least for a transitional period. Modeling all zones all of the time – including even zones that have adequate capacity – risks exercise of market power and other unintended results.

V. Market Power Mitigation

Q 95: Please summarize the changes in ISO-NE's New Proposal with regard to supplier market power mitigation.

A: ISO-NE proposes substantial changes to the existing market power mitigation rules, which it considers necessary to accommodate its new proposal for zonal capacity pricing.

1. The threshold for Dynamic De-List Bids would be set at $1.00/kW-month. Dynamic de-list bids below this threshold would continue to be allowed without IMM review or mitigation, while de-list bids above the threshold would be considered Static De-List Bids and would be subject to IMM review to ensure that bids reflect the resources' net risk-adjusted going-forward cost. The IMM would periodically review the dynamic de-list threshold.
2. In reviewing Permanent and Static De-List Bids for consistency with net risk-adjusted going-forward cost, the IMM would determine going-forward costs assuming the resource would continue to operate in the New England energy and ancillary services markets, unless the resource owner submitted a plan and committed to leaving those markets. This would generally lead to lower net risk-adjusted going-forward cost values.
3. The requirement that a zone be capacity deficient to be modeled, which ISO-NE considered a market power mitigation provision, would be eliminated.
4. The pivotal supplier test proposed in the Joint Filing to determine whether a resource's bid would be allowed to set price would also be dropped.
5. The existing "Quantity Rule," which ISO-NE considered a market power mitigation provision, would be eliminated.

Q 96: Please summarize your response to ISO-NE's new market power mitigation proposal.

A: ISO-NE's proposal expands mitigation based on unit-specific going-forward costs for all de-list bids above $1/kW-month. This strengthens the market power mitigation rules, which would be essential if the Commission accepts expanded zonal pricing and would also be very important if the Commission adopts fundamental changes to the APR rules. However, as I explained in my July Testimony (38:17 – 39:19), this or any market power mitigation approach is only partially effective, leaving the incentives to exercise market power, and some opportunities to withhold, in place.

In addition, ISO-NE's new proposal would likely lead to many applications for mitigation based on "opportunity costs" instead of plant-specific going-forward cost. Further specification of how opportunity cost will be determined would be needed to prevent abuse of this flexibility and to circumscribe the discretion exercised by the IMM in reviewing such requests.

Q 97: You stated that ISO-NE's proposed changes to the FCM market power mitigation rules only partially address concerns about the exercise of market power. Please explain why this is so.

A: While the proposal strengthens the mitigation in some respects by lowering the threshold for Dynamic De-List Bids, it continues to only partially and imperfectly mitigate the potential for exercise of market power. As I noted above, mitigation approaches do not affect incentives at all, and the incentives to withhold become much stronger with zonal pricing. A revised APR process may also increase suppliers' incentives and opportunities to affect prices by withholding.

In addition, the mitigation only applies to some resources. It does not apply, for instance, to a supplier with a portfolio of existing resources that could either offer or withhold a new resource, or could either develop economical incremental capacity at an existing unit or not develop the incremental capacity. Moreover, the mitigation based on going-forward costs is imperfect because costs are imperfectly known and future revenues are uncertain. Furthermore, an owner can always submit a Non-Price Retirement Request and retire an existing resource that remains economic to operate.

Q 98: ISO-NE proposes to set the Dynamic De-List threshold to $1/kW-month. Is this reasonable?

A: No. As ISO-NE acknowledges (ISO First Brief at 50), a threshold for dynamic de-list bids is "worthwhile" to save existing resources the administrative cost of submitting Static De-List bids. Such a threshold is not necessary, however, simply to conserve on administrative costs. Under PJM's capacity construct, for instance, all bids are mitigated based on avoidable cost, and there is no offer price threshold below which mitigation is not applied.

As proposed by ISO-NE, the dynamic de-list threshold is likely to become, in essence, the new "floor" price. The Commission stated in the April Order that it is generally opposed to floor prices. P 19.

The proposed $1/kW-month threshold would allow existing resources to exercise unmitigated market power to set the FCA Price to $1/kW-month. As I noted in my July Testimony (23:22-23), the two most recent clearing prices under PJM's RPM capacity construct were the equivalent of $0.50/kW-month and $0.84/kW-month. While these values are not directly comparable due to the Peak Energy Rent deduction (which

averaged $0.02/kW-month and $0.29/kW-month over the 2008-2009 and 2009-2010 capacity commitment periods, respectively), they suggest that a capacity market with a surplus can clear at a price lower than $1/kW-month when bids are mitigated based on net going-forward costs.

Q 99: ISO-NE based the $1/kW-month value on the results of reconfiguration auctions, stating that the prices from these auctions represent "competitive estimates of the cost of providing capacity." (ISO First Brief at 50). Do you agree?

A: No. There is no basis for concluding that the prices resulting from reconfiguration auctions represent "competitive" estimates of the cost of providing capacity. These auctions largely reflect the needs of market participants to adjust their commitments or to sell incremental capacity that becomes available. These auctions clear only very small amounts of demand and supply. In the only three reconfiguration auctions held to date, the amount of cleared supply (excluding ISO-NE's supply offers) ranged from 188 MW to 202 MW, well under one percent of New England's ICR.

Q 100: You stated that ISO-NE's new proposal could result in an increased number of requests for mitigation based on "opportunity costs", the alternative to mitigation based on net risk-adjusted going-forward cost. Why would this occur?

A: Suppliers may attempt to use opportunity costs to justify their de-list bids more frequently because ISO-NE proposes to reduce the threshold for Dynamic De-List Bids and to base mitigation of Static De-List Bids based on going-forward costs assuming a resource would continue to operate in the New England markets. This would result in limiting many plants to lower de-list bid prices. However, the Tariff also allows a supplier to justify a de-list bid based on "opportunity costs." Thus, many owners may attempt to gain approval for higher de-list bids by claiming higher opportunity costs, for instance, based on opportunities to sell capacity into adjacent RTO markets.

Q 101: NEPGA's witness Stoddard recommends allowing suppliers to claim opportunity cost based on NYISO capacity prices. (Stoddard Testimony at 79). Would this be a reasonable approach to market power mitigation?

A: No, this would not be a reasonable approach. First, the NYISO capacity construct sets capacity prices for no more than one year forward while FCM operates three years forward. So for the FCA for 2014/2015 that will be held in 2011, NYISO prices will only be available for part of 2012. A 2012 price for NYISO is not an appropriate basis for mitigating bids pertaining to 2014/2015 in New England.

Second, NYISO is a relatively small market; smaller than New England and much smaller than PJM. Only a small quantity of additional capacity, from New England or elsewhere, could be sold into the NYISO market without causing the capacity price to have to decline to clear the capacity. Roughly 400 MW of additional cleared capacity would cause the NYISO capacity price to fall by $1/kW-month. New York Independent System Operator, Inc., Market Administration and Control Area Services Tariff, § 5.14.1.2 at 204-05 (effective June 30, 2010). In addition, sales into the NYISO are limited by firm transmission capacity. The IMM would have no reasonable basis for determining the opportunity costs if more than a small amount of capacity sought to establish de-list bids on this basis.

Third, the NYISO capacity demand curve tends to keep capacity prices relatively close to the established NYISO CONE levels, and the CONE levels are set based on engineering studies of power plant costs and modeling of energy and ancillary services markets earnings. Allowing New England de-list bid prices to be pegged to the NYISO capacity prices would potentially make New England capacity prices highly dependent upon an

administrative parameter determined through engineering studies, modeling, and a stakeholder process occurring in a different market area.

VI. FCM Price Parameters ("CONE"-related issues)

Q 102: What issues were set for paper hearing with regard to the FCM CONE parameter?

A: The April Order set only one such issue for paper hearing: Whether the value of the FCM CONE parameter should be "reset." (P 18).

Q 103: What changes does ISO-NE propose to the FCM CONE parameter and related parameters?

A: ISO-NE proposes to eliminate the linkages in the Tariff between various parameters and the FCM CONE parameter. While ISO-NE does not state a position with regard to the reset of CONE, its proposals would make the CONE parameter either unnecessary or unimportant, so a reset would be pointless.

Q 104: Please summarize how ISO-NE proposes to set the various parameters that to date have been linked to CONE.

A: The proposed changes to the Dynamic De-List threshold, and to the threshold for review of offers for potential OOM designation, eliminate two of the most important parameters linked to the CONE parameter. ISO-NE proposes that all Static and Permanent De-List Bids would be subject to IMM review (ISO First Brief at 54), so, in effect, the threshold for review of such bids is the same Dynamic De-List bid threshold.

ISO-NE also proposes to eliminate the Quantity Rule, which included parameters linked to the CONE parameter. ISO-NE proposes tying various other, less important parameters to either the FCA Starting Price or the clearing price in the most recent FCA auction. (*Id.* at 60 – 61)

Q 105: Has ISO-NE proposed a sound approach for addressing the issues related to the CONE parameter?

A: Yes. I have not evaluated the proposed changes to each of the less important parameters, and it may be appropriate to reconsider some of them through a stakeholder process. However, it is appropriate to eliminate linkages to the parameter called "CONE" that has caused so much confusion and controversy. As a result, a reset of the CONE parameter is pointless and unnecessary.

Q 106: Does this complete your supplemental testimony?

A: Yes it does.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

ISO New England Inc. and New England Power Pool Participants Committee	Docket Nos. ER10-787-000
New England Power Generators Association v. ISO New England Inc.	EL10-50-000
PSEG Energy Resources & Trade LLC, PSEG Power Connecticut LLC, NRG Power Marketing LLC, Connecticut Jet Power LLC, Devon Power LLC, Middletown Power LLC, Montville Power LLC, Norwalk Power LLC, and Somerset Power LLC v. ISO New England Inc.	EL10-57-000

SUPPLEMENTAL TESTIMONY OF JAMES F. WILSON
IN SUPPORT OF SECOND BRIEF OF
THE JOINT FILING SUPPORTERS

James F. Wilson, being first duly sworn, states he is the same James F. Wilson whose Supplemental Testimony in Support of Second Brief of The Joint Filing Supporters accompanies this affidavit; and that the facts set forth therein are true and correct to the best of his knowledge, information, and belief.

James F. Wilson

Subscribed and sworn before me, a Notary Public in and for the State of Maryland

this 1 day of September, 2010.

Notary Public
My Commission expires: 6/29/2014

Meghan Tolmie
Montgomery County, MD
Notary Public
My Comm. Exp.: 6/29/2014

Illustration of ISO-NE's New APR Proposal: The FCA

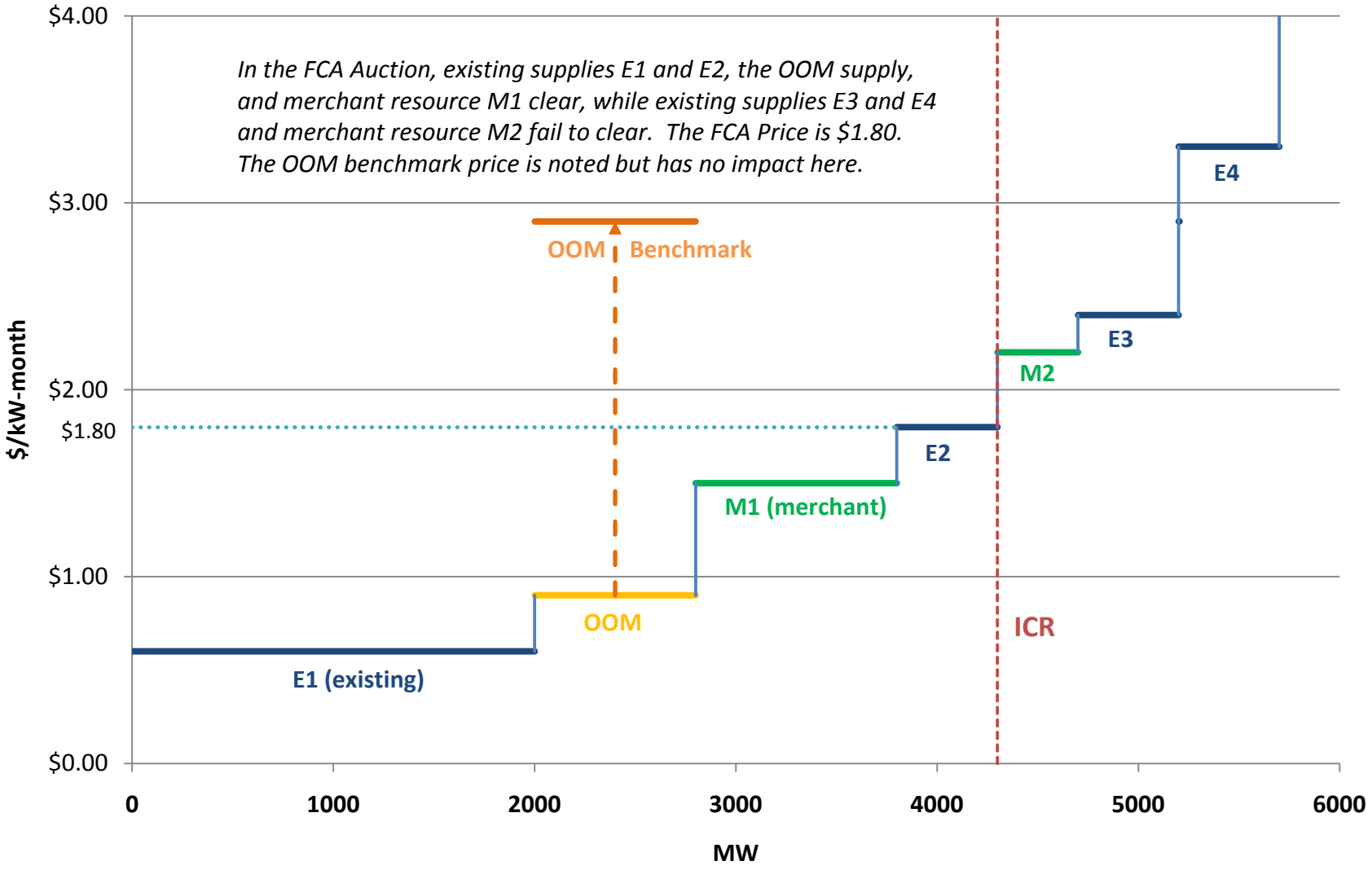
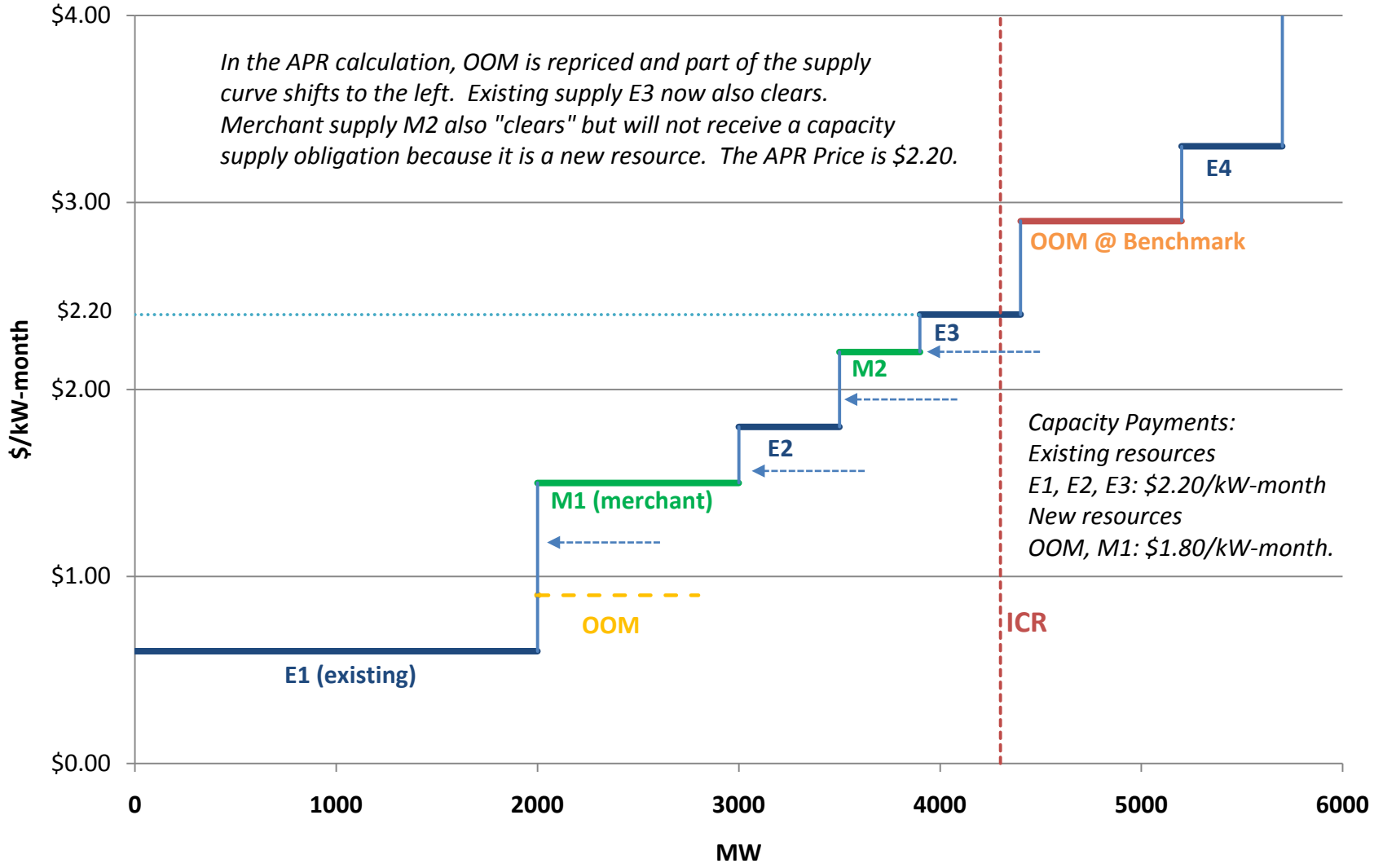


Illustration of ISO-NE's New APR Proposal: APR Calculation



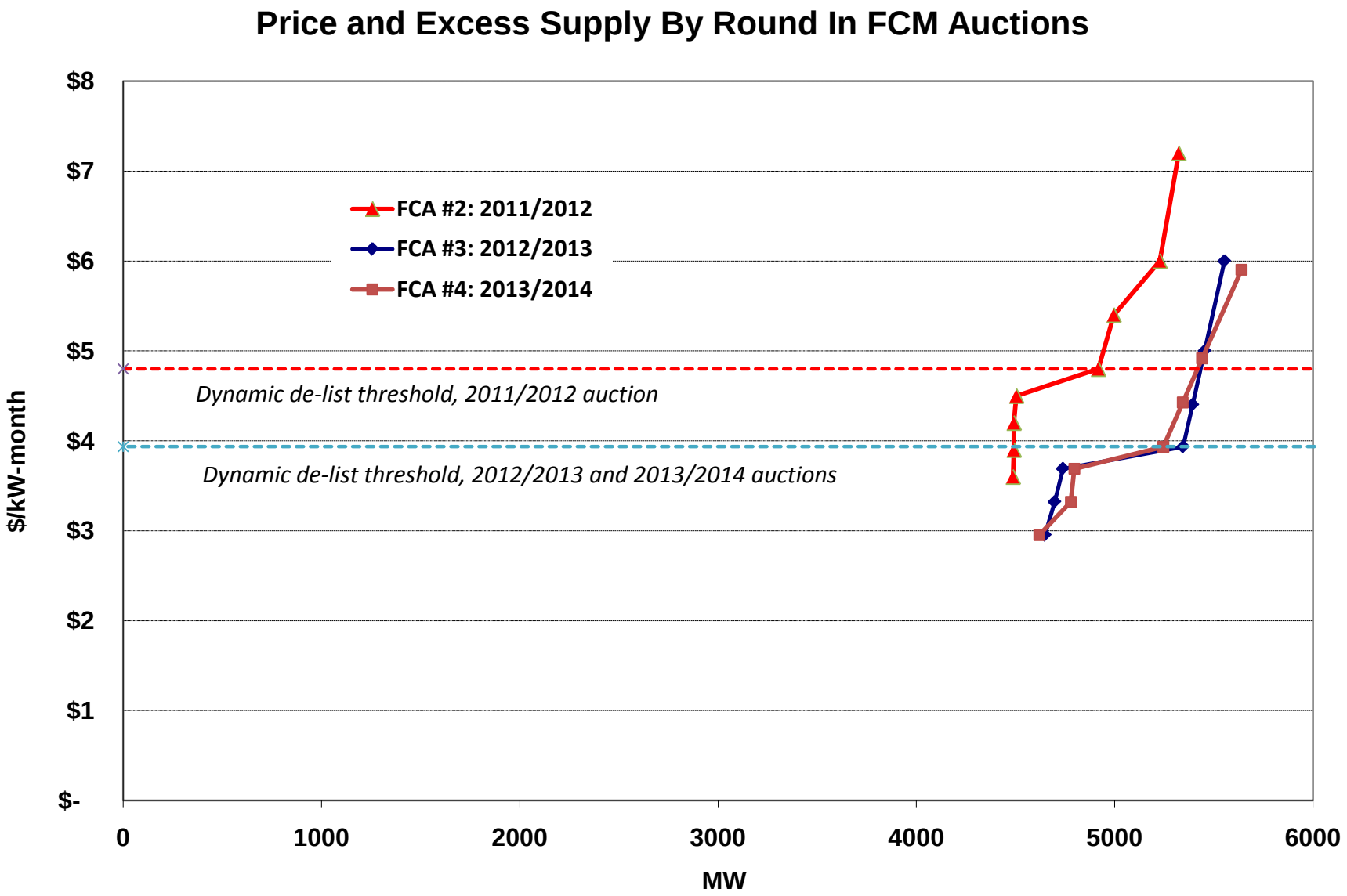
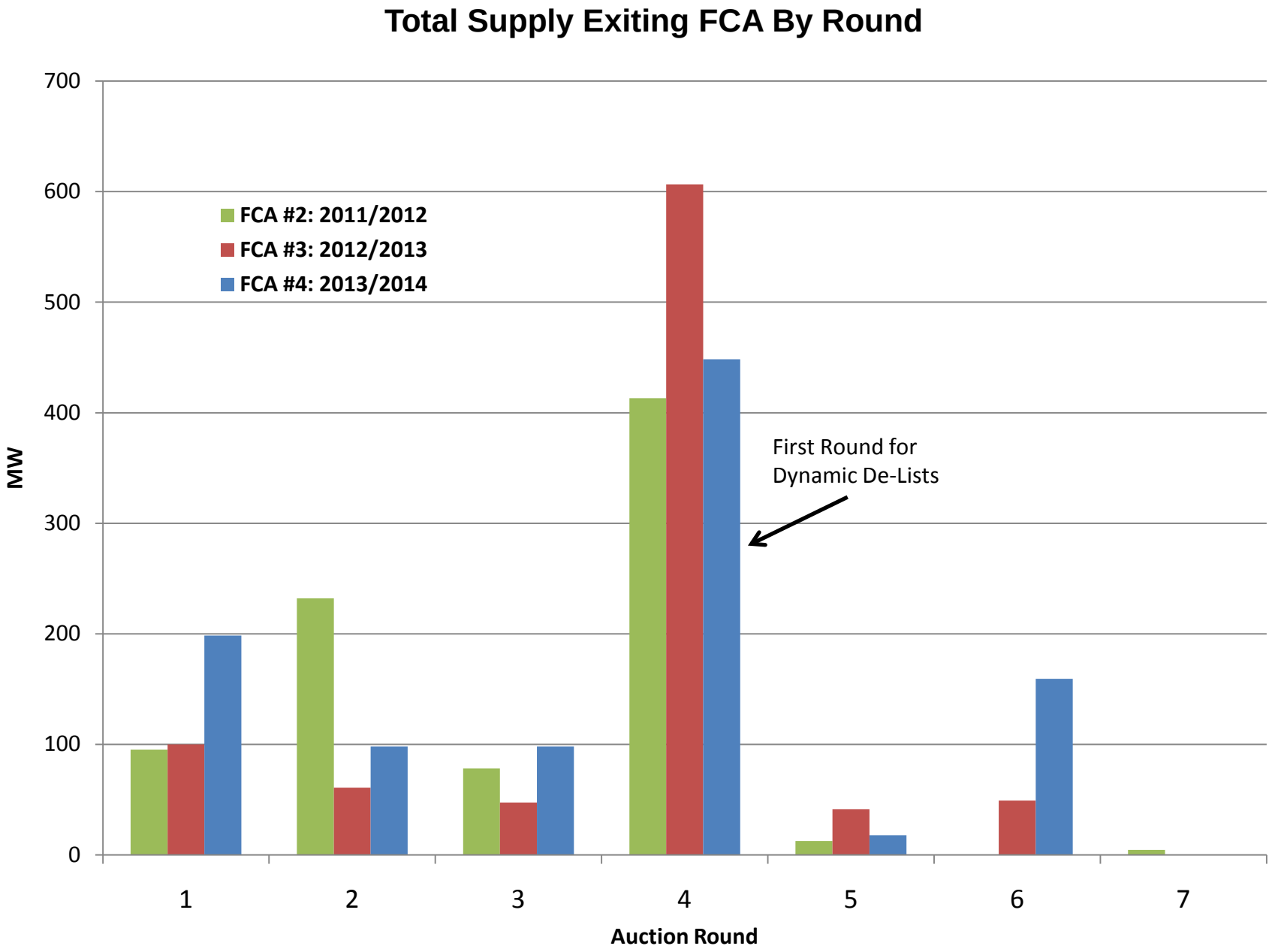
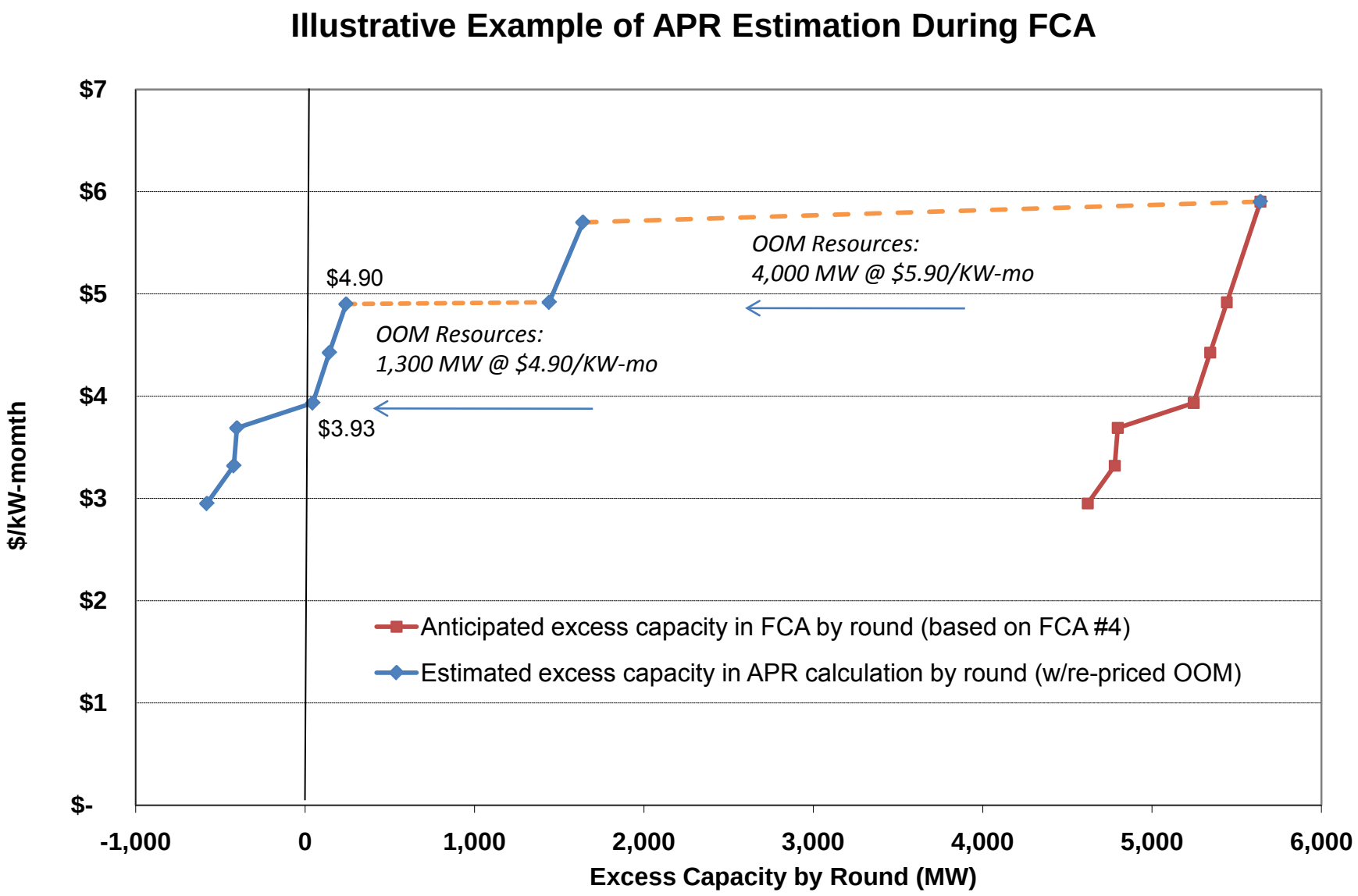

Price and Excess Supply By Round In FCM Auctions
$8
$7
$6
$5
$4
$3
$2
$1
$-
$/kW-month
FCA #2: 2011/2012
FCA #3: 2012/2013
FCA #4: 2013/2014
Dynamic de-list threshold, 2011/2012 auction
Dynamic de-list threshold, 2012/2013 and 2013/2014 auctions
0
1000
2000
3000
4000
5000
6000
MW

Exhibit DPUC-31




Illustrative Example of APR Estimation During FCA
$7
$6
$5
$4
$3
$2
$1
$-
$/kW-momth
$4.90
$3.93
OOM Resources:
1,300 MW @ $4.90/KW-mo
OOM Resources:
4,000 MW @ $5.90/KW-mo
Anticipated excess capacity in FCA by round (based on FCA #4)
Estimated excess capacity in APR calculation by round (w/re-priced OOM)
-1,000
0
1,000
2,000
3,000
4,000
5,000
6,000
Excess Capacity by Round (MW)

Example 2
Case 2A
Assumptions and results

Panel 1: Summary of Resources

Resource	Owner	[E]xisting or [N]ew	MW	Resource "cost"	FCA Offer Price	APR Price*	OOM? (offer < APR price)
Others Existing	Others	E	7000	$0.5	$0.5	$0.5	F
Supplier 1 Mid Cost	Supplier 1	E	3400	$1.5	$1.5	$1.5	F
Supplier 1 High Cost	Supplier 1	E	400	$2.5	$2.5	$2.5	F
Supplier 1 New	Supplier 1	N	0	$2.2	$2.2	$2.2	F
Merchant resource	Entrant 1	N	400	$1.4	$1.4	$1.4	F
DR 1	DR 1	N	200	$3.0	$1.0	$3.0	T
DR 2	DR 2	N	200	$3.1	$1.1	$3.1	T
DR 3	DR 3	N	200	$3.2	$1.2	$3.2	T

* For new resources, APR Price is max(offer, "cost") and determines whether resource is OOM.

Panel 2: FCA Clearing ***ICR:*** ***11000***

Rank by price	Resource	FCA - Cleared MW	Cumul. Cleared MW	FCA Price
1	Others Existing	7000	7000	
2	DR 1	200	7200	
3	DR 2	200	7400	
4	DR 3	200	7600	
5	Merchant resource	400	8000	
6	Supplier 1 Mid Cost	3000	11000	**$1.5**
7	Supplier 1 New	0	11000	
8	Supplier 1 High Cost	0	11000	

Panel 3: APR Clearing

Rank by price	Resource	APR-Cleared MW	Add'l cleared APR MW	APR Price
1	Others Existing	7000	0	
2	Merchant resource	400	0	
3	Supplier 1 Mid Cost	3400	400	
4	Supplier 1 New	0	0	
5	Supplier 1 High Cost	200	200	**$2.5**
6	DR 1	0	0	
7	DR 2	0	0	
8	DR 3	0	0	

Panel 4: Summary of Market-Wide Results

Auction Run	Existing/New Resources	MW	Price	Cost ($mil. /mo)
FCA	New	1000	$1.5	$1.5
FCA	Existing	10000	n.a.	$0.0
APR	Existing	10600	$2.5	$26.5
Total FCM:		11600	$0.0	**$28.0**

Panel 5: Supplier 1's Result

Resource	Cleared MW	Applic-able Price	Cost	Net rev. ($mil. /mo)
Supplier 1 Mid Cost	3400	$2.5	$1.5	$3.4
Supplier 1 High Cost	200	$2.5	$2.5	$0.0
Supplier 1 New	0	$1.5	$2.2	$0.0
Total:	3600	$0.0	$0.0	**$3.4**

Example 2
Case 2B

Supplier 1 offers its Mid Cost resource at a lower price, causing the Merchant resource to fail to clear, and with no impact on revenue.

Panel 1: Summary of Resources

Resource	Owner	[E]xisting or [N]ew	MW	Resource "cost"	FCA Offer Price	APR Price*	OOM? (offer < APR price)
Others Existing	Others	E	7000	$0.5	$0.5	$0.5	F
Supplier 1 Mid Cost	Supplier 1	E	3400	$1.5	**$1.3**	$1.3	F
Supplier 1 High Cost	Supplier 1	E	400	$2.5	$2.5	$2.5	F
Supplier 1 New	Supplier 1	N	0	$2.2	$2.2	$2.2	F
Merchant resource	Entrant 1	N	400	$1.4	$1.4	$1.4	F
DR 1	DR 1	N	200	$3.0	$1.0	$3.0	T
DR 2	DR 2	N	200	$3.1	$1.1	$3.1	T
DR 3	DR 3	N	200	$3.2	$1.2	$3.2	T

* For new resources, APR Price is max(offer, "cost") and determines whether resource is OOM.

Panel 2: FCA Clearing ***ICR:*** ***11000***

Rank by price	Resource	FCA - Cleared MW	Cumul. Cleared MW	FCA Price
1	Others Existing	7000	7000	
2	DR 1	200	7200	
3	DR 2	200	7400	
4	DR 3	200	7600	
5	Supplier 1 Mid Cost	3400	11000	**$1.3**
6	Merchant resource	0	11000	
7	Supplier 1 New	0	11000	
8	Supplier 1 High Cost	0	11000	

Panel 3: APR Clearing

Rank by price	Resource	APR-Cleared MW	Add'l cleared APR MW	APR Price
1	Others Existing	7000	0	
2	Supplier 1 Mid Cost	3400	0	
3	Merchant resource	400	0	
4	Supplier 1 New	0	0	
5	Supplier 1 High Cost	200	200	**$2.5**
6	DR 1	0	0	
7	DR 2	0	0	
8	DR 3	0	0	

Panel 4: Summary of Market-Wide Results

Auction Run	Existing/New Resources	MW	Price	Cost ($mil. /mo)
FCA	New	600	$1.3	$0.8
FCA	Existing	10400	n.a.	$0.0
APR	Existing	10600	$2.5	$26.5
Total FCM:		11200	$0.0	**$27.3**

Panel 5: Supplier 1's Result

Resource	Cleared MW	Applic-able Price	Cost	Net rev. ($mil. /mo)
Supplier 1 Mid Cost	3400	$2.5	$1.5	$3.4
Supplier 1 High Cost	200	$2.5	$2.5	$0.0
Supplier 1 New	0	$1.3	$2.2	$0.0
Total:	3600	$0.0	$0.0	**$3.4**

Example 3
Case 3A

Panel 1: Summary of Resources

Resource	Owner	[E]xisting or [N]ew	MW	Resource "cost"	FCA Offer Price	APR Price*	OOM? (offer < APR price)
Others Existing	Others	E	7000	$0.5	$0.5	$0.5	F
Supplier 1 Mid Cost	Supplier 1	E	3000	$1.5	$1.5	$1.5	F
Supplier 1 High Cost	Supplier 1	E	400	$2.5	$2.5	$2.5	F
Supplier 1 New	Supplier 1	N	0	$2.2	$2.2	$2.2	F
Merchant resource	Entrant 1	N	0	$1.4	$1.4	$1.4	F
DR 1	DR 1	N	200	$3.0	$1.0	$3.0	T
DR 2	DR 2	N	200	$3.1	$1.1	$3.1	T
DR 3	DR 3	N	200	$3.2	$1.2	$3.2	T

* For new resources, APR Price is max(offer, "cost") and determines whether resource is OOM.

Panel 2: FCA Clearing — ***ICR:*** ***11000***

Rank by price	Resource	FCA - Cleared MW	Cumul. Cleared MW	FCA Price
1	Others Existing	7000	7000	
2	DR 1	200	7200	
3	DR 2	200	7400	
4	DR 3	200	7600	
5	Merchant resource	0	7600	
6	Supplier 1 Mid Cost	3000	10600	
7	Supplier 1 New	0	10600	
8	Supplier 1 High Cost	400	11000	**$2.5**

Panel 3: APR Clearing

Rank by price	Resource	APR-Cleared MW	Add'l cleared APR MW	APR Price
1	Others Existing	7000	0	
2	Merchant resource	0	0	
3	Supplier 1 Mid Cost	3000	0	
4	Supplier 1 New	0	0	
5	Supplier 1 High Cost	400	0	
6	DR 1	200	0	
7	DR 2	200	0	
8	DR 3	200	0	**$3.2**

Panel 4: Summary of Market-Wide Results

Auction Run	Existing/New Resources	MW	Price	Cost ($mil. /mo)
FCA	New	600	$2.5	$1.5
FCA	Existing	10400	n.a.	$0.0
APR	Existing	10400	$3.2	$33.3
Total FCM:		11000	$0.0	**$34.8**

Panel 5: Supplier 1's Result

Resource	Cleared MW	Applic-able Price	Cost	Net rev. ($mil. /mo)
Supplier 1 Mid Cost	3000	$3.2	$1.5	$5.1
Supplier 1 High Cost	400	$3.2	$2.5	$0.3
Supplier 1 New	0	$2.5	$2.2	$0.0
Total:	3400	$0.0	$0.0	**$5.4**

Example 3
Case 3B

For Supplier 1, offering a lower-cost new resource reduces net revenue compared to clearing a higher-cost existing resource that earns APR Price.

Panel 1: Summary of Resources

Resource	Owner	[E]xisting or [N]ew	MW	Resource "cost"	FCA Offer Price	APR Price*	OOM? (offer < APR price)
Others Existing	Others	E	7000	$0.5	$0.5	$0.5	F
Supplier 1 Mid Cost	Supplier 1	E	3000	$1.5	$1.5	$1.5	F
Supplier 1 High Cost	Supplier 1	E	**0**	$2.5	$2.5	$2.5	F
Supplier 1 New	Supplier 1	N	**400**	$2.2	$2.2	$2.2	F
Merchant resource	Entrant 1	N	0	$1.4	$1.4	$1.4	F
DR 1	DR 1	N	200	$3.0	$1.0	$3.0	T
DR 2	DR 2	N	200	$3.1	$1.1	$3.1	T
DR 3	DR 3	N	200	$3.2	$1.2	$3.2	T

* For new resources, APR Price is max(offer, "cost") and determines whether resource is OOM.

Panel 2: FCA Clearing ***ICR:*** ***11000***

Rank by price	Resource	FCA - Cleared MW	Cumul. Cleared MW	FCA Price
1	Others Existing	7000	7000	
2	DR 1	200	7200	
3	DR 2	200	7400	
4	DR 3	200	7600	
5	Merchant resource	0	7600	
6	Supplier 1 Mid Cost	3000	10600	
7	Supplier 1 New	400	11000	**$2.2**
8	Supplier 1 High Cost	0	11000	

Panel 3: APR Clearing

Rank by price	Resource	APR-Cleared MW	Add'l cleared APR MW	APR Price
1	Others Existing	7000	0	
2	Merchant resource	0	0	
3	Supplier 1 Mid Cost	3000	0	
4	Supplier 1 New	400	0	
5	Supplier 1 High Cost	0	0	
6	DR 1	200	0	
7	DR 2	200	0	
8	DR 3	200	0	**$3.2**

Panel 4: Summary of Market-Wide Results

Auction Run	Existing/New Resources	MW	Price	Cost ($mil. /mo)
FCA	New	1000	$2.2	$2.2
FCA	Existing	10000	n.a.	$0.0
APR	Existing	10000	$3.2	$32.0
Total FCM:		11000	$0.0	**$34.2**

Panel 5: Supplier 1's Result

Resource	Cleared MW	Applic-able Price	Cost	Net rev. ($mil. /mo)
Supplier 1 Mid Cost	3000	$3.2	$1.5	$5.1
Supplier 1 High Cost	0	$3.2	$2.5	$0.0
Supplier 1 New	400	$2.2	$2.2	$0.0
Total:	3400	$0.0	$0.0	**$5.1**

Example 3
Case 3C

Offering and clearing both resources leads to even lower net revenue for Supplier 1 as the APR Price declines.

Panel 1: Summary of Resources

Resource	Owner	[E]xisting or [N]ew	MW	Resource "cost"	FCA Offer Price	APR Price*	OOM? (offer < APR price)
Others Existing	Others	E	7000	$0.5	$0.5	$0.5	F
Supplier 1 Mid Cost	Supplier 1	E	3000	$1.5	$1.5	$1.5	F
Supplier 1 High Cost	Supplier 1	E	**400**	$2.5	$2.5	$2.5	F
Supplier 1 New	Supplier 1	N	400	$2.2	$2.2	$2.2	F
Merchant resource	Entrant 1	N	0	$1.4	$1.4	$1.4	F
DR 1	DR 1	N	200	$3.0	$1.0	$3.0	T
DR 2	DR 2	N	200	$3.1	$1.1	$3.1	T
DR 3	DR 3	N	200	$3.2	$1.2	$3.2	T

* For new resources, APR Price is max(offer, "cost") and determines whether resource is OOM.

Panel 2: FCA Clearing — ***ICR:*** ***11000***

Rank by price	Resource	FCA - Cleared MW	Cumul. Cleared MW	FCA Price
1	Others Existing	7000	7000	
2	DR 1	200	7200	
3	DR 2	200	7400	
4	DR 3	200	7600	
5	Merchant resource	0	7600	
6	Supplier 1 Mid Cost	3000	10600	
7	Supplier 1 New	400	11000	**$2.2**
8	Supplier 1 High Cost	0	11000	

Panel 3: APR Clearing

Rank by price	Resource	APR-Cleared MW	Add'l cleared APR MW	APR Price
1	Others Existing	7000	0	
2	Merchant resource	0	0	
3	Supplier 1 Mid Cost	3000	0	
4	Supplier 1 New	400	0	
5	Supplier 1 High Cost	400	400	
6	DR 1	200	0	**$3.0**
7	DR 2	0	0	
8	DR 3	0	0	

Panel 4: Summary of Market-Wide Results

Auction Run	Existing/New Resources	MW	Price	Cost ($mil. /mo)
FCA	New	1000	$2.2	$2.2
FCA	Existing	10000	n.a.	$0.0
APR	Existing	10400	$3.0	$31.2
Total FCM:		11400	$0.0	**$33.4**

Panel 5: Supplier 1's Result

Resource	Cleared MW	Applic-able Price	Cost	Net rev. ($mil. /mo)
Supplier 1 Mid Cost	3000	$3.0	$1.5	$4.5
Supplier 1 High Cost	400	$3.0	$2.5	$0.2
Supplier 1 New	400	$2.2	$2.2	$0.0
Total:	3800	$0.0	$0.0	**$4.7**

Example 4

(compare to Case 3B) Offering and clearing a higher-cost new OOM resource raises the APR Price and Supplier 1's net revenue compared to clearing a lower-cost new resource.

Panel 1: Summary of Resources

Resource	Owner	[E]xisting or [N]ew	MW	Resource "cost"	FCA Offer Price	APR Price*	OOM? (offer < APR price)
Others Existing	Others	E	7000	$0.5	$0.5	$0.5	F
Supplier 1 Mid Cost	Supplier 1	E	3000	$1.5	$1.5	$1.5	F
Supplier 1 High Cost	Supplier 1	E	0	$2.5	$2.5	$2.5	F
Supplier 1 New	Supplier 1	N	400	**$3.5**	$2.2	$3.5	T
Merchant resource	Entrant 1	N	0	$1.4	$1.4	$1.4	F
DR 1	DR 1	N	200	$3.0	$1.0	$3.0	T
DR 2	DR 2	N	200	$3.1	$1.1	$3.1	T
DR 3	DR 3	N	200	$3.2	$1.2	$3.2	T

* For new resources, APR Price is max(offer, "cost") and determines whether resource is OOM.

Panel 2: FCA Clearing — ***ICR:*** ***11000***

Rank by price	Resource	FCA - Cleared MW	Cumul. Cleared MW	FCA Price
1	Others Existing	7000	7000	
2	DR 1	200	7200	
3	DR 2	200	7400	
4	DR 3	200	7600	
5	Merchant resource	0	7600	
6	Supplier 1 Mid Cost	3000	10600	
7	Supplier 1 New	400	11000	**$2.2**
8	Supplier 1 High Cost	0	11000	

Panel 3: APR Clearing

Rank by price	Resource	APR-Cleared MW	Add'l cleared APR MW	APR Price
1	Others Existing	7000	0	
2	Merchant resource	0	0	
3	Supplier 1 Mid Cost	3000	0	
4	Supplier 1 High Cost	0	0	
5	DR 1	200	0	
6	DR 2	200	0	
7	DR 3	200	0	
8	Supplier 1 New	400	0	**$3.5**

Panel 4: Summary of Market-Wide Results

Auction Run	Existing/New Resources	MW	Price	Cost ($mil. /mo)
FCA	New	1000	$2.2	$2.2
FCA	Existing	10000	n.a.	$0.0
APR	Existing	10000	$3.5	$35.0
Total FCM:		11000	$0.0	**$37.2**

Panel 5: Supplier 1's Result

Resource	Cleared MW	Applic-able Price	Cost	Net rev. ($mil. /mo)
Supplier 1 Mid Cost	3000	$3.5	$1.5	$6.0
Supplier 1 High Cost	0	$3.5	$2.5	$0.0
Supplier 1 New	400	$2.2	$3.5	-$0.5
Total:	3400	$0.0	$0.0	**$5.5**

Example 5

(Compare to Example 4) Whether or not a new merchant resource that will not clear the FCA is offered at all affects the APR Price.

Panel 1: Summary of Resources

Resource	Owner	[E]xisting or [N]ew	MW	Resource "cost"	FCA Offer Price	APR Price*	OOM? (offer < APR price)
Others Existing	Others	E	7000	$0.5	$0.5	$0.5	F
Supplier 1 Mid Cost	Supplier 1	E	3000	$1.5	$1.5	$1.5	F
Supplier 1 High Cost	Supplier 1	E	0	$2.5	$2.5	$2.5	F
Supplier 1 New	Supplier 1	N	400	$3.5	$2.2	$3.5	T
Merchant resource	Entrant 1	N	**400**	$2.6	$2.6	$2.6	F
DR 1	DR 1	N	200	$3.0	$1.0	$3.0	T
DR 2	DR 2	N	200	$3.1	$1.1	$3.1	T
DR 3	DR 3	N	200	$3.2	$1.2	$3.2	T

* For new resources, APR Price is max(offer, "cost") and determines whether resource is OOM.

Panel 2: FCA Clearing — ***ICR:*** ***11000***

Rank by price	Resource	FCA - Cleared MW	Cumul. Cleared MW	FCA Price
1	Others Existing	7000	7000	
2	DR 1	200	7200	
3	DR 2	200	7400	
4	DR 3	200	7600	
5	Supplier 1 Mid Cost	3000	10600	
6	Supplier 1 New	400	11000	**$2.2**
7	Supplier 1 High Cost	0	11000	
8	Merchant resource	0	11000	

Panel 3: APR Clearing

Rank by price	Resource	APR-Cleared MW	Add'l cleared APR MW	APR Price
1	Others Existing	7000	0	
2	Supplier 1 Mid Cost	3000	0	
3	Supplier 1 High Cost	0	0	
4	Merchant resource	400	0	
5	DR 1	200	0	
6	DR 2	200	0	
7	DR 3	200	0	**$3.2**
8	Supplier 1 New	0	0	

Panel 4: Summary of Market-Wide Results

Auction Run	Existing/New Resources	MW	Price	Cost ($mil. /mo)
FCA	New	1000	$2.2	$2.2
FCA	Existing	10000	n.a.	$0.0
APR	Existing	10000	$3.2	$32.0
Total FCM:		11000	$0.0	**$34.2**

Panel 5: Supplier 1's Result

Resource	Cleared MW	Applic-able Price	Cost	Net rev. ($mil. /mo)
Supplier 1 Mid Cost	3000	$3.2	$1.5	$5.1
Supplier 1 High Cost	0	$3.2	$2.5	$0.0
Supplier 1 New	400	$2.2	$3.5	-$0.5
Total:	3400	$0.0	$0.0	**$4.6**

Example 6 Case 6A
Results if no APR and No Interzonal Transmission

Example 6: Resources by Zone					Case 6A: Results if OOM offered at "cost" (so no APR), and No Interzonal Transmission		
					FCA Clearing:		
	Resource	MW	FCA Offer Price	Resource "cost"	Cleared MW	FCA Price	Cost (mil./mo)
Zone A:	OOMA	2000	$1.0	$2.6	1000		$2.6
LSR:	ExistingA	2000	$2.0	$2.0	2000		$5.2
3000 MW							
	Total	4000			3000	$2.6	**$7.8**
Zone B:	ExistingB1	2000	$1.5	$1.5	2000		$5.0
LSR:	ExistingB2	2000	$2.5	$2.5	1000		$2.5
3000 MW							
	Total	4000			3000	$2.5	**$7.5**
Two Zone Totals:					6000		**$15.3**

Example 6 Case 6B
Results if APR and No Interzonal Transmission

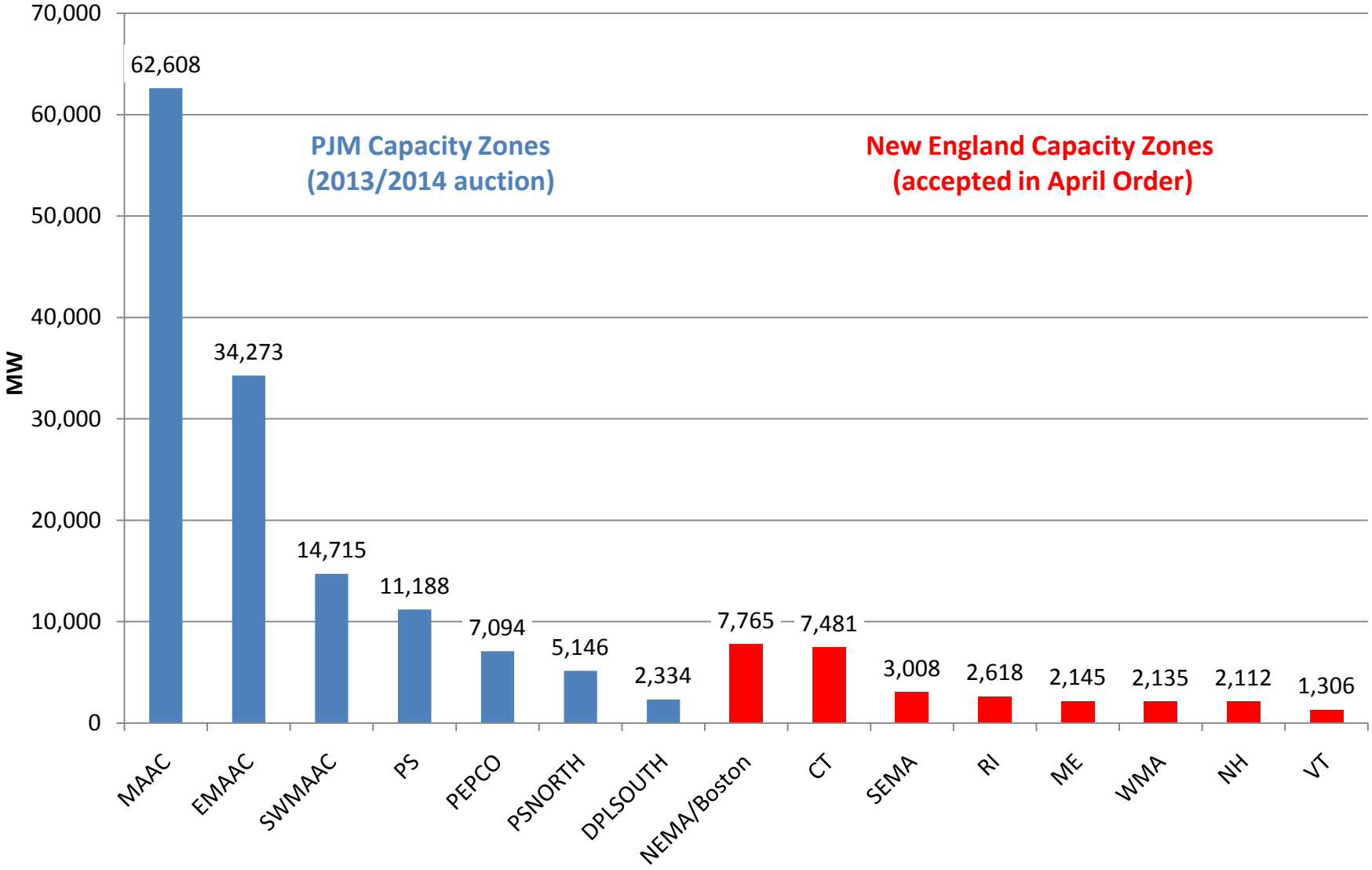
Case 6B: Results if APR (OOM offered below "cost") and No Interzonal Transmission								
		FCA Clearing:		**APR Clearing:**		**Overall Result:**		
	Resource	Cleared MW	FCA Price	Cleared MW	APR Price	Cleared MW	Applic. Price	Cost (mil./mo)
Zone A:	OOMA	2000		1000		2000	$2.0	$4.0
	ExistingA	1000		2000		2000	$2.6	$5.2
	Total	3000	$2.0	3000	$2.6	4000		**$9.2**
Zone B:	ExistingB1	2000		n.a.		2000	$2.5	$5.0
	ExistingB2	1000				1000	$2.5	$2.5
	Total	3000	$2.5			3000		**$7.5**
Two Zone Totals:		6000				7000		**$16.7**

Example 6 Case 6C
Results if APR and Interzonal Transmission

Case 6C: Results if APR and Interzonal Transmission (1000 MW)								
		FCA Clearing:		**APR Clearing:**		**Overall Result:**		
	Resource	Cleared MW	FCA Price	Cleared MW	APR Price	Cleared MW	Applic. Price	Cost (mil./mo)
Zone A:	OOMA	2000		0		2000	$2.0	$4.0
	ExistingA	2000		2000		2000	$2.5	$5.0
	Transm.	-1000		1000		1000	$2.5	$2.5
	Total	3000	$2.0	3000	$2.5	5000		**$11.5**
Zone B:	ExistingB1	2000		2000		2000	$2.5	$5.0
	ExistingB2	0		2000		1000	$2.5	$2.5
	Transm.	1000		-1000		0		$0.0
	Total	3000	$2.0	3000	$2.5	3000		**$7.5**
Two Zone Totals:		6000		6000		8000		**$19.0**

Exhibit DPUC-43

PJM and NE Capacity Zone Peak Loads 2013/2014



Sources: RPM Planning Parameters for 2013/2014 Base Residual Auction;
ISO-NE RSP10 Long-run Forecast of Energy and Seasonal Peaks, March 18, 2010