

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

ISO New England, Inc. and)
New England Power Pool) Docket No. ER10-787-000
)
)

**DIRECT TESTIMONY OF JAMES F. WILSON
ON BEHALF OF
THE CONNECTICUT DEPARTMENT OF UTILITY CONTROL**

CONTENTS

	<u>Page</u>
I. Introduction	2
II. Summary And Conclusions.....	3
III. Evolving Understanding of the Role of Centralized Capacity Markets in the Commission's Restructured Wholesale Power Markets	9
IV. Protesters' Predictions Of Dire Consequences Of The Joint Filing Revisions Are Based On An Understanding Of FCM's Role That Is Conceptually Flawed And Has Become Obsolete Due To Changing Circumstances	22
V. Protesters' Proposed Changes to the APR Rules Should Be Rejected	30
VI. Protesters' Proposals To Increase the FCM CONE Parameter Or Related Thresholds Should Be Rejected	45
VII. Protesters' Proposals Regarding Zone Formation Should Be Rejected.....	52

1 **I. Introduction**

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

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

6 **Q 2: Please describe your experience and qualifications.**

7 A: I have 25 years of consulting experience to the electric power and natural gas industries.
8 Many of my past assignments have focused on the economic and policy issues arising
9 from the introduction of competition into these industries, including restructuring
10 policies, market design, and market power. Other engagements have included contract
11 litigation and damages; pipeline rate cases; forecasting and market assessment; evaluating
12 allegations of market manipulation; probabilistic modeling of utility planning problems;
13 and a wide range of other issues arising in these industries. I also spent five years in
14 Russia in the early 1990s advising on the reform, restructuring, and development of the
15 Russian electricity and natural gas industries for the World Bank and other clients.
16 I have submitted affidavits and presented testimony in proceedings of the Federal Energy
17 Regulatory Commission (“Commission”), state regulatory agencies, and U.S. district
18 court. I hold a B.A. in Mathematics from Oberlin College and an M.S. in Engineering-
19 Economic Systems from Stanford University. My curriculum vitae, summarizing my
20 experience and listing past testimony, is Exhibit DPUC-2, attached hereto.

1 I have been involved in electricity restructuring and wholesale market design for over
2 twenty years in California, the Mid-Atlantic states, New England, Ontario, Russia, and
3 other regions. I have been extensively involved in centralized capacity market design and
4 analysis, primarily with respect to PJM Interconnection, L.L.C.'s ("PJM") Reliability
5 Pricing Model ("RPM") capacity construct. I have also been involved in the closely
6 related issues of resource adequacy, capacity requirements, and peak load forecasting.

7 **Q 3: Please describe the scope of your testimony in this proceeding.**

8 A: On February 22, 2010, ISO New England, Inc. ("ISO-NE") and the New England Power
9 Pool ("NEPOOL") filed revisions to ISO-NE's Forward Capacity Market ("FCM")
10 capacity construct ("Joint Filing Revisions"), and on March 15, 2010, various parties
11 filed comments and protests in response. I was asked by counsel for the Connecticut
12 Department of Public Utility Control ("DPUC") to review the Joint Filing Revisions,
13 comments, and protests, and to evaluate the various proposals for further changes to the
14 FCM.

15 **II. Summary And Conclusions**

16 **Q 4: Please summarize the Joint Filing Revisions.**

17 A: The Joint Filing Revisions include a number of changes, but my testimony focuses on
18 three elements of the FCM design: the Alternative Price Rule ("APR"); FCM's CONE
19 parameter and related parameters; and the provisions pertaining to definition and
20 formation of capacity zones. The Joint Filing Revisions are described in detail in the
21 filing and supporting testimony of ISO-NE witnesses Robert G. Ethier, Mark G. Karl and
22 David LaPlante.

1 **Q 5: Why have ISO-NE and NEPOOL filed these revisions at this time?**

2 A: The proposed revisions address concerns raised by stakeholders and by ISO-NE's
3 Internal Market Monitor in a report issued in June, 2009.¹ The specific changes were
4 developed through the FCM Working Group with assistance of Ms. Cynthia Marlette of
5 the Commission.

6 **Q 6: Please identify the comments and protests that you will discuss in your testimony.**

7 A: My testimony will primarily focus on and respond to the affidavits of Dr. Roy J. Shanker
8 and Mr. Robert B. Stoddard, attached to the Motion to Intervene and Protest of the New
9 England Power Generators Association; and the affidavit of Dr. Miles Bidwell, attached
10 to the Protest and Comments of the Boston Gen Companies.

11 **Q 7: Please summarize the additional changes to FCM (other than as proposed under the**
12 **Joint Filing Revisions) proposed by the protestors' experts.**

13 A: Protestors' experts recommend further changes primarily in three areas.

14 1. APR: They propose changes that would result in classifying additional resources as
15 OOM; triggering the APR rule more often; and setting higher prices when APR
16 triggers.

17 2. The FCM CONE² and related parameters: They propose administratively raising the
18 FCM CONE Parameter, to raise the various market power mitigation thresholds and
19 other parameters linked to it.

¹ ISO New England Inc. Market Monitoring Unit, *Internal Market Monitoring Unit Review of the Forward Capacity Market Auction Results and Design Elements*, June 5, 2009.

² The acronym "CONE" stands for Cost of New Entry, and in the context of centralized capacity markets such as FCM is generally used to refer to the cost to build a combustion turbine power plant, as discussed later in this

1 3. Zonal pricing: They propose that ISO-NE create capacity zones and locational prices
2 whenever there are constraints in the auctions, and relaxed market power mitigation
3 to allow de-list bids to cause zone formation under a broader set of circumstances.

4 **Q 8: Please summarize your understanding of the issues around FCM operation that**
5 **have led to the Joint Filing Revisions, and also the protestors' other proposals.**

6 A: New England now has an excess of capacity despite relatively low prices. The FCM has
7 not operated as many expected, due to evolving conditions that are now far different from
8 those anticipated at the time it was designed. Rather than most new capacity being gas-
9 fired generation built under “merchant” conditions, capacity additions have included
10 large amounts of demand response, and the diversity of capacity additions is likely to
11 further increase to meet targets for renewable generation. Much of the new capacity is
12 now entering the market with contracts or incentives rather than relying entirely on
13 wholesale spot market revenues, and this is likely to continue.

14 In addition, the FCM design reflected some expectations about how the market would
15 work that were not well founded, and that have now been disproven by the market's
16 operation. In particular, it was expected by some that new capacity would be offered into
17 the FCM at prices reflecting its long-run average cost, leading to relatively stable
18 capacity prices at such levels when new capacity is needed, but the experience in
19 centralized capacity markets does not support this theory.

testimony. In some contexts the term “Net CONE” is used to refer to the cost of construction net of anticipated net revenue from sales of energy and ancillary services. The parameter called “CONE” in FCM is updated based on FCA clearing prices year to year, so over time has become unrelated to the “CONE” of a combustion turbine, or, for that matter, any other resource. To avoid confusion, in this testimony the FCM parameter will be referred to as the “FCM CONE Parameter.”

1 One of the main issues in this proceeding is whether to allow FCM's role as a capacity
2 spot market to evolve in response to the changing conditions, or instead to attempt to
3 force a stronger correspondence with some parties' original expectations, as the proposals
4 for more substantial revisions to the APR and a large increase in the FCM CONE
5 Parameter would attempt to do. Protestors' experts predict retirements and loss of
6 demand response capacity if FCM prices are not raised, but there is no evidence for such
7 predictions; there have been few retirements in response to the low FCM prices, and
8 demand response has been increasing. These experts also claim the low prices will harm
9 consumers over the long run. The FCM provides a one-year spot market for capacity
10 (with a rarely used exception), and it is designed such that prices will rise when necessary
11 to retain existing and attract new resources to meet reliability requirements. Policies that
12 raise Forward Capacity Auction ("FCA") prices above the level that clears actual supply
13 and demand will only exacerbate the current surplus.

14 **Q 9: Please summarize your conclusions regarding protestors' experts' allegations that**
15 **"out-of-market" capacity constitutes an exercise of "buyer market power" or**
16 **manipulation of the FCM.**

17 A: The FCM is designed to offer a capacity payment sufficient to attract and retain the
18 amount of capacity needed for reliability, and it has done so. Capacity that is under
19 contract or receives incentives is rationally offered into the FCA at a price that makes
20 accepting a capacity supply obligation attractive, which is generally lower than its "long-
21 run average cost." Offering such capacity at such prices is competitive conduct. Nor are
22 procurements that select new resources based on multiple objectives and resource
23 attributes – including reliability needs, fuel diversity and flexibility, emissions, and other
24 characteristics – an exercise of buyer market power or attempt to manipulate the FCM.

1 **Q 10: Please summarize your conclusions regarding the protestors' experts' proposals for**
2 **further changes to the APR.**

3 A: The Joint Filing Revisions include several changes to expand the APR, a rule intended to
4 set the FCA price in a manner that accounts for specific consequences of "out-of-market"
5 capacity. Protestor's experts' proposals to further expand the APR reflect the view that
6 FCA prices should be based on the "merchant" entry model and should reflect long-run
7 rather than short-run supply and demand conditions. However, to be efficient in its role
8 as a capacity spot market, the FCM should set a price that clears the actual supply and
9 demand in the market. New capacity has been coming into the market with contracts and
10 incentives, and this pattern is likely to continue; it should be accepted rather than
11 discouraged. Protestors' experts' proposals for further changes to the APR would
12 contravene policies that recognize the desirable non-price attributes of certain types of
13 capacity, such as demand response and renewables.

14 The changes to the APR under the Joint Filing Revisions represent a number of material
15 concessions and would result in FCA prices above the level that would clear actual
16 supply and demand. New England has surplus capacity at this time and is likely to
17 continue to have surplus capacity for years to come; there is no reason to go further with
18 the APR rule and the protestors' experts' proposals to do so should be rejected.

19 **Q 11: Please summarize your conclusions regarding the protestors' experts' proposals for**
20 **changes to the FCM CONE and related parameters.**

21 A: The FCM CONE Parameter determines various thresholds for market power mitigation
22 and the FCM Quantity Rule, among other FCM parameters. These thresholds need to
23 remain reasonably close to past and likely future FCA prices to serve their intended
24 functions. Protestors' experts' proposals for a sharp increase in the FCM CONE

1 Parameter would push these values far above FCA prices, largely removing market
2 power mitigation and allowing exercise of market power to raise FCA prices. These
3 proposals should be rejected.

4 **Q 12: Please summarize your conclusions regarding the protestors' experts' proposals for**
5 **further changes to zonal price formation and related market power mitigation.**

6 A: The Joint Filing Revisions include several changes to increase the likelihood of locational
7 capacity pricing in future FCAs. While more frequent locational pricing can improve the
8 FCM, there are reasons to be cautious in this regard. First, geographically smaller
9 capacity markets increase the incentives for sellers to attempt to withhold and raise
10 prices; thus, locational pricing increases the concern about market power. In addition,
11 while locational pricing results in higher prices within the zones that form, it also lowers
12 prices in the surrounding unconstrained areas, so the local sourcing requirements (the
13 amount of capacity to be procured in a zone) can have a substantial impact on prices both
14 within and without a zone. ISO-NE proposes to consider further changes with regard to
15 locational pricing, the local sourcing requirements, and related issues through a
16 stakeholder process; this process will allow further changes to reflect a coordinated
17 approach to these interrelated issues. The protestors' experts' proposals to relax market
18 power mitigation and further expand locational pricing beyond the measures included in
19 the Joint Filing Revisions should be rejected.

20 **Q 13: Please summarize your conclusions regarding the Joint Filing Revisions to the FCM.**

21 A: The revisions proposed by ISO-NE and NEPOOL move the FCM design in the direction
22 of a more substantial Alternative Price Rule and more frequent zone formation, while
23 providing protection against lower prices by extending the price floor. Protestors'

1 experts would go further to raise prices through the APR, to relax market power
2 mitigation in various ways, and to allow more frequent locational pricing. These
3 proposals should be rejected. The Joint Filing Revisions are a reasonable compromise
4 between disparate visions of how FCM should operate and disparate interests with regard
5 to the level of capacity prices; they should be approved as filed.

6 **Q 14: How is the remainder of your testimony organized?**

7 A: The next section of my testimony describes the changing circumstances that have resulted
8 in the FCM operating differently than was originally expected and how its role should
9 now be understood. Then in Section IV I respond to the protestors' experts' claims of
10 various adverse consequences if further changes to the FCM, beyond those included in
11 the Joint Filing Revisions, are not implemented. Sections V, VI and VII respond to the
12 various proposals for further changes to the APR, to the FCM CONE Parameter and
13 related parameters, and to the rules regarding zone formation, respectively.

14 **III. Evolving Understanding of the Role of Centralized Capacity Markets in**
15 **the Commission's Restructured Wholesale Power Markets**

16 **Q 15: Mr. Wilson, what do you see as being the main issue in this proceeding?**

17 A: The Joint Filing Revisions respond to criticisms of the FCM, primarily from generation
18 interests, and largely related to what these interests perceive as the low prices that have
19 resulted in the first three FCAs. These prices are the result of a number of factors related
20 to changing external conditions and some aspects of the workings of the capacity market
21 that were not adequately understood when it was designed. While achieving the
22 objective of resource adequacy, the FCM has operated in a manner different from what

1 some of its architects apparently envisioned, and has not produced capacity payments at
2 the levels some stakeholders apparently anticipated.

3 **Q 16: Please describe the setting in which the FCM was conceived and designed, and the**
4 **expectations at that time for its operation.**

5 A: Centralized capacity mechanisms like the FCM, PJM Interconnection, L.L.C.'s three-
6 year-forward Reliability Pricing Model ("RPM"), and NYISO's capacity construct, were
7 conceived and designed about five years ago. The preceding period had been
8 characterized by the following circumstances:

- 9 1. Peak load growth had been and was expected to remain fairly steady, resulting in a
10 stable, consistent need to add new generating capacity to maintain reliability.
- 11 2. For several years before this time, nearly all generation additions in the U.S. were
12 gas-fired combustion turbines ("CT") or combined cycle ("CC") units, built under
13 "merchant" circumstances – *i.e.*, based on anticipated revenues in short-term
14 wholesale markets without long-term contracts - and this pattern was expected to
15 continue.
- 16 3. However, there was concern that under the conditions of the wholesale markets at the
17 time, an energy-only market design would result in unacceptable price volatility
18 and/or an unacceptable level of capacity and resource adequacy. Therefore,
19 centralized capacity markets were considered needed as a transitional mechanism,
20 until wholesale market designs could be further developed and the demand side of the
21 market could become more actively involved.
- 22 4. It was expected that three-year-forward, centralized capacity markets would attract
23 multiple offers to build new gas-fired generation, competing based on price. In
24 addition, the new capacity markets would have the potential to offer locational prices,
25 to retain existing capacity and attract new capacity to the locations where it is most
26 needed.
- 27 5. It was expected that to be built, new resources would have to expect to earn revenues
28 over the life of a project that would cover cost plus a return on the investment. Based
29 on this, it was expected that capacity prices would have to average, over time, the
30 levelized (or long-run average)³ cost of construction of a peaking plant, such as a

³ Construction costs are incurred up front and recovered over a longer period of plant operation; the levelized or annualized amount is the amount that must be recovered each year in order to ultimately recover the entire amount plus financing cost, considering the time value of money. In the FCM context, "long-run average cost" is used to

1 combustion turbine, net of any retained market earnings (the Cost of New Entry, or
2 “CONE”).⁴ It was also widely believed that new projects would and should be
3 offered at prices based on their levelized cost into centralized capacity markets, and
4 that the capacity markets would generally clear at such levels when new capacity was
5 needed.

6 The expectation that capacity markets would clear at prices close to a combustion
7 turbine’s CONE net of market revenues evolved over time into a view by some that they
8 *should* clear at such levels, and a sense that existing resources are entitled to average
9 payments of such magnitude, even if such capacity prices are not required to attract and
10 retain sufficient resources to accomplish the original and fundamental objective of
11 resource adequacy.

12 **Q 17: How have these circumstances changed since FCM was being designed?**

13 A: There have been substantial changes in the circumstances since the 2004 period.

- 14 1. Especially in the last few years, peak load growth has been slowing, leading to a
15 reduced need for new capacity. This reflects the recent recession, but it also likely
16 reflects responses to higher fuel and energy prices and increasing efficiency of
17 electricity use. Expectations of future growth are now lower than in the past,
18 resulting in reduced expectations of incremental capacity needs.
- 19 2. Over the past few years, demand response has become a major resource for satisfying
20 incremental capacity needs. Upgrades to existing plants have also been a significant
21 source of incremental capacity in some areas, although this has apparently been minor
22 in New England to date.
- 23 3. Over the past several years it has become increasingly difficult to obtain financing for
24 merchant power plants, and at the present time it is generally considered that a long-
25 term contract or other highly reliable source of revenue is required to finance and
26 build a new plant.

mean roughly the same thing – a levelization or annualization of cost – and these terms will generally be used interchangeably in this testimony.

⁴ While resources earn offsetting net revenues in energy and ancillary services markets, the estimated amount of such revenue that a very high heat rate peaking resource would earn is recaptured under the FCM rules as Peak Energy Rents (“PER”). Consequently, newer combustion turbines and other, more efficient resources retain market net revenues other than the PER and would seek to earn from the capacity market the cost to build net of these retained revenues.

- 1 4. As a result of weakening load growth, the development of other sources of
2 incremental capacity, and difficulties in obtaining financing, fewer gas-fired power
3 plants have been built, and very few have been built entirely under merchant
4 circumstances.
- 5 5. In addition, new resources are increasingly being selected and contracted with
6 substantial weight placed on non-price attributes. State and federal programs have
7 created strong incentives and programs for demand-side resources, energy efficiency,
8 renewable resources, and cleaner and more diversified sources of energy that are
9 having the desired impact of increasing these sources of energy or energy reductions.
- 10 6. Much of the incremental new capacity that has been available has shorter construction
11 lead times than the three years often considered necessary for new gas-fired
12 generation. Demand response capacity, in particular, can be added in much less than
13 three years. Upgrades and uprates of existing plants, another source of incremental
14 capacity, also typically take much less than three years to implement. As a result,
15 there is much more flexibility to adjust capacity commitments closer to each delivery
16 year than had been anticipated, and FCM's reconfiguration auctions facilitate such
17 adjustments.
- 18 7. Even though FCM auction prices have been much lower than some parties expected
19 (and have been constrained by an administrative price "floor"), this has not led to
20 many retirements of existing plants. Almost all existing plants have accepted
21 capacity obligations despite FCA prices that were, for some plants, below what had
22 been represented as their "going-forward costs".
- 23 8. With slower peak load growth, diverse new sources of capacity, and few retirements,
24 the New England market has substantial excess capacity and it will take several years
25 of anticipated load growth to absorb the excess.

26 **Q 18: In addition to the changing circumstances, were there other ways in which the**
27 **Forward Capacity Market did not operate as some had anticipated?**

28 A: Yes. As noted above, some expected that new capacity would (or at least should) be
29 offered into the FCM at prices based on the resources' long-run average (or levelized) net
30 cost. This expectation was reflected in the FCM design in a number of places, *e.g.*, as a
31 criterion for determining whether offers appeared "competitive" or should be subject to
32 mitigation. This expectation was also reflected in the oft-expressed view that capacity
33 market supply curves would include a relatively "flat" segment near a combustion
34 turbine's levelized CONE net of market revenues, reflecting multiple competitive offers
35 to build such capacity, and leading to stable capacity prices at around this level.

1 However, the expectation that new capacity would be offered based on levelized or long-
2 run average cost net of market earnings was never grounded in any sound economic or
3 business logic.⁵ And the results in centralized capacity markets have now provided
4 substantial evidence discrediting the notion that entrants will price new capacity on this
5 basis.

6 **Q 19: Please elaborate as to why it is not economically rational for a sponsor to bid a new**
7 **resource into the FCA based on its long-run average (or levelized) net cost.**

8 A: Only by coincidence would it be economically rational to offer a new resource at a price
9 based on long-run average net cost. This is primarily because capacity resources are
10 fixed assets that typically operate for 20 or more years, but the FCA provides a payment
11 for only a single year (with a rarely used exception⁶). If ten-year or longer commitments
12 were being auctioned in the FCA, new, long-lived resources might be offered at prices
13 reflecting their levelized cost, but this is not the case; the FCA is primarily a one-year
14 spot market for capacity. The economically rational offer price for a new resource into
15 the FCA will depend upon the resource's particular circumstances and its owner's
16 expectations, and could be much lower or higher than the levelized cost. The following
17 paragraphs describe a few of these circumstances.

⁵ I have explained why new capacity would not be offered based on levelized cost in comments in response to PJM's original application to implement its RPM capacity mechanism and at various times since; the explanation is equally applicable to FCM. See, for instance, Affidavit of James F. Wilson on Behalf of The Public Power Association of New Jersey, Docket Nos. ER05-1410 and EL05-148, filed October 19, 2005, p. 15-17; Affidavit of James F. Wilson on Proposed Changes to the Reliability Pricing Model In Support of Protest of RPM Load Group, filed January 9, 2009 in Docket No. ER09-412-000, P. 194-201.

⁶ ISO-NE's Market Rule 1 sections III.13.1.1.2.2.4 and III.13.1.4.2.2.5 provide new generation and demand response, respectively, the opportunity to elect up to four additional and consecutive capacity commitment periods at the price set in the first FCA, adjusted for inflation. However, 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, according to auction results posted on the ISO-NE web site.

- 1 1. If the resource is under construction or under contract and is already largely
2 committed to being available in the delivery year, the resource is in a similar situation
3 to that of an existing resource from an economic perspective. Resources that are
4 committed to being available would offer based on their going-forward cost (or
5 opportunity cost, *e.g.*, reflecting the opportunity to sell into a neighboring market, or
6 to operate without a Capacity Supply Obligation and earn Peak Energy Rents) as
7 would existing resources. This will generally be much lower than long-run average
8 cost. It makes no economic sense for resources that are committed to being available
9 to offer at higher prices and risk not receiving a Capacity Supply Obligation.
- 10 2. Resources that are not under construction and not under contract, and, therefore, are
11 not committed to being available in the delivery year, face a “go/no go” decision on
12 whether to go forward with construction. For a long-lived asset, the decision depends
13 upon the present value of the project’s stream of anticipated net revenues over the life
14 of the project, compared to its cost, and weighing in various uncertainties and risks.
15 If the sponsor believes the net present value is positive, the sponsor can be expected
16 to decide to go forward with the project, and then may offer into the first FCA based
17 on the project’s going-forward or opportunity cost as would an existing resource.
- 18 3. The developer of a potential project who concludes that it is not expected to have a
19 positive net present value would tentatively plan to cancel or delay development of
20 the project. However, it might be that a high enough price level in the first FCA
21 could make the project marginally profitable on a net present value basis. This
22 threshold price would rationally be based on the project’s expected net present value
23 shortfall, not on its levelized cost. This threshold price could be much higher than
24 CONE, for instance.

25 **Q 20: Please provide an example showing why it is not economically rational to offer new**
26 **capacity into the FCA based on levelized net cost.**

27 A: Consider the sponsor of a project with a 20-year period of operation, who believes the
28 project, if built, would have construction cost of \$6.00/kW-mo, earn \$2.00/kW-mo from
29 energy and ancillary services markets, and earn capacity payments of \$3.80/kW-mo, all
30 on a levelized basis. Under these circumstances, the sponsor expects the project to lose
31 \$0.20/kW-mo on a levelized or average basis. But if the project could earn \$4.00/kW-mo
32 (rather than the expected \$3.80/kW-mo) consistently from capacity markets, it would
33 break even.

34 Does this mean the sponsor should offer the resource into the first FCA at \$4.00/kW-mo?

35 No, that would not be economically rational and would lead to expected losses, because if

1 the first FCA clears at \$4.00/kW-mo, it only means the project would earn this payment
2 in the first year of operation. The sponsor would need to believe it would earn at least
3 \$4.00/kW-mo from the capacity market on average *over the life of the project* in order to
4 break even.

5 Losing \$0.20/kW-mo on average over twenty years is a loss of \$17.20/kW (or \$1.44/kW-
6 mo over twelve months) on a net present value basis (discounting at 15%). The project
7 would break even if it could earn the extra \$1.44/kW-mo all in the first year, that is, if the
8 first FCA cleared not at the expected \$3.80, but at \$5.24/kW-mo. Under these
9 circumstances and assumptions, it would be economically rational for the sponsor to offer
10 the project into the FCA at \$5.24/kW-mo, and if the project clears, build it. Note that if
11 the sponsor offers the project at \$4.00/kW-mo (the amount that must be earned year after
12 year to break even), and clears, and then expectations of capacity prices and other
13 revenues in future years prove accurate, the project will lose money to the extent the
14 clearing price in the first year was less than \$5.24/kW-mo.

15 Other circumstances would lead to other economically rational offer prices. However,
16 under no circumstances is it economically rational to offer a project into the FCA based
17 on long-run average cost, if the life of the project exceeds the duration of the commitment
18 obtained in the FCA, although the economically rational offer price could be close to the
19 long-run average cost by coincidence.

1 **Q 21: If the sponsors of new capacity believe the FCM must provide revenues equal to the**
2 **levelized net cost of a peaking unit on average over time, and, based on this, expect**
3 **their competitors to offer at this price, would it then be economically rational to**
4 **offer based on levelized net cost?**

5 A: Clearly not. If competitors are expected to offer at some price, it makes sense to offer at
6 a somewhat lower price if you wish to clear; and of course, you expect your competitors
7 to be thinking the same way. This assumption regarding competitors' conduct (besides
8 being unfounded) does not lead to any expectation of offer or clearing prices at or near
9 levelized net cost.

10 **Q 22: Please describe the evidence from three-year-forward capacity auctions regarding**
11 **the prices at which new resources are offered.**

12 A: Quite a number of three-year-forward capacity auctions have now been held under FCM
13 and PJM's RPM. The supply curves have never exhibited the anticipated "flat" segment,
14 or any cluster of offers around the expected CONE value (*e.g.*, \$7.50/kW-mo, the original
15 CONE value used in FCM), or any another price, even where the evidence suggests that
16 new capacity was offered competitively. Instead, many new resources have been offered
17 at much lower prices.⁷

18 **Q 23: You have explained that there is no economic basis for expecting new capacity to be**
19 **offered based on levelized net cost, and that the results of capacity auctions show**
20 **that offers are not clustered around such a value. Do protestors' experts appear to**
21 **still believe that offers for new capacity will be priced this way?**

22 A: Yes they do. Dr. Bidwell, for instance, states (p. 15 and elsewhere) that he expected FCA
23 prices to remain close to LRIC (Long Run Incremental Cost). He also states (p. 14) that

⁷ See FCA 2010 2011 Auction Results, FCA 2011 2012 Auction Results, and FCA 2012 2013 Auction Results, spreadsheets posted on the ISO-NE web site showing total capacity remaining by round in the auction; and PJM, *2012/2013 RPM Base Residual Auction Results* and similar reports for other auctions, showing the supply curves for each zone modeled in the auctions.

1 “[t]he supply curve in the FCA is elastic at prices around LRIC” (meaning there should
2 be many capacity offers at that price level) although he cites no evidence of this.

3 Mr. Stoddard (p. 21) refers to “the slope of the new-entry segment of the supply curve
4 (which should, in theory, be relatively flat)” while also recognizing (p. 22) that “the
5 supply curve for new resources is only flat in textbook treatments” and (p. 21) that there
6 is now “a great deal of texture” in the supply stack.

7 **Q 24: What have been the implications for FCM and other centralized capacity markets of**
8 **the fact that new capacity is offered at prices other than CONE?**

9 A: The implication has been that prices have not been stable near CONE, as some had
10 expected; instead, they have either settled at much lower levels (as in New England, and
11 in the PJM RTO Region recently), or they have been quite volatile (as in PJM’s zones).

12 **Q 25: The FCM was designed based on the concept that its clearing prices should equal**
13 **the cost of new entry, when new entry is needed. Is this a realistic expectation under**
14 **present circumstances?**

15 A: Yes, as long as the “cost of new entry” is understood to mean the offer prices of new
16 capacity, rather than long-run average cost. Prices will rise when necessary to clear
17 sufficient offers from new capacity. However, as explained earlier, there is no “cost of
18 new entry” price at which most new capacity will be offered, so there is also no
19 predictable or target price level to which prices should be expected to rise when new
20 capacity is needed.

21 **Q 26: In addition to the misconception regarding offer prices for new capacity, were there**
22 **other misconceptions about how centralized capacity markets would operate that**
23 **have contributed to outcomes different from some expectations?**

24 A: Yes. First, it was also expected that offering a multi-year pricing option in the FCM
25 would be sufficient to support financing and building new capacity, but this has not been

1 the case. Very few new resources have taken advantage of FCM's multi-year pricing
2 option, as noted earlier. Second, it was anticipated that at low prices, many of the least
3 efficient existing plants would choose to de-list, *i.e.*, to be retired or repowered. This too
4 has not occurred; there have been very few retirements despite FCM prices that are below
5 the levels thought necessary to retain the highest cost generation, as reflected in formulaic
6 calculations of going-forward costs.

7 **Q 27: Looking forward, can these circumstances be expected to continue, and what other**
8 **major forces may influence FCM results?**

9 A: The trends of slower load growth, and diverse capacity additions based more on long-
10 term contracts and regulatory incentives rather than the merchant model, leads me to
11 expect that excess capacity and the resulting low FCM prices should continue. In
12 addition, I expect that two new forces will have a large impact on New England capacity
13 requirements and additions.

14 1. All New England states have put in place aggressive targets for renewable resources.

15 To have any chance of meeting these targets, renewable resources will have to be
16 added at a rate that exceeds anticipated load growth.

17 2. In addition, the smart grid, including advanced metering and smart devices, will result
18 in loads that are increasingly price-responsive. The increasingly active demand side
19 will ultimately reduce or eliminate the need for a centralized capacity market.

20 **Q 28: In light of these observations, how should the Commission expect FCM and other**
21 **centralized capacity markets to operate over the coming years?**

22 A: It should be expected that there will continue to be capacity additions, including demand
23 response, upgrades to existing plants, and renewables, among other resources, offered at

1 the capacity prices required to make the projects worthwhile. Many additions will be
2 under contract, and there may be some contractual baseload additions. Contractual
3 additions will rationally be offered into centralized capacity markets at low prices
4 reflecting going-forward or opportunity cost, if any, because there is no reason for the
5 sponsors to risk failing to obtain a capacity supply obligation at prices that make it the
6 most attractive option. Accordingly, clearing prices will be set at levels that
7 accommodate the lowest-cost incremental sources of supply while also retaining all but
8 the least efficient existing generation. The supply curves will be fairly elastic at such
9 price levels, reflecting competition between low-cost new resources and the highest-cost
10 existing resources, unless there are interventions to prevent the spot capacity markets
11 from clearing supply and demand in this manner. No rational investor would enter this
12 market at this time without either low-cost generation for which the recent or anticipated
13 price levels are adequate, or a contract or other incentives providing the required revenue.

14 From time to time, capacity prices may have to rise to higher levels to clear additional
15 incremental resources, especially if load serving entities are insufficiently proactive in
16 their resource acquisitions, or if suppliers are able to exercise market power; this will be
17 most likely in transmission-constrained zones. When prices do rise higher in this
18 manner, they will likely be volatile, as the higher cost new resources may be offered at a
19 range of prices reflecting the various technologies, costs, and circumstances of each
20 project, and the sponsor's expectations of future market conditions.

21 **Q 29: Is this mode of operation of centralized capacity markets stable over the longer run?**

22 A: This mode of operation would be stable over many years, especially if additions under
23 contract or in response to state and federal incentives programs keep up with incremental

1 needs. However, it has always been recognized that centralized capacity markets are a
2 transitional mechanism whose role should diminish as wholesale markets further develop.
3 Utilities in New England and across the country are planning wide-scale implementation
4 of advanced metering, and the implementation of the smart grid should greatly increase
5 the extent to which peak demands are price-responsive. In combination with wholesale
6 and retail pricing mechanisms that better reflect system conditions and capacity needs at
7 any time, peak loads will be lowered and some peak demand will shift to adjacent hours.
8 As a result, the number of hours with somewhat elevated prices (but likely not extremely
9 high price “spikes”) should increase. Higher prices in a larger number of peak and near-
10 peak hours should reduce and eventually eliminate the present disconnect between the
11 amount of capacity that can economically operate relying on energy and ancillary
12 services and the amount of capacity considered required for resource adequacy; and
13 under such conditions, centralized capacity markets are no longer needed.

14 **Q 30: You have described how the Forward Capacity Market has not turned out as some**
15 **had expected, and is unlikely to begin to perform that way, due to changing external**
16 **conditions and also some misconceptions underlying its design. What are the**
17 **implications for the issues at hand?**

18 A: There are several implications.

19 1. It is clear that resource adequacy in the ISO-NE footprint is not going to be a concern
20 for the next several years. There is already excess capacity, and incremental needs
21 are expected to be low; meanwhile, the states will be promoting additions of
22 renewable resources to comply with statutory or legal mandates. There may,
23 however, be very specific locational needs in areas that are too small to be considered
24 zones within the context of the FCM design.

- 1 2. Nor is there cause for concern over the level of FCM prices. Low FCM capacity
2 prices have not led to many plant retirements. While low prices could lead to an
3 increase in retirements of the least efficient, most costly existing generation, this is
4 not necessarily a bad thing – some of these inefficient or environmentally undesirable
5 plants probably should be retired or repowered. Moreover, in the short term, the Joint
6 Filing Revisions will extend the price floor for three more auctions, thereby
7 protecting against a significant price drop.
- 8 3. Furthermore, there is much more flexibility to adjust capacity obligations closer to the
9 delivery year than had been anticipated when FCM was designed. Many of the
10 incremental resources have short lead times, particularly demand response. FCM’s
11 reconfiguration auctions provide opportunities to acquire additional resources
12 (including resources that may have been planning to retire) closer to each delivery
13 year, should the need arise. This flexibility means that even if peak loads increase
14 unexpectedly (contrary to state policies encouraging efficiency and peak load
15 reductions), FCM would be able to acquire additional needed resources with short
16 lead time.

17 Under these circumstances, FCM prices should be allowed to move toward the levels that
18 balance capacity supply and demand.

1 **Q 31: Should the Commission be concerned that many new capacity additions are**
2 **occurring under contracts now, rather than entering the market on a merchant**
3 **basis (relying solely on anticipated earnings in wholesale spot energy and ancillary**
4 **services markets)?**

5 A: No. In fact, Commission policy has attempted to encourage long-term contracting for
6 several years.⁸ Indeed, in industries with costly, long-lived, fixed assets, capacity
7 additions will typically involve long-term contracts or some other strong assurance of
8 revenue, such as could be provided through regulatory action, and the electric power
9 industry always worked this way.

10 **Q 32: Please elaborate as to the benefits of long-term contracting for new capacity.**

11 A: Contracts provide both buyers and sellers assurance of price and quantity, and hedge spot
12 market prices. A mix of contract and spot purchases is common in many markets, with
13 contract prices providing more stability and spot purchases providing more flexibility. It
14 is also a common pattern for spot prices to usually be below contract prices, while
15 occasionally rising sharply above them.

16 **IV. Protesters' Predictions Of Dire Consequences Of The Joint Filing**
17 **Revisions Are Based On An Understanding Of FCM's Role That Is**
18 **Conceptually Flawed And Has Become Obsolete Due To Changing**
19 **Circumstances**

20 **Q 33: Please summarize the additional revisions to the FCM rules proposed by Protesters'**
21 **experts.**

22 A: The proposals of Mr. Stoddard, Dr. Shanker, and Dr. Bidwell are similar. These experts
23 propose additional changes primarily in three areas that would raise FCM prices by:

⁸ *Wholesale Competition in Regions with Organized Electric Markets*, 125 FERC ¶ 61,071 (Order 719) at P. 151.

- 1 1. Triggering the APR more often, by expanding the definition of Out-of-Market
2 (“OOM”) resources and modifying the triggers, and applying a different pricing rule
3 when APR is triggered that would lead to larger price adjustments.
- 4 2. Resetting the FCM CONE Parameter, and the various mitigation thresholds and other
5 parameters tied to it, to a higher level.
- 6 3. Modeling all potential capacity zones in every auction, or alternatively, relaxing the
7 mitigation rules to allow zones to be created more often.

8 **Q 34: What consequences do these experts predict unless the Commission orders further**
9 **changes to the FCM?**

10 A: Mr. Stoddard predicts that FCM will “fail” (p. 6), with a return to rate-based investment
11 (p. 16). He also suggests that some of the lowest-cost facilities will deactivate (p. 6), and
12 that much of the new demand response would be “hit particularly hard” (p. 13). He
13 suggests that, “most importantly”, there will be “long-lasting harm” due to “misdirecting
14 investment” (p. 7).

15 Similarly, Dr. Shanker claims (p. 2) that supply contracted out-of-market is “destabilizing
16 the market” and addressing OOM is “crucial to the survival of competitive capacity
17 markets”. He characterizes OOM contracting as “corrosive” (p. 3) and an exercise of
18 “buyer market power” (p. 10).

19 Dr. Bidwell states (p. 5) that events and circumstances that he had not foreseen have
20 “brought the FCM to the brink of market failure.” He expresses concern about “boom
21 and bust cycles” (p. 12) and predicts that the lack of “efficient competition” and
22 “remunerative revenue” will “destroy the FCM as a bulwark against the boom-and-bust
23 cycles.”

24 All predict the cost to consumers will ultimately be higher in the long term unless further
25 changes to the FCM are implemented.

1 **Q 35: What exactly about the FCM, with the Joint Filing Revisions, do these experts claim**
2 **will lead to these adverse results?**

3 A: They state that low capacity prices, partly due to the addition of new resources based on
4 incentives and contracts not generally available to all existing and new resources, are the
5 primary cause of these results.

6 **Q 36: How, according to these experts, will low prices and out-of-market contracting lead**
7 **to the predicted consequences?**

8 A: Mr. Stoddard acknowledges (p. 33) that the New England market is likely to have low
9 prices and adequate capacity for several years into the future even if no changes are
10 made. However, he warns (p. 33) that low prices may lead to exit from the market in the
11 near term, and over the longer term, these low prices from prior periods may lead
12 investors to demand higher prices in order to invest in New England. Or (p. 16),
13 investors may be unwilling to build, leading, it is claimed, to a return to regulated, rate-
14 based capacity additions.

15 **Q 37: Focusing first on the alleged near term impacts, should the Commission be**
16 **concerned about the possibility of retirements or loss of demand response capacity**
17 **in the near term?**

18 A: No. The auction mechanism – including the three-year extension of the price floor -
19 ensures that prices will clear at levels adequate to retain the amount of capacity required
20 for reliability.

21 **Q 38: Please summarize the evidence regarding whether low FCM prices will lead to a**
22 **large increase in retirements.**

23 A: Experience to date demonstrates that low prices in the FCM have led to very few
24 instances of plants de-listing. If the recent FCM prices are below levels that cover the
25 going-forward cost of existing generation, it is reasonable to expect that the owners of

1 that generation would have de-listed in the auctions. Then they would have had several
2 options available, including:

- 3 1. To operate without a capacity obligation, which allows plant to earn the Peak Energy
4 Rents that capacity providers are not permitted to keep, in addition to other energy
5 and ancillary services revenues;
- 6 2. To export their capacity to a neighboring region where it might receive a higher price;
- 7 3. To participate in a reconfiguration auction for the same delivery year, where a price
8 covering going-forward cost might be obtained;
- 9 4. To plan to mothball the plant for the delivery year, with plant operation in the
10 following delivery year dependent upon whether an adequate price could be obtained
11 in the FCA for that year, or another attractive alternative appears;
- 12 5. To plan to shut the plant down for the delivery year and repower it, increasing its
13 efficiency so as to be more competitive in future delivery years; or
- 14 6. To plan to shut the plant down permanently and convert the site to another use or sell
15 the site.

16 Because owners have not chosen to de-list and take advantage of these options (which
17 they can do on a year-by-year basis, and again accept a capacity supply obligation when
18 prices increase) it is reasonable to conclude that owners find the FCA prices and capacity
19 supply obligations more attractive than the other alternatives. With FCM prices now
20 supported by an extended price floor for the next three auctions, existing suppliers should
21 continue their past economically rational behavior, and there should be no near-term
22 threat of significant retirements.

23 **Q 39: Please summarize the evidence regarding whether low FCM prices will lead to the**
24 **loss of a substantial quantity of the new demand response capacity.**

25 A: There has been a huge increase in demand response in just the past few years, and
26 Commission Staff identify far greater potential in all areas of the country, including New

1 England.⁹ To realize this potential, state and federal programs and incentives have been
2 put in place, and a large amount of demand response cleared in the FCAs despite the low
3 prices. In PJM's RPM, too, a substantial amount of demand response has been offered at
4 low prices and cleared even when clearing prices were quite low. While there is sure to
5 be some turnover from year to year in the demand response providers, there is no
6 evidence that the trend of increasing demand response will abate, or that many demand
7 response providers will begin to require much higher prices in coming years. Indeed,
8 ISO-NE and other RTOs are adapting their operations to accommodate increasing
9 amounts of demand response on their systems. Therefore, it does not appear at all likely
10 that demand response will evaporate if FCA prices do not increase, as Mr. Stoddard
11 claims. In any case, if large numbers of demand response providers submit de-list bids in
12 future FCAs, the clearing prices will rise as needed to retain sufficient capacity to meet
13 reliability requirements.

14 **Q 40: Is Mr. Stoddard consistent in his claim that resources will be retired or lost?**

15 A: No. Mr. Stoddard claims there will be an acceleration of retirements and loss of demand
16 response capacity (p. 6; p. 13), while elsewhere he assumes no such exit from the market
17 will occur even if prices remain low (p. 33):

18 Compared to annual average load growth of 290 MW, it appears that load
19 interests are ready, willing, and able to maintain a pace of adding at least 290 MW
20 of OOM resources annually to stay ahead of the rule. If that occurs, then capacity
21 prices will never be affected by APR-2.
22

⁹ Federal Energy Regulatory Commission Staff Report, *A National Assessment Of Demand Response Potential*, prepared by The Brattle Group, Freeman, Sullivan & Co, and Global Energy Partners, LLC, June 2009.

1 Dr. Bidwell also does not appear to believe there will be exit from the market, even if
2 OOM contracting continues (p. 31):

3 If new OOM is added in amounts that equal or exceed load growth (as it has in
4 the first three FCAs), the surplus will never decrease, much less disappear.

5 **Q 41: Dr. Bidwell states that unless changes are made, New England will experience boom**
6 **and bust cycles that are costly to consumers. First, please describe your**
7 **understanding of what he means by boom and bust cycles.**

8 A: This is unclear. Usually in the present context (capacity markets and resource adequacy),
9 boom and bust cycle would refer to multi-year periods of overbuilding (the ‘boom’)
10 leading to excess capacity, low prices, and very few capacity additions (‘the ‘bust’),
11 leading to inadequate capacity, high prices, and acceleration of capacity additions (the
12 next ‘boom’). However, in at least one place in his affidavit (p. 7), Dr. Bidwell clearly
13 has in mind the much shorter-term pattern of occasional price spikes considered
14 characteristic of an ‘energy-only’ market without capacity obligations and payments.

15 **Q 42: Focusing on the usual meaning of boom and bust cycle as a multi-year phenomenon,**
16 **do you believe this can result from low FCM prices?**

17 A: No. Boom and bust cycles were a concern, and a boom cycle occurred in some areas,
18 before about 2004. With nearly all entry gas-fired and merchant with roughly three year
19 lead times, there was the potential for conditions to attract a rush to build, as occurred in
20 some parts of the country, leading to excess capacity and low prices. However, a number
21 of characteristics of the present circumstances make the period of inadequate capacity
22 characteristic of the ‘bust’ segment of the cycle increasingly unlikely.

- 23 1. The long-term trend of slower peak load growth makes it much less likely that a
24 capacity shortage situation can develop.
- 25 2. Many of the incremental resources being offered to the market at this time have short
26 lead times, such as demand response and upgrades to existing plants. The availability

1 of short-lead-time resources, together with forward and reconfiguration capacity
2 markets, provide the flexibility to adjust commitments as needed.

3 3. Some New England states have been proactive in acquiring new resources, and it can
4 be expected that this pattern will continue, especially with aggressive, legislative
5 directives setting targets for adding renewable resources.

6 4. Capacity additions at present are not occurring under the merchant circumstances that
7 Dr. Bidwell apparently still envisions; the boom-bust theory results from the
8 assumption of merchant-only entry.

9 **Q 43: Protestors' experts express concern that the new resources being contracted may**
10 **not be the lowest-cost available resources. In markets generally, do buyers always**
11 **contract only with the lowest cost sellers?**

12 A: No, that principle holds only in economics textbooks. In actual markets, most goods and
13 services are not homogeneous, and buyers will consider many attributes of a good in
14 addition to price. Even where goods are relatively homogeneous, buyers may be
15 influenced by company reputation, advertising, the effectiveness of a salesman, or other
16 considerations leading to decisions that may not appear to be textbook rational.

17 A buyer may also choose to purchase from a new seller out of concern that it has become
18 too dependent on an existing seller. Over time a buyer's dependence on one or a few
19 sellers may put it in a disadvantageous bargaining position. Contracting with a new seller
20 can be a completely rational strategy to counteract what amounts to some market power
21 on the part of the existing provider.

22 **Q 44: In other markets, if a buyer selects a seller based on factors other than price, can**
23 **there be regulatory intervention to provide other sellers additional compensation (as**
24 **the APR provides)?**

25 A: No, I know of no such market. Furthermore, the antitrust laws do not require buyers to
26 make their purchases based on any specific criteria.

1 **Q 45: Dr. Shanker claims that the recent contracting of “out-of-market” resources**
2 **amounts to price discrimination. Is this correct?**

3 A: No. All capacity clearing in the FCA receives the same FCA price. Bilateral contracts
4 are permitted, and all capacity contracted under a bilateral contract receives the
5 negotiated price specified in the contract.

6 **Q 46: Dr. Bidwell states (p. 20) that markets are most efficient when prices always equal**
7 **long-run incremental cost. Is this true?**

8 A: No. Markets are most efficient when they clear actual supply and demand. Under very
9 special, “textbook” assumptions (costs and expectations are constant over time, demand
10 is growing steadily, etc.) prices can be constant over time at long-run incremental cost.
11 But in real markets, and in New England’s capacity market, conditions are changing all
12 the time. Peak load growth rates change; new technologies emerge and new sources of
13 supply join the market; fuel prices and price differentials are frequently changing;
14 environmental and other regulations are often modified; and many other aspects of the
15 market are constantly providing unexpected stresses. The market adapts – *i.e.*, moves
16 toward equilibrium -- but this takes time. Markets are efficient if they set prices that
17 clear actual supply and demand; prices that exceed the clearing level lead to excess
18 supply, while prices below clearing levels lead to shortages. Forcing the price to equal
19 “long-run incremental cost” (presumably, as estimated by a consultant based on various
20 assumptions such as those about technology choice, financing, future market prices, and
21 revenue expectations) would generally fail to clear the market in the near term. And if
22 the assumptions underlying the long-run incremental cost estimate are incorrect, this
23 approach would not even clear the market over a longer period.

1 **Q 47: Mr. Stoddard argues that unless the changes he proposes are made to raise FCM**
2 **prices, there will be long-lasting harm due to misdirection of investment in**
3 **generation and transmission infrastructure (p. 7). Is this true?**

4 A: No. Mr. Stoddard fails to accept that at present and for the foreseeable future, there will
5 be sufficient capacity additions even if there are few if any new “merchant” power plants.
6 Prices could remain low for a long time, but the FCM design ensures that should new
7 capacity be needed that has not been previously contracted, FCM prices can rise high to
8 allow additional offers to clear. Investment is “misdirected” when there is already excess
9 capacity and prices are further raised, as Mr. Stoddard’s proposals would accomplish.

10 **Q 48: The experts also claim that investors will demand higher prices to build new power**
11 **plants in the future, if prices remain low now and there are non-merchant capacity**
12 **additions. Would this be rational conduct by investors?**

13 A: Investors will rationally focus on anticipated market conditions and opportunities looking
14 forward, not looking back. As long as FCM rules call for prices that clear supply and
15 demand, investors will know what to expect from it and be able to plan accordingly.

16 **V. Protesters’ Proposed Changes to the APR Rules Should Be Rejected**

17 **Q 49: Please summarize why the Alternative Price Rule (“APR”) was included in the FCM**
18 **rules.**

19 A: Under the original conception of the FCM, it was anticipated that most new capacity
20 would enter the market under merchant circumstances, that is, relying solely on energy,
21 ancillary services and capacity revenues through ISO-NE’s wholesale markets for these
22 services. Entry under long-term contracts was expected to be a relatively minor
23 contributor to new capacity. However, there was a concern that new capacity with
24 contractual or other “non-market” sources of revenue might stay in the auction at prices
25 lower than “in-market” or “merchant” new resources, lowering FCA clearing prices

1 below the levels that might have obtained had all resources relied solely on revenues
2 from ISO-NE's markets. The APR was added to recalculate a higher FCA clearing price
3 under circumstances where new resources were offered at prices deemed "out-of-
4 market".

5 **Q 50: Please describe the current APR rule.**

6 A: The current APR rule entails the following:

- 7 1. Review by the Internal Market Monitor of offers for new generating, import, or
8 demand response resources below 0.75 times the FCM CONE Parameter, and
9 classification of such offers as Out of Market" ("OOM") if they appear to not
10 correspond to the resource's "long-run average cost" net of expected net revenues
11 other than capacity revenues;
- 12 2. The APR is generally triggered if there is a demand for new resources that is satisfied
13 by the OOM resources;
- 14 3. When the APR is triggered, the FCA price is reset to the lower of the FCM CONE
15 Parameter or one cent below the price at which the last non-OOM new resource
16 exited the auction.

17 **Q 51: What has been the experience with the APR to date?**

18 A: The APR has not triggered in any of the first three FCAs, primarily because there was no
19 need for new capacity.

20 **Q 52: What do the Joint Filing Revisions provide with regard to the APR?**

21 A: The Joint Filing Revisions make several changes to the APR provisions:

- 22 1. The criteria the Internal Market Monitor will apply in determining whether new
23 capacity offers will be classified as Out-of-Market are further detailed. This is further
24 discussed later in this section of the testimony.
- 25 2. The definition of OOM capacity is expanded to include permanent de-list bids and
26 non-price retirement requests that are rejected for reliability reasons.
- 27 3. The existing APR rule (to be called APR-1) is modified so that the quantity of
28 permanent de-list bids clearing in the FCA is included in the determination as to
29 whether there is a need for new capacity in the triggering mechanism.

1 4. A new APR rule, APR-2, expands the application of APR-1 beginning with the fourth
2 FCA to consider excess OOM capacity cleared in prior FCAs, and will be triggered
3 when there is no need for new capacity but OOM carry-over capacity may affect the
4 FCA price.

5 5. Another new APR rule, APR-3, will be triggered if there is no need for new capacity
6 but ISO-NE rejects de-list bids for reliability reasons. This rule enables these de-list
7 bids to set price at less than 0.6 times the FCM CONE Parameter, and employs a
8 different mechanism for setting the price when the rule is triggered.

9 **Q 53: Protestors' experts criticize these changes and propose further changes to the APR**
10 **rules. Please summarize what protestors' experts propose.**

11 A: Protestors' experts propose broadening the definition of OOM, changing the triggering
12 conditions to increase the likelihood that the APR will be triggered, and changing the
13 pricing rule to set higher prices when the APR is triggered.

14 **Q 54: Dr. Shanker states (p. 1) that further changes are needed to the APR because OOM**
15 **contracting constitutes an exercise of "buyer market power." First, please define**
16 **"buyer market power."**

17 A: Allegations of buyer market power, and antitrust cases pertaining to such allegations, are
18 quite rare. Economists do not have an agreed definition of "buyer market power."¹⁰ One
19 definition parallels the definition of seller market power -- buyer market power is the
20 ability of a buyer to lower the market price.¹¹ This definition parallels the definition of
21 seller market power, which is the ability to raise the market price.

22 **Q 55: How is buyer market power exercised?**

23 A: Buyer market power would be exercised by reducing purchases, or refusing to purchase
24 without price or non-price concessions. Again, the exercise of buyer market power
25 parallels the exercise of seller market power, in which a seller withholds supply from the

¹⁰ A discussion of various definitions of "buyer market power" is provided in Chen, Z. *Defining Buyer Power*, presented at the American Antitrust Institute's Invitational Symposium on Buyer Power, revised January 10, 2008.

¹¹ Scherer, F.M., *Industrial Market Structure and Economic Performance*, Second Edition, p. 11.

1 market (physically or economically) to raise the price. A buyer exercises market power
2 by withholding purchases.

3 **Q 56: If a buyer purchases from existing or new sellers on a bilateral basis, rather than**
4 **through a centralized exchange or a solicitation open to any new or existing seller, is**
5 **this considered an exercise of buyer market power?**

6 A: No. Nor is it seller market power when a seller chooses a specific buyer for its output.
7 Seller or buyer exercise of market power entails some withholding of sales or purchases,
8 respectively.

9 Note that when a seller economically or physically withholds from the market to raise
10 price, the seller has essentially misrepresented, or told a lie, about his resources, and
11 caused market prices to fail to correspond to actual supply and demand. Similarly, when
12 a buyer with market power withholds demand and suppresses the price, the level of
13 demand is misrepresented, and the resulting price does not accurately reflect the actual
14 supply and demand available to the market.

15 By contrast, when a buyer contracts for additional supply on a bilateral basis, the
16 additional resources really exist, and the remainder of the market clears at a price that
17 accurately reflects the actual supply and demand. The market price accurately reflects
18 the conditions in the market, including the new (and all other) bilateral agreements.

19 **Q 57: Is there evidence that any party has brought new capacity into the New England**
20 **market for the purpose of lowering FCM prices?**

21 A: While some protestors suggest that DPUC procurements had this purpose, I do not see
22 evidence that the intent of the procurements was to manipulate FCM prices. The
23 particular incremental resources that were contracted were selected based on multiple
24 attributes, including fulfilling reliability needs, fuel diversity and flexibility, emissions,

1 project execution and interconnection risks, use of existing sites and electric generation
2 infrastructure, impact on market concentration, and impact on taxes and employment, in
3 addition to cost. The contracting, and the selected resources, appeared to serve multiple
4 purposes.

5 **Q 58: Is there any reason to believe that, had there been no anticipated impact of the**
6 **DPUC procurements on New England FCM or other wholesale prices, that a**
7 **different quantity would have been acquired, or different resources would have**
8 **been selected, under these procurements?**

9 A: I have seen no such evidence, and protestors' experts make no such claims. To the
10 contrary, there is ample evidence that the quantity was based on reliability needs, and the
11 particular resources were selected based on the identified criteria and attributes through
12 an open solicitation.

13 **Q 59: Protestors' experts claim that without the adjustment of the APR, markets are**
14 **distorted. Do you agree?**

15 A: No. These claims reflect the notion that only new resources that rely solely on wholesale
16 spot market revenues are "in the market", and any other resources distort the market.
17 Once new supply has been contracted, it is then "in the market", and prices should
18 balance the actual supply and demand.

19 **Q 60: Mr. Stoddard states (p. 17) "a robust APR promotes market efficiency in several**
20 **ways." Does APR promote efficiency as he claims?**

21 A: No. First, he claims the APR eliminates incentives to enter into contracts that are not
22 "economic." He has not, however, shown that such incentives exist or have ever been
23 acted upon, nor does he address how "economic" would be defined for resources that are
24 chosen based on multiple attributes.

1 Second, he states that the APR, modified as he proposes, will ensure the spot market is
2 not systematically lower than the contract market for capacity, eliminating the potential
3 for discriminatory prices paid to new and existing resources, and reducing risk to both
4 buyers and sellers. But he provides no estimate of contract prices or comparison to spot
5 prices, which would need to take into account the different characteristics of contracted
6 resources. Again, the capacity spot market to be efficient must clear supply and demand,
7 and interventions that raise spot prices will only exacerbate the current surplus. It is a
8 normal and common pattern for spot prices to more often than not be below contract
9 prices because buyers value the assurance of a contract.

10 Finally, he claims the APR he proposes would “improve the alignment” between clearing
11 prices and the actual cost of marginal resources, providing better price signals for
12 building or retiring resources. The evidence is that under the recent FCA prices (that do
13 not reflect any APR adjustment), there have been very few retirements, more than enough
14 new capacity, and a growing surplus, so it would appear doubtful that changes to the
15 APR to increase its potential impact on prices would improve the alignment between
16 price and marginal cost at this time.

17 **Q 61: To summarize, do you believe there is a problem with the FCM that further changes**
18 **to the APR are needed to address?**

19 A: No. The APR, with the Joint Filing Revisions, is already a significant concession.
20 Centralized capacity markets were implemented out of concerns regarding resource
21 adequacy; they were not implemented to be mechanisms for calculating payments to
22 which existing resources are entitled. The APR with the Joint Filing Revisions is already

1 a substantial concession to existing generators' claims of entitlement to capacity
2 payments based on long-run average costs.

3 **Q 62: Turning now to the existing APR and the proposed revisions, please describe how**
4 **the resources considered "Out-of-Market" are identified, under the current rules**
5 **and under the Joint Filing Revisions.**

6 A: The provision calls for the Internal Market Monitor to review offers from new generation,
7 import, or demand response capacity below 0.75 times the FCM CONE Parameter for
8 consistency with "long-run average cost." The provision for new generation, showing the
9 existing rules and proposed clarifications in underline, is as follows:

10 **III.13.1.1.2.6. Review by Internal Market Monitoring Unit of Offers from New Generating Capacity**
11 **Resources Below 0.75 times CONE.** The Internal Market Monitoring Unit shall review each offer from
12 new Generating Capacity Resources below 0.75 times CONE. The Internal Market Monitoring Unit shall
13 determine whether the offer is consistent with the long run average costs of that resource net of expected
14 net revenues other than capacity revenues. The Internal Market Monitoring Unit will consider reductions
15 in costs such as reduced taxes in determining expected net revenues. Expected net revenues considered in
16 this determination shall only include net revenues that are: (i) tradeable throughout the New England
17 Control Area or not restricted to resources within a particular state or other geographic sub-region; and (ii)
18 available to all resources of the same physical type within the New England Control Area, regardless of the
19 resource owner. Expected net revenues shall include economic development incentives that are offered
20 broadly by state or local government and that are not expressly intended to reduce prices in the Forward
21 Capacity Market. In estimating expected net revenue from other markets, the Internal Market Monitoring
22 Unit shall consider whether any contract revenues relied on by the New Generating Capacity Resource
23 reasonably represent the market price for the non-capacity products or services provided. If the Internal
24 Market Monitoring Unit determines that the offer is not consistent with the long run average costs net of
25 expected net revenues other than capacity revenues, as described above, then the amount of capacity
26 clearing from that offer shall be considered Out-of-Market Capacity for purposes of determining the
27 applicability of the Alternative Capacity Price Rule, as discussed in Section III.13.2.7.8.

28 The key aspects are the requirement that 1) the offer be consistent with long-run average
29 cost net of expected net revenues other than capacity revenues; 2) contract revenues must
30 represent the market prices for the non-capacity products and services provided; 3)
31 geographically restricted revenue opportunities cannot be considered; 4) revenues must
32 be available to all resources of the same physical type, regardless of the resource owner
33 to be considered; and 5) economic development incentives can be considered as long as
34 they are not expressly intended to lower FCA prices (the first two of these elements are in

1 the current rule, while the last three are new). If the Internal Market Monitor determines
2 the offer is not consistent with long-run average cost, the resource is considered Out-of-
3 Market.

4 **Q 63: The rule for determining OOM resources calls for comparing offer prices to “long-
5 run average cost.” Is this likely to result in too many or too few resources being
6 classified as “Out-of-Market”?**

7 A: This will tend to overstate the OOM resources. As discussed earlier in this testimony,
8 even new resources that are not under contract should not be expected to bid their long-
9 run average costs. New resource offer prices would rationally reflect the amount required
10 from the first FCA to make the project profitable on a net present value basis, which will
11 often be less, but could also be more, than the long-run average net cost.

12 **Q 64: The revised rule precludes consideration of revenue opportunities that are
13 geographically restricted. Is this likely to result in too many or too few resources
14 being classified as “Out-of-Market”?**

15 A: This, too, could result in “false positives”, and is another concession that could lead to
16 overstating the OOM quantity. Capacity need, value, and price can be locational. This
17 provision could lead to capacity procured specifically to meet locational reliability needs
18 being considered Out-of-Market.

19 **Q 65: The provision, with the proposed revisions, only allows recognition of revenues
20 available to all resources of the “same physical type”; is this likely to result in too
21 many or too few resources being classified as “Out-of-Market”?**

22 A: This, too, could lead to overstating the OOM quantity. It is unclear how the Internal
23 Market Monitor is to consider the value of various non-price attributes (fuel diversity,
24 fuel flexibility, emissions, renewable source, etc.), and the provision could be understood
25 to limit consideration of such attributes, which could result in classification of resources
26 with valuable non-price attributes as Out-of-Market.

1 **Q 66: The provision, with the proposed revisions, only allows recognition of revenues**
2 **available “regardless of the resource owner.” Is this likely to result in too many or**
3 **too few resources being classified as “Out-of-Market”?**

4 A: This provision apparently is intended to preclude any consideration of the value of
5 contracting with new or smaller suppliers in reducing concentration and market power.
6 Apparently that is not considered a valid non-price attribute, and any such contracting
7 would increase the likelihood of OOM classification.

8 **Q 67: Dr. Bidwell states (p. 16) that “much, or most” demand resources should be**
9 **classified as OOM because these resources receive incentives under state programs**
10 **that are not available to other types of resources. Please comment on this proposal.**

11 A: With respect to demand resources, state and federal policies encourage these resources
12 for valid reasons having to do with non-price attributes. Classifying them as OOM runs
13 contrary to these policies.

14 **Q 68: Do protestors’ experts discuss how their proposals are consistent with state or**
15 **federal policies that may encourage renewable resources, demand-side resources, or**
16 **other types of resources that possess preferred attributes?**

17 A: No, they do not.

18 **Q 69: Please describe the provisions for triggering APR-1 and APR-2 under the Joint**
19 **Filing Revisions.**

20 A: APR-1 is essentially the existing APR rule. It triggers when new capacity is needed but
21 is satisfied by new resources classified as OOM. APR-2 is a new provision that triggers
22 when new resources are not needed in the FCA, but only because there was an excess of
23 OOM resources in prior FCAs that is “carried forward.”

24 **Q 70: Please describe the new OOM carry-forward provision.**

25 A: The Joint Filing Revisions provide that if the need for new capacity in an FCA does not
26 consume the OOM amount, the excess OOM is “carried forward” and treated as OOM in

1 the subsequent FCAs. Carried forward OOM can trigger the new APR provision, APR-2.
2 This provision will potentially increase the amount of capacity classified as OOM in
3 future FCAs, as the total amount of OOM could include resources that joined the market
4 several years earlier. A limit of six years is placed on the carry forward of OOM
5 capacity, based on the estimated amount of time for load growth to absorb the OOM
6 resources from the first three FCAs.

7 **Q 71: What changes do protestors' experts propose with regard to the carry-forward**
8 **provisions?**

9 A: Mr. Stoddard proposes (p. 34) to increase the six year carry-forward limit, or to calculate
10 a duration in each FCA based on the estimated number of years for load growth to absorb
11 the surplus (the ratio of the surplus resources to anticipated annual load growth).

12 **Q 72: Would these changes improve the carry-forward rule?**

13 A: No, these additional changes should be rejected. The APR-2 as the Joint Filers proposed
14 provides transparency and predictability allowing market participants and state regulators
15 to understand how a bilateral contract that might be considered OOM may contribute to
16 triggering the APR-2 pricing mechanism in future years. A fixed carry-forward period is
17 also an important protection against setting administrative prices for many years after
18 OOM entry occurs, for instance, if load growth is very slow.

1 **Q 73: Please describe how the protestors' experts propose to change the conditions under**
2 **which APR-1 and APR-2 are triggered.**

3 A: Mr. Stoddard proposes (p. 26-30) to eliminate the triggers, and always apply the APR
4 price rule if there were any OOM resources, including those carried forward from prior
5 FCAs. Under his proposal, there would only be one APR rule that would apply if there
6 were any OOM resources, including de-list bids rejected for reliability reasons.

7 **Q 74: Would this proposal improve the APR rules?**

8 A: No, this proposal would greatly expand the frequency and impact of the administrative
9 price adjustments under the APR rules, increasing the divergence between actual supply
10 and demand conditions and the FCA price. Under Mr. Stoddard's proposal the APR
11 would likely trigger every year.

12 **Q 75: Please describe the pricing rule applicable when APR-1 or APR-2 are triggered**
13 **under the Joint Filing Revisions.**

14 A: APR-1 and APR-2 are proposed to use the same pricing rule, which is the current pricing
15 rule: The FCA price is set to the lesser of the FCM CONE Parameter or one cent less
16 than the price that the last non-OOM new resource exited the auction.

17 **Q 76: What do protestors' experts propose with regard to the pricing rule under APR-1**
18 **and APR-2?**

19 A: Mr. Stoddard proposes (p. 29) to re-run the FCA and to determine a new clearing price
20 after imputing a higher offer price to each OOM resource.

21 **Q 77: How does Mr. Stoddard propose to develop the prices to be imputed to OOM**
22 **resources?**

23 A: Mr. Stoddard proposes (p. 29) to reprice each OOM resource based on "reference prices"
24 by resource type, to be developed by the Internal Market Monitor. The reference prices

1 would be set to reflect the “competitive, unsubsidized, long-term average cost” of each
2 resource type based on engineering and financial estimates, less a deduction for expected
3 energy and ancillary services revenues (p. 28-29).

4 **Q 78: How well would you expect such “reference prices” to correspond to the offer prices**
5 **the owners of such resources would submit, if acting competitively?**

6 A: They will not correspond well at all. As I have explained, we should not expect new
7 resources to be offered based on their long-run average costs even if offered under
8 “merchant” circumstances without a contract. Furthermore, the OOM resources will
9 likely include demand response capacity, renewable resources, and other types of
10 resources that are very diverse. Either the market monitor will have to develop a very
11 large number of “reference prices”, or many resources will be assigned reference prices
12 that will likely bear little relation to the resources’ actual cost and rational offer price.

13 In addition, each project sponsor will have different expectations regarding the energy
14 and ancillary services prices and net revenues the resources would earn, and such
15 expectations will likely vary widely among market participants. Many of these resources
16 have low variable costs and would earn considerable market revenues. The Internal
17 Market Monitor’s deductions for market revenues for each type of resource may differ
18 substantially from many market participants’ expectations.

19 In summary, the proposal to use “reference prices” for OOM resources to recalculate
20 FCA prices eliminates any semblance of market-based rates and substitutes purely
21 administrative rates determined indirectly by the Internal Market Monitor. Reversion to
22 this administratively determined rate, likely in most years, would be a significant step
23 away from the goal of rates based on competition, supply, and demand.

1 **Q 79: If the FCA auction is re-run after imputing reference prices to OOM resources,**
2 **what impact could this have on the clearing prices?**

3 A: In the FCA price recalculation, OOM resources would be priced at higher levels, and
4 some or many OOM resources would not clear. When some OOM resources that are,
5 presumably, under contract or otherwise committed to the market, do not clear, the
6 resulting FCA clearing price fails to accurately reflect the true conditions of supply and
7 demand, and is distorted upward. This higher price will retain existing resources and
8 attract new resources that are not actually needed, and the FCA will fail to perform its
9 role as a spot market for capacity. This would exacerbate the excess capacity situation
10 that Mr. Stoddard calls “the most serious issue in the FCM” (p. 9). Calculating the FCA
11 clearing price after “correcting” certain resources’ offer prices for incentives they may
12 have been offered misdirects investment and thwarts the policy objectives that led to the
13 incentives.

14 **Q 80: You have suggested that re-running the FCA after imputing “competitive,**
15 **unsubsidized” prices to OOM resources can essentially negate policies that provide**
16 **incentives for certain types of resources based on non-price attributes. Can you give**
17 **an example to illustrate this?**

18 A: Yes. Consider a simple market in which there are only two types of resources, call them
19 Brown and Green. Brown resources have incremental cost of \$5, while Green resources
20 have incremental cost of \$7. However, state and/or federal policies offer a \$3 incentive
21 for Green resources in recognition of various non-price attributes. As a result, under
22 these policies, Green resources are more attractive than Brown when the differences in
23 non-priced attributes are considered.

1 The correct ordering or “dispatch” in the FCA would have Green resources offered at \$4
2 (the capacity payment needed, in addition to the \$3 incentive, to cover their cost) and
3 Brown at \$5.

4 The protestors’ experts believe the Green resources should be dispatched in the FCA as if
5 there was no incentive payment, that is, at \$7. This would result in all available Brown
6 resources clearing first, and then any Green resources to the extent there is additional
7 need. This would undo the state or federal policies and distort the market.

8 If only Brown resources clear, the price would be \$5, but investment would have been
9 misdirected, as policies clearly favor Green resources (at $\$7 - \$3 = \$4$) over Brown (at
10 \$5).

11 If the need is sufficient that some Green resources clear, there still would be the same
12 misdirected investment – too much Brown, too little Green. Brown resources would
13 receive \$7, which now includes an unearned and unjustified windfall of \$2 (\$7 payment
14 minus \$5 cost). Green resources would receive \$7, which essentially double-pays them
15 for the \$3 incentive.

16 Of course, protestors’ experts propose to impute prices and re-run the FCA only for the
17 purpose of setting the price, not for determining which resources are selected for
18 Capacity Supply Obligations. Nevertheless, the resulting price would have the impact
19 described above – overpaying both Brown and Green resources and sending a price
20 signal that misrepresents the need for and value of incremental capacity given the policy
21 that offers incentives for resources with desirable non-price attributes.

1 **Q 81: Protestors’ experts also propose to use the pricing rule applicable to APR-3 for**
2 **APR-1 and APR-2. If this rule is appropriate for APR-3, why is it not also**
3 **appropriate for APR-1 and APR-2?**

4 A: APR-3 is applicable only when the de-list bids of existing resources are rejected for
5 reliability. As the External Market Monitor recognizes, the Joint Filers proposed APR-3
6 only because FCM’s provisions for forming zones may not be sufficiently granular to
7 obviate any chance of rejecting de-list bids for reliability reasons. Thus, APR-3, if
8 invoked, would apply to a small number of typically large, old plants that are needed for
9 reliability, and for whom the going-forward costs are known. By contrast, resources
10 designated OOM are generally new, may be small and numerous, and the total quantity
11 may be larger.

12 **Q 82: Mr. Stoddard claims (p. 30) that PJM’s Minimum Offer Pricing Rule “is almost**
13 **identical” to the APR rules as he proposes to revise them. Please compare the APR**
14 **rules to the corresponding provisions in PJM’s RPM.**

15 A: The APR, with or without the Joint Filing Revisions or the further revisions proposed by
16 Mr. Stoddard, goes far beyond the corresponding provisions in the PJM tariff, called the
17 Minimum Offer Price Rule, or “MOPR” (PJM Tariff Attachment DD, § 5.14(h)).

18 The MOPR is applied on an individual resource basis, and has never been invoked. It
19 would apply only during the capacity auction, and only if all of the following conditions
20 were satisfied:

- 21 1. The MOPR applies only in constrained areas, not in the Rest of RTO region. §
22 5.14(h)(2).
- 23 2. The MOPR never applies to base load resources (coal, nuclear, IGCC, etc.),
24 hydroelectric, or upgrades or additions to existing plants. § 5.14(h)(1).
- 25 3. The MOPR never applies to any resources developed in response to a state mandate
26 to resolve a projected capacity shortfall, as determined pursuant to a state evidentiary
27 proceeding. § 5.14(h)(1).

- 1 4. The MOPR does not apply to a resource unless its owner has a “net short position”
2 that fails a screen (ten percent of the reliability requirement in smaller zones, five
3 percent in larger zones). § 5.14(h)(2)(iii).
- 4 5. The MOPR does not apply unless the resource’s offer price is less than 80 percent of
5 the applicable Net Asset Class Cost of New Entry. § 5.14(h)(2)(ii).
- 6 6. The MOPR also does not apply if the owner has obtained a determination from FERC
7 that the offer price is consistent with the real levelized cost-based net cost of new
8 entry based on revenues from the PJM-administered markets. § 5.14(h)(2).
- 9 7. The MOPR does not apply unless the offer is found to have had a substantial impact
10 on the market clearing price that exceeds a threshold. When a substitute offer equal
11 to 90 percent of the Net Asset Class Cost of New Entry is used and the market is re-
12 run, the price difference must exceed the greater of \$25/MW-day (\$.76/kW-mo) or
13 20/25/30 percent in large/medium/small zones, respectively. § 5.14(h)(2)(i),
14 §5.14(h)(3).
- 15 8. The MOPR applies only in the first year a resource is offered, *i.e.*, there is no “carry
16 forward” provision. § 5.14(h)(2).

17
18 These provisions are markedly different from – and much more limited than – the
19 FCM APR rules, with or without Mr. Stoddard’s proposed changes to them.

20 **VI. Protesters’ Proposals To Increase the FCM CONE Parameter Or** 21 **Related Thresholds Should Be Rejected**

22 **Q 83: Please summarize the role of the FCM CONE Parameter in FCM.**

23 A: A number of FCM parameters and thresholds are pegged to the FCM parameter that is
24 called “CONE” and that, for clarity, is referred to as the FCM CONE Parameter in this
25 testimony. The parameters and thresholds pegged to the FCM CONE Parameter can be
26 grouped into five categories for the purpose of this testimony.

- 27 1. The most important group includes thresholds for market power mitigation and
28 review of bids by the Internal Market Monitor: Permanent de-list bids are reviewed if
29 they exceed 1.25 times CONE; Static and Export de-list bids are reviewed if they
30 exceed 0.8 times CONE; and Dynamic de-list bids must be less than 0.8 times CONE.

- 1 2. The threshold for reviewing bids for possible OOM classification is also pegged to
2 the FCM CONE Parameter. New capacity offers are reviewed if they are below 0.75
3 times CONE.
- 4 3. FCM's "Quantity Rule" calls for deferring replacement of some or all de-listed
5 resources to reconfiguration auction when clearing prices exceed various CONE-
6 based thresholds.
- 7 4. The FCA auction "floor" price has been set to 0.6 times CONE, and was set to expire;
8 under the Joint Filing Revisions, the floor price remains 0.6 times CONE for three
9 more years.
- 10 5. The FCA auction starting price was twice CONE, and is unlinked to CONE under the
11 Joint Filing Revisions.

12 The FCM CONE Parameter is referenced in various other places in the tariff that are
13 currently expired or unimportant for the purposes of this testimony.

14 The most important role of the FCM CONE Parameter is to determine the ranges within
15 which various de-list and new capacity bids will and will not be subject to review for
16 market power mitigation and OOM classification purposes.

17 **Q 84: Please summarize how the FCM CONE Parameter has changed to date, and how it**
18 **would be updated under the Joint Filing Revisions.**

19 A: The FCM CONE Parameter was originally set to \$7.50/kW-mo, based on the estimated
20 construction cost of a gas turbine, and the tariff calls for it to be updated after each FCA
21 based on clearing prices. This has resulted in the FCM CONE Parameter updating to
22 \$6.00/kW-mo for the second FCA and \$4.918/kW-mo for the third FCA. After the third

1 FCA, the FCM CONE Parameter was to update after each FCA based on 70% of its value
2 plus 30% of the clearing price in the FCA, subject to certain conditions, including a need
3 for new capacity. The Joint Filing Revisions call for the FCM CONE Parameter to
4 remain at the same value, \$4.918/kW-mo, for the fourth FCA, and to be updated for
5 subsequent auctions based on an index of power plant construction costs in any year
6 when the 70%/30% update is not applicable.

7 **Q 85: Please discuss how the FCM CONE Parameter is likely to change over the next few**
8 **auctions under the Joint Filing Revisions.**

9 A: Due to the large excess of capacity at present, it is likely that future FCAs will continue
10 to clear at or near the floor price, and there will not be a 70/30 update of the FCM CONE
11 Parameter due to the lack of need for new resources. If so, the FCM CONE Parameter
12 would only be updated beginning with the fifth FCA, based only on changes in the
13 construction cost index. Therefore, the FCM CONE Parameter, and any parameters
14 linked to it, are likely to remain close to their current values over at least the next two
15 auctions.

16 **Q 86: What do protestors' experts propose with regard to the FCM CONE Parameter?**

17 A: They propose large increases in the parameter. Mr. Stoddard proposes setting CONE to
18 \$7.50/kW-mo (p. 59), its original value before updates based on FCA results. Dr.
19 Bidwell proposes \$11.50/kW-mo (p. 43). These values are directly or indirectly based on
20 administrative estimates of the Cost of New Entry for combustion turbine power plants.

21 **Q 87: Does it make sense to set the FCM CONE Parameter based on an administrative**
22 **estimate of the cost to build a combustion turbine?**

23 A: No, it does not. The primary reason is that the various thresholds and parameters linked
24 to the FCM CONE Parameter need to remain close to clearing prices to fulfill their

1 functions effectively; if the FCM CONE Parameter is raised far above clearing prices, the
2 values of these parameters will be too high. But even if it is believed the FCM CONE
3 Parameter's value should be based on some resource's cost of new entry, combustion
4 turbines are not the right choice for New England because other, lower-cost types of
5 capacity are coming to the New England market at this time.

6 **Q 88: Please discuss whether the various market power mitigation thresholds that are**
7 **linked to the FCM CONE Parameter appear to be at reasonable levels (or too high**
8 **or too low) for the purposes of upcoming FCAs.**

9 A: The FCM design calls for the FCM CONE Parameter to update based on FCA clearing
10 prices, and this was expected to keep clearing prices and the FCM CONE Parameter
11 close. However, when the FCA clears (or stops) at or near the floor price, it sets a price
12 of approximately 0.6 times CONE. This means that all parameters pegged to CONE are
13 relatively high compared to the price resulting from the auction.

14 For instance, dynamic de-list bids less than 0.8 times CONE and are not subject to
15 review. If CONE is close to recent FCA clearing prices, the 0.8 times CONE threshold is
16 below the recent clearing prices. But when the FCAs set a price of 0.6 times CONE (at
17 the floor, as they have recently), and the FCM CONE Parameter is not updated, this
18 means that offers at 0.8 times CONE are 33 percent in excess of the last FCA price ($0.8 /$
19 $0.6 = 1.33$) and are not subject to review. This allows unmitigated exercise of market
20 power to raise prices 33 percent above the level of recent auction results. Raising the
21 FCM CONE Parameter would increase the amount by which exercise of market power
22 could raise prices above recent FCA prices.

1 **Q 89: Does the threshold for review of new capacity offers for possible OOM designation**
2 **appear to be at a reasonable level (or too high or too low) for the purposes of**
3 **upcoming FCAs?**

4 A: Set at 0.75 times CONE, this threshold is 25% above the recent FCA prices, resulting in
5 all offers below or even 25% above recent FCA prices being subject to review. This
6 already makes it impossible to avoid review of new capacity offers that are likely to clear.
7 Raising the FCM CONE Parameter further would simply subject additional new capacity
8 offers – ones that are even less likely to clear – to review.

9 **Q 90: Do the thresholds in the FCM Quantity Rule appear to be at reasonable levels (or**
10 **too high or too low) for the purposes of upcoming FCAs?**

11 A: The thresholds in the Quantity Rule are intended to defer replacement of de-list bids to
12 reconfiguration auctions when FCA prices are relatively high. Again, these parameters
13 are pegged to CONE which is well above the prices resulting from the FCAs. Under the
14 Quantity Rule, all de-list bids will be replace in the FCA, and none deferred, if the price
15 is less than 0.8 times CONE, or \$3.93/kW-mo for the next FCA. Thus, with the current
16 value of CONE being higher than likely FCA prices, it is unlikely that the Quantity Rule
17 will be triggered, and de-list bids are likely to be replaced in the FCA rather than
18 deferred. Further raising CONE would make the Quantity Rule even less likely to
19 trigger.

20 **Q 91: Does the FCA auction “floor” price appear to be at a reasonable level (or too high or**
21 **too low) for the purposes of upcoming FCAs?**

22 A: No FCA has yet cleared supply and demand; rather, each auction has stopped when the
23 floor price was hit with excess supply still remaining in the auction. A lower floor price
24 could allow the FCA to continue until supply and demand are cleared, with the advantage
25 of revealing the prices at which various resources (including both existing and new, and

1 those classified as OOM and others not so classified) would exit the auction. Even if the
2 APR will be triggered to set a higher final FCA price, a lower floor price and initial FCA
3 clearing price would potentially providing a better starting place for the application of the
4 APR rule. By contrast, a higher floor price would simply increase the likelihood that the
5 FCA auction will stop at that price, failing to reveal the price that would clear supply and
6 demand, and increasing the capacity excess. While I would prefer to see the floor price at
7 a lower level to reveal more information about supply, the proposal to maintain it at the
8 current level seems a reasonable concession for the near term and provides predictability
9 and stability.

10 **Q 92: What impact might large increases in the FCM CONE Parameter have on future**
11 **FCAs?**

12 A: Such increases would move the various thresholds even further from the market reality as
13 reflected in past FCA prices. The 0.8 CONE threshold for dynamic de-list bids without
14 review, if CONE were set to \$7.50/kW-mo, would be \$6.00/kW-mo, more than twice the
15 price from the last FCA. This would essentially allow exercise of market power up to the
16 point where it doubles prices relative to the last auction (which price resulted in excess
17 capacity).

18 With a CONE increase to \$7.50/kW-mo, the threshold for review of offers for possible
19 classification as Out-of-Market would rise to \$5.625/kW-mo, subjecting additional offers
20 well above recent clearing prices to such review.

1 **Q 93: Mr. Stoddard notes that the current FCM CONE Parameter is below the levels that**
2 **have been approved for “CONE” parameters used in NYISO and PJM. Does this**
3 **suggest the FCM CONE Parameter needs to be increased?**

4 A: No. The “CONE” values in NYISO and PJM are defined differently, and play entirely
5 different roles in those market designs, despite the similar nomenclature. For both
6 NYISO and PJM, the most important role of the parameter called “CONE” or “Net
7 CONE” is as the price parameter in a sloped capacity demand curve. Unlike the PJM and
8 NYISO designs, under FCM the CONE parameter does not affect FCA prices, except
9 perhaps if the APR is triggered. The FCM parameters linked to CONE need to remain
10 close to FCA prices in order to fulfill their roles in the FCM design, in particular with
11 respect to market power mitigation.

12 While PJM’s CONE values are higher than the FCM CONE Parameter, the most recent
13 capacity auction (for the 2012/2013 delivery year) cleared at a price of \$16.46/MW-day
14 in the RTO Region,¹² the equivalent of \$0.50/kW-mo, about one-sixth the FCM floor
15 price and one-tenth the FCM CONE Parameter. The PJM RTO Region is very large and
16 competitive, and this low price has resulted from competitive offers to provide capacity
17 without leading to accusations of “out of market” entry or price manipulation.

18 **Q 94: Please summarize your conclusion regarding the FCM CONE Parameter and**
19 **various thresholds and parameters linked to it.**

20 A: I conclude that some of the various parameters and thresholds tied to the FCM CONE
21 Parameter, at the values they would assume under the proposed FCM Revisions, are at
22 somewhat high levels at present, given the excess of capacity and likelihood of low prices

¹² PJM, *2012/2013 RPM Base Residual Auction Results*, p. 1.

1 in upcoming FCAs. If anything, lower values for the market power mitigation thresholds
2 in particular would be justified to bring them closer to likely auction prices. The Joint
3 Filing Revisions leave all of the values at their present levels, which is a reasonable
4 approach.

5 **VII. Protesters' Proposals Regarding Zone Formation Should Be Rejected**

6 **Q 95: Please summarize the Joint Filing Revisions pertaining to the possibility of zonal 7 pricing in future FCAs.**

8 A: The Joint Filing Revisions generally have the impact of increasing the likelihood of
9 locational capacity prices in future FCAs.

- 10 1. First, the rule changes will allow subdivisions of energy Load Zones, in addition to
11 energy Load Zones, to potentially become Capacity Zones in the FCAs.
- 12 2. Second, the calculation of the Local Sourcing Requirements for potential Capacity
13 Zones will be changed in a manner that will generally increase the requirements.
14 Specifically, the Local Sourcing Requirement will be the greater of the local resource
15 adequacy requirement (the value used in the past) or the Transmission Security
16 Requirement for the zone, which utilizes a different analytical methodology and
17 typically leads to a higher requirement. Changes are also proposed to assumptions
18 used in the Transmission Security Analysis to enhance consistency with the local
19 resource adequacy calculation.
- 20 3. Third, in evaluating whether a potential Capacity Zone should be modeled in the
21 FCA, the rule changes call for excluding non-price retirement and permanent de-list
22 bids from all suppliers, and static, export, and administrative export bids from non-
23 pivotal suppliers. Under the proposed changes, if the existing capacity in a capacity
24 zone, minus these resources, is less than the local sourcing requirement, the zone will
25 be modeled in the FCA, allowing the zone to split and have a higher price than the
26 rest of the pool.

27 **Q 96: Why have ISO-NE and NEPOOL proposed these changes?**

28 A: The changes increase the likelihood that some zones will have price separation in future
29 FCAs, creating a stronger locational price signal and allowing FCM to reflect more
30 potential locational differences in capacity needs and costs. Setting the local sourcing
31 requirement based on the results of the Transmission Security Analysis, when higher than

1 the value determined through the probabilistic local resource adequacy analysis, increases
2 the consistency of FCM auctions with ISO-NE's reliability evaluation of de-list bids.
3 This should also reduce the likelihood that de-list bids will be rejected for reliability
4 reasons and reduce the number of instances when APR-3 might be triggered.

5 **Q 97: Is more granular locational capacity pricing a good thing?**

6 A: In principle, yes. Locational pricing allows setting higher prices in local areas to retain
7 higher-cost existing generation and to attract new capacity to areas where the need may
8 be greater or it may be more costly to build. Locational capacity pricing also results in
9 lowering capacity purchases and clearing prices in unconstrained zones where the need
10 for and value of capacity is lower. However, there are two types of problems to consider
11 with respect to more granular capacity pricing.

- 12 1. While capacity markets by their nature always raise market power concerns, it is well
13 understood that smaller geographic markets are likely to have more concentrated
14 ownership and to be more vulnerable to exercise of market power. In the extreme,
15 the Transmission Security Analysis may identify a single plant required for reliability,
16 and clearly there can be no "market" around a single plant.
- 17 2. Locational capacity pricing results in higher prices in constrained areas and lower
18 prices in the surrounding unconstrained areas, and these results depend heavily on the
19 calculation of local sourcing requirements for the constrained areas. If local sourcing
20 requirements are too conservative, locational capacity prices in the constrained areas
21 will be too high and prices in the unconstrained regions will be too low.

22 If these two potential problems are not effectively addressed, locational capacity pricing
23 could decrease instead of increase efficiency.

24 **Q 98: What further changes to the formation and pricing of capacity zones have the**
25 **protestors' experts proposed?**

26 A: Protestors' experts propose that ISO-NE create zones in the auction to reflect all
27 constraints in each FCA, and to relax market power mitigation, increasing the likelihood

1 of de-list bids causing zone formation. They downplay market power concerns, and do
2 not discuss the importance of accurately setting local sourcing requirements.

3 **Q 99: Please summarize why market power is a concern in capacity markets, and**
4 **especially in capacity zones.**

5 A: Capacity markets attempt to obtain commitments from sufficient capacity to meet peak
6 loads plus a reserve margin to provide a very high level of reliability. Consequently, all
7 or nearly all existing capacity, plus some new capacity, will usually be selected for
8 capacity obligations through capacity auctions. Because all or nearly all offered capacity
9 is selected, small reductions in offered capacity, or increases in the offer prices, can raise
10 clearing prices. In particular, suppliers with large portfolios of assets may find it
11 profitable to physically or economically withhold some available capacity from the
12 auctions, to the extent permitted.

13 In smaller zones, there are likely to be fewer resources and resource owners, and the
14 concentration of ownership is often much higher than in larger zones. Moreover, it
15 generally takes much less withholding in a smaller zone to substantially raise prices.

16 This is especially true when considering that the constrained zones in the ISO New
17 England footprint, as for NYISO and PJM, tend to be urban and suburban areas in which
18 opposition to power plant construction may be relatively strong, there are relatively few
19 available sites to build new power plants, and the most economical locations to build new
20 capacity are likely to be the sites of existing power plants. Northeast Massachusetts,
21 Boston, Connecticut, New York City, Long Island, New Jersey, Maryland, and the
22 District of Columbia have been constrained or potentially constrained areas in these three
23 RTOs.

1 **Q 100: Have locational capacity prices been successful in attracting new capacity to such**
2 **constrained areas?**

3 A: No, there is not evidence that locational capacity prices have attracted new capacity.

4 There are at least two reasons this has been the case. First, locational capacity prices
5 have been very volatile, with small changes in transmission or generation causing large
6 changes in the prices. Thus, locational capacity prices are a very unreliable price signal.

7 In addition, it may be considerably more difficult to build in these areas, and volatile
8 locational price signals do not provide sufficient incentive to take on these challenges.

9 Developers may prefer to build outside the urban and suburban constrained areas and
10 wait for the RTOs to expand transmission capacity into them, rather than take on the
11 many hurdles to building generation in such areas. Developers are also aware that even if
12 they are successful in building generation in these areas, other new generation and/or
13 transmission capacity can eliminate the constraints and any locational price advantage the
14 areas may have offered at one time.

15 **Q 101: Please summarize the experience with locational capacity markets to date in PJM.**

16 A: PJM has held capacity auctions for six delivery years to date, and the potential and actual
17 capacity zones have varied from delivery year to delivery year. The next (seventh) RPM
18 Base Residual Auction to be held in May 2010 for the 2013/2014 delivery year will
19 involve yet another configuration of potential capacity zones. PJM's experience with
20 capacity zones has shown the following:

- 21 1. Locational capacity prices and price differentials have been highly volatile, changing
22 from year to year as local requirements and resources have changed.

1 2. The main driver of changes in locational prices has been transmission enhancements
2 that reduce the net local requirements. Locational capacity pricing has not attracted
3 relatively more generating capacity additions to the constrained or potentially
4 constrained zones.

5 While capacity sellers under the RPM rules are mitigated, they have some flexibility
6 within these rules. The available evidence suggests that, as would be expected,
7 incumbent sellers are more likely to strive to offer more capacity and at lower prices in
8 the relatively large and competitive zones (the Rest of RTO, and Mid-Atlantic areas, both
9 of which are over 60,000 MW).¹³ By contrast, in the constrained areas, and especially in
10 smaller capacity zones, incumbent sellers are more likely to exercise available flexibility
11 to offer relatively less capacity and at higher prices.¹⁴

12 **Q 102: Why do the Joint Filing Revisions call for recognition of all non-price retirement**
13 **and permanent de-list bids, but static, export, and administrative export bids only**
14 **from non-pivotal suppliers, in determining whether to model a Capacity Zone in an**
15 **FCA?**

16 A: The Joint Filing Revisions recognize that while non-price retirement bids and permanent
17 de-list bids are unlikely to be submitted with the intent to raise FCA clearing prices

¹³ For example, the amount of incremental capacity offered based on uprates to existing plants was proportionally greater in the RTO Region than in smaller zones where prices were higher, but the incentives to not provide such incremental capacity were also much stronger. PJM, *2012/2013 RPM Base Residual Auction Results*, Tables 1A and 4A.

¹⁴ For example, RPM rules allow capacity sellers to increase their offer prices to reflect “Accelerated Project Investment Recovery” (“APIR”). These costs are of course sunk once the owner has decided to make the investment, so under competitive circumstances, offer prices would not be raised by the amount of APIR allowed, as this would risk failing to clear and receive a capacity payment. APIR has been heavily used in the concentrated, constrained zones, and used much less in the larger more competitive areas. Monitoring Analytics, *Analysis of APIR Investment and MW Added Under RPM: 2007 - 2011 RPM Auctions*, September 8, 2008, Table 4 (showing that offers with APIR, and especially the maximum allowed amount of APIR, are disproportionately from resources offered in the smaller zones). In addition, derates and retirements have also occurred disproportionately in smaller zones. PJM, *2012/2013 RPM Base Residual Auction Results*, Table 4A.

1 (because these bids result in permanently exiting the market), static, export and
2 administrative export bids are more likely to be used in an attempt to exercise market
3 power and raise prices. Therefore, the pivotal supplier test is applied to identify suppliers
4 unlikely to use such bids in an attempt to raise prices.

5 **Q 103: Please describe how the pivotal supplier test works.**

6 A: A supplier is considered pivotal in a zone if some of its capacity is needed to meet the
7 local sourcing requirement. If a supplier is pivotal, it will be able to raise price by de-
8 listing some of its capacity.

9 Specifically, the test calls for comparing the total amount of qualified existing capacity in
10 a zone (excluding non-price retirement requests), minus one market participant's total
11 qualified capacity (also excluding the participant's capacity subject to non-price
12 retirement requests), with the local sourcing requirement for the zone. If the capacity is
13 sufficient to meet the local sourcing requirement, the participant is not pivotal.

14 Otherwise – some of the participant's capacity is needed to meet the local sourcing
15 requirement – the participant is considered an FCM Pivotal Supplier. For participants
16 found to be FCM Pivotal Suppliers, their static, export, and administrative export bids are
17 not considered in determining whether to model a capacity zone in the FCA.

18 **Q 104: How could a pivotal supplier use static or export de-list bids to attempt to cause**
19 **zone formation and higher FCA clearing prices?**

20 A: A pivotal supplier could find it profitable to submit static or export bids at prices above a
21 plant's going-forward or opportunity cost to attempt to cause zone formation. During the
22 FCA, a pivotal supplier in the formed zone could set price by de-listing some of its
23 capacity. While this might cause some of its capacity to not receive a capacity supply

1 obligation, the increase in the price earned by the seller's other capacity might recoup this
2 lost revenue several times over.

3 If much of the capacity in a zone is owned by just a few suppliers, each might expect the
4 others to also de-list some capacity at higher prices to contribute to a higher zonal price,
5 from which they all benefit. If such tacit collusion develops, each seller might only have
6 to de-list a fraction of its capacity to help establish a high price. This also suggests that a
7 two- or three-pivotal supplier test might also be an appropriate market power test for
8 these circumstances, and the Commission has authorized such tests in some contexts.¹⁵

9 **Q 105: If such bids exceed 0.8 times CONE, aren't they subject to review by the Internal**
10 **Market Monitor?**

11 A: Yes. However, the External Market Monitor has expressed concern that the standard of
12 review for such bids "may not be fully effective" in requiring such bids to be competitive
13 (p. 20). ISO-NE's Internal Market Monitor expressed similar concerns.¹⁶ In my opinion,
14 it is appropriate that such bids not be considered in determining whether a zone will be
15 formed; consideration of such bids would create a strong incentive to attempt to use them
16 to cause zone formation and raise prices.

¹⁵ See *PJM Interconnection, L.L.C.*, 126 FERC ¶ 61,145 (2009).

¹⁶ ISO New England, Inc., *Internal Market Monitoring Unit Review of the Forward Capacity Market Auction Results and Design Elements*, June 5, 2009, p. 43 (stating, with regard to the APR, "... it is difficult for any price-adjustment mechanism to exactly replicate a competitive outcome; hence it is appropriate to monitor market participants' offer behavior over time and consider other monitoring, mitigation, and incentive mechanisms.")

1 **Q 106: Mr. Stoddard argues that the pivotal supplier test should recognize qualified new**
2 **capacity, not just existing capacity, because new capacity is a “perfect substitute”**
3 **for existing capacity. Would it be appropriate to recognize new capacity in the**
4 **pivotal supplier test?**

5 A: No, the test should not include qualified new capacity. Such capacity has no obligation
6 to remain in the auction at any price level. In fact, in the two most recent FCA auctions,
7 over 5,800 MW of qualified capacity has exited the auction in the first round, at prices
8 double the final auction prices. Under Commission policy, a product is a “good”
9 alternative if it is "available soon enough, has a price low enough, and has a quality high
10 enough" for the customer to substitute it for a seller's service.¹⁷ Because much of the
11 qualified new capacity is only available at very high prices, it cannot be concluded that it
12 is a perfect substitute, or even a good alternative, to existing capacity.

13 **Q 107: Mr. Stoddard states that dynamic de-list bids by non-pivotal suppliers, and even by**
14 **pivotal suppliers, should also be allowed to cause zone formation. Would this raise**
15 **any market power concerns?**

16 A: Yes, it would. At present, dynamic de-list bids can be submitted at prices up to 0.8 times
17 CONE. Allowing dynamic de-list bids to create zones could incent sellers who are
18 pivotal, or nearly pivotal, to offer some of their capacity at close to 0.8 times CONE, with
19 the hope that at least some other sellers would also do so, causing a zone to form with
20 higher prices.

¹⁷ *Perryville Gas Storage, L.L.C.*, 130 FERC ¶ 61,065 (January 26, 2010) P. 28, citing *Alternative Rate Policy Statement*, 74 FERC ¶ 61,230.

1 **Q 108: The Joint Protestors claim that the Joint Filing Revisions have the "paradoxical**
2 **result" of reducing the likelihood that a zone will be modeled as zones get closer to**
3 **becoming constrained (p. 12). Is this correct, and is this paradoxical?**

4 A: No. The pivotal supplier test has become widely used precisely because it recognizes an
5 important fact about electricity markets: the exercise of market power is more likely
6 when demand pushes up against supply. When demand is inelastic and nearly all supply
7 is required to satisfy demand, even small suppliers are pivotal and have market power
8 and the ability to raise price. The market share screens the Commission had relied on
9 previously did not recognize the important connection between excess capacity (or its
10 absence) and market power.

11 **Q 109: Mr. Stoddard also proposes that suppliers with less than a 20% market share**
12 **should not be subject to the pivotal supplier test (p. 57). Would this modification**
13 **raise market power concerns?**

14 A: Yes it would. As explained above, the pivotal supplier test is used because unlike market
15 share screens, it recognizes that even small suppliers may have market power when
16 demand approaches available supply. Applying a market share screen as Mr. Stoddard
17 proposes would result in substantial unmitigated market power when demand approaches
18 supply for a zone.

19 **Q 110: Does this complete your testimony?**

20 A: Yes it does.