

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Exelon Corporation) Docket No. EC05-43-000
Public Service Enterprise Group Incorporated)

**SUPPLEMENTAL TESTIMONY OF JULIA FRAYER
ON BEHALF OF FIRSTENERGY SERVICE COMPANY**

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Table of Contents

- 1 INTRODUCTION 1
- 2 SUMMARY 2
- 3 INSUFFICIENCY OF THE APPLICANTS’ PROPOSED NEW MITIGATION PLAN 10
 - 3.1 THE NEW MITIGATION PLAN AND THE DELIVERED PRICE TEST (“DPT”) FOR ECONOMIC CAPACITY 14
 - 3.2 THE NEW MITIGATION PLAN AND COMPETITIVE ANALYSIS SCREEN FOR THE CAPACITY CREDIT MARKET 17
 - 3.3 RECOMMENDATION REGARDING THE APPLICANTS’ NEW MITIGATION PLAN 20
 - 3.4 VIRTUAL MITIGATION AND FURTHER CAPACITY CREDIT MARKET COMMITMENTS 20
 - 3.5 OVERALL CONCLUSIONS REGARDING THE APPLICANTS’ NEW MITIGATION PLAN 26
- 4 SUPPLEMENTAL ANALYSIS OF THE PROPOSED MERGER 27
 - 4.1 DELIVERED PRICE TEST FOR ECONOMIC CAPACITY 29
 - 4.2 SENSITIVITY ANALYSIS OF THE DPT 37
 - 4.3 CAPACITY CREDIT MARKET 41
 - 4.4 MARKET SHARE SCREEN 46
 - 4.5 CONCENTRATION TEST OF SPARE CAPACITY 49
- 5 CONCLUDING REMARKS 50
- 6 EXHIBITS 52
 - 6.1 DESTINATION MARKET PRICES 61
 - 6.2 ECONOMIC CAPACITY DPT - SUPPLEMENTAL BASELINE UNDER THE NEW MITIGATION PLAN 67
 - 6.3 ECONOMIC CAPACITY DPT - SUPPLEMENTAL BASELINE AND SENSITIVITIES UNDER THE INITIAL MITIGATION PLAN 69
 - 6.4 SUPPLEMENTAL CAPACITY CREDIT MARKET UNDER THE NEWLY PROPOSED MITIGATION PLAN 76
 - 6.5 SUPPLEMENTAL CAPACITY CREDIT MARKET UNDER THE ORIGINAL MITIGATION PLAN 78
 - 6.6 SUPPLEMENTAL SEASONAL MARKET SHARE SCREEN ANALYSIS 80
 - 6.7 SUPPLEMENTAL CONCENTRATION TEST OF SPARE CAPACITY 81
 - 6.8 REVISED FUEL PRICES 82
 - 6.9 REFERENCE LIST OF SELECTED EMPIRICAL STUDIES AND PAPERS ON GENERATION, TRANSMISSION AND MARKET POWER 86

Table of Exhibits

EXHIBIT 25. CATALOGUE OF ERRORS, DISCREPANCIES, AND POSSIBLE OMISSIONS IN GENERATION AND ICAP DATABASES SUBMITTED IN DR. HIERONYMUS' ORIGINAL WORKING PAPERS	52
EXHIBIT 26. ILLUSTRATIVE EXAMPLE OF DISCREPANCIES IN FIRST TIER MARKET CAPACITY IN DR. HIERONYMUS' GENERATION DATABASE.....	58
EXHIBIT 27. PJM EAST MARKET DELINEATION.....	60
EXHIBIT 28. RELATING ACTUAL PRICES IN PJM EAST TO SELECTED DESTINATION MARKET PRICES (FOR BASELINE AND SENSITIVITIES).....	61
EXHIBIT 29. LEI'S PJM EAST SUPPLY CURVE WITH ALL DESTINATION MARKET PRICES TESTED IN LEI'S ANALYSIS (YELLOW LINES).....	65
EXHIBIT 30. DR. HIERONYMUS' PJM EAST SUPPLY CURVE WITH ALL DESTINATION MARKET PRICES TESTED IN HIS ANALYSIS (YELLOW LINES)	66
EXHIBIT 31. LEI'S ECONOMIC CAPACITY HHIS (UNDER THE NEW MITIGATION PLAN - TWO BUYERS)	67
EXHIBIT 32. LEI'S ECONOMIC CAPACITY HHIS (UNDER THE NEW MITIGATION PLAN - FOUR BUYERS)	68
EXHIBIT 33. LEI'S SUPPLEMENTAL ECONOMIC CAPACITY HHIS (POST-MERGER).....	69
EXHIBIT 34. LEI'S SUPPLEMENTAL ECONOMIC CAPACITY HHI (UNDER THE INITIAL MITIGATION PLAN).....	70
EXHIBIT 35. SUMMARY OF SUPPLEMENTAL - 25% SENSITIVITY CASE FOR ECONOMICS CAPACITY HHIS (UNDER THE INITIAL MITIGATION PLAN)	71
EXHIBIT 36. SUMMARY OF SUPPLEMENTAL + 25% SENSITIVITY CASE FOR ECONOMICS CAPACITY HHIS (UNDER THE INITIAL MITIGATION PLAN)	72
EXHIBIT 37. LEI'S PROPOSED MITIGATION UNDER SUPPLEMENTAL BASELINE AND SENSITIVITIES (UNDER THE INITIAL MITIGATION PLAN).....	73
EXHIBIT 38. LEI'S SUPPLEMENTAL ECONOMIC CAPACITY HHIS (UNDER INITIALLY PROPOSED BUYER RESTRICTIONS AND DR. HIERONYMUS' PREFERRED MITIGATION ALLOCATION ASSUMPTIONS)	75
EXHIBIT 39. SUPPLEMENTAL COMPETITIVE ANALYSIS SCREEN FOR PJM CAPACITY CREDIT MARKET UNDER NEW MITIGATION PLAN WITH ALL NON-NUCLEAR MITIGATION ACQUIRED BY THE LARGEST SUPPLIER.....	76
EXHIBIT 40. SUPPLEMENTAL COMPETITIVE ANALYSIS SCREEN FOR PJM CAPACITY CREDIT MARKET UNDER NEW MITIGATION PLAN WITH ALL NON-NUCLEAR MITIGATION ACQUIRED BY THE FOUR LARGEST SUPPLIERS	77
EXHIBIT 41. SUPPLEMENTAL COMPETITIVE ANALYSIS SCREEN FOR PJM CAPACITY CREDIT MARKET UNDER THE INITIAL MITIGATION PLAN (USING CLASS-AVERAGE EFOR).....	78
EXHIBIT 42. SUPPLEMENTAL COMPETITIVE ANALYSIS SCREEN FOR PJM CAPACITY CREDIT MARKET UNDER THE INITIAL MITIGATION PLAN (USING DR. HIERONYMUS' PREFERRED CLASS AVERAGE EFORD)	79
EXHIBIT 43. SUMMARY RESULTS OF THE MARKET SHARE ANALYSIS PER SECTION 205, ADJUSTED FOR IMPORT ALLOCATION	80
EXHIBIT 44. SUMMARY RESULTS OF THE TEST FOR SPARE CAPACITY	81
EXHIBIT 45. FUEL PRICES	82
EXHIBIT 46. SELECT LIST OF ACADEMIC PAPERS DISCUSSING TRANSMISSION, GENERATION, MARKET POWER, AND STRATEGIC BEHAVIOR.....	86

1 **1 Introduction**

2 **Q. Please state your name and business address.**

3 **A.** My name is Julia Frayer, and I am one of the partners and a Managing Director of
4 London Economics International LLC ("LEI"). My business address is 717 Atlantic Avenue,
5 Unit 1A, Boston, MA 02111.

6 **Q. Are you the same Julia Frayer that submitted testimony in this proceeding on**
7 **April 11, 2005?**

8 **A.** Yes.

9 **Q. What is the purpose of your Supplemental Testimony?**

10 **A.** I have been engaged by FirstEnergy Service Company ("FirstEnergy") to review the
11 economic and market power-related analysis prepared by Dr. William Hieronymus on behalf of
12 Exelon Corporation ("Exelon"), which proposes to merge with Public Service Enterprise Group
13 Incorporated ("PSEG"), who are jointly referred to as the "Applicants." The Applicants filed an
14 Answer to FirstEnergy's protest and the protests of other parties (the "Answer"). Dr.
15 Hieronymus also prepared supplemental testimony ("Dr. Hieronymus' Supplemental
16 Testimony"). I have reviewed the Answer, which modifies substantially the Applicants'
17 proposed mitigation plan, and Dr. Hieronymus' Supplemental Testimony. I have completed
18 supplemental analyses to address the Applicants' new mitigation plan and the various
19 comments made in Dr. Hieronymus' Supplemental Testimony concerning my analysis of the
20 Applicants' initial mitigation plan.

1 **2 Summary**

2 **Q. Please summarize the key conclusions from your Supplemental Testimony.**

3 **A. My Supplemental Testimony contains three key conclusions in response to the**
4 **Applicants' Answer and Dr. Hieronymus' Supplemental Testimony.**

5 First, with the withdrawal of any restrictions on the purchasers of the generation to be
6 divested by the Applicants, it is not possible to conclude, as required by Section 203 of the
7 Federal Power Act ("FPA"), that the proposed merger is consistent with the public interest. Dr.
8 Hieronymus analyzes three hypothetical scenarios under which the Applicants' generation
9 might be divested to attempt to demonstrate that the new mitigation plan will cure market
10 power failures. However, there are numerous further plausible divestment scenarios that will
11 have outcomes quite different from the scenarios analyzed by Dr. Hieronymus. For example, I
12 conducted an analysis assuming maximum attribution of the 6,600 MW of generation to be
13 divested under Applicants' new mitigation plan to the largest suppliers currently in the market.
14 Under this scenario, the proposed merger fails the screens for 27 of the 30 market segments
15 tested in all relevant markets for Economic Capacity. In the Capacity Credit market, market
16 screens failures occur for both PJM East and PJM Expanded. Even the Applicants concede that
17 they are not able to conclude that their new mitigation plan is sufficient to "cure all screen
18 failures for all possible combinations of sales to companies with large market shares."¹ Thus, it
19 is not possible for the Commission to find, on the record before it, that the proposed merger is
20 consistent with the public interest as required by FPA Section 203.

21 Second, other "concessions" that the Applicants offer in order to obtain Commission

¹ Answer at 33.

1 approval, namely the revised capacity mitigation bidding strategy and the transmission
2 upgrade and investment commitments, do not appear to constitute serious mitigation measures.

3 To make their virtual mitigation proposal more palatable, the Applicants now propose
4 to bid all of their net daily capacity at zero in the PJM Capacity Credit markets until such time
5 as a locational ICAP market is introduced in PJM and Applicants make a compliance filing.²
6 However, this new capacity mitigation measure does not resolve market power concerns in
7 today's Capacity Credit market. Instead, the newly proposed strategy is likely to drive the
8 Applicants to sell most of their capacity forward in the bilateral "term market" for capacity.
9 Given the lag time for new investment to become operational and qualified to participate in
10 PJM's Capacity Credit market, the difficulty in monitoring the term market, and the size of the
11 Applicants' portfolios of capacity in PJM Expanded and PJM East, it would be prudent and
12 consistent with the public interest for the Commission to investigate this aspect of Applicants'
13 new mitigation proposal at a hearing.

14 Similarly, Applicants' new transmission upgrade and investment commitment is not a
15 significant concession or properly tailored to enhance competition within the region. The
16 Applicants are obligated to make most of these transmission investments as part of PJM's
17 Regional Transmission Expansion Plan ("RTEP"). The Applicants also concede that they will
18 seek a return on these transmission investments in their rates.

19 Finally, based on a supplemental analysis, including revisions based on comments made
20 by the Applicants and their technical witness, I am able to confirm that the Applicants' initial
21 mitigation plan, including the divestiture of 5,500 MW of generation, is insufficient to cure

² Answer at 45.

1 competitive market concerns raised by the merger in the Economic Capacity and Capacity
2 Credit markets. Furthermore, the Applicants continue to discount possible market power
3 concerns in Ancillary Services. I have performed this supplemental analysis because the
4 Applicants' offer to divest an additional 1,100 MW of generation is "conditioned" on the
5 Commission approving the proposed merger without a hearing. Accordingly, there is a need to
6 ensure that the most up-to-date analysis of the Application, including the Applicants' initial
7 proposed mitigation plan, is before the Commission, in the event this matter is set for hearing
8 and the Applicants' new mitigation proposal is withdrawn.

9 **Q. Please summarize your conclusions regarding the Applicants' conditional**
10 **commitment to divest another 1,100 MW of generation and to relax buyer restrictions.**

11 **A.** I completed an analysis of the Applicants' proposed divestiture of an additional 1,100
12 MW of generation coupled with the new, relaxed buyer restrictions proposed by the
13 Applicants.³ My analysis shows that, assuming maximum attribution of the total divested
14 capacity to the largest market participants, the proposed merger, even with the divestiture of
15 6,600 MW of generation, still fails: (1) 27 of 30 market segments tested for Economic Capacity in
16 all markets; and (2) all of the scenarios I tested for the Capacity Credit market. In other words,
17 *the proposed additional mitigation is wholly inadequate when coupled with the relaxed buyer restrictions.*
18 This conclusion is not surprising in light of the Applicants' initial, unjustified proposal to limit
19 the parties eligible to acquire divested generation facilities in order to mask the enormous HHI
20 failures created by the proposed merger. Once this artificial restriction is lifted, it becomes
21 obvious that the anticompetitive impact of the proposed merger is far greater than presented by

³ My analysis also takes into consideration the corrections made by Dr. Hieronymus in his Supplemental Testimony and other modifications I made that are discussed in more detail in Section 4, *infra*.

1 the Applicants in their filing. Notably, the Applicants do not even attempt to address this
2 deficiency in their proposal or the impact of the uncertainty created by it on the Commission's
3 ability to make the public interest determinations required under FPA Section 203. In his
4 Supplemental Testimony, Dr. Hieronymus does not describe or test the range of potential
5 impacts of the new, relaxed buyer restrictions. Instead, Dr. Hieronymus simply notes that the
6 particulars of divestment will be dealt with in an after-the-fact compliance filing proposed by
7 the Applicants in their Answer. In other words, the Applicants and their technical witness
8 concede that the Commission is not able to evaluate and approve the merger on the basis of the
9 record currently before it.

10 My analysis of the Economic Capacity market indicates that, with the relaxed buyer
11 restrictions, no amount of mitigation can cure the screen failures resulting from the potential
12 purchase of the divested generation by a limited number of existing large suppliers. Similar
13 conclusions appear in an analysis of the PJM Capacity Credit market: no amount of plausible
14 additional mitigation can fully cure screen failures resulting from the sale of non-nuclear assets
15 to the largest supplier, as permitted by the Applicants' relaxed buyer restrictions. In summary,
16 screen failures under the relaxed buyer restrictions cannot be reasonably resolved through
17 additional mitigation. Rather, with the relaxed buyer restrictions, absent further augmentation
18 and refinement of the Applicants' new mitigation plan, the Commission is not able to conclude
19 that the mitigation plan will truly and effectively de-concentrate the post-merger market and
20 remove the market power concerns created by the proposed merger.

21 **Q. Please summarize your conclusions about the Applicants' enhancement to their**
22 **capacity mitigation proposal.**

23 **A. The Applicants propose to bid their net daily capacity position into the PJM- market at a**

1 price of zero. This does not completely resolve market power concerns in the PJM Capacity
2 Credit market because the Applicants have the ability and incentive to minimize their daily
3 capacity position and circumvent the restrictions in the daily capacity market by selling into the
4 forward term markets, for which they have not offered any safeguards or sufficient mitigation.
5 Indeed, the newly proposed strategy is likely to drive the Applicants to sell most of their
6 capacity forward in the bilateral market (which is commonly referred to as the "term market"
7 for capacity). Absent other mitigation, the Applicants could have a substantial influence over
8 the market price for capacity in the term market because they possess, before mitigation, the
9 largest portfolio of marketable installed capacity within both PJM East and PJM Expanded.⁴

10 **Q. What are your conclusions about the Applicants' proposed transmission upgrades and**
11 **investments?**

12 **A.** The Applicants contend that, as an additional mitigation measure, they are committing
13 to certain reliability-driven and economic transmission upgrades and investments. However, as
14 an integrated energy utility in PJM, the Applicants are obligated to make the reliability-based
15 investments identified in PJM's RTEP. Though the Applicants are not similarly obligated to
16 make them, the transmission enhancements proposed by the Applicants that are in addition to
17 those included in the RTEP are not the magnanimous offers the Applicants suggest them to be.
18 Indeed, the Applicants candidly note that they will be seeking a commercial return on their
19 investments.⁵ This type of transmission investment is simply part of the Applicants' ongoing
20 business as an integrated utility and should not be categorized as a "concession." Moreover,

⁴ After the newly proposed mitigation (4,000 MW of which contains capacity rights), the Applicants would still be one of the largest suppliers in PJM.

⁵ Answer at 60.

1 because the Applicants have not identified where the transmission investments will be located,
2 the Commission cannot assess whether these enhancements, in fact, will increase transmission
3 capacity in PJM East and mitigate congestion in any meaningful way.

4 **Q. Does the Applicants' new transmission upgrade and investment commitment address**
5 **your concerns about their proposal to reduce the amount of virtual divestiture for**
6 **transmission upgrades?**

7 **A.** No. Transmission infrastructure investment generally produces public benefits.
8 However, depending on the assignment of transmission capacity rights from this increased
9 transmission capacity, the Applicants may stand to benefit disproportionately from increased
10 control (financially speaking, through Auction Revenue Rights ("ARRs") or firm transmission
11 rights ("FTRs")) of transmission capacity. Transmission typically is considered to be a
12 facilitator for broader markets (and thus a stimulant for competition), but under certain
13 circumstances it may also be used to complement generator market power. Empirical studies
14 have shown that a generator with assets distributed across transmission bottlenecks and with
15 transmission rights to capacity across those bottlenecks may have the incentive to strategically
16 handle bidding in the wholesale market so as to increase congestion or "self-manage"
17 congestion and thus control prices so as to profit from transmission constraints.⁶ I am
18 concerned with the possibility of such outcomes in this instance as well, especially if the
19 Applicants are allocated some of the transmission rights along the expanded transmission
20 interfaces. The Commission has required merger applicants to forego transmission-related

⁶ I discuss these further in Section 3.4 of this Supplemental Testimony.

1 rights in other merger contexts.⁷ Alternatively, the Commission could request that the
2 Applicants finance these investments through merger savings. In any event, the Commission
3 should provide an opportunity at a hearing for the parties to explore this issue further.
4 Moreover, the transmission upgrade and investment concession is still burdened by the
5 Applicants' original request to reduce the amount of their virtual divestiture of generation by
6 the increased transmission capacity in PJM East on a MW-for-MW basis. The Commission
7 should specify that the transmission enhancements the Applicants have identified will not
8 qualify in any respect to reduce the amount of their virtual divestiture proposal.

9 **Q. Please summarize your supplemental analysis of the Applicants' initial proposed**
10 **mitigation plan.**

11 **A.** My supplemental analysis, which reflects a review and consideration of the data
12 underlying the Applicants' Competitive Analysis Screen and the comments made in the
13 Applicants' Answer and Dr. Hieronymus' Supplemental Testimony, affirms the conclusions in
14 my original testimony: the Applicants' initial mitigation plan, including the physical and virtual
15 divestiture of 5,500 MW of generation, is insufficient to cure competitive market concerns raised
16 by the proposed merger in the energy, capacity, and ancillary services markets.

17 My supplemental baseline analysis shows that the Applicants continue to fail the screen
18 for Economic Capacity in 18 of the 30 market segments analyzed in the PJM East, Pre-2004 PJM,
19 and PJM Expanded markets, even after taking into account the Applicants' proposed divestiture
20 of 5,500 MW of generation. There are continued failures under the sensitivity cases as well, and

⁷ See, e.g., *Sierra Pacific Power Co.*, 93 FERC 61,217 (2000) (waiving AES-TVA right on a significant intertie and waiving native load priority on a specific firm transmission path); *IES Utilities, Inc.*, 81 FERC 61,187 (1997) (the merging applicants waived their right to capacity rights associated with required transmission upgrades).

1 in the analysis of the PJM Capacity Credit market. Indeed, even if I take into account the
 2 alternative assumptions favored by Dr. Hieronymus, my conclusion regarding the inadequacy
 3 of the initially proposed divestiture of 5,500 MW of generation stands. Similarly, taking into
 4 account Dr. Hieronymus' preferred assumptions on forced outages, the Applicants' initial
 5 proposed mitigation plan severely fails the Competitive Analysis Screen for the Capacity Credit
 6 Market in PJM East and PJM Expanded.

7 To cure these market power failures, even with the original buyer limitations,
 8 Applicants must divest the following amounts of generation *in addition to that proposed by the*
 9 *Applicants*⁸:

10 For Economic Capacity (Energy):

- 11 • Approximately 1,600 MW in PJM Expanded and approximately 1,400 MW is in
 12 PJM East,⁹ beyond the 5,500 MW offered by the Applicants. Further, the
 13 sensitivity analysis shows that under certain conditions an additional 200 MW will
 14 be needed in PJM East.

15 For the Capacity Credit Markets:

- 16 • In PJM East, as much as an additional 2,425 MW (on an ICAP basis) beyond the
 17 2,900 MW of non-nuclear generation that the Applicants commit to divest.
- 18 • In PJM Expanded, as much as an additional 4,250 MW (on an ICAP basis) beyond
 19 the 2,900 MW of non-nuclear generation that the Applicants commit to divest.

⁸ The required amount of mitigation to cure screen failures is directly related to the amount of mitigation needed to reduce the change in HHIs to levels consistent with the Commission's *Merger Policy Statement*. Furthermore, small changes in market shares have a significant impact on screen failures as can be seen in the Winter market segments of PJM Expanded in Exhibit 32. Thus, for PJM Expanded, the sensitivities require smaller amounts of incremental mitigation as compared to the baseline. The results of the baseline and sensitivities analyses are further discussed in Section 4.2.

⁹ I analyzed each of the three markets separately using tailored buyer assumptions with respect to each market and the Applicants' original buyer restrictions. Thus, the amount of divestiture in PJM Expanded may or may not be sufficient to cure PJM East screen failures as well.

1 **3 Insufficiency of the Applicants' proposed new mitigation plan**

2 **Q. What new mitigation measures have the Applicants proposed in their Answer?**

3 **A.**The Applicants propose to divest an additional 200 MW of non-nuclear generation in
4 PJM East and an additional 900 MW of non-nuclear generation in the PJM Pre-2004 market area.
5 In the aggregate, the Applicants are offering to divest 1,100 MW of additional non-nuclear
6 generating assets and are thus raising the total amount of physical and virtual mitigation from
7 5,500 MW to 6,600 MW of generation. Notably, the divestiture of 6,600 MW of generation is
8 only being offered conditionally. If the Commission does not approve the merger without a
9 hearing, the Applicants will adhere to their original proposal to divest 5,500 MW of generation.

10 The Applicants claim that offering to divest this additional generation allows them to
11 eliminate almost all buyer restrictions. There are no longer any eligibility criteria that limit
12 maximum market shares for entities purchasing generation or energy entitlements in the
13 physical divestiture and virtual divestiture auctions, respectively. The Applicants maintain
14 only one restriction on quantity limits: no single buyer can purchase more than 50% of the 2,400
15 MW of the nuclear energy entitlements earmarked by the Applicants for virtual divestiture.
16 The Applicants propose to demonstrate that the divestitures will not result in screen failures in
17 the relevant markets through an after-the-fact compliance filing submitted 12 months after the
18 merger closes.

19 To address some of the objections raised in protests to their initial mitigation plan, the
20 Applicants also have committed to bid all of their uncommitted capacity at zero in PJM's daily
21 Capacity Credit market until such time as the new capacity market design is implemented and
22 Applicants submit a compliance filing addressing mitigation in the restructured market. In

1 addition, the Applicants have purported to make concessions with respect to transmission
2 upgrades and investments.

3 **Q. What are your observations regarding the new mitigation plan and relaxation of**
4 **buyer restrictions?**

5 **A.** The Applicants have not proposed a workable mitigation plan. By pairing their
6 increased divestitures with relaxed buyer restrictions, the Applicants have offered a mitigation
7 plan that cannot, on the basis of the current record, support a finding that the proposed merger
8 is in the public interest.

9 The Applicants state: "In order to ensure that, with this additional divestiture,
10 generation could be sold to large market participants without causing market power problems,
11 Dr. Hieronymus performed analyses of various divestiture scenarios."¹⁰ In fact, Dr.
12 Hieronymus tested only two additional scenarios beyond his original case. The two additional
13 scenarios are: (1) "the divested [non-nuclear] generation is sold in four equal-sized packages to
14 the four largest market participants in PJM;"¹¹ and (2) "all of the divested [non-nuclear]
15 generation is sold to a single purchaser that does not currently own any capacity in PJM."¹²
16 Notably, Dr. Hieronymus never explains whether or why he believes these two new divestiture
17 scenarios are likely to occur or otherwise are appropriate tests for the new mitigation proposal.

¹⁰ Answer at 33.

¹¹ In their Answer, the Applicants state that Dr. Hieronymus "assumed that the divested generation is sold in four equal-sized packages to the four largest market participants in PJM East." Answer at 33. However, as the devil is always in the details, one has to look to Dr. Hieronymus' Supplemental Testimony. On page 48 of Dr. Hieronymus' Supplemental Testimony, he has in fact only assigned the non-nuclear divested generation to the four largest market participants; the energy entitlements from the nuclear virtual auctions are being assigned to a mix of buyers which includes twelve additional suppliers. Thus, this scenario incorporates a total of fourteen buyers, not the four buyers referred to in the Answer.

¹² Answer at 33. According to his Supplemental Testimony, these tests also passed the screens (Dr. Hieronymus' Supplemental Testimony at 49).

1 Not surprisingly, he finds no screen failures in these scenarios. Dr. Hieronymus does not
2 address the numerous other plausible divestiture scenarios, some of which likely would cause
3 serious screen failures. In light of the existence of the large number of potential scenarios that
4 have not been evaluated, the Commission cannot determine that the merger is in the public
5 interest.

6 In my opinion, in a competitive auction setting, it is foreseeable that a large existing
7 supplier with generating assets within PJM would attach a higher intrinsic value to the divested
8 assets and nuclear entitlements given its existing portfolio holding and market intelligence than
9 would entities that have no assets within PJM. With the relaxation of the buyer restrictions in
10 the Applicants' new mitigation proposal, one of the larger suppliers in PJM, such as American
11 Electric Power ("AEP"), Dominion Resources, Inc. ("Dominion"), Allegheny Energy, Inc.
12 ("Allegheny") or PPL Corporation ("PPL"), could purchase the majority of the divested
13 generating assets. Indeed, under a literal interpretation of the relaxed buyer restrictions, one
14 such entity could bid to buy the entire non-nuclear block of assets and 50% of the nuclear
15 energy entitlements, while another large supplier could bid to buy the other 50% of the nuclear
16 energy entitlements. I analyzed this scenario and found that there is no amount of generation
17 divestiture that would cure the substantial increase in the HHIs for Economic Capacity and the
18 PJM Capacity Credit market.

19 The Applicants admit that their proposed additional divestiture "will [not] cure all
20 screen failures for all possible combinations of sales to companies with large market shares."¹³
21 Yet they dismiss this problem as outside the scope of their responsibility: "Of course, . . . the

¹³ Answer at 33.

1 Applicants are under no obligation to design a mitigation proposal that permits any existing
2 market participant to purchase any amount of the divested generation."¹⁴ Although the
3 Applicants' statement may be true, it is also true that the Applicants are obligated to design a
4 mitigation plan that works generally. They have not met this burden, and, as noted, my
5 analysis shows that they cannot.

6 Instead, the Applicants ask the Commission to postpone its determination of whether
7 they have proposed a mitigation plan that will eliminate the market power concerns created by
8 the proposed merger until the Commission considers the Applicants' after-the-fact compliance
9 filing. However, this determination is critical to a finding that the proposed merger is in the
10 public interest. The Applicants claim that they intend to "balance the competing goals of
11 obtaining the best price for their generation and not causing market power problems,"¹⁵ but
12 they fail to explain how exactly they are going to achieve this. Does this mean that the
13 Applicants are going to reject the higher-priced offers from existing large suppliers because that
14 would result in screen failures? If so, does this mean that they will need to impose additional
15 de facto buyer restrictions? These are details that the Commission needs to know now if it is to
16 have any confidence that the Applicants' new mitigation plan will effectively mitigate the
17 market power that would be created by the proposed merger. Because the Applicants have not
18 provided these critical details, in my opinion, their Application is deficient, and the
19 Commission cannot find this proposed merger to be consistent with the public interest.

¹⁴ Answer at 33.

¹⁵ Answer at 33.

1 3.1 The New Mitigation Plan and the Delivered Price Test (“DPT”) for Economic Capacity

2 Q. You mentioned that the Applicants’ new mitigation plan and relaxed buyer
3 restrictions fail the DPT for Economic Capacity. Please discuss the results of your analysis
4 on the energy market.

5 A. My analysis shows that the divestiture of 6,600 MW of generation with the relaxed buyer
6 restrictions will lead to screen failures in all but three of the market segments¹⁶ analyzed in PJM
7 East, PJM Pre-2004 and PJM Expanded under the very plausible buyer situation I discuss above
8 (where two of PJM’s largest suppliers acquire all the divested capacity). As shown in Exhibit
9 31, the resulting HHIs for Economic Capacity after the newly proposed mitigation are all above
10 1,400 in PJM East and the change in HHIs are well over 100 in all three markets:

- 11 • For PJM East, HHIs are as high as 1,556 and HHI changes as high as 317;
- 12 • For PJM Pre-2004, HHIs are as high as 1,251 and HHI changes as high as 267; and
- 13 • For PJM Expanded, HHIs are as high as 1,237 and HHI changes as high as 202.

14 Given these results, an after-the-fact compliance filing,¹⁷ as proposed by the Applicants,
15 simply is not sufficient to enable the Commission to conclude now, on this incomplete record,
16 that the proposed merger is in the public interest.

¹⁶ These segments are: Summer Extreme Peak (Super-peak), Summer ‘Top 10% of Peak’ and Shoulder ‘Top 10% of Peak’ in PJM Expanded. These exceptions are not surprising. Given the constructs of the DPT for these market segments, we are investigating almost the entire market supply curve (in other words, all capacity that is deemed operating, which would equate to the most unconcentrated market snapshot). However, in the Concentration Test for Spare Capacity – which looks at the concentration of spare capacity that could be brought on line and would be price setting, rather than the market concentration of simply that capacity which is already operating, these are exactly the periods of market power concern.

¹⁷ Answer at 33.

1 Based on my analysis of the new mitigation plan and relaxed buyer restrictions, screen
2 failures in PJM East, PJM Pre-2004 or PJM Expanded cannot be cured even with various
3 combinations involving the purchase of the divested generation by two of the larger existing
4 suppliers. The screen failures can potentially be rectified only if the buyer restrictions are
5 expanded to incorporate: (1) limits on how much a supplier can purchase (which is what Dr.
6 Hieronymus implies in his scenario that assumes the divested generation is sold "in four equal-
7 sized packages to the four largest market participants in PJM"¹⁸); or limits on the size of eligible
8 buyers (as in the scenario first analyzed in Dr. Hieronymus' original testimony, where "one
9 party [buys] 50 percent, and two parties each [buy] 25 percent of the total non-nuclear
10 divestiture,"¹⁹ or where "a new buyer in the market bought 100 percent of the divested non-
11 nuclear generation."²⁰).

12 Furthermore, even if I take a derivative of the scenario implemented by Dr. Hieronymus
13 in his supplemental analysis, and assume that the four largest PJM suppliers purchase all of the
14 divested 6,600 MW of generation, there still are 23 instances of screen failures in my DPT
15 analysis of Economic Capacity, as detailed in Exhibit 32:

- 16 • For PJM East, HHIs are as high as 1,500 and HHI changes as high as 280, with
17 screen failures in 8 out of the 10 market segments.
- 18 • For PJM Pre-2004, HHIs are as high as 1,162 and HHI changes as high as 205,
19 with screen failures in all 10 market segments.

¹⁸ Answer at 48.

¹⁹ Answer at 48.

²⁰ Answer at 48.

- 1 • For PJM Expanded, HHIs are as high as 1,139 and HHI changes as high as 160,
2 with screen failures in 5 out of the 10 market segments.

3 Q. Would you explain the difference in your results and those of Dr. Hieronymus in the
4 "four buyer" scenario?

5 A. Yes. The difference is in the assumptions. Dr. Hieronymus' "four buyer" case should be
6 renamed the "fourteen buyer" case. Whereas I assumed that equal shares of the 6,600 MW of
7 generation were sold to each of the four largest market participants in PJM East (PPL, Reliant
8 Energy, Inc. ("Reliant"), Pepco Holdings, Inc. ("PHI"), and NRG, Inc.²¹), Dr. Hieronymus sold
9 only the 4,000 MW of non-nuclear generation to the four largest market participants in PJM
10 East.²² With regard to the virtual nuclear divestitures, Dr. Hieronymus allocated the energy
11 entitlements on a pro-rata basis to the winners in the 2004 and 2005 New Jersey Basic
12 Generation Service auctions. As a result, he has effectively further de-concentrated his analysis
13 by including another twelve buyers. In my analysis, I allocated the divested nuclear energy
14 entitlements in the same manner that I allocated the non-nuclear divestitures, that is to the four
15 largest suppliers, which is a very possible outcome under the new mitigation plan. Though the
16 post-merger HHIs for PJM East are generally similar between Dr. Hieronymus and myself, the
17 post-mitigation results are different due to the differences in the allocation of the divested
18 capacity. Therefore, higher HHI changes are estimated in my analysis, which lead to 8 screen
19 failures in PJM East.

²¹ In his analysis, Dr. Hieronymus uses FirstEnergy instead of NRG. Based on our analysis of installed capacity NRG has a slightly higher (i.e., 0.58 percentage points) market share than FirstEnergy in PJM East.

²² Namely PPL, Reliant, PHI and FirstEnergy.

1 For PJM Pre-2004 and PJM Expanded, Dr. Hieronymus kept the same list of hypothetical
2 buyers that he used in analyzing PJM East, even though these entities could no longer be
3 classified as the "largest suppliers" in that market. In contrast, I modified the hypothetical buyer
4 list for each geographic market, so that the scenario would stay true to its name.²³ Thus, it is no
5 surprise that my analysis produces higher HHIs and changes in HHIs which in turn lead to 10
6 instances of screen failures in PJM Pre-2004 and 5 screen failures in PJM Expanded.

7 **3.2 The New Mitigation Plan and Competitive Analysis Screen for the Capacity Credit**
8 **Market**

9 **Q. Does Dr. Hieronymus perform a revised Competitive Analysis Screen for the**
10 **Capacity Credit market taking into account the new mitigation plan?**

11 **A. No.**

12 **Q. Did you perform an analysis of PJM's Capacity Credit market given the newly**
13 **proposed mitigation and relaxed buyer restrictions?**

14 **A. Yes.**

15 **Q. Please discuss the results of your analysis of PJM's Capacity Credit market.**

16 **A. Consistent with my original analysis, I analyzed two scenarios with respect to PJM's**
17 **Capacity Credit market. These two scenarios allocated import capacity differently. In the first**
18 **scenario ("Scenario 1"), I investigated an allocation of import capacity to four existing PJM**
19 **suppliers, excluding Exelon and PSEG. In the second scenario ("Scenario 2"), I considered**
20 **allocation of import capacity to all suppliers equally (including Exelon and PSEG).**

²³ For PJM Expanded, the four largest suppliers are AEP, Dominion, Allegheny, and PPL. For PJM Pre-2004, the four largest suppliers are Allegheny, PPL, PHI, and Reliant.

1 As I noted in my original testimony, as of June 1, 2005, there will be a single market for
 2 capacity in PJM, which would suggest that PJM Expanded is the relevant focal point of the
 3 analysis. The Applicants conclude similarly in their Answer.²⁴ In the case of PJM Expanded,
 4 under the newly proposed mitigation plan, I allocated all non-nuclear capacity to AEP - the
 5 largest supplier (on an ICAP basis) in PJM Expanded. The relaxed buyer restrictions allow for
 6 this hypothetical sale. Under both Scenario 1 and Scenario 2, the market screen failures are so
 7 large that no reasonable amount of additional mitigation is sufficient to cure screen failures.
 8 Exhibit 39 illustrates the outcome and includes - under the "post-merger with LBI's mitigation"
 9 column - the lowest attainable HHIs under the hypothetical sale. The analysis reveals post-
 10 mitigation HHI levels between 1,039 and 1,123 - suggesting moderate to high concentration -
 11 with HHI changes of 210 and 216. Because the HHI changes are so substantial, no reasonable
 12 amount of additional divestiture will cure these Capacity Credit market screen failures in PJM
 13 Expanded. The outcome is similar if I instead allocate all non-nuclear mitigation capacity to the
 14 second largest supplier within PJM Expanded, which would be Dominion (on an ICAP basis).

15 If and when a locational capacity market develops (as currently envisioned by the market
 16 design process in PJM), the effect of the proposed merger on the Capacity Credit market in PJM
 17 East would become another area of concern. In PJM East, under the new mitigation plan, I
 18 allocated all non-nuclear capacity to PHI - the largest supplier in PJM East. Under both
 19 Scenario 1 and Scenario 2 for PJM East, the market screen failures are so egregious (even more
 20 severe than those under PJM Expanded) that no amount of mitigation is sufficient to cure screen
 21 failures. Exhibit 39 illustrates the lowest attainable HHIs given the relaxed buyer restrictions,

²⁴ Answer at 44.

1 which nevertheless result in screen failures. The HHIs range from 1,555 to 1,977 - again,
2 suggesting moderate to high concentration - with HHI changes between 341 and 487. As in the
3 case of PJM Expanded, no reasonable amount of additional divestiture will cure these Capacity
4 Credit market screen failures without further consideration of buyer restrictions. The outcome
5 is similar if I allocate all non-nuclear mitigation capacity to the second largest supplier within
6 PJM East, which is PPL (on an ICAP basis). Even shifting MW to mid-sized suppliers does not
7 effectively mitigate market power.

8 Finally, I also analyzed a scenario like that analyzed by Dr. Hieronymus in his
9 supplemental analysis for the DPT, *i.e.*, allocating divested non-nuclear capacity to the four
10 largest existing suppliers. For PJM East, mitigation capacity is assigned equally to PHI, PPL,
11 Reliant Energy, and NRG Energy. There are screen failures in both Scenario 1 and Scenario 2.
12 To pass the screens, Scenario 1 would require a minimum mitigation of 8,490 MW of generation
13 (7,834 MW on a UCAP basis) and Scenario 2 would require a mitigation of at least 5,680 MW of
14 generation (5,241 MW on a UCAP basis). Both mitigation amounts are in excess of the amounts
15 the Applicants have proposed. In PJM Expanded, a four-buyer case would also fail the screens
16 in both Scenario 1 and Scenario 2. In fact, for PJM Expanded, no reasonable additional
17 mitigation can cure the screen failures under Scenario 1. Scenario 2, however, would require a
18 minimum mitigation of 5,750 MW (5,306 MW on a UCAP basis) for PJM Expanded to pass the
19 screen. Exhibit 40 summarizes the results of this analysis.

20 In conclusion, for both PJM East and PJM Expanded under the new mitigation plan, it is
21 impossible to cure screen failures for the Capacity Credit market simply by divesting additional
22 capacity. This is because every additional MW of mitigation is not de-concentrating the market

1 as intended, but is shifting the market power potential from the Applicants to another already
2 sizeable entity.

3 **3.3 Recommendation Regarding the Applicants' New Mitigation Plan**

4 **Q. In light of your analysis, what are your recommendations to the Commission?**

5 **A.** The Applicants have failed to show that their new generation divestiture commitment
6 effectively mitigates market power if additional capacity is acquired by major suppliers in PJM.
7 Further, neither the Commission nor I can analyze all of the numerous permutations of
8 potential buyers and combinations of purchase amounts. This is precisely why, as the
9 Commission has stated in its regulations, merger applicants must specifically identify their
10 mitigation measures. The Applicants tested only three of the numerous scenarios possible
11 under the new mitigation plan, and in fact my analysis shows that a version of at least one of
12 these scenarios (the four-buyer case) does not cure all screen failures when it is adopted true to
13 its name. In my opinion, the Applicants' analysis is not sufficient to demonstrate, or to provide
14 the Commission with the substantive evidence it needs to find, that the proposed merger is
15 consistent with the public interest as required under Section 203 of the FPA. Nor does the
16 Applicants' proposal to make an after-the-fact compliance filing satisfy the Applicants'
17 obligations under Section 203. It is my opinion that the Commission cannot approve this
18 proposed merger until the efficacy of the Applicants' mitigation plan is confirmed with
19 definitive analytic data.

20 **3.4 Virtual Mitigation and Further Capacity Credit Market Commitments**

21 **Q. Does the Applicants' new proposal to restrict capacity bids meet the concerns you**
22 **identified in your initial testimony?**

23 **A.** No. I do not believe that the Applicants' proposal to offer their net capacity at zero in

1 PJM's daily Capacity Credit market sufficiently addresses market power concerns. In their
2 initial mitigation plan, the Applicants proposed to offer 2,400 MW of capacity at zero. Now
3 they propose to offer their entire net daily position into the Capacity Credit market at zero.²⁵
4 Leaving aside that crucial details of the proposed offer strategy are lacking,²⁶ it is apparent that
5 the Applicants' new proposal is flawed. It is likely that the zero offer strategy is going to
6 depress the market clearing price in the daily auction market and thus the revenues that the
7 Applicants' assets would generate. In light of such market results, such a requirement would
8 naturally provide the Applicants with an incentive to sell their capacity in the term market
9 rather than in the daily market. Unfortunately, the Applicants do not propose any safeguards
10 concerning the term market. Such safeguards, whether in the form of bidding restrictions or the
11 divestiture of additional capacity rights, are necessary in order to protect the term market from
12 possible market power abuse.

13 PJM's market monitor has noted previous and current market power-related problems with
14 the capacity market.²⁷ Such a history, coupled with the results of my Competitive Analysis
15 Screen for the PJM Capacity Credit market, suggests substantive concerns. The Applicants

²⁵ Answer at 45-46.

²⁶ For example, the Applicants note that PJM currently calculates the net position of the Applicants (see Answer at 46), but fail to note that this is generally treated as proprietary information and not disclosed to the market. Would the Applicants propose to disclose in advance their net position and the quantity of MW they will be submitting into the daily capacity auction? Without disclosure, the effect of this strategy would likely cause distortions in the capacity market as the expectations of the other market participants may be subject to additional uncertainty as a result of this offer restriction. Any proposed mitigation needs to be transparent to the regulator, market monitor, and market participants in order to be effective.

²⁷ See PJM Interconnection, L.L.C., Market Monitoring Unit, *2004 State of the Market Report* at 21 (2005), available at <http://www.pjm.com/markets/market-monitor/downloads/mmu-reports/pjm-som-2004.pdf>; *New Power Co. v. PJM Interconnection, Inc.*, 98 FERC ¶ 61,208 at 61,756-57 (2002) (quoting PJM MMU's recognition that an entity exercised market power in capacity and citing PJM Interconnection L.L.C., Market Monitoring Unit, *PJM Interconnection State of the Market Report 2001 (2002)*, available at <http://www.pjm.com/markets/market-monitor/downloads/mmu-reports/200206-pjmmusom-2001.pdf>).

1 concede that their outright sales will not even cover the amount of mitigation proposed by Dr.
2 Hieronymus. Thus, they propose this new strategy as an interim solution.

3 Furthermore, in 2004, the daily Capacity Credit market administered by PJM cleared an
4 average 1,062 MW of capacity, which in turn represents only 1.4% of the total capacity
5 obligation in PJM.²⁸ The Applicants have offered a bidding restriction that covers a *de minimus*
6 amount of actual volume in the Capacity Credit market today, and likely even a smaller market
7 share in the future. The Applicants have structured this mitigation proposal in their favor, by
8 obligating themselves to bid at zero only the residual that they have not otherwise sold. The
9 Applicants' emphasis on daily markets is also in stark contrast to the current objectives of PJM
10 in its market redesign effort to bolster resource adequacy. It is well noted that PJM is trying to
11 construct and instill confidence in long-term capacity market mechanisms that would better
12 address resource adequacy.²⁹

13 **Q. Should the amount of the virtual divestiture of capacity be subject to reduction due to**
14 **retirements, derates, or decommissioning?**

15 **A.** No. This type of adjustment makes sense only if all other things - relative market shares
16 of all other parties - remain equal. Since this is unlikely to be the case, the selective adjustment
17 proposed by the Applicants is inappropriate. In any event, such reductions should be
18 permitted only if the Applicants also are required to increase the amount of the virtual
19 divestiture to account for capacity uprates at their generating facilities. For example, based on
20 its January 2005 survey of license holders like Exelon and PSEG, over the 2005-2006 timeframe,

²⁸ PJM Market Monitoring Unit, "2004 State of the Market Report," March 8, 2005, pg. 158.

²⁹ See <http://www.pjm.com/committees/working-groups/cmmwg/cmmwg.html>.

1 the NRC is expecting 17 applications from current NRC license holders for nuclear capacity
2 uprates totaling over 620 MW of increased capacity.³⁰ Just as there are no known public plans
3 for derating or (early) decommissioning of any of the Applicants' facilities, the Applicants have
4 not made any public announcement regarding capacity uprates. Nevertheless, the results of the
5 NRC survey, coupled with the Applicants' track record with nuclear operations and
6 management, suggest that the Applicants may well apply for capacity uprates in the future.
7 Uprates are simply the flipside of derates and, thus, should be treated identically, especially
8 with respect to their nuclear capacity.

9 **Q. What is your opinion about the Applicants' proposal to reduce the virtual divestiture**
10 **amounts MW-for-MW based on their new transmission upgrade and investment**
11 **commitment?**

12 **A.** The Applicants propose to adjust downward the amount of capacity they plan to
13 "virtually mitigate" for any transmission investments across the PJM East interface. This
14 proposal was part of the original Application. In the Answer, the Applicants confirm this
15 aspect of their initial mitigation plan and implicitly try to promote it to the Commission by
16 committing to undertake various transmission enhancements. Yet, the Applicants still have not
17 addressed the shortcomings in this MW-for-MW reduction proposal. Specifically, to what
18 degree does the location of the transmission enhancement correlate to a reduction in the need
19 for MW mitigation? Transmission enhancements in the ComEd service territory, or the far
20 eastern section of PJM East, or the Delmarva load pocket may only ameliorate local
21 transmission problems and, indeed, may benefit only the Applicants. Such enhancements have

³⁰ See <http://www.nrc.gov/reactors/operating/licensing/power-uprates/expected-applications.html>.

1 absolutely no offsetting effect on the PJM East interface and thus on promotion of competition
2 through expanding markets. Further, even if a transmission enhancement were in a proper
3 location in PJM East, the Applicants provide absolutely no empirical evidence that there is a
4 direct MW-for-MW correlation between transmission capacity expansion and their estimated
5 market power potential.³¹ Accordingly, because this facet of the Applicants' proposal is so
6 vague and undefined, the Commission should reject it. The Commission also should specify
7 that the MW-for-MW reduction proposal would not apply to the upgrades listed in Applicants'
8 new transmission investment commitment.

9 The transmission enhancements to which Applicants commit are not "special
10 considerations" being made solely to mitigate the market power resulting from the proposed
11 merger. Instead, they are investments that the Applicants would make in the ordinary course of
12 business as an integrated transmission, distribution, and generation utility company. Indeed, in
13 some cases, they are investments that the Applicants already have agreed to make as part of the
14 PJM RTEP.³² The Applicants also note that they will seek approval of rates that will allow them
15 to earn a return on these transmission investments.³³ Accordingly, Applicants' transmission
16 commitment, as it currently stands, should not necessarily be viewed as pro-competitive or as
17 an appropriate mitigation measure.

18 Even though transmission generally is considered a substitute for generation and a
19 catalyst for market expansion (which buttresses competition), it also can complement

³¹ Mathematically, expansion of the SIL into PJM East by 10% (for example) would reduce the Applicants' market shares by less than 10% generally and thus the impact on "Change in HHI" would also be less than 10%.

³² Answer at 56.

³³ Answer at 60.

1 generation market power under certain circumstances. Empirical studies have shown that
2 generators with assets in different transmission constrained markets and transmission rights
3 between those constrained markets may have an incentive to increase or "self-manage"
4 congestion for financial profit.³⁴ Thus, transmission, and namely transmission rights, could
5 serve to complement the market power potential of a generation portfolio.³⁵ To the extent that
6 the transmission infrastructure expansion proposed by the Applicants and others also leads to
7 an allocation of ARRs or FTRs to the Applicants (which is plausible under current PJM rules),³⁶
8 this can serve to magnify - rather than reduce - market power in generation infrastructure.
9 Accordingly, the Applicants' transmission investment commitment should not necessarily be
10 viewed as pro-competitive or as an appropriate mitigation measure.

11 **Q. Have the Applicants' satisfactorily justified their virtual divestiture proposal?**

12 **A.** No. Indeed, the Applicants attempt to attribute optimistic features to their proposed
13 virtual divestiture of generation that are inconsistent with their other proposed mitigation
14 measures. The Applicants state: "Applicants' virtual nuclear divestiture proposal allows
15 Applicants' nuclear capacity to be assigned in smaller increments to more purchasers than
16 would be the case if the nuclear units could be sold on a station-by-station basis."³⁷ However,
17 under the relaxed buyer restrictions, as few as two suppliers could buy all of the nuclear energy

³⁴ Exhibit 46 provides a non-exhaustive list of relevant studies and academic papers on the interplay of transmission, generation, and strategic bidding.

³⁵ Though Dr. Hieronymus gives up on analyzing FTRs because he thinks it is difficult to perform (see Dr. Hieronymus' Supplemental Testimony at 18), it should be noted for the record that a number of very robust simulation and modeling techniques have been developed and implemented by academics and practitioners to evaluate such issues.

³⁶ See *PJM Manual: Financial Transmission Rights*.

³⁷ Answer at 2.

1 entitlements. In that case, the sale of the nuclear capacity would be more concentrated than if it
2 were accomplished through an outright sale of assets on a station-by-station basis.

3 Further, the Applicants' statement regarding the benefits of its virtual divestment
4 proposal ignores the fact that the Applicants have not specifically committed to the three-year
5 auctions of 25 MW increments versus the long-term sales of the nuclear energy entitlements. It
6 would be helpful for market participants evaluating the merits of the proposed merger and for
7 the Commission to know upfront the process by which the Applicants will determine the
8 nuclear capacity earmarked for mitigation that will be sold via the auctions and via long-term
9 contracts.

10 The Applicants criticize FirstEnergy for noting that virtual divestiture may not work as
11 intended and allow the Applicants to receive supra-competitive prices.³⁸ However, the
12 Applicants' criticism takes this statement out of context. There is substantial substitutability
13 between spot and forward markets, as reflected in commercial arrangements in the industry.
14 On that basis, unresolved market power can and will affect prices in the short (spot) and long
15 term (forward) markets. By extension, if the post-merger market power of the Applicants is not
16 fully mitigated, the market will continue to expect "higher" prices and trade at such levels. The
17 over-priced forward curve will impact the valuations of possible buyers and may become
18 embedded in the offers made for the nuclear energy entitlements. Thus, the Applicants will be
19 able to simply "securitize" possible market power rents vis-à-vis the virtual auctions.

20 3.5 Overall Conclusions Regarding The Applicants' New Mitigation Plan

21 Q. Please summarize your opinion about the Applicants' new mitigation plan.

³⁸ Answer at 38.

1 A. As noted in my initial testimony and confirmed in my supplemental analysis of the
2 initial mitigation plan, to cure screen failures in the Economic Capacity markets it would be
3 necessary to increase the amount of generation to be divested by 1,300 MW in PJM East (or
4 1,500 MW in PJM Expanded), which is similar to the additional 1,100 MW divestiture that the
5 Applicants now propose. However, the Applicants' new proposal to lift the buyer restrictions
6 means that it is not possible for the Commission to find that Applicants' new plan will mitigate
7 the highly concentrated Economic Capacity and Capacity Credit markets in PJM East, Pre-2004
8 PJM, and PJM Expanded that will result from the proposed merger.

9 The Applicants' other mitigation commitments are either lacking in detail which
10 precludes an effective evaluation (such as the virtual divestiture proposal), have inherent
11 market power concerns (such as with the commitment to bid all net capacity at zero), or have
12 not been shown to concretely reduce the Applicants' post-merger market power (such as with
13 the transmission investment commitments).

14 Accordingly, in my opinion, the Applicants new mitigation plan does not eliminate the
15 market power concerns created by the proposed merger. I continue to recommend that the
16 Commission not approve this merger until it can find that Applicants' post-merger market
17 power will be mitigated. Such a finding is not possible on the basis of the record currently
18 before the Commission.

19 **4 Supplemental Analysis of the Proposed Merger**

20 **Q. Why have you undertaken a supplemental analysis of the proposed merger?**

21 A. As noted above, the Applicants' offer to divest an additional 1,100 MW of generation is
22 "conditioned" on the Commission approving the merger without a hearing. However, if the

1 Commission determines that a hearing is necessary to address the effect of the proposed merger
2 on competition, the Applicants will withdraw their offer to divest the additional generation,
3 leaving the Applicants' proposed physical and virtual divestiture proposal at 5,500 MW of
4 generation. Accordingly, the purpose of my supplemental analysis is to demonstrate that, even
5 when specific errors noted by Dr. Hieronymus are corrected, there is no material change in my
6 initial opinion that the proposed merger fails to satisfy the Commission's HHI test.

7 In this section of my supplemental testimony, I address the criticisms Dr. Hieronymus
8 makes of my initial testimony and show that those criticisms are unfounded and immaterial to
9 my analysis and conclusions. I also identify and make numerous corrections to Dr.
10 Hieronymus' generation database, and present the results of an updated Delivered Price Test
11 for Economic Capacity and Competitive Analysis Screen for the Capacity Credit market to
12 demonstrate that the Applicants' proposed divestment of 5,500 MW of generation falls woefully
13 short of what is needed to mitigate the Applicants' post-merger market power. I also update
14 my analysis of the Applicants' Market Share Screen under Section 205 of the FPA and the
15 "Concentration Test for Spare Capacity." Both of these tests substantiate that the Commission
16 must require the Applicants to divest additional generation before this proposed merger can be
17 found consistent with the public interest.

18 **Q. Please summarize what the results of your supplemental analyses show in terms of**
19 **the level of mitigation needed to address the Applicant's post-merger market power.**

20 **A. My supplemental analysis shows that the following additional mitigation is needed**
21 **under the Applicants' initial mitigation plan:**

1 For Economic Capacity (Energy)³⁹:

- 2 • Approximately 1,600 MW in PJM Expanded and approximately 1,400 MW is in
3 PJM East,⁴⁰ beyond the 5,500 MW offered by the Applicants. Further, the
4 sensitivity analysis shows that under certain conditions an additional 200 MW will
5 be needed in PJM East.

6 For the Capacity Credit Markets:

- 7 • In PJM East, as much as an additional 2,425 MW (on an ICAP basis) beyond the
8 2,900 MW of non-nuclear generation that the Applicants commit to divest.
- 9 • In PJM Expanded, as much as an additional 4,250 MW (on an ICAP basis) beyond
10 the 2,900 MW of non-nuclear generation that the Applicants commit to divest.⁴¹

11 **4.1 Delivered Price Test for Economic Capacity**

12 **Q. Did you adopt the corrections Dr. Hieronymus made to his DPT analysis in his**
13 **Supplemental Testimony?**

14 **A. Yes. I made the following three changes highlighted in Dr. Hieronymus' Supplemental**
15 **Testimony on pages 5 and 6: (1) I accounted for the Hoosier power sales agreement; (2) I added**
16 **the Lower Mount Bethel plant; and (3) I adjusted control of capacity of Catalytica Energy**

³⁹ The incremental mitigation quantities necessary to cure Economic Capacity screen failures relate directly to the magnitude and frequency of the screen failures in the baseline and sensitivities. For example, a screen failure resulting from an "HHI change" of 150 requires more mitigation, ceteris paribus, than a screen failure resulting from an "HHI change" of 110. In PJM East, screen failures occur generally across all three seasons and various load conditions in the supplemental baseline (i.e., screen failures in 8 out of the 10 market segments). Thus, when Destination Market Prices are raised in the +25% sensitivity, the frequency and extent of screen failures rise, requiring more mitigation capacity than the Supplemental Baseline. Lower Destination Market Prices in the -25% sensitivity suggest less screen failures and slightly lower incremental mitigation of capacity. In contrast to PJM East, PJM Expanded typically sees screen failures in the baseload and intermediate periods of each season in the Supplemental Baseline. As a result of our analysis of different "slices" of the supply curve (with varying Destination Market Prices), the Applicants face slightly different market shares, and fewer instances of screen failures in the sensitivities than in the Supplemental Baseline. In addition, the different HHI and change in HHI levels in the sensitivities for PJM Expanded require less mitigation.

⁴⁰ I analyzed each of the three markets separately using tailored buyer assumptions with respect to each market and the Applicants' original buyer restrictions. Thus, the amount of divestiture in PJM Expanded may or may not be sufficient to cure PJM East screen failures as well.

⁴¹ The amount of divestiture needed in PJM Expanded is 4,950 MW (on an ICAP equivalent basis) over and above the 2,200 MW figure proposed by Dr. Hieronymus in his Supplemental Testimony.

1 Systems Inc. ("CESI"). I have not accounted for the error he identifies relating to Dominion's
2 native load requirements because I did not perform an Available Economic Capacity analysis.
3 In addition, I already had accounted correctly for Deepwater (19 MW) and Madison Street (11
4 MW) as retired in my original analysis, so there was no need to make that adjustment as Dr.
5 Hieronymus did.

6 Because Dr. Hieronymus does not provide updated working papers to illustrate the
7 exact modifications he made to his underlying input databases, I made some minor
8 assumptions in implementing two of these changes. Specifically, with regard to the addition of
9 PPL's Lower Mount Bethel plant, I relied on a third-party data provider⁴² to obtain the
10 operating characteristics of the plant for inclusion in the DPT. When adjusting for the CESI
11 ownership issues, Dr. Hieronymus did not specify to whom he assigned residual control of
12 Mobile NUG (44 MW), PCLPIPP (111 MW), Delaware City (181 MW), CCLIP NUGIPP (59 MW),
13 and Logan (KCS) (19 MW). In order to be conservative, I created a new "owner" for each of
14 these plants individually, which serves to reduce the overall market concentration. In addition,
15 I had to assume a price for the Hoosier contract.

16 **Q. Do you agree with Dr. Hieronymus' comments about your use of various generation**
17 **inputs, including new entry and retirements?**

18 **A.** No. As I explained in my initial testimony, I relied on Dr. Hieronymus' underlying data
19 inputs when I performed my analysis. Some of the errors he notes regarding my analysis were
20 a direct result of his database of generation assets, as I discuss further below.

⁴² *Energy Velocity.*

1 Dr. Hieronymus' other concerns are primarily the result of incomplete and vague
2 documentation in his working papers. For example, Dr. Hieronymus' database of inputs does
3 not have any markers permitting the identification of the specific units affected by his new
4 entry and retirement assumptions on page 4 of Exhibit J-4 and on page 41 of Exhibit J-1. In his
5 Exhibit J-4 at 4, Dr. Hieronymus notes that "[there] are relatively few [new entry] *units* included
6 in my analysis." (*Emphasis added.*) This statement implies that Dr. Hieronymus included
7 multiple new entry units. However, Dr. Hieronymus now concedes that he only included one
8 new entrant (the Linden plant) in his original analysis.⁴³ Furthermore, Dr. Hieronymus did not
9 specify the plants he considered new entrants, and thus I made an approximate deduction of
10 presumed overstated capacity from his generation database before performing my original DPT
11 analysis. However, he estimates them and acknowledges them in his new Exhibit J-23.⁴⁴

12 Given the additional information disclosed by Dr. Hieronymus in his Supplemental
13 Testimony, I have removed the reduction in new entry that was included in my original
14 analysis. My supplemental testimony now reflects the same new entry and retirement
15 assumptions as Dr. Hieronymus' with the exception of the retirement of one plant⁴⁵ which Dr.
16 Hieronymus has not yet accounted for in his Supplemental Testimony.

17 With respect to retirements, Dr. Hieronymus notes that he found minor differences
18 between our databases and that "none of them can be attributed to additional retirements or

⁴³ Dr. Hieronymus' Supplemental Testimony at 13.

⁴⁴ The negative differences Dr. Hieronymus calculates in Exhibit J-23 for PJM Expanded reflect the adjustments I had to make to account for what I believed to be an overstatement of new entry plus retirements that Dr. Hieronymus had erroneously omitted.

⁴⁵ This plant is the 66-MW Cat Tractor NUG.

1 fewer new builds.”⁴⁶ However, included among the differences he identified in his Exhibit J-23
2 are my retirements of the Madison Street and Deepwater units, which he subsequently retires,
3 as suggested by PPL in its protest. Dr. Hieronymus also notes that I excluded Reliant’s share of
4 the Keystone and Conemaugh plants.⁴⁷ This is a direct result of a formulaic flaw in his
5 generation input database that included an erroneous link between his main generation unit
6 template and the worksheet accounting for the joint ownership of these two plants.⁴⁸ After
7 further review, I was able to confirm that the plant was attributed to Reliant in Dr. Hieronymus’
8 main generation template, but to Sithe in the other worksheet. I have corrected this error in Dr.
9 Hieronymus’ generation database and incorporated it in my supplemental analysis.⁴⁹

10 Q. Have you corrected the coal prices you use in your supplemental analysis?

11 A. Yes. Dr. Hieronymus found a typographical error in my calculation of coal commodity
12 prices, which affected the delivered coal prices described in my original testimony and exhibits.
13 Exhibit 45 contains the correct fuel prices. However, the mistaken coal prices did not impact the
14 overall merit order of the dispatch of the generating plants and thus did not affect the results
15 materially, as noted by Dr. Hieronymus, himself: “the difference between our analyses ... do

⁴⁶ Dr. Hieronymus’ Supplemental Testimony at 14.

⁴⁷ Dr. Hieronymus’ Supplemental Testimony at 14.

⁴⁸ For example, in Dr. Hieronymus’ generation database for the Conemaugh plant, the cells that accounted for joint ownership (cells M6188 through M6199) in his “Unit_data” sheet, look up the Supplier name (cells F6188 through F6199) and unit name (cells F6188 through F6199) in the “Joint” sheet. However, the “Joint” sheet has Sithe listed instead of Reliant in the Supplier name for the Conemaugh units (cells F176, F184, F192, F200, F208, F216). As a result, the link is subsequently erroneous causing numerous formulaic flaws for the cells that are dependent on it, e.g. linked to the cells which account for joint ownership in the “Unit-data” worksheet (cells W6188 through Y6199). The same statement is true for the Keystone plant.

⁴⁹ Dr. Hieronymus states that he could not identify the new additions and retirements in my working papers for the Capacity Credit market analysis. Dr. Hieronymus’ Supplemental Testimony at 14. He is correct in that observation. These changes were inadvertently not saved in the final set of my Working Papers and thus did not make it into my original exhibits. However, my supplemental Competitive Analysis Screens for the PJM Capacity Credit market (see Exhibit 39 through Exhibit 42) resolves this issue.

1 not materially affect the rank ordering of generating plants along the supply curve.”⁵⁰

2 **Q. To recap then, were any of these items material to the overall conclusions presented**
3 **in your initial testimony and exhibits?**

4 **A.** No. My analysis shows that these issues were generally immaterial to my initial
5 conclusions regarding the inadequacy of the Applicants’ proposed divestiture of 5,500 MW of
6 generation.

7 **Q. Are there other errors in Dr. Hieronymus’ generation database and working papers?**

8 **A.** Yes, I have found several mistakes in Dr. Hieronymus’ database that have required
9 correction in order to present a complete HHI analysis. Most of these flaws stem from the input
10 databases that Dr. Hieronymus provided as part of his working papers for his Delivered Price
11 Test and ICAP analysis. I found the following types of errors in Dr. Hieronymus’ database:
12 omissions of plants, wrong or outdated ownership/control assignments, undocumented
13 discrepancies between Dr. Hieronymus’ generation and ICAP databases, flawed demarcation of
14 the PJM East market, and understatements of capacity in First Tier markets. These errors are
15 further detailed in Exhibit 25 and Exhibit 26. In the aggregate, all the corrections that I have
16 made to the database and in the resulting analysis suggest that the conclusions in my original
17 testimony are accurate with respect to the inadequacy of the Applicants’ initial mitigation plan
18 of 5,500 MW of generation to eliminate undue market power created by the proposed merger.

19 Correcting the data in Dr. Hieronymus’ database reaffirms that the proposed merger
20 will raise market concentration substantially, resulting in screen failures in all market segments
21 tested after the merger, with HHI changes exceeding 100, with overall HHI levels in the range

⁵⁰ Dr. Hieronymus’ Supplemental Testimony at 22.

1 of 1,028 to 2,399 and across all three markets (PJM East, PJM Pre-2004 and PJM Expanded).
2 Furthermore, divestiture of 5,500 MW of generation is insufficient to cure screen failures in 6
3 out of 10 market segments in PJM Pre-2004, in 8 out of 10 market segments in PJM East, and in 4
4 out of 10 market segments in PJM Expanded. If the Applicants were to refine their list of
5 mitigation-eligible units, as I have stated is necessary, my analysis could be further refined.

6 With the exception of a few market segments where these corrections had a reverse
7 effect, the post-merger HHIs in my supplemental analysis (see Exhibit 33) have *increased* from
8 those in my initial analysis by a few percentage points. My results show - similar to Dr.
9 Hieronymus' revised analysis in his Supplemental Testimony - that the proposed merger
10 continues to fail the Competitive Analysis Screen for all market segments in all three geographic
11 markets prior to mitigation.

12 I tested the Applicants' proposed 5,500 MW of mitigation in the DPT with their original
13 buyer restrictions (*i.e.* 3-5% market share limit for eligibility and a 25% and 50% purchase limit).
14 Even though the market concentration did not vary significantly, the change in HHI did
15 increase substantially from my initial analysis, 137 points on average in PJM East and on
16 average by 23 points in PJM Expanded.⁵¹ These revised figures further underscore the
17 inadequacy of the Applicants' proposed physical and virtual divestiture of 5,500 MW of
18 generation. The frequency of the screen failures also increased from 6 of the 30 market
19 segments in my initial analysis post-mitigation to a total of 18 of the 30 market segments in my
20 supplemental analysis, as summarized in Exhibit 33. Again, this further underscores the
21 inadequacy of the Applicants' initial mitigation plan.

⁵¹ The large differential in the change in HHI metric was the result of the aggregate of all the changes implemented.

1 In summary, after all of the adjustments described above are made, my supplemental
2 analysis shows that the Applicants proposal to divest 5,500 MW of generation is inadequate. In
3 order to cure all screen failures in Economic Capacity with the original buyer restrictions in
4 place, the Applicants must divest approximately 1,300 MW of additional generation for PJM
5 East, and nearly 1,500 MW for Expanded PJM.⁵² Exhibit 37 summarizes the additional
6 mitigation required under my supplemental analysis.

7 Q. Dr. Hieronymus contends that you implemented the Applicants' mitigation
8 incorrectly. Do you agree?

9 A. No.

10 Q. Please explain.

11 A. In their Application, the Applicants do not provide a specific list of generating assets to
12 be divested. Rather, they provide a list of "mitigation eligible" units totaling over 17,000 MW of
13 summer demonstrated capacity (see Exhibit J-12 in Dr. Hieronymus' original testimony). There
14 are many types of units in that list: 6,157 MW of nuclear units, 712 MW of hydroelectric plants,
15 4,136 MW of steam-fired units, 2,443 MW of combined cycle plants, 3,530 MW of gas turbines,
16 46 MW of non-utility generation, and 300 MW of combustion turbines and internal combustion
17 units. Exhibit J-13 to Dr. Hieronymus' initial testimony describes the approach he used to test
18 the Applicants' proposed mitigation in his DPT. However, Dr. Hieronymus did not specify in
19 Exhibit J-13, the units that he assumed would be divested. Rather, Exhibit J-13 allocates the

⁵² These figures are based on a mix of baseload nuclear and mid-merit capacity for additional mitigation as highlighted in Exhibit 37 under Option 1. The specific MW of capacity will be slightly lower if I assume that all additional mitigation is achieved through additional nuclear divestitures (Option 2) because of the lower derating of the nominal capacity of nuclear versus that of non-nuclear assets in the Delivered Price Test, consistent with Dr. Hieronymus' assumptions in Exhibit J-13.

1 5,500 MW to four generation categories: nuclear, coal, mid-merit and peaking – which are not
2 the same categories he uses in Exhibit J-12.

3 This ambiguity in Dr. Hieronymus' exhibits and his aggregation of the mitigation units
4 into four basic categories (in Exhibit J-13) made it impossible, as a practical matter, to exactly
5 align my analysis with the unit-level detail Dr. Hieronymus may have subsumed in his analysis,
6 but never revealed. Thus, I did not analyze the Applicants' initial mitigation plan on a unit-
7 level. Rather, I used the categories that Dr. Hieronymus developed in Exhibit J-13 and assigned
8 the entire capacity in each aggregate category to my market segments. However, I did review
9 the general dispatch cost characteristics of the Applicants' portfolio (using my assumptions on
10 fuel prices and variable costs and Destination Market Prices) prior to determining the
11 assignment. Thus, in my analysis, nuclear capacity in Dr. Hieronymus' Exhibit J-13 was
12 attributed to all market segments, while coal was assigned to "Rest of Peak," "Top 10% of
13 Peak," and "Super-Peak" periods. Mid-merit capacity from Dr. Hieronymus' Exhibit J-13 was
14 assigned to "Top 10% of Peak" and "Super-Peak" periods, and the peaking capacity was
15 assigned to the "Super-Peak" period only. This was a reasonable allocation given the level of
16 information that Dr. Hieronymus provided in his own analysis and my forecast dispatch prices
17 vis-à-vis the diversity of the generating asset pool that included the assets available to be
18 divested.

19 **Q. Do your conclusions change if you consider Dr. Hieronymus' preferred allocation of**
20 **mitigation?**

21 **A. No.** As can be seen in Exhibit 38, which represents the results of my supplemental
22 analysis modified for Dr. Hieronymus' preferred allocation of mitigation tranches (*i.e.*,
23 attribution of mid-merit to "Rest of Peak" and higher), there are still multiple screen failures in

1 the analysis: 5 out of 10 market segments continue to fail in PJM East; 5 out of 10 market
2 segments continue to fail in PJM Pre-2004; and 3 out of 10 market segments continue to fail in
3 PJM Expanded. Notably, screen failures continue in some "Rest of Peak" market segments -
4 "Rest of Peak" is the market segment that Dr. Hieronymus believed would be remedied with
5 his preferred allocation of mitigation capacity.

6 4.2 Sensitivity Analysis of the DPT

7 Q. Do you agree with the Applicants' comments on the sensitivity analysis you
8 performed?

9 A. No. As the Applicants cite in their own Answer,⁵³ Section 33.3(d)(6) of the
10 Commission's regulations require an applicant to "demonstrate that the results of the analysis
11 do not vary significantly in response to small variations in actual or estimated prices." My
12 sensitivity analysis satisfies this requirement.

13 Q. Please describe the economic reason for changing only the Destination Market Prices
14 in conducting a sensitivity analysis.

15 A. Strategic behavior for realizing market power can be sustained only in those instances in
16 which demand would intersect with an area of discontinuity on the supply curve around which
17 the supplier controls generation that he can profitably withhold from the market without
18 competitive response. Dr. Andrew N. Kleit, Direct Energy Services LLC's technical witness in
19 his testimony submitted in this proceeding, describes this same economic logic. Using Dr.
20 Hieronymus' data, adjusted for recent gas prices, for PJM Pre-2004, Dr. Kleit specifically notes
21 that the data shows the existence of "price regions" where the supply curve is steep, indicating

⁵³ Answer at 17.

1 the potential for the unilateral exercise of market power.⁵⁴ My sensitivity analysis was
2 constructed to look specifically at different points on the supply curve in conjunction with
3 possible demand levels in each market segment being analyzed.

4 In contrast, the selection of a single price point based on the average, or minimum or
5 maximum criteria, as Dr. Hieronymus employs, does not necessarily guarantee that one has
6 selected the price associated with those critical points of discontinuity. The selection of multiple
7 price points (as I use) can help improve the depth of analysis and thus provided a more
8 complete picture of what is happening on the supply curve. The supply curve does not change.
9 Rather, one must look at different points of intersection between the supply curve and demand
10 and the resulting price. For this reason, I intentionally held the fuel prices underlying the
11 supply curve constant and selected alternative Destination Market Prices for my sensitivity
12 analysis. Moreover, the Destination Market Prices used in the sensitivities are within range of
13 actual observed prices for each respective load segment and season, as I discuss further below.
14 My intention was (and still is) to approximate the complexities of measuring market power
15 potential in electricity markets. Markets are continuously changing, and Dr. Hieronymus does
16 not dispute the fact that gas prices have risen recently. However, he claims that his outdated
17 analysis is still valid because electricity prices rise in lock-step with gas prices. This is simply
18 wrong: in the real world, electricity prices do not move perfectly in parallel with fuel prices.
19 For example, while Henry Hub spot gas prices rose by more than 14% for the first quarter of
20 2005 year-over-year, PJM Day-Ahead electricity prices rose only 7% year-over-year over the

⁵⁴ Kleit at 9.

1 same time period. The sensitivity analysis allows me to capture and analyze such market
2 outcomes.

3 The Destination Market Prices I tested in the sensitivity analysis are conceptually akin to
4 the principle of confidence intervals around the average in statistical methods. For illustrative
5 purposes, Exhibit 28 highlights the Destination Market Prices used in my original analysis and
6 sensitivities as compared to the entire range of prices I estimated for 2006 using the implied heat
7 rate methodology and historical prices from 2004 that I described in my original testimony. As
8 can be seen in the seasonal snapshots, my destination market prices generally lie within the
9 range of "actual" prices and in fact provide good coverage of the price duration curves. This
10 exhibit illustrates the expansive view I took with respect to possible price outcomes within each
11 market segment across seasons and confirms the consistency of my selected Destination Market
12 Prices with the observed range in actual PJM prices.

13 **Q. The Applicants claim that Dr. Hieronymus' use of many load segments constitutes a**
14 **sufficient sensitivity analysis. Do you agree?**

15 **A.** No. Even though Dr. Hieronymus is looking at different seasons and demand periods
16 (peak versus off-peak), he is still taking a single point estimate of Destination Market Prices and
17 applying that to "define" the entire market segment. As can be seen by reviewing the seasonal
18 peak and off-peak price duration curves for PJM East in Exhibit 28, there is a wide dispersion of
19 actual prices within peak and off-peak load segments. What confidence can Dr. Hieronymus
20 provide to the Commission that the conclusions he derives from his single point estimate would
21 not be reversed if he were to choose the median, for example, rather than the average, in his
22 price distribution graphs? Or if he moves to slightly higher or lower price levels then his
23 selected Destination Market Prices? Indeed, given that Dr. Hieronymus did *not* test other

1 possible prices within each of the ten market segments, he cannot provide an answer to this
2 important question. On the other hand, my sensitivity analysis is explicitly designed to address
3 this question.

4 **Q. Do you have any remarks about the Applicants' or Dr. Hieronymus' comments on the**
5 **25% band you tested?**

6 **A.** The Applicants assert that my 25% deviations off the baseline are larger than the "small
7 variations" contemplated in the Commission's regulations.⁵⁵ However, the differences in the
8 baseline Destination Market Prices and sensitivities in dollar per MWh terms are reasonable
9 and, most important, consistent with actual historical price data, as I described above and
10 highlighted in Exhibit 28. The Destination Market Prices used in my baseline analysis and
11 sensitivities range from \$34 to \$156 per MWh for PJM East, and \$32 to \$141 per MWh for PJM
12 Pre-2004 and PJM Expanded.

13 Dr. Hieronymus claims that the wide range of his Destination Market Prices is sufficient
14 for the Commission to conclude that his analysis reflects a "full range of results."⁵⁶ Even
15 though he may have picked up results associated with the outer bounds by using a wider
16 spread of prices his analysis is by no means more thorough than that suggested by the
17 combination of my baseline and sensitivity analyses. Exhibit 29 and Exhibit 30, respectively,
18 show the summer supply curve for PJM East and indicators for each Destination Market Price I
19 used in the baseline and sensitivities as compared to Dr. Hieronymus' assumptions and

⁵⁵ Answer at 18.

⁵⁶ Dr. Hieronymus Supplemental Testimony at 18.

1 selection of Destination Market Prices. The results show that he tested far fewer points than I
2 tested.

3 **Q. Did you perform a supplemental sensitivity analysis taking into account the**
4 **corrections and modifications to the generation input database you discussed previously?**

5 **A.** Yes. I performed such an analysis, and it confirms the results of the original baseline and
6 supplemental analyses: the Applicants' original proposal to divest 5,500 MW does not cure the
7 market screen failures in all market segments. My supplemental -25% sensitivity analysis,
8 summarized in Exhibit 35, indicates that the merger causes screen failures in 4 out of 10 market
9 segments in PJM East, 8 out of 10 in PJM Pre-2004 and 3 out of 10 in PJM Expanded. Similarly,
10 my +25% sensitivity analysis, summarized in Exhibit 36, indicates that the merger would cause
11 even more screen failures in 9 out of 10 market segments in PJM East, in 9 out of 10 market
12 segments Pre-2004 PJM, and in 2 out of 10 market segments in PJM Expanded.

13 My supplemental -25% sensitivity analysis suggests that the Applicants would need to
14 divest an additional 700 MW in PJM East, 1,800 MW in PJM Pre-2004 and 500 MW in PJM
15 Expanded to cure screen failures. My supplemental +25% sensitivity analysis suggests that the
16 Applicants would need to divest over 1,600 MW in PJM East, 1,400 MW in Pre-2004 and over
17 600 MW in PJM Expanded to cure all screen failures.

18 **4.3 Capacity Credit Market**

19 **Q. Do you agree with Dr. Hieronymus' comments on your allocation of import**
20 **transmission capacity?**

21 **A.** No. Dr. Hieronymus' allocation of import capacity to four equally-sized parties having
22 *no* capacity located in PJM is unrealistic. I presented two alternative analyses with the intention

1 of modeling balanced perspectives. First (Scenario 1), I allocated the import capacity equally to
2 all suppliers within the PJM market. Second (Scenario 2), I allocated import capacity to the
3 existing four largest suppliers within the PJM market. It is this second allocation with which
4 Dr. Hieronymus is concerned. Dr. Hieronymus contends "it is hard to justify the notion that
5 Dominion and AEP, both of whom have enough capacity to meet their ICAP requirements,
6 would contract for a quarter of import capacity. The same is true for PPL and APS."⁵⁷ Dr.
7 Hieronymus claims that there is no justification for assigning control of capacity from external
8 markets to large existing PJM suppliers like Dominion and AEP, given the extent of resources
9 they already control within PJM.

10 However, Dr. Hieronymus assumes that PJM suppliers will seek to import capacity into
11 PJM solely to meet their obligation as load serving entities. He overlooks the fact that a supplier
12 may import capacity into PJM for resale in PJM's Capacity Credit market. Indeed, many of the
13 larger suppliers in PJM have active power trading businesses, as do the Applicants. Control of
14 import capacity for resale into the PJM Capacity Credit market would be a natural part of their
15 overall business strategy in trading capacity and arbitraging market opportunities, especially if
16 suppliers can earn a higher price for capacity in PJM than in neighboring markets. Thus, there
17 is a legitimate basis for allocating import capacity as I have done. In contrast, Dr. Hieronymus
18 offers no reason why he allocated import capacity to four entities with *no* capacity holdings
19 within PJM. In my opinion, this is an unrealistic allocation used solely for the purpose of
20 mathematically suppressing overall HHI levels by introducing new suppliers and diluting

⁵⁷ Dr. Hieronymus' Supplemental Testimony at 30.

1 market concentration. His assumption effectively creates a hypothetical market structure that
2 allows the Applicants to pass the market screens more easily.

3 **Q. Did you prepare a supplemental Competitive Analysis Screen for PJM's Capacity**
4 **Credit market?**

5 **A. Yes.**

6 **Q. What modifications did you make?**

7 **A.** To correct for the inadvertent error of saving the incorrect exhibits, the supplemental
8 analysis incorporates all of the retirements that I had originally considered (including those that
9 Dr. Hieronymus corrected in his Supplemental Testimony and one additional unit he had
10 forgotten to modify), based on PJM's retirement list as of March 24, 2005. In addition, I
11 incorporated in my analysis the treatment of CESI capacity in accordance with the information
12 provided by PHI in its protest. Other changes to Dr. Hieronymus' ICAP database upon which I
13 based my UCAP analysis include:

- 14 • correction of assignment of control for several plants, as was the case with the
15 Kendall facility, Pottstown landfill, Deep Creek, Piney, and Westwood Generating
16 Station;
- 17 • correction for the appropriate location of several plants in the case of Bayonne Cogen
18 Tech, Newark Bay, and Bethlehem (CIV); and
- 19 • addition of PPL's Lower Mount Bethel unit to PJM East.

20 **Q. Please review the results of your supplemental Competitive Analysis Screen for the**
21 **Capacity Credit market.**

22 **A.** Following the same approach I used in my initial analysis, and incorporating the

1 corrections described above in the ICAP database provided by the Applicants on which I relied,
 2 PJM Expanded still experiences egregious market screen failures even after accounting for Dr.
 3 Hieronymus' originally proposed mitigation. In PJM Expanded, the post-merger HHI levels
 4 range from 1,029 to 1,102, with HHI changes in the proximity of 200 points in each of the
 5 scenarios analyzed. In PJM Expanded Scenario 1, the mitigation of the screen failures would
 6 require, at the minimum, a divestiture of some 7,150 MW (6,597 MW on a UCAP adjusted basis)
 7 of capacity. This represents 4,250 MW over the amount proposed by the Applicants.⁵⁸
 8 Mitigation of market screen failures in PJM Expanded Scenario 2 would require the divestiture
 9 of at least 3,620 MW (3,340 MW on a UCAP basis), which is 720 MW over the amount proposed
 10 by the Applicants.⁵⁹ The net effect of the compounded adjustments (retirements, new
 11 construction, as well as the adjustments detailed earlier) now translates into slight market
 12 screen passes in PJM East. Exhibit 41 illustrates the resultant HHI and the required mitigation
 13 under the initial mitigation plan for this aspect of my supplemental analysis.

14 **Q. Have you taken into account Dr. Hieronymus' comments on your treatment of new**
 15 **entry and retirements in your supplemental analysis of the Capacity Credit market?**

16 **A.** Yes. Dr. Hieronymus states that he could not identify the new additions and retirements
 17 in my working papers for the Capacity Credit market analysis. These changes were
 18 inadvertently not saved in the final set of exhibits and working papers. However, my
 19 supplemental UCAP analysis for the PJM Capacity Credit market as discussed above and
 20 further below (see Exhibit 39 through Exhibit 42) shows that these corrections, along with other

⁵⁸ When compared to Dr. Hieronymus' suggested divestiture, this represents 4,950 MW over and above the figure suggested by Dr. Hieronymus.

⁵⁹ This is 1,430 MW over the 2,200 MW suggested by Dr. Hieronymus.

1 adjustments, do not substantially change my original conclusions for PJM's Capacity Credit
2 market.

3 **Q. How does PJM calculate UCAP?**

4 **A.** PJM calculates UCAP by taking each unit's actual historical forced outage rate adjusted
5 for demand (also known as EFORD) and multiplying it by the seasonal capacity of the unit,
6 based on its capacity rating tests.

7 **Q. Why did you use GADS' class average EFOR figures in your estimates of UCAP?**

8 **A.** *PJM Unforced Capacity Market Business Rules* specify unit-specific EFORD as the
9 appropriate forced outage rate. However, I intentionally used class-average EFOR levels
10 (versus class average EFORD) from NERC's latest GADS report because I believe it serves as a
11 better proxy for actual, unit-specific forced outage rate data and thus provides a more accurate
12 depiction of market conditions. Throughout my professional experience, I have found a
13 consistent trend where actual EFORD used in the unit-specific UCAP calculations by PJM and
14 the New York ISO⁶⁰ has been higher than the class averages published by NERC, especially for
15 older, less efficient units because of the natural degradation in technology over time. However,
16 because I do not have access to actual EFORD for all plants in PJM, I used GADS data, reviewed
17 the available class average statistics, and chose a forced outage metric that closely resembled
18 what I believe to be the best indicator of actual forced outage rates. Class average EFOR -
19 which is typically higher than class average EFORD - was selected for my proxy of actual
20 outage rates in the UCAP calculation.

⁶⁰ Both PJM and New York ISO use UCAP in their respective capacity markets.

1 Q. Does the use of class average EFOR versus EFORd from GADS data materially affect
2 your conclusions?

3 A. No. I tested my Competitive Analysis Screen using Dr. Hieronymus' preferred class-
4 average EFORd. The use of class average EFORd versus class average EFOR does not
5 materially change the conclusions I reached in my original testimony. The results comparing
6 the materiality of using class average EFORd vis-à-vis EFOR are captured in Exhibit 41 (class
7 average EFOR results) and Exhibit 42 (class average EFORd results).

8 Q. Please summarize your conclusions with respect to the Capacity Credit market.

9 A. After accounting for Dr. Hieronymus' comments and various errors identified in his
10 input database, my conclusion remains the same as in my initial testimony: the Applicants'
11 proposed mitigation plan for the Capacity Credit market is grossly inadequate. The
12 Commission cannot find that the proposed merger is consistent with the public interest unless
13 the Applicants agree to divest additional amounts of generation and/or sell capacity rights to
14 the nuclear generation along with the energy entitlements.

15 **4.4 Market Share Screen**

16 Q. Given the Applicants' comments, do you still find that the market share screen from
17 the Section 205 market-based rate test is relevant to this proceeding?

18 A. Yes. I believe that the Commission can and should consider the competitive effects of
19 the merger using other metrics that the Commission has approved and is using in Section 205
20 proceedings, especially because the Applicants concede that they soon will be seeking
21 authorization to continue to charge market-based rates.⁶¹ It follows that the main purpose for

⁶¹ See Answer at 77.

1 testing the market share screen in the context of this merger proceeding is to ensure that the
2 mitigation required and selected for the proposed merger is also sufficient for the Applicants'
3 market-based rate authorization.

4 **Q. Do you agree with Dr. Hieronymus' comment on your seasonal market share screens**
5 **using the market-based rate ("MBR") approach?**

6 **A.** Dr. Hieronymus' only comment relates to the priority allocation⁶² of external capacity to
7 the Applicants' total Uncommitted Supply in my analysis of seasonal market shares. If Dr.
8 Hieronymus had completed the numerical analysis, he would have realized that his approach
9 does not result in any substantial change in MWs of Uncommitted Supply for the Applicants.
10 Furthermore, modifying my analysis to account for the Applicants' newly proposed mitigation
11 of 6,600 MW does not change my overall conclusions regarding the inadequacy of the proposed
12 divestiture to cure the seasonal Market Share Screen failures.

13 Using Dr. Hieronymus' own filing for Exelon's MBR and (for the sake of argument)
14 assuming that PSEG has no firm transmission reservations into PJM from NYISO,⁶³ the
15 difference in import allocation is only 1,008 MW. As summarized in Exhibit 43, this would not
16 change my conclusions regarding the Market Share Screen failures. The Applicants still have
17 seasonal market shares well in excess of 20% in all four seasons post-mitigation in PJM
18 Expanded.

19 The Applicants have about 1,700 MW of installed capacity in the First Tier markets of
20 PJM Expanded, as compared to a simultaneous import limit (SIL) of 7,500 MW and native

⁶² Dr. Hieronymus' Supplemental Testimony at 17.

⁶³ Which is an assumption favorable to the Applicants.

1 capacity holdings (within PJM Expanded) of approximately 40,000 MW. Hence, a different
2 allocation of imports is unlikely to have a material effect on whether or not the Applicants pass
3 or fail the FERC's Market Share Screen. Nevertheless, I have taken the Applicants' comment
4 into account in my supplemental analysis. In addition, I have included the newly proposed
5 1,100 MW of additional mitigation (in spite of the fact that it is conditioned on Commission
6 approval without a hearing).

7 Based on the information publicly available, I was able to modify the import allocation
8 for the Applicants' external generation to include the following:

- 9 • For Exelon's asset in MISO, I use information in their Triennial Review⁶⁴ pending
10 before the FERC. The Applicants' technical witness in that proceeding (Dr.
11 Hieronymus) states that: "Since the Applicants, in 2005, have a firm transmission
12 reservation from IP to ComEd to import the output of Clinton, I allocated this
13 amount of transmission import capability into Expanded PJM to Applicants, but also
14 took into consideration that a 370 MW transmission reservation from IP to PJM had
15 already been included in base flows."
- 16 • There are no recent FERC filings from which to determine the Applicants' firm or
17 network reservations for PSEG's assets in the NYISO. Thus, I allocated the import
18 capacity on a prorated basis with other assets in NYISO, without any priority
19 allocation. I used the import capacity of 2,200 MW⁶⁵ from NYISO into PJM as a
20 reference point in my analysis. Thus, PSEG was conservatively allocated a portion of

⁶⁴ See Page 12, Exelon Generation Company, LLC, Triennial Review, FERC ¶ ER-98-1734-007 (2004).

⁶⁵ See http://www.nyiso.com/services/documents/studies/pdf/summer_2005_op_study_oc_approved_042805.pdf.

1 this NYISO to PJM transmission capacity, based on its relative market share in
2 NYISO.⁶⁶

3 As highlighted in Exhibit 43, even with these adjustments to the import allocation
4 methodology *and* the additional 1,100 MW of divestiture conditionally proposed by the
5 Applicants, the Applicants' seasonal market shares are all still well above the 20% threshold
6 required to pass the test. The Applicants would need to divest 2,000 MW of generation to pass
7 all four seasonal market share screens in addition to the 6,600 MW of generation divestitures in
8 the new mitigation plan.

9 **Q. What is the significance of these results?**

10 **A.**These results are integrally related to the level of mitigation that is required in this
11 merger proceeding. The Commission ought not to fashion a remedy in this proceeding that
12 allows the Applicants to have such high market shares post-merger. The Commission should
13 fashion a remedy that will enable the Applicants to pass the MBR test. Applicants' market
14 share inevitably must be discussed, and there is no justification for proceeding in piecemeal
15 fashion and requiring all interested parties to once again dig into the generation data and input
16 assumptions within the relevant PJM markets once the Applicants file their MBR application.

17 **4.5 Concentration Test of Spare Capacity**

18 **Q. Did you revise your Concentration Test of Spare Capacity for the various**
19 **modifications made to the DPT and Competitive Analysis Screen of PJM's Capacity Credit**
20 **market?**

21 **A.**Yes. The same underlying database and assumptions are used to derive the HHI

⁶⁶ See http://www.nyiso.com/services/documents/studies/pdf/lcr_report_3_23_2005.pdf.

1 calculations in the Concentration Test of Spare Capacity as in the Delivered Price Test. Thus, all
2 the changes made to the DPT were also included in my supplemental Concentration Test of
3 Spare Capacity. The methodology and assumptions I used in conducting this test are identical
4 to those described in my original testimony.

5 **Q. What are the results of your supplemental Concentration Test of Spare Capacity?**

6 **A.** The conclusions have not materially changed from the original analysis, which serves to
7 underscore the market power concerns of the proposed merger vis-à-vis price setting
8 capabilities, especially at peak conditions. The results still indicate that the HHIs tend to
9 increase as we move further up the supply curve (and price levels rise) in *all* markets. The
10 Applicants fail the Concentration Test for Spare Capacity for *all* periods tested in *all* three
11 markets - PJM East, PJM Pre-2004, and PJM Expanded. Moreover, the post-merger HHIs for
12 PJM East during summer peaks are as high as 4,200 with the changes in HHI exceeding 1,900.
13 The results clearly indicate that the Applicants would control a market share of 30% and above
14 in PJM Expanded during summer, winter and shoulder peaks at the top of the supply curve.
15 Furthermore, they would own substantial capacity (60% and above) during summer peaks in
16 PJM East at the top of the supply curve. They could use this capacity, if conditions warrant, to
17 raise prices, perhaps substantially, and extract market power rents. Exhibit 44 contains the
18 results for the supplemental Concentration Test of Spare Capacity.

19 **5 Concluding remarks**

20 **Q. On the basis of your supplemental analysis, do you believe that a hearing is**
21 **warranted?**

22 **A.** Yes. My analysis has shown that the new proposed divestment of 6,600 MW of

1 generation is not adequate under all plausible buyer scenarios with the Applicants' proposed
2 relaxed buyer restrictions. At the same time, my supplemental analysis shows that the
3 Applicants' original mitigation of 5,500 MW with the original buyer restrictions is still
4 inadequate to cure all screen failures, even under Dr. Hieronymus' preferred assumptions with
5 respect to mitigation allocation (for energy) or use of class average EFORD (for PJM's Capacity
6 Credit market).

7 Moreover, there are numerous issues of material fact that require a hearing to determine
8 whether the merger as proposed will be consistent with the public interest. Given the
9 magnitude of the post-merger market power that will result from the merger as currently
10 proposed, I urge the Commission not to approve the merger unless additional safeguards can
11 be put in place as discussed in my testimony or as developed at a hearing.

12 **Q. Does this conclude your Supplemental Testimony?**

13 **A. Yes.**

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**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

State of Wyoming)
)
County of Natrona) ss.

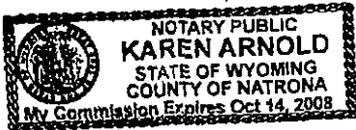
AFFIDAVIT OF JULIA FRAYER

I, Julia Frayer, being duly sworn, depose and state that the statements contained in the supplemental testimony and exhibits of Julia Frayer, are true and correct to the best of my knowledge, information and belief.



Julia Frayer

SUBSCRIBED AND SWORN TO BEFORE ME, this the 26th day of May, 2005.





Notary Public,
State of Wyoming

6 Exhibits

Exhibit 25. Catalogue of Errors, Discrepancies, and Possible Omissions in Generation and ICAP databases submitted in Dr. Hieronymus' original Working Papers

A- Errors in the Generation and ICAP databases

1- Ownership/Control - (Discrepancies involve over 1,200 MW)

- **Linden - 24 MW**, controlled by PSEG. Dr. Hieronymus, in his generation database has listed one of the five combustion turbine peaker units totaling 24 MW, as retired. However, neither PSEG's website⁶⁷ nor the PJM ISO make any reference to this retirement.
- **Cat Tractor - 66 MW**, controlled by Reliant Energy in PJM Pre-2004, should be retired according to PJM ISO data.⁶⁸ (*Incorporated in my supplemental analysis*).
- **Piney - 29 MW and Deep Creek - 19 MW**, plants listed as controlled by Reliant but actually controlled by Brascan based on transaction announced in January of 2005⁶⁹. (*Incorporated in my supplemental analysis*).
- **Rock Springs (Cecil County) - 610 MW**, CONED's share of the plant (50%) is not listed. (*Incorporated in my supplemental analysis*).
- **Allens Falls, Baldwinsville, Beardslee, Beebee Island, Belfort, Bennetts Bridge, Black River, Black River Hydro, Blake, Browns Falls, Chasm, Colton, Deferiet, E J West, Eagle, East Norfolk, Eel Weir, Effley, Elmer, Ephratah, Feeder Dam, Five Falls, Flat Rock, Franklin, Franklin Hydro, Fulton, Glenwood, Granby, Hannawa, Herrings, Heuvelton, High Falls, Higley, Hogansburg, Hydraulic Race, Inghams, Johnsonville, Kamargo, Lighthouse Hill, Macomb, Minetto, Moshier, Norfolk, Norwood, Oak Orchard, Oswegatchie, Oswego County, Oswego Falls East, Oswego Falls West, Parishville, Piercefield, Prospect, Rainbow Falls, Raymondville, Schaghticoke, School Street, Schuylerville, Sewalls, Sherman Island, Soft Maple, South Colton, South Edwards, Spier Falls, Stark, Stewarts Bridge, Sugar Island, Talcville, Taylorville, Trenton Falls, Varick, Waterport, Yaleville (over 650 MW)**, listed as controlled by Niagara Mohawk in Dr. Hieronymus' generation database, actually controlled by an affiliate of Brascan Power which announced⁷⁰ the acquisition of the plants from Reliant on May 8th 2004 who in turn had acquired them through their Orion purchase in 2001,⁷¹

⁶⁷ See <http://www.pseg.com/companies/fossil/plants/linden.jsp>.

⁶⁸ See <http://www.pjm.com/planning/project-queues/gen-retire.html>. The March 24, 2005 update of this report (which I used in my original testimony) had this unit retirement identified already.

⁶⁹ See <http://www.brascanpower.com/NewsEvents/pr-1-26-2005.htm>.

⁷⁰ See <http://www.reliant.com/corporate/news/detail/1,1004,CID447499,00.html?2id=&1id=227037&xid=307474>.

⁷¹ See <http://www.reliant.com/corporate/news/detail/1,1004,CID62615,00.html?2id=&1id=227037&xid=307474>.

who had acquired them from Niagara Mohawk in 1999. Interestingly, a similar mistake is made in the ICAP database although it had been updated up through the Reliant purchase of Orion. Also the Reliant sale to Brascan listed the **Carr Street Generating Station - 125 MW**, which is not listed in either the generation or ICAP database, but is operational per NYISO's data.⁷² (*Incorporated current supplier attribution and addition of Carr Street in my supplemental analysis*).

2 - Geographic Market - (Discrepancies involve over 3,400 MW)

- **Camden County Rr NUG - 23 MW**, listed under PJM East in the generation database but not listed as such in the ICAP database. (*Not incorporated in my supplemental analysis due to lack of information for accurate resolution*).
- **Composite (JC) NUG - 12 MW**, listed under PJM East in the generation database but not listed as such in the ICAP database. (*Not incorporated in my supplemental analysis due to lack of information for accurate resolution*).
- **Hamm's Landfill - 1 MW**, listed under PJM East in the generation database but not as such in the ICAP database. (*Not incorporated in my supplemental analysis due to lack of information for accurate resolution*).
- **Bayonne Cogen Tech -160 MW**, listed under PJM East in the generation database but not as such in the ICAP database. (*Incorporated in my supplemental analysis based on confirmation from Energy Velocity that the plant is located to the East of the PJM East Interface*).
- **Newark Bay - 156 MW**, listed under PJM East in the generation database but not as such in the ICAP database. (*Incorporated in my supplemental analysis based on confirmation from Energy Velocity that the plant is located to the East of the PJM East Interface*).
- **Gr. Falls - 11 MW**, listed under PJM East (CASm node "NUGs in PJM East" in the generation database, and controlled by PSEG and not in PJM East in the ICAP database). (*Not incorporated in my supplemental analysis due to lack of information for accurate resolution*).
- **Kinsley - 3 MW**, listed as controlled by "NUG" and under PJM East in the generation database, is listed as controlled by PSEG and not in PJM East in the ICAP database. (*Not incorporated in my supplemental analysis due to lack of information for accurate resolution*).
- **Marcus Hook - 850 MW**, controlled by FPL, listed as outside PJM East by Dr. Hieronymus. However, our analysis of the location of this facility vis-à-vis PJM ISO's defining transmission elements, suggests that unit is in PJM East. See Exhibit 27.
- **Bethlehem Steel NUG - 124 MW**, controlled by Constellation, listed in PJM East by Dr. Hieronymus. However our analysis of the location of this facility vis-à-vis PJM ISO's defining transmission elements, suggests that this unit is outside PJM East. See Exhibit 27.

⁷² See NYISO's Goldbook (2004).

- **Warren Country Rr NUG - 10 MW**, controlled by FirstEnergy, listed in PJM East by Dr. Hieronymus. However our analysis of the location of this facility vis-à-vis PJM ISO's defining transmission elements, suggest that this unit is outside PJM East. See Exhibit 27.
- **Niles - 276 MW**, controlled by Reliant is listed in PJM Expanded (CASM node Duquesne Light and Power Control Area), but is actually in MISO (FirstEnergy control area) *(Incorporated in my supplemental analysis)*.
- **New Castle - 315 MW**, controlled by Reliant, is listed in PJM Expanded (CASM node Duquesne Light and Power Control Area), but is actually in MISO (FirstEnergy control area) *(Incorporated in my supplemental analysis)*.
- **Avon Lake - 796 MW**, controlled by Reliant, is listed in PJM Expanded (CASM node Duquesne Light and Power Control Area), but is actually in MISO (FirstEnergy control area) *(Incorporated in my supplemental analysis)*.
- **Fremont - 700 MW**, controlled by Reliant, is listed in PJM Expanded (CASM node Duquesne Light and Power Control Area), but is actually in MISO (FirstEnergy control area) *(Incorporated in my supplemental analysis)*.
- **First Tier Markets**. We have noted some discrepancies between the total capacities of the First Tier markets between Dr. Hieronymus' generation database and other primary sources, please refer to Exhibit 26.

2 - Geographic Market

- **Camden County Rr NUG - 23 MW**, listed under PJM East in the generation database but not listed as such in the ICAP database. *(Not incorporated in my supplemental analysis due to lack of information for accurate resolution)*.
- **Composite (JC) NUG - 12 MW**, listed under PJM East in the generation database but not listed as such in the ICAP database. *(Not incorporated in my supplemental analysis due to lack of information for accurate resolution)*.
- **Hamm's Landfill - 1 MW**, listed under PJM East in the generation database but not as such in the ICAP database. *(Not incorporated in my supplemental analysis due to lack of information for accurate resolution)*.
- **Bayonne Cogen Tech - 160 MW**, listed under PJM East in the generation database but not as such in the ICAP database. *(Incorporated in my supplemental analysis based on confirmation from Energy Velocity that the plant is located to the East of the PJM East Interface)*.
- **Newark Bay - 156 MW**, listed under PJM East in the generation database but not as such in the ICAP database. *(Incorporated in my supplemental analysis based on confirmation from Energy Velocity that the plant is located to the East of the PJM East Interface)*.
- **Gr. Falls - 11 MW**, listed under PJM East (CASM node XXX in the generation database, is listed as controlled by PSEG and not in PJM East in the ICAP database). *(Not incorporated in my supplemental analysis due to lack of information for accurate resolution)*.

- **Kinsley - 3 MW**, listed as controlled by "NUG" and under PJM East in the generation database, is listed as controlled by PSEG and not in PJM East in the ICAP database. *(Not incorporated in my supplemental analysis due to lack of information for accurate resolution).*
- **Marcus Hook - 850 MW**, controlled by FPL, listed as outside PJM East by Dr. Hieronymus. However, our analysis of the location of this facility vis-à-vis PJM ISO's defining transmission elements, suggests that it is in PJM East. See Exhibit 27.
- **Bethlehem Steel NUG - 124 MW**, controlled by Constellation, listed in PJM East by Dr. Hieronymus. However our analysis of the location of this facility vis-à-vis PJM ISO's defining transmission elements, suggest that it is outside PJM East. See Exhibit 27.
- **Warren Country Rr NUG - 10 MW**, controlled by FirstEnergy, listed in PJM East by Dr. Hieronymus. However our analysis of the location of this facility vis-à-vis PJM ISO's defining transmission elements, suggest that it is outside PJM East. See Exhibit 27.

B - Discrepancies between the Generation and ICAP databases as a results of reliance on Supplier column in Generation database for assignment of ownership/control of capacity⁷³

1- Ownership - (Discrepancies involve over 2,200 MW)

- **Pottstown-Landfill - 10 MW**, assigned to BIO-ENERGY in the generation database but listed in the ICAP database as controlled by PSEG-Exelon. *(Incorporated in my supplemental analysis).*
- **Newark Boxboard - 52 MW**, assigned to FirstEnergy in the ICAP database and to Calpine in the generation database.⁷⁴
- **Parlin NUG - 114 MW**, assigned to FirstEnergy in the ICAP database and to Calpine in the generation database.⁷⁵
- **Grays Ferry NUG - 150 MW**, listed as controlled by "NUG" in the ICAP database but listed under NRG in the generation database. *(Not incorporated in my supplemental analysis due to lack of information for accurate resolution).*

⁷³ Dr. Hieronymus' generation database has a specified field for adjusting for long-term purchases and sales which would logically imply that the Supplier field is representing entity controlling the capacity prior to adjustment for purchases and sales. If any adjustment had in fact been made in the Supplier field, those adjustments have not been documented sufficiently, thus rendering verification and corrections so much more difficult.

⁷⁴ Dr. Hieronymus provides no documentation resolving this inconsistency. However, I note that this discrepancy is in fact an accurate reflection of the long term purchases and sales for this unit based on proprietary information that is not necessarily available to other intervenors trying to perform independent analyses.

⁷⁵ Dr. Hieronymus provides no documentation resolving this inconsistency. However, I note that this discrepancy is in fact an accurate reflection of the long term purchases and sales for this unit based on proprietary information that is not necessarily available to other intervenors trying to perform independent analyses.

- **Westwood Generating Station - 34 MW**, listed as controlled by PPL in the generation database but listed as controlled by WPS in the ICAP database. *(Incorporated in my supplemental analysis).*
- **Allegheny Hydro - 49 MW, Batavia - 55 MW, Ogdensburg - 57 MW, Massena - 57 MW, Independence - 1080 MW, Sterling - 57 MW**, listed as controlled by Sithe in the generation database but listed as controlled by Dynegy in the ICAP database. *(Incorporated in my supplemental analysis).*
- **Potomac River Plant - 482 MW**, listed as controlled by PEPCO, actually controlled by Mirant. *(Incorporated in my supplemental analysis).*
- **Morgantown - 50 MW**, waste-coal, listed as controlled by Dominion (the current operator and majority owner) in the ICAP database but listed under Allegheny in generation database (presumably because of Monongahela Power's long-term purchases). The other minority owners are not represented in either database. Furthermore, Dominion notes that the capacity of this facility is 60 MW as opposed to the 50 MW assumed by Dr. Hieronymus in his generation database and ICAP.⁷⁶ *(Not incorporated in my supplemental analysis, due to lack of information publicly available regarding precise current ownership of capacity and energy rights from the plant).*

C - Possible Omissions in the ICAP database⁷⁷ - (Discrepancies involve over 3,200 MW)

- **Turner Falls Cogen - 20 MW**, listed as controlled by NRG in the generation database but is not listed in the ICAP database.
- **Philadelphia Water Department - 22 MW**, listed as controlled by NRG in the generation database but is not listed in the ICAP database.
- **Eagle Point - 223 MW**, listed as controlled by "NUG" in the generation database (actually controlled by El Paso according to independent data provider, *Energy Velocity*), but is not listed in the ICAP database.
- **Sayreville - 300 MW**, listed as jointly controlled by Tractebel and FPL in the generation database, but is not listed in the ICAP database.
- **Tosco - 172 MW**, listed as controlled by Goldman Sachs in the generation database, but is not listed in the ICAP database.
- **Kimberly Clark - 50 MW**, listed in the generation database as an independent unit, but is not listed in the ICAP database.
- **Merck - 65 MW**, listed in the generation database as an independent unit but is not listed in the ICAP database.
- **Seward - 719 MW**, listed as controlled by Reliant in the generation database but is not listed in the ICAP database.

⁷⁶ See <http://www.dom.com/about/companies/generation/index.jsp>.

⁷⁷ None of these facilities are in the unit level list of the ICAP database. As some of these involve units controlled by the Applicants, I have not incorporated these in my Supplemental Analysis for lack of proper documentation by Dr. Hieronymus. There may be contractual agreements for the capacity or energy of these units that have been embedded in Dr. Hieronymus' database.

- **Grant Town - 80 MW**, listed as controlled by Allegheny is listed in the generation database but is not listed in the ICAP database.
- **Hannibal LK&D - 40 MW**, listed as controlled by Allegheny in the generation database but is not listed in the ICAP database.
- **Springdale - 215 MW**, listed as controlled by Allegheny, in the generation database but is not listed in the ICAP database.
- **Allegheny Hydro1 - 49 MW**, listed as controlled by Dynegy in the generation database but not in the ICAP database.
- **Kendall - 1156 MW**, listed as controlled by NRG in the ICAP database but listed as jointly controlled by Dynegy, LSP, and Minnesota Power in the generation database. Kendall was sold to LSP in September 2004.⁷⁸ Dr. Hieronymus appears to have listed the new ownership in his generation database, but failed to do so in his ICAP database. (*I have corrected for this error and incorporated the new ownership in my supplemental analysis*).
- **Burrows-Lyonsdale - 20 MW**, listed as controlled by Exelon in the generation database but not in the ICAP database.
- **Somerset - 9 MW**, listed as controlled by Exelon in the generation database but not in the ICAP database.
- **Mill Run Wind Farm - 15 MW**, listed as controlled by Exelon in the generation database but not in the ICAP database.
- **Buchanan - 88 MW**, listed in the generation database under PJM Expanded (CASm node APS assets in AEP) but not listed in the ICAP database.

⁷⁸ See <http://ir.nrgenergy.com/phoenix.zhtml?c=121544&p=irol-newsArticle&ID=613549&highlight=>

Exhibit 26. Illustrative example of discrepancies in First Tier market capacity in Dr. Hieronymus' generation database

First Tier Market	Hieronymus' Generation Database (Summer Capacity-MW)	Other Sources (Summer Capacity-MW)	Difference (MW)	Source
NYISO	36,971	38,111	1,140	NYISO 2004 Gold Book
CPL	13,334	13,787	453	CPL Form 714 2004 (Year ending 2003)
DUKE	19,933	22,756	2,823	DUKE Form 714 2004 (Year ending 2003)
MISO	112,079	130,724	18,645	MISO Module E - Resource Adequacy Implementation Workshop, February 23rd 2005
TVA	35,268	36,646	1,378	Energy Velocity
TOTAL	217,585	242,024	24,439	

Non-exhaustive list of discrepancies in Dr. Hieronymus' generation database regarding First Tier market capacity:

Possible Omissions - (Discrepancies involve over 2,385 MW)

- **WPS Beaver Falls - 84 MW**, controlled by WPS in NYISO market but is not listed in the generation database.⁷⁹ (Not incorporated in my supplemental analysis due to lack of information for accurate resolution).
- **Brentwood - 40 MW**, controlled by NYPA in NYISO market but is not listed in the generation database.⁸⁰ (Not incorporated in my supplemental analysis due to lack of information for accurate resolution).
- **Rowan - 925 MW**, controlled by Progress Energy but is not listed in the generation database.⁸¹ The plant is operating and located in the Duke control area.⁸² (Not incorporated in my supplemental analysis due to lack of information for accurate resolution).

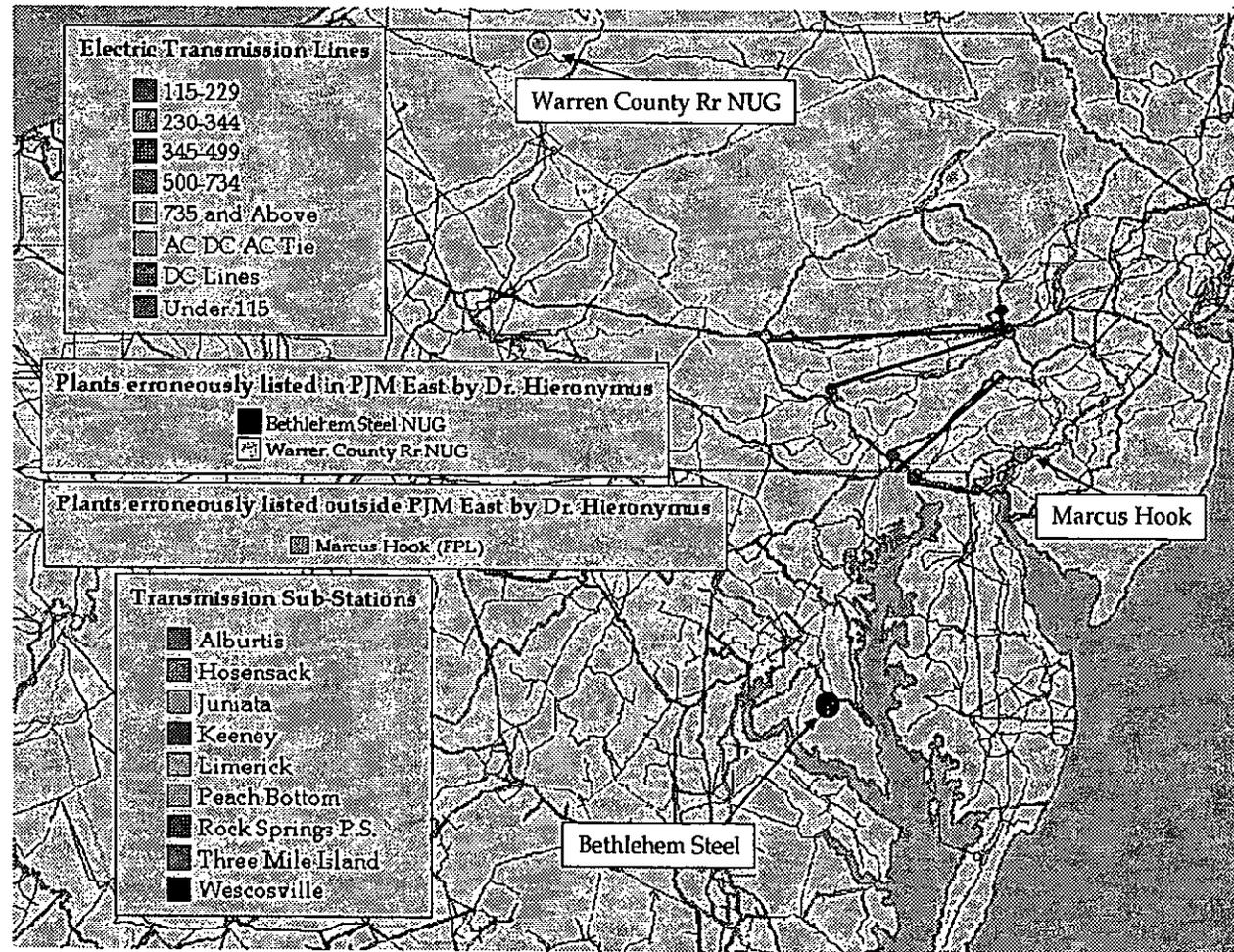
⁷⁹ See <http://www.wpsenergy.com/data/misc/beaverfalls.pdf>; the plant is also listed as operating in NYISO Gold Book 2004 and *Energy Velocity*.

⁸⁰ The plant is also listed as operating in NYISO Gold Book 2004 and *Energy Velocity*.

⁸¹ See <http://www.progress-energy.com/aboutenergy/powerplants/combined.asp>.

⁸² See <http://www.dukepower.com/aboutus/company/servicemap.asp> ; <http://www.progress-energy.com/aboutenergy/coverage/map.asp>.

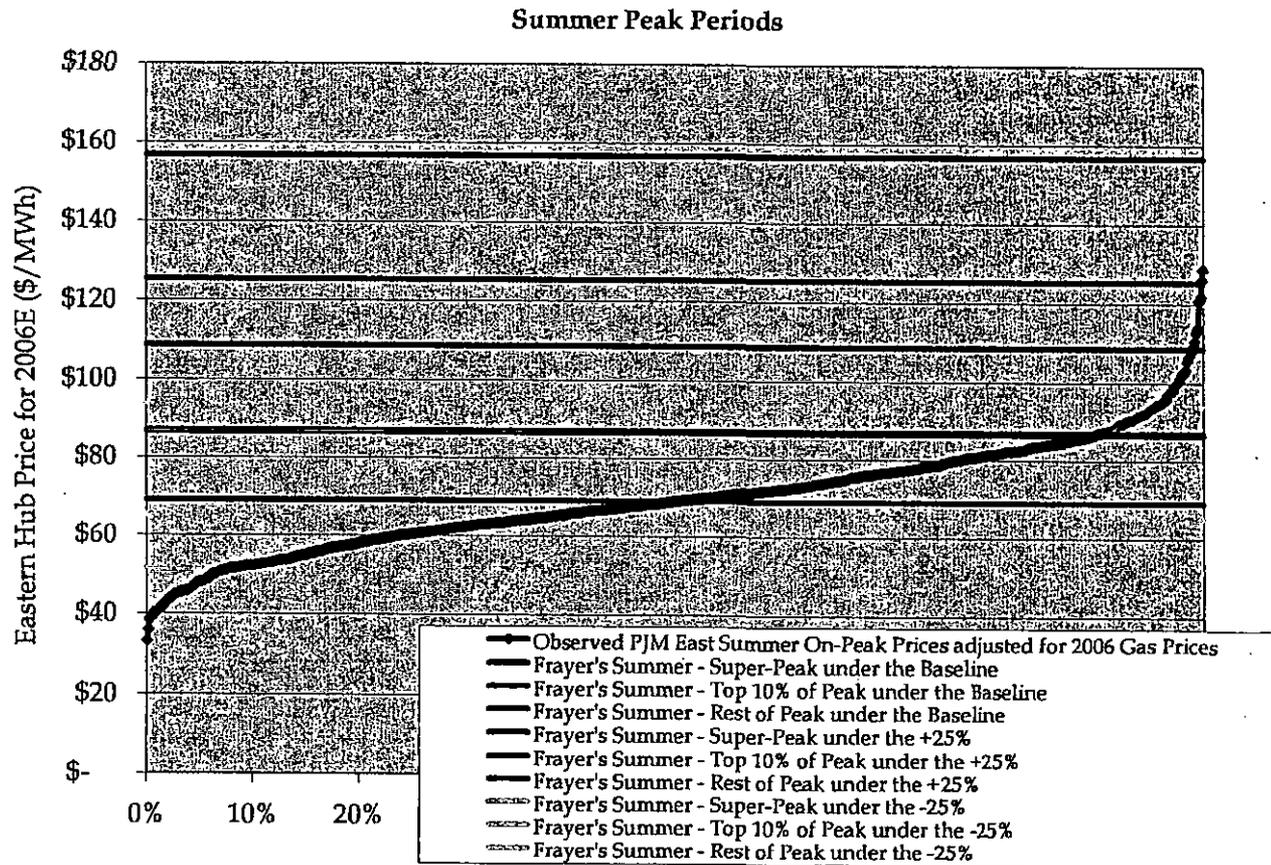
Exhibit 27. PJM East Market Delineation

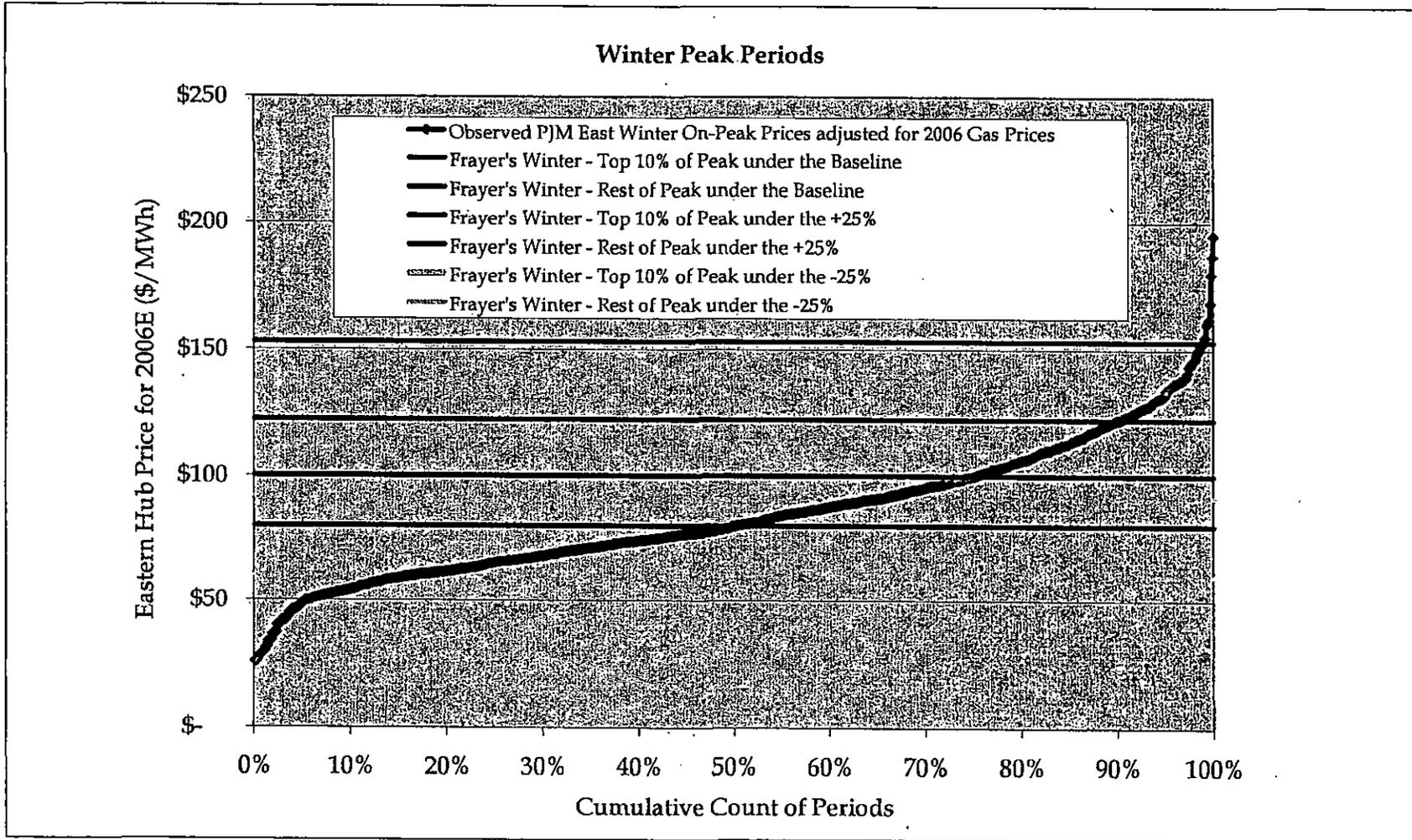


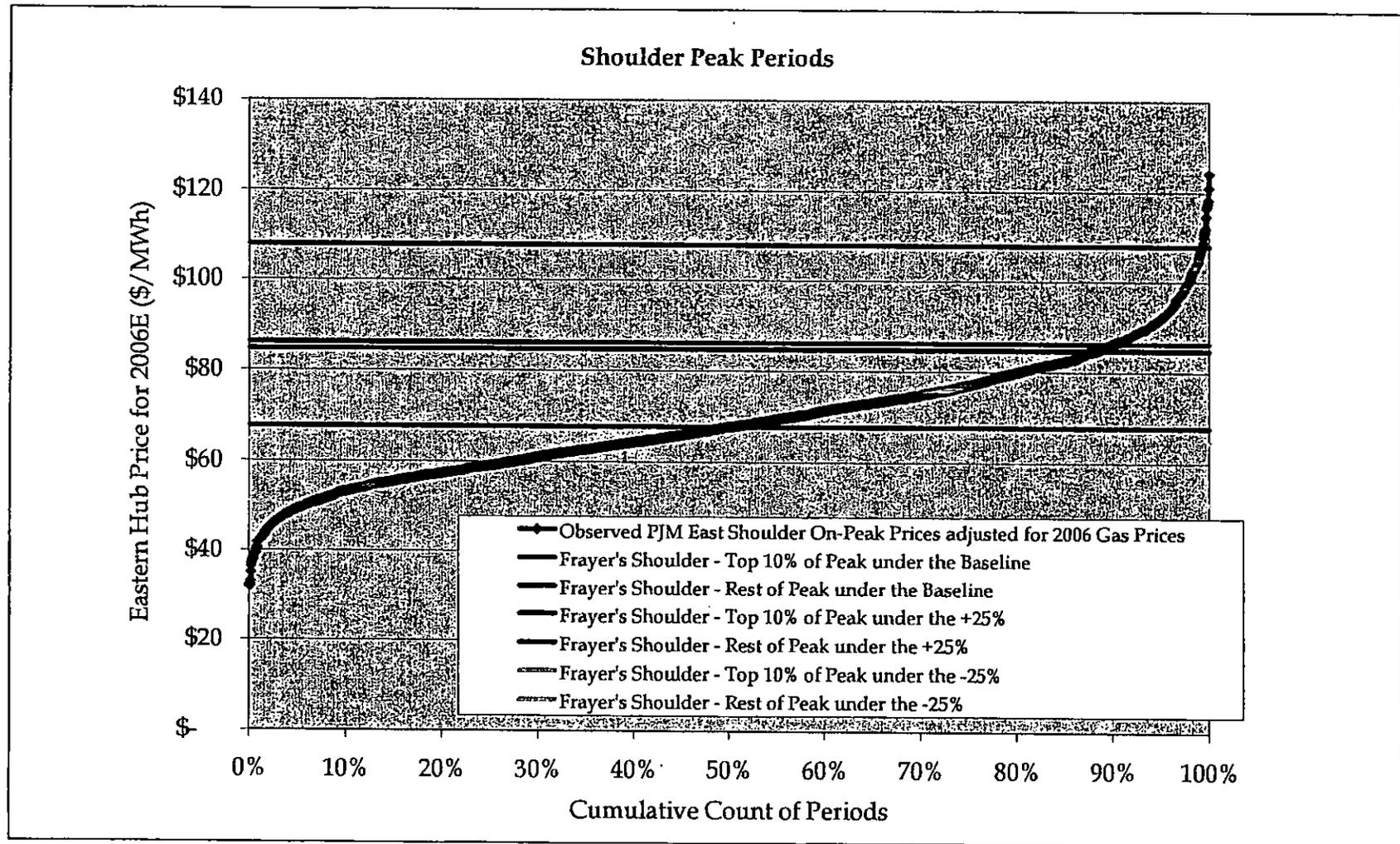
Source: Energy Velocity, PJM ISO

6.1 Destination Market Prices

Exhibit 28. Relating actual prices in PJM East to selected Destination Market Prices (for baseline and sensitivities)







Offpeak Periods

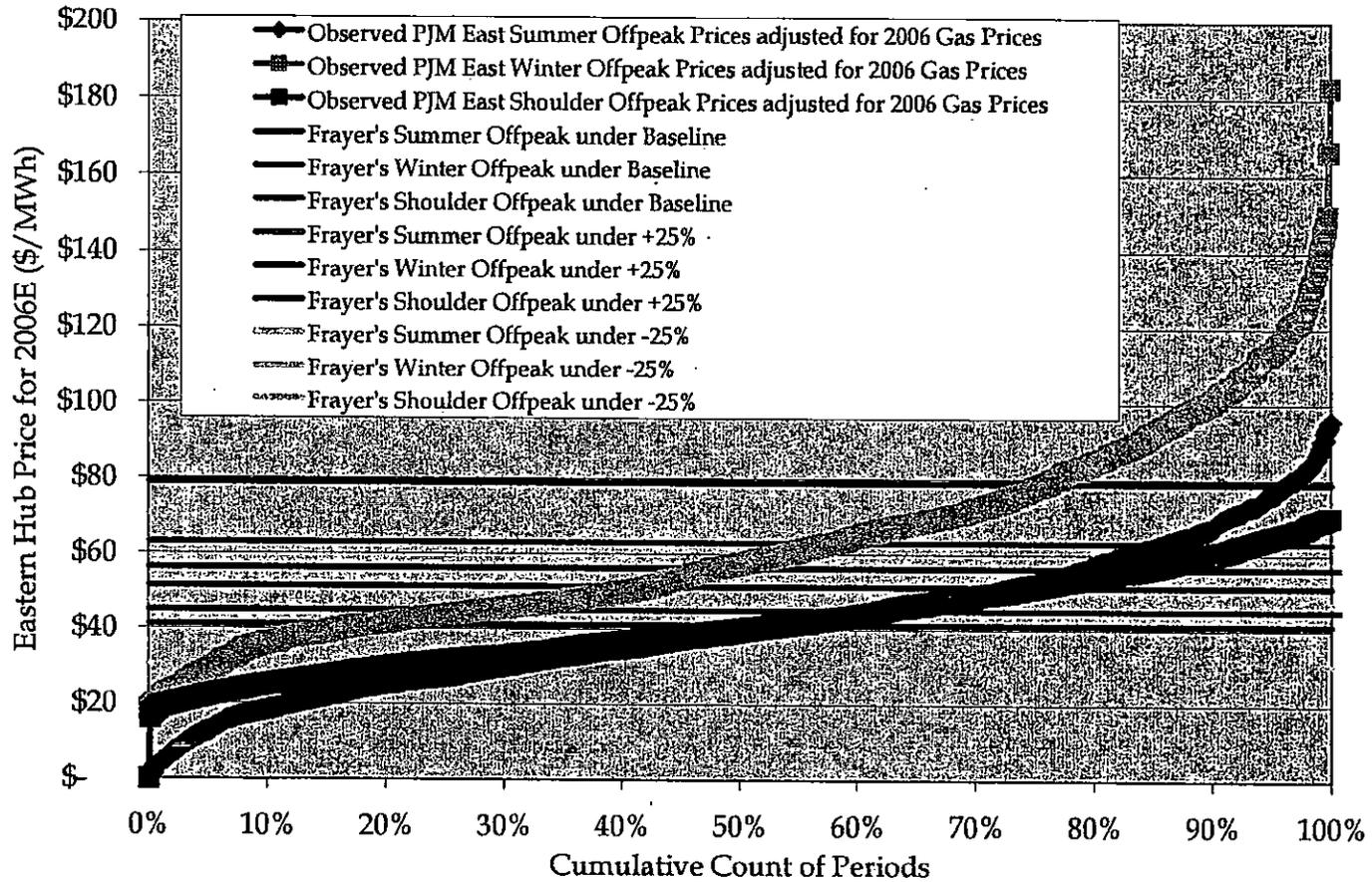
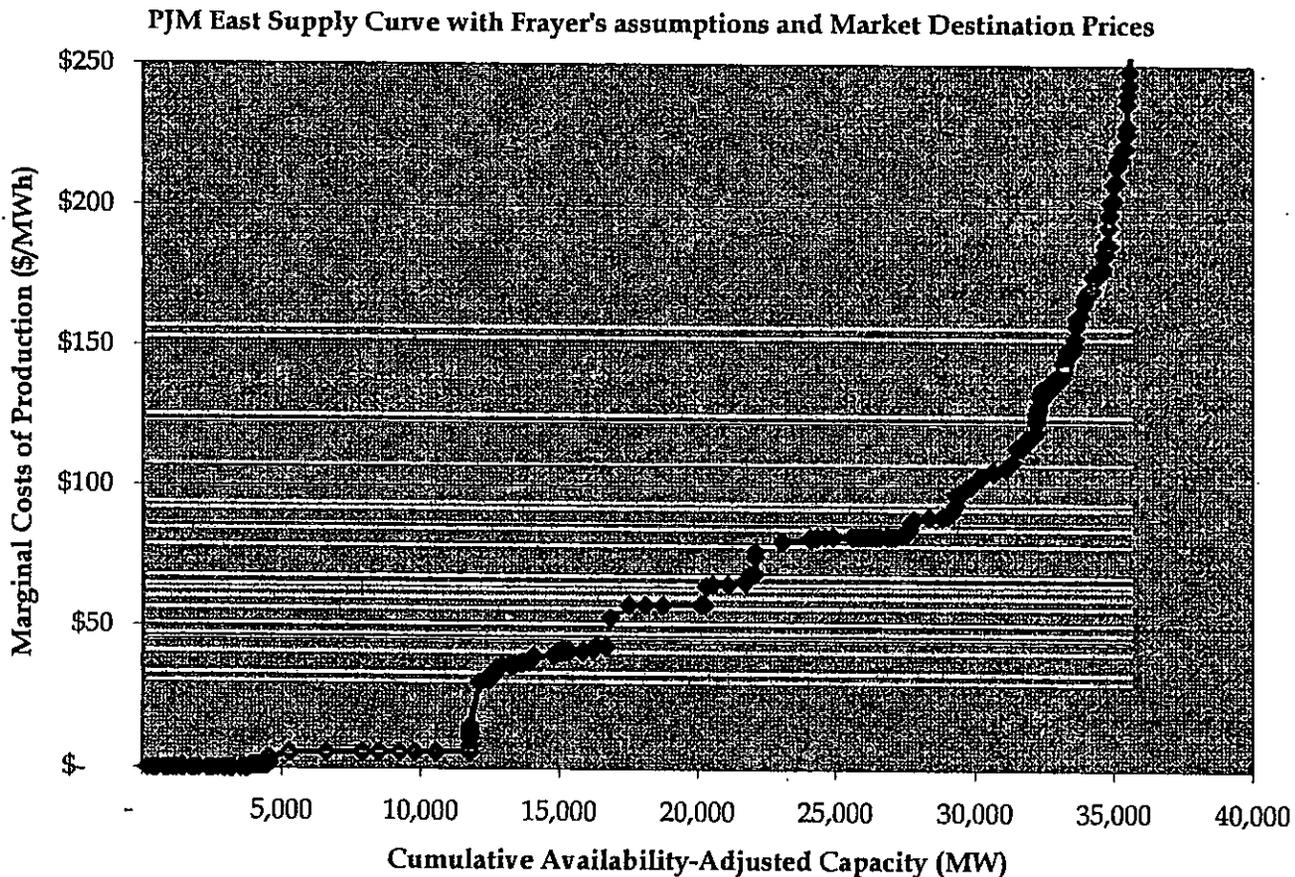


Exhibit 29. LEI's PJM East Supply Curve with all Destination Market Prices tested in LEI's analysis (yellow lines)



6.2 Economic Capacity DPT - Supplemental Baseline under the new mitigation plan

Exhibit 31. LEI's Economic Capacity HHIs (under the new mitigation plan - two buyers)

PJM Expanded			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' NEW MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Evelon MW	Evelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EEG MW	EEG Market Share	HHI		HHI Change
SUMMER	Extreme	\$	113	23,249	15.49%	11,347	7.56%	150,083	897	34,596	23.05%	1,041	234	28,526	19.01%	999	192	Yes
SUMMER	Top 10%	\$	84	22,498	15.74%	9,709	6.79%	142,897	819	32,207	22.54%	1,033	214	27,254	19.07%	998	179	Yes
SUMMER	Rest of Peak	\$	65	18,671	15.27%	9,176	7.56%	122,302	890	27,849	22.77%	1,119	229	28,719	19.39%	1,091	202	No
SUMMER	Offpeak	\$	37	18,125	18.31%	3,927	4.01%	97,906	1,113	22,051	22.52%	1,261	148	19,667	20.05%	1,237	124	No
WINTER	Top 10%	\$	120	23,768	15.83%	10,595	7.06%	150,108	821	34,343	22.87%	1,045	224	29,125	19.40%	1,005	184	No
WINTER	Rest of Peak	\$	76	19,008	16.12%	7,901	6.78%	117,899	951	26,909	22.82%	1,167	216	22,490	19.08%	1,145	194	No
WINTER	Offpeak	\$	55	18,348	16.74%	3,947	5.43%	109,407	1,003	24,295	21.17%	1,184	182	21,777	19.82%	1,160	158	No
SHOULDER	Top 10%	\$	83	20,945	15.98%	8,652	6.60%	131,071	817	29,597	22.58%	1,028	211	25,331	19.48%	993	177	Yes
SHOULDER	Rest of Peak	\$	65	17,301	15.16%	8,177	7.31%	111,915	883	25,479	22.77%	1,109	226	22,103	19.75%	1,081	199	No
SHOULDER	Offpeak	\$	42	16,614	17.15%	4,470	4.62%	96,867	1,020	21,084	21.77%	1,178	158	19,134	19.75%	1,159	139	No
Pre 2003 PJM			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' NEW MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Evelon MW	Evelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EEG MW	EEG Market Share	HHI		HHI Change
SUMMER	Extreme	\$	113	9,678	13.89%	9,621	13.80%	69,690	872	19,799	27.69%	1,255	383	13,229	18.58%	1,116	245	No
SUMMER	Top 10%	\$	84	8,924	13.87%	7,979	12.40%	64,348	861	16,903	24.27%	1,205	344	11,950	18.57%	1,107	240	No
SUMMER	Rest of Peak	\$	65	8,013	14.44%	7,459	13.44%	55,207	916	15,473	27.87%	1,304	388	11,537	20.42%	1,179	263	No
SUMMER	Offpeak	\$	37	7,679	18.40%	3,927	9.41%	81,741	993	11,605	27.80%	1,339	346	9,276	22.05%	1,219	226	No
WINTER	Top 10%	\$	120	9,924	14.43%	8,868	12.89%	68,786	882	18,791	27.52%	1,235	372	13,554	19.71%	1,101	298	Yes
WINTER	Rest of Peak	\$	76	8,342	16.58%	6,182	12.29%	50,298	994	14,574	28.88%	1,392	408	10,106	20.05%	1,251	267	No
WINTER	Offpeak	\$	55	7,737	16.25%	5,003	10.51%	47,605	970	12,740	26.76%	1,311	342	10,177	21.37%	1,212	243	No
SHOULDER	Top 10%	\$	83	8,654	14.54%	7,090	11.92%	59,501	881	15,744	26.46%	1,268	347	11,678	19.63%	1,102	240	No
SHOULDER	Rest of Peak	\$	65	7,657	15.05%	6,622	15.01%	50,994	912	14,288	28.04%	1,303	391	10,909	21.43%	1,177	263	No
SHOULDER	Offpeak	\$	42	7,149	16.48%	4,470	10.31%	43,374	965	11,618	26.79%	1,304	340	9,668	22.29%	1,215	250	No
PJM East			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' NEW MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Evelon MW	Evelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EEG MW	EEG Market Share	HHI		HHI Change
SUMMER	Extreme	\$	175	6,091	18.53%	8,200	24.95%	32,868	1,233	14,291	43.48%	2,157	925	9,297	28.05%	1,490	258	No
SUMMER	Top 10%	\$	87	5,370	17.69%	7,075	23.31%	30,355	1,150	12,445	41.00%	1,975	823	8,316	27.40%	1,407	257	No
SUMMER	Rest of Peak	\$	69	5,116	20.83%	5,940	24.30%	24,449	1,245	11,057	45.22%	2,262	1,017	7,747	31.69%	1,483	297	No
SUMMER	Offpeak	\$	41	5,040	25.24%	3,726	18.66%	19,969	1,243	8,767	43.90%	2,185	842	6,565	32.08%	1,538	299	No
WINTER	Top 10%	\$	123	6,380	19.72%	7,455	23.04%	32,360	1,190	13,835	42.75%	2,098	908	9,991	29.64%	1,486	297	No
WINTER	Rest of Peak	\$	80	5,528	25.32%	4,695	21.38%	21,912	1,321	10,213	46.61%	2,399	1,079	6,788	30.98%	1,500	180	No
WINTER	Offpeak	\$	53	5,100	25.32%	3,257	17.66%	29,139	1,219	8,497	42.99%	2,114	895	6,367	31.62%	1,477	257	No
SHOULDER	Top 10%	\$	86	5,310	18.81%	6,148	21.78%	28,794	1,220	11,458	40.58%	1,999	819	8,072	28.56%	1,415	293	No
SHOULDER	Rest of Peak	\$	68	4,050	22.11%	5,266	23.06%	22,837	1,245	10,316	45.17%	2,765	1,020	7,621	33.37%	1,556	311	No
SHOULDER	Offpeak	\$	43	4,793	25.14%	3,240	17.20%	18,833	1,203	7,973	42.34%	2,067	865	6,179	32.78%	1,520	317	No

Exhibit 32. LEI's Economic Capacity HHIs (under the new mitigation plan - four buyers)

PJM Expanded			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' NEW MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Eholon MW	Eholon Market Share	PSEB MW	PSEB Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EEG MW	EEG Market Share	HHI		HHI Change
SUMMER	Extreme	1	119	23,249	15.49%	11,347	7.56%	150,083	807	34,594	23.05%	1,041	291	28,576	19.01%	951	144	Yes
SUMMER	Top 10%	1	84	22,498	15.74%	9,709	6.79%	142,872	619	32,207	22.54%	1,035	214	27,754	19.87%	950	139	Yes
SUMMER	Rest of Peak	1	65	18,671	13.27%	9,174	7.50%	122,302	890	27,847	22.77%	1,119	229	23,713	19.99%	1,046	157	No
SUMMER	Offpeak	1	37	18,125	18.51%	1,927	4.01%	97,906	1,113	22,051	22.52%	1,261	148	19,647	20.09%	1,211	98	Yes
WINTER	Top 10%	1	120	23,768	15.81%	10,593	7.08%	150,108	821	34,363	22.89%	1,045	224	29,125	19.40%	967	146	Yes
WINTER	Rest of Peak	1	76	19,008	16.12%	7,901	6.70%	117,899	951	26,909	22.82%	1,167	216	22,490	19.08%	1,091	140	No
WINTER	Offpeak	1	53	18,348	16.74%	5,947	5.43%	109,607	1,003	24,295	22.17%	1,184	182	21,777	19.82%	1,197	134	No
SHOULDER	Top 10%	1	83	20,943	15.98%	8,652	6.60%	131,071	817	29,597	22.58%	1,028	211	26,521	19.48%	999	142	Yes
SHOULDER	Rest of Peak	1	65	17,301	15.44%	8,177	7.31%	111,915	883	25,479	22.77%	1,109	226	22,103	19.75%	1,042	160	No
SHOULDER	Offpeak	1	47	16,614	17.15%	4,470	4.67%	96,862	1,020	21,064	21.77%	1,178	158	19,134	19.75%	1,139	119	No
PJM East			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' NEW MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Eholon MW	Eholon Market Share	PSEB MW	PSEB Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EEG MW	EEG Market Share	HHI		HHI Change
SUMMER	Extreme	1	113	9,678	18.89%	9,621	18.80%	69,690	872	19,299	27.69%	1,255	383	13,229	18.98%	1,020	148	No
SUMMER	Top 10%	1	84	8,974	19.87%	7,979	12.10%	64,348	861	16,903	26.27%	1,205	344	11,990	18.57%	1,015	151	No
SUMMER	Rest of Peak	1	65	8,013	14.44%	7,459	13.44%	55,507	916	15,472	27.87%	1,304	288	11,337	20.42%	1,092	176	No
SUMMER	Offpeak	1	37	7,679	18.40%	3,977	9.41%	41,741	993	11,405	27.80%	1,339	346	9,220	22.09%	1,162	169	No
WINTER	Top 10%	1	120	9,924	14.43%	8,868	12.89%	68,780	862	18,791	27.31%	1,235	372	13,554	19.71%	1,074	162	No
WINTER	Rest of Peak	1	76	8,942	14.58%	5,182	12.29%	50,298	984	14,524	28.83%	1,372	408	10,106	20.09%	1,135	151	No
WINTER	Offpeak	1	53	7,737	16.25%	5,003	10.51%	47,605	970	12,740	24.74%	1,311	343	10,172	21.37%	1,157	187	No
SHOULDER	Top 10%	1	83	8,654	14.34%	7,090	11.92%	59,501	861	15,744	26.46%	1,208	347	11,678	19.63%	1,029	168	No
SHOULDER	Rest of Peak	1	65	7,657	15.03%	6,627	13.01%	50,934	912	16,281	28.04%	1,303	391	10,509	21.42%	1,104	192	No
SHOULDER	Offpeak	1	42	7,140	16.48%	4,470	10.51%	43,374	965	11,618	24.79%	1,304	380	9,648	22.29%	1,170	205	No
PJM East			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' NEW MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Eholon MW	Eholon Market Share	PSEB MW	PSEB Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EEG MW	EEG Market Share	HHI		HHI Change
SUMMER	Extreme	1	125	6,091	18.53%	5,200	24.95%	32,868	1,233	14,291	43.48%	2,157	925	9,232	28.09%	1,316	84	Yes
SUMMER	Top 10%	1	87	5,370	17.69%	7,075	23.51%	30,555	1,150	12,445	41.00%	1,975	825	8,316	27.40%	1,275	125	No
SUMMER	Rest of Peak	1	69	5,116	20.92%	5,940	24.50%	24,449	1,245	11,057	45.22%	2,262	1,017	7,747	31.69%	1,412	167	No
SUMMER	Offpeak	1	41	5,040	25.24%	3,726	18.66%	19,969	1,243	8,767	43.90%	2,185	942	6,565	32.88%	1,496	252	No
WINTER	Top 10%	1	123	6,380	19.72%	7,455	23.04%	32,360	1,190	13,835	42.73%	2,098	908	9,291	28.64%	1,344	173	No
WINTER	Rest of Peak	1	80	5,928	25.23%	4,685	21.38%	21,912	1,321	10,219	44.61%	2,399	1,079	6,788	30.98%	1,414	93	Yes
WINTER	Offpeak	1	63	5,190	29.32%	3,557	17.66%	20,139	1,219	8,457	42.59%	2,114	859	6,347	31.62%	1,430	210	No
SHOULDER	Top 10%	1	86	5,310	18.81%	6,148	21.78%	28,234	1,120	11,438	40.54%	1,999	819	8,077	28.59%	1,304	166	No
SHOULDER	Rest of Peak	1	68	5,090	22.11%	5,266	23.04%	22,837	1,343	10,316	45.17%	2,269	1,020	7,621	33.37%	1,500	255	No
SHOULDER	Offpeak	1	45	4,725	25.14%	3,240	17.20%	18,855	1,203	7,975	42.34%	2,067	865	6,175	32.78%	1,483	280	No

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6.3 Economic Capacity DPT - Supplemental Baseline and Sensitivities under the initial mitigation plan

Exhibit 33. LEI's Supplemental Economic Capacity HHIs (post-merger)

PJM Expanded			PRE MERGER					POST MERGER				Status of screen failure?	
Season	Period	Destination Market Price	Exelon MW	Exelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change
SUMMER	Extreme	\$ 113	23,249	15.49%	11,347	7.56%	150,083	807	34,596	23.05%	1,041	734	Fail
SUMMER	Top 10%	\$ 84	22,498	15.74%	9,709	6.79%	142,892	819	32,207	22.54%	1,039	214	Fail
SUMMER	Rest of Peak	\$ 65	18,671	15.27%	9,174	7.50%	122,302	850	27,847	22.77%	1,119	229	Fail
SUMMER	Offpeak	\$ 37	18,125	18.51%	3,927	4.01%	97,906	1,113	22,051	22.52%	1,261	148	Fail
WINTER	Top 10%	\$ 120	23,768	15.83%	10,595	7.06%	150,108	821	34,363	22.89%	1,045	224	Fail
WINTER	Rest of Peak	\$ 76	19,008	16.12%	7,901	6.70%	117,899	791	26,909	22.82%	1,167	216	Fail
WINTER	Offpeak	\$ 55	18,348	16.74%	5,947	5.43%	109,607	1,003	24,295	22.17%	1,186	182	Fail
SHOULDER	Top 10%	\$ 83	20,945	15.98%	8,652	6.60%	131,071	817	29,557	22.58%	1,078	211	Fail
SHOULDER	Rest of Peak	\$ 65	17,301	15.46%	8,177	7.31%	111,915	883	25,479	22.77%	1,109	226	Fail
SHOULDER	Offpeak	\$ 42	16,614	17.15%	4,470	4.62%	96,862	1,020	21,094	21.77%	1,176	158	Fail
Pre 2004 PJM			PRE MERGER					POST MERGER				Status of screen failure?	
Season	Period	Destination Market Price	Exelon MW	Exelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change
SUMMER	Extreme	\$ 113	9,678	13.89%	9,621	13.80%	69,690	872	19,299	27.69%	1,255	383	Fail
SUMMER	Top 10%	\$ 84	8,924	13.87%	7,979	12.40%	64,948	861	16,983	26.27%	1,205	344	Fail
SUMMER	Rest of Peak	\$ 65	8,013	14.44%	7,459	13.44%	55,507	916	15,472	27.87%	1,304	388	Fail
SUMMER	Offpeak	\$ 37	7,679	18.40%	3,927	9.41%	41,741	993	11,605	27.80%	1,339	346	Fail
WINTER	Top 10%	\$ 120	9,924	14.63%	8,868	12.89%	68,780	862	18,791	27.32%	1,239	372	Fail
WINTER	Rest of Peak	\$ 76	8,342	16.58%	6,182	12.29%	50,298	984	14,524	28.88%	1,592	408	Fail
WINTER	Offpeak	\$ 55	7,737	16.25%	5,003	10.51%	47,605	970	12,740	26.74%	1,311	342	Fail
SHOULDER	Top 10%	\$ 83	8,654	14.54%	7,090	11.92%	59,501	861	15,744	26.44%	1,206	347	Fail
SHOULDER	Rest of Peak	\$ 65	7,657	15.03%	6,627	13.01%	50,934	912	14,264	28.04%	1,303	391	Fail
SHOULDER	Offpeak	\$ 42	7,148	16.48%	4,470	10.31%	43,374	965	11,618	26.79%	1,304	340	Fail
PJM East			PRE MERGER					POST MERGER				Status of screen failure?	
Season	Period	Destination Market Price	Exelon MW	Exelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change
SUMMER	Extreme	\$ 125	6,091	18.53%	8,200	24.95%	32,869	1,293	14,291	43.48%	2,157	925	Fail
SUMMER	Top 10%	\$ 87	5,370	17.69%	7,075	29.31%	30,388	1,150	12,446	41.00%	1,975	925	Fail
SUMMER	Rest of Peak	\$ 69	5,116	20.89%	5,940	24.30%	24,449	1,245	11,057	45.22%	2,263	1,017	Fail
SUMMER	Offpeak	\$ 41	5,040	25.24%	3,726	18.66%	19,969	1,243	8,767	43.90%	2,185	942	Fail
WINTER	Top 10%	\$ 123	6,380	19.72%	7,455	23.04%	32,360	1,190	13,835	42.79%	2,098	908	Fail
WINTER	Rest of Peak	\$ 80	5,528	25.23%	4,685	21.38%	21,912	1,321	10,213	46.61%	2,399	1,079	Fail
WINTER	Offpeak	\$ 63	5,100	25.92%	3,557	17.66%	20,139	1,219	8,657	42.99%	2,114	895	Fail
SHOULDER	Top 10%	\$ 86	4,310	18.81%	6,148	21.78%	28,234	1,120	11,458	40.58%	1,939	819	Fail
SHOULDER	Rest of Peak	\$ 68	5,050	22.11%	5,266	23.06%	22,837	1,245	10,316	45.17%	2,265	1,020	Fail
SHOULDER	Offpeak	\$ 45	4,735	25.14%	3,240	17.20%	18,835	1,203	7,975	42.34%	2,067	865	Fail

Exhibit 34. LEI's Supplemental Economic Capacity HHI (under the initial mitigation plan)

PJM Expanded			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Ebelen MW	Ebelen Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EBG MW	EBG Market Share	HHI		HHI Change
SUMMER	Extreme	\$ 113	23,249	15.49%	11,947	7.56%	150,083	807	34,596	23.05%	1,041	734	Fail	29,535	19.68%	972	119	Yes
SUMMER	Top 10%	\$ 84	22,498	15.74%	9,709	6.79%	142,892	819	32,207	22.54%	1,093	214	Fail	28,077	19.65%	932	119	Yes
SUMMER	Rest of Peak	\$ 65	18,671	15.27%	9,176	7.50%	122,302	890	27,847	22.77%	1,119	229	Fail	24,946	20.40%	1,034	144	No
SUMMER	Offpeak	\$ 37	18,125	18.51%	9,927	4.01%	97,906	1,113	22,051	22.52%	1,261	148	Fail	19,667	20.09%	1,179	66	Yes
WINTER	Top 10%	\$ 120	23,768	19.83%	10,595	7.06%	150,108	821	34,063	22.89%	1,045	224	Fail	30,072	20.00%	943	130	Yes
WINTER	Rest of Peak	\$ 76	19,008	16.12%	7,901	6.70%	117,899	951	26,909	22.82%	1,167	216	Fail	23,796	20.18%	1,074	173	No
WINTER	Offpeak	\$ 55	18,348	16.74%	9,947	5.43%	109,407	1,009	24,295	22.17%	1,184	182	Fail	21,927	19.82%	1,105	102	No
SHOULDER	Top 10%	\$ 83	20,945	15.98%	8,652	6.60%	131,071	817	29,597	22.58%	1,028	211	Fail	26,214	20.00%	936	119	Yes
SHOULDER	Rest of Peak	\$ 63	17,301	15.46%	8,177	7.31%	111,915	889	25,479	22.77%	1,109	226	Fail	23,193	20.67%	1,032	160	No
SHOULDER	Offpeak	\$ 42	16,614	17.15%	4,470	4.62%	95,862	1,020	21,084	21.77%	1,178	158	Fail	19,134	19.75%	1,111	91	Yes
Pre 2004 PJM			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Ebelen MW	Ebelen Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EBG MW	EBG Market Share	HHI		HHI Change
SUMMER	Extreme	\$ 113	9,678	13.89%	9,621	18.80%	69,690	872	19,299	27.49%	1,225	383	Fail	14,238	20.43%	972	101	Yes
SUMMER	Top 10%	\$ 84	8,974	13.87%	7,979	12.40%	64,348	861	16,909	24.77%	1,205	344	Fail	12,773	19.85%	969	102	Yes
SUMMER	Rest of Peak	\$ 65	8,013	14.44%	7,459	13.44%	55,507	916	15,472	27.87%	1,304	368	Fail	12,570	22.65%	1,007	371	No
SUMMER	Offpeak	\$ 37	7,629	18.40%	3,927	5.61%	41,741	993	11,605	27.80%	1,339	346	Fail	9,220	22.69%	1,118	174	No
WINTER	Top 10%	\$ 120	9,924	14.43%	8,868	12.89%	68,780	862	18,791	27.97%	1,235	372	Fail	14,451	21.01%	985	129	Yes
WINTER	Rest of Peak	\$ 76	8,342	16.58%	6,182	12.29%	50,298	984	14,524	28.88%	1,372	468	Fail	11,412	22.69%	1,185	151	No
WINTER	Offpeak	\$ 55	7,737	16.26%	5,003	10.51%	47,605	970	12,740	26.76%	1,311	262	Fail	10,172	21.97%	1,105	134	No
SHOULDER	Top 10%	\$ 83	8,654	14.54%	7,090	11.92%	59,501	861	15,744	26.46%	1,208	349	Fail	12,361	20.78%	990	129	Yes
SHOULDER	Rest of Peak	\$ 63	7,607	13.00%	6,627	18.01%	50,934	912	14,281	28.04%	1,303	391	Fail	11,938	23.44%	1,106	194	No
SHOULDER	Offpeak	\$ 42	7,148	16.48%	4,470	10.31%	43,374	965	11,618	26.79%	1,304	340	Fail	9,640	22.29%	1,126	162	No
PJM East			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Ebelen MW	Ebelen Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EBG MW	EBG Market Share	HHI		HHI Change
SUMMER	Extreme	\$ 125	6,091	18.53%	8,200	24.99%	32,868	1,293	14,291	43.48%	2,157	925	Fail	9,814	28.64%	1,270	38	Yes
SUMMER	Top 10%	\$ 87	5,370	17.69%	7,073	23.51%	30,565	1,150	12,445	41.00%	1,975	825	Fail	8,498	28.00%	1,232	82	Yes
SUMMER	Rest of Peak	\$ 69	3,116	20.93%	1,940	24.30%	24,449	1,245	11,057	45.22%	2,267	1,017	Fail	6,339	34.11%	1,493	258	No
SUMMER	Offpeak	\$ 41	3,040	25.24%	3,726	18.56%	19,969	1,249	8,767	43.90%	2,185	942	Fail	6,569	32.88%	1,448	205	No
WINTER	Top 10%	\$ 120	6,380	19.72%	7,455	23.04%	32,360	1,190	13,835	42.75%	2,098	908	Fail	9,779	30.20%	1,325	156	No
WINTER	Rest of Peak	\$ 80	5,528	25.29%	4,685	21.38%	21,912	1,221	10,213	46.61%	2,399	1,079	Fail	7,380	33.68%	1,591	180	No
WINTER	Offpeak	\$ 63	5,100	25.32%	3,557	17.64%	20,139	1,219	8,657	42.99%	2,114	899	Fail	6,567	31.62%	1,382	162	No
SHOULDER	Top 10%	\$ 84	4,310	18.81%	6,148	21.78%	28,794	1,120	11,458	40.98%	1,939	819	Fail	8,729	29.19%	1,247	148	No
SHOULDER	Rest of Peak	\$ 66	5,050	22.11%	3,266	23.06%	22,897	1,245	10,316	49.17%	2,265	1,020	Fail	8,120	36.56%	1,570	325	No
SHOULDER	Offpeak	\$ 45	4,735	25.14%	3,740	17.20%	18,835	1,203	7,975	42.34%	2,067	865	Fail	6,173	32.78%	1,436	234	No

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Exhibit 35. Summary of Supplemental - 25% sensitivity case for Economics Capacity HHIs (under the initial mitigation plan)

PJM Expanded				PRE MERGER				POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	EWLON MW	EWLON Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EWG MW	EWG Market Share	HHI		HHI Change
SUMMER	Extreme	1	85	22,497	15.73%	8,808	6.86%	143,017	838	22,306	22.59%	1,004	-216	22,245	18.05%	919	85	Yes
SUMMER	Top 10%	1	63	19,330	15.46%	9,378	7.46%	125,040	892	28,657	22.91%	1,172	221	24,576	19.61%	1,087	118	No
SUMMER	Rest of Peak	1	49	18,505	17.06%	5,100	4.71%	108,869	1,034	23,705	21.77%	1,195	161	20,803	19.11%	1,108	74	Yes
SUMMER	Offpeak	1	28	16,797	22.31%	3,192	4.24%	75,289	1,345	19,989	26.99%	1,531	189	17,604	23.38%	1,404	61	Yes
WINTER	Top 10%	1	30	22,872	17.00%	9,145	6.80%	134,540	902	22,015	23.80%	1,133	231	22,674	20.57%	1,013	111	No
WINTER	Rest of Peak	1	27	19,609	16.85%	5,982	5.30%	112,808	1,005	24,591	21.15%	1,184	179	21,879	19.59%	1,091	86	Yes
WINTER	Offpeak	1	41	18,249	17.10%	4,993	4.42%	106,711	1,099	23,183	21.72%	1,197	158	20,614	19.37%	1,118	75	Yes
SHOULDER	Top 10%	1	62	18,042	15.84%	7,370	6.49%	113,918	890	25,362	21.26%	1,094	204	21,979	18.73%	993	107	Yes
SHOULDER	Rest of Peak	1	49	17,204	17.21%	4,505	4.51%	99,890	1,021	21,710	21.71%	1,179	155	19,944	19.57%	1,098	77	Yes
SHOULDER	Offpeak	1	32	16,619	18.65%	4,470	5.02%	89,126	1,070	21,089	23.66%	1,257	187	19,139	21.47%	1,177	107	No
PJM East				PRE MERGER				POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	EWLON MW	EWLON Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EWG MW	EWG Market Share	HHI		HHI Change
SUMMER	Extreme	1	85	8,942	13.87%	8,080	12.53%	64,474	844	17,023	26.40%	1,212	348	11,962	18.55%	950	86	Yes
SUMMER	Top 10%	1	63	8,662	15.11%	7,809	13.27%	57,338	934	16,271	28.36%	1,592	601	12,141	21.17%	1,062	178	No
SUMMER	Rest of Peak	1	40	9,077	16.71%	5,130	10.61%	48,331	989	13,207	27.95%	1,944	355	10,308	21.32%	1,192	130	No
SUMMER	Offpeak	1	28	6,437	24.83%	3,192	12.32%	25,900	1,194	9,629	37.17%	1,806	611	7,244	27.97%	1,274	80	Yes
WINTER	Top 10%	1	30	9,075	15.57%	7,418	12.73%	58,301	928	16,493	28.29%	1,974	396	12,159	20.84%	1,045	117	No
WINTER	Rest of Peak	1	27	8,582	17.11%	5,054	10.28%	48,992	988	13,418	27.99%	1,940	392	10,306	21.04%	1,107	119	No
WINTER	Offpeak	1	41	7,764	16.36%	4,923	10.40%	47,445	974	12,697	26.76%	1,814	340	10,129	21.33%	1,112	141	No
SHOULDER	Top 10%	1	62	8,413	16.20%	5,789	11.11%	51,541	979	14,180	27.91%	1,908	360	10,798	20.79%	1,049	121	No
SHOULDER	Rest of Peak	1	49	7,719	17.27%	4,505	10.08%	44,684	982	12,224	27.36%	1,931	348	9,878	22.11%	1,129	147	No
SHOULDER	Offpeak	1	32	7,191	18.65%	4,470	11.59%	38,559	991	11,642	30.24%	1,474	432	9,712	25.19%	1,202	211	No
PJM West				PRE MERGER				POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	EWLON MW	EWLON Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EWG MW	EWG Market Share	HHI		HHI Change
SUMMER	Extreme	1	94	5,422	17.67%	7,303	23.81%	30,678	1,166	12,725	41.48%	2,008	841	7,848	25.58%	1,153	(14)	Yes
SUMMER	Top 10%	1	65	5,207	21.22%	6,078	24.77%	24,538	1,282	11,285	45.99%	2,894	1,061	7,339	29.91%	1,314	32	Yes
SUMMER	Rest of Peak	1	52	5,188	25.84%	3,751	18.48%	20,297	1,283	6,934	44.01%	2,197	544	6,216	30.67%	1,348	95	Yes
SUMMER	Offpeak	1	31	5,277	31.87%	2,665	16.10%	16,559	1,529	7,943	47.97%	2,565	1,024	5,741	34.67%	1,671	97	Yes
WINTER	Top 10%	1	32	5,541	21.68%	5,987	23.03%	25,558	1,226	11,426	44.72%	2,224	999	7,366	28.87%	1,252	27	Yes
WINTER	Rest of Peak	1	60	5,511	26.76%	3,983	17.40%	20,599	1,275	8,094	41.19%	2,204	931	6,260	30.40%	1,339	69	Yes
WINTER	Offpeak	1	47	5,108	25.97%	3,543	17.56%	20,144	1,218	6,600	42.94%	2,110	892	6,361	21.29%	1,569	161	No
SHOULDER	Top 10%	1	65	5,167	22.33%	5,401	23.34%	23,142	1,265	10,548	45.67%	2,898	1,042	7,534	31.70%	1,387	122	No
SHOULDER	Rest of Peak	1	51	5,128	26.57%	3,266	16.95%	19,771	1,258	8,386	43.52%	2,159	901	6,190	32.12%	1,412	154	No
SHOULDER	Offpeak	1	34	4,762	26.02%	3,251	17.77%	18,300	1,255	8,013	43.79%	2,180	525	6,213	35.94%	1,507	282	No

Exhibit 36. Summary of Supplemental + 25% sensitivity case for Economics Capacity HHIs (under the initial mitigation plan)

PJM Expanded			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANT'S ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Eexlon MW	Eexlon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EBG MW	EBG Market Share	HHI		HHI Change
SUMMER	Extreme	\$	141	24,277	15.34%	11,589	7.64%	151,710	797	34,866	22.98%	1,057	284	29,896	19.65%	918	116	Yes
SUMMER	Top 10%	\$	109	23,249	15.61%	10,840	7.28%	148,977	811	34,089	22.88%	1,038	227	29,959	20.11%	938	128	Yes
SUMMER	Rest of Peak	\$	81	21,840	15.62%	9,515	6.80%	139,829	817	31,253	22.42%	1,029	213	28,450	20.25%	935	138	Yes
SUMMER	Offpeak	\$	46	18,173	17.19%	3,029	4.83%	105,444	1,041	23,218	22.02%	1,207	166	20,854	19.76%	1,131	50	Yes
WINTER	Top 10%	\$	150	24,087	15.69%	11,314	7.58%	153,219	808	35,361	23.08%	1,040	132	31,021	20.25%	937	129	Yes
WINTER	Rest of Peak	\$	95	22,264	16.35%	8,991	6.60%	146,203	868	31,254	22.99%	1,084	214	28,142	20.64%	1,001	139	No
WINTER	Offpeak	\$	69	18,948	16.29%	5,947	5.28%	112,651	964	24,294	21.57%	1,194	172	21,726	19.23%	1,059	96	Yes
SHCULDER	Top 10%	\$	104	21,578	15.62%	9,690	7.10%	136,394	809	31,268	22.92%	1,084	225	27,886	20.44%	944	134	Yes
SHCULDER	Rest of Peak	\$	81	20,205	15.90%	8,987	6.54%	127,868	811	28,592	22.34%	1,019	207	26,246	20.53%	892	141	Yes
SHCULDER	Offpeak	\$	53	16,711	16.84%	3,390	5.43%	99,226	987	22,101	22.27%	1,170	183	20,151	20.31%	1,102	115	No
Pre 2014 PJM																		
Pre 2014 PJM			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANT'S ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Eexlon MW	Eexlon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EBG MW	EBG Market Share	HHI		HHI Change
SUMMER	Extreme	\$	141	9,705	15.66%	9,862	13.88%	71,005	864	19,568	27.35%	1,244	379	14,907	20.42%	989	174	Yes
SUMMER	Top 10%	\$	109	9,662	14.07%	9,110	13.77%	68,661	863	18,773	27.31%	1,237	373	14,643	21.53%	1,016	152	No
SUMMER	Rest of Peak	\$	81	8,275	13.27%	7,786	12.51%	62,298	850	16,061	25.83%	1,183	332	13,160	21.14%	1,008	137	No
SUMMER	Offpeak	\$	46	7,645	16.32%	5,095	10.88%	46,837	969	12,740	27.20%	1,337	355	10,956	22.11%	1,142	163	No
WINTER	Top 10%	\$	150	10,201	14.27%	9,587	13.41%	71,503	861	19,788	27.67%	1,245	383	15,447	21.60%	1,015	153	No
WINTER	Rest of Peak	\$	95	8,420	14.77%	7,261	12.73%	57,017	897	15,681	27.50%	1,273	376	12,969	22.04%	1,058	163	No
WINTER	Offpeak	\$	69	7,705	16.17%	5,000	10.49%	47,651	964	12,709	26.66%	1,303	339	10,125	21.27%	1,105	141	No
SHCULDER	Top 10%	\$	104	9,273	14.65%	8,131	12.84%	63,505	865	17,403	27.43%	1,241	376	14,021	22.15%	1,036	172	No
SHCULDER	Rest of Peak	\$	81	7,904	13.73%	6,823	11.90%	57,337	840	14,730	26.69%	1,169	328	12,384	21.60%	1,012	172	No
SHCULDER	Offpeak	\$	53	7,173	16.42%	4,540	10.47%	43,374	969	11,664	26.89%	1,308	344	9,714	22.39%	1,135	170	No
PJM East																		
PJM East			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANT'S ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Eexlon MW	Eexlon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EBG MW	EBG Market Share	HHI		HHI Change
SUMMER	Extreme	\$	156	6,305	18.90%	8,431	24.74%	34,076	1,222	14,738	43.24%	2,137	916	9,858	28.93%	1,775	53	Yes
SUMMER	Top 10%	\$	109	6,093	18.98%	7,562	23.36%	32,029	1,192	13,693	42.54%	2,086	894	9,708	30.24%	1,729	137	No
SUMMER	Rest of Peak	\$	86	5,282	17.66%	6,798	22.73%	29,507	1,151	12,060	40.89%	1,933	863	9,367	31.30%	1,367	236	No
SUMMER	Offpeak	\$	51	5,005	24.92%	3,727	18.62%	20,090	1,229	8,732	43.46%	2,159	924	6,581	32.51%	1,428	199	No
WINTER	Top 10%	\$	154	6,674	19.38%	8,167	23.77%	34,438	1,205	14,841	43.09%	2,125	919	10,779	31.30%	1,373	168	No
WINTER	Rest of Peak	\$	100	5,445	21.14%	6,049	23.48%	25,758	1,223	11,494	44.62%	2,216	993	8,660	33.62%	1,456	232	No
WINTER	Offpeak	\$	79	5,119	23.87%	4,661	21.74%	21,447	1,277	5,781	45.40%	2,274	1,038	7,491	34.93%	1,567	280	No
SHCULDER	Top 10%	\$	108	5,914	19.29%	6,736	22.53%	29,890	1,192	12,650	42.52%	2,064	892	9,417	31.51%	1,379	206	No
SHCULDER	Rest of Peak	\$	85	5,202	18.73%	5,923	21.91%	27,795	1,104	11,176	40.63%	1,903	799	6,929	32.13%	1,401	296	No
SHCULDER	Offpeak	\$	56	4,664	21.92%	4,731	19.68%	21,181	1,182	8,895	41.80%	2,004	872	7,095	33.84%	1,435	303	No

Exhibit 37. LEI's proposed mitigation under Supplemental Baseline and Sensitivities (under the initial mitigation plan)⁸⁶

BASELINE SCENARIO

OPTION 1									
Baseline Scenario	PJM East			PJM Pre 2004			PJM Expanded		
	Summer	Winter	Shoulder	Summer	Winter	Shoulder	Summer	Winter	Shoulder
Baseload	710	738	710	1,210	1,258	1,210	80	83	80
Mid Merit	660	695	660	850	895	850	1,490	1,569	1,490
Peaking	-	-	-	-	-	-	-	-	-
TOTAL	1,370	1,433	1,370	2,060	2,153	2,060	1,570	1,652	1,570
OPTION 2									
Baseline Scenario	PJM East			PJM Pre 2004			PJM Expanded		
	Summer	Winter	Shoulder	Summer	Winter	Shoulder	Summer	Winter	Shoulder
Baseload	1,340	1,394	1,340	2,030	2,111	2,030	1,510	1,570	1,510
Mid Merit	-	-	-	-	-	-	-	-	-
Peaking	-	-	-	-	-	-	-	-	-
TOTAL	1,340	1,394	1,340	2,030	2,111	2,030	1,510	1,570	1,510

⁸⁶ The figures in Option 1 are based on a mix of baseload nuclear and mid-merit capacity for additional mitigation. The specific MW of capacity is slightly lower if I assume that all additional mitigation is achieved through additional nuclear divestitures (Option 2) because of the lower derating of the nominal capacity of nuclear versus that of non-nuclear assets in the DPT, consistent with Dr. Hieronymus' assumptions in Exhibit J-13.

BASELINE -25% SCENARIO

OPTION 1									
-25% Scenario	PJM East			PJM Pre 2004			PJM Expanded		
	Summer	Winter	Shoulder	Summer	Winter	Shoulder	Summer	Winter	Shoulder
Baseload	760	790	760	1,860	1,934	1,860	260	270	260
Mid Merit							240	253	240
Peaking									
TOTAL	760	790	760	1,860	1,934	1,860	500	523	500

OPTION 2									
-25% Scenario	PJM East			PJM Pre 2004			PJM Expanded		
	Summer	Winter	Shoulder	Summer	Winter	Shoulder	Summer	Winter	Shoulder
Baseload	760	790	760	1,860	1,934	1,860	510	530	510
Mid Merit									
Peaking									
TOTAL	760	790	760	1,860	1,934	1,860	510	530	510

BASELINE +25% SCENARIO

OPTION 1									
+25% Scenario	PJM East			PJM Pre 2004			PJM Expanded		
	Summer	Winter	Shoulder	Summer	Winter	Shoulder	Summer	Winter	Shoulder
Baseload	1,200	1,248	1,200	1,450	1,508	1,450	620	645	620
Mid Merit	430	453	430						
Peaking									
TOTAL	1,630	1,701	1,630	1,450	1,508	1,450	620	645	620

OPTION 2									
+25% Scenario	PJM East			PJM Pre 2004			PJM Expanded		
	Summer	Winter	Shoulder	Summer	Winter	Shoulder	Summer	Winter	Shoulder
Baseload	1,620	1,685	1,620	1,450	1,508	1,450	620	645	620
Mid Merit									
Peaking									
TOTAL	1,620	1,685	1,620	1,450	1,508	1,450	620	645	620

Exhibit 38. LEI's Supplemental Economic Capacity HHIs (under initially proposed buyer restrictions and Dr. Hieronymus' preferred mitigation allocation assumptions)

PJM Expanded			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Exelon MW	Exelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EEG MW	EEG Market Share	HHI		HHI Change
SUMMER	Extreme	1	119	23,249	15.49%	11,317	7.56%	150,083	807	21,596	21,05%	1,091	294	29,539	19.68%	922	119	Yes
SUMMER	Top 10%	1	84	22,498	15.24%	9,709	6.73%	142,872	819	32,707	22,54%	1,053	214	29,077	19.65%	932	113	Yes
SUMMER	Rest of Peak	1	65	18,671	15.27%	9,174	7.50%	122,302	890	27,847	22,77%	1,119	229	23,717	19.39%	1,007	112	No
SUMMER	Offpeak	1	37	15,125	18.51%	3,927	4.01%	97,906	1,119	22,051	22,52%	1,261	148	19,647	20.09%	1,179	144	Yes
WINTER	Top 10%	1	120	23,768	15.83%	10,595	7.06%	154,108	821	34,363	22,89%	1,045	224	30,027	20.00%	941	120	Yes
WINTER	Rest of Peak	1	76	19,008	16.12%	7,901	6.70%	117,899	951	26,909	22,82%	1,167	216	22,568	19.14%	1,044	91	Yes
WINTER	Offpeak	1	55	18,348	16.74%	5,947	5.43%	109,607	1,003	24,295	21,17%	1,184	182	21,727	19.82%	1,105	102	No
SHOULDER	Top 10%	1	83	20,945	15.98%	8,652	6.60%	131,071	817	29,597	22,58%	1,028	211	26,214	20.00%	956	119	Yes
SHOULDER	Rest of Peak	1	65	17,301	15.46%	8,177	7.31%	111,915	883	25,479	22,77%	1,109	226	22,096	19.74%	1,002	120	No
SHOULDER	Offpeak	1	42	16,614	17.15%	4,470	6.62%	96,862	1,020	21,064	21,77%	1,178	156	19,131	19.75%	1,111	91	Yes
Pre 2004 PJM			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Exelon MW	Exelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EEG MW	EEG Market Share	HHI		HHI Change
SUMMER	Extreme	1	113	9,678	19.89%	9,621	18.80%	69,690	872	19,299	27.69%	1,256	383	14,298	20.43%	972	101	Yes
SUMMER	Top 10%	1	84	8,924	19.87%	7,979	17.40%	64,348	861	16,903	26.27%	1,206	344	12,778	19.85%	969	107	Yes
SUMMER	Rest of Peak	1	65	8,013	14.44%	7,459	19.44%	55,507	916	15,472	27.87%	1,304	388	11,342	20.43%	1,019	103	No
SUMMER	Offpeak	1	37	7,679	18.40%	5,927	9.41%	41,741	993	11,605	27.80%	1,339	346	9,220	22.09%	1,118	124	Yes
WINTER	Top 10%	1	120	9,924	14.43%	8,868	12.89%	68,780	882	18,791	27.32%	1,231	372	14,451	21.01%	988	123	Yes
WINTER	Rest of Peak	1	76	8,342	16.58%	6,182	12.29%	50,298	984	14,524	28.88%	1,392	408	10,184	20.29%	1,066	82	Yes
WINTER	Offpeak	1	55	7,737	16.25%	5,000	10.51%	47,605	970	12,740	26.76%	1,311	342	10,172	21.57%	1,105	136	No
SHOULDER	Top 10%	1	83	8,654	14.54%	7,090	11.92%	59,501	861	15,744	26.46%	1,208	342	12,361	20.78%	990	129	Yes
SHOULDER	Rest of Peak	1	65	7,657	19.03%	6,627	18.01%	50,934	912	14,284	28.04%	1,303	391	10,907	21.40%	1,039	127	No
SHOULDER	Offpeak	1	42	7,169	16.68%	4,870	10.51%	43,374	965	11,618	26.72%	1,304	340	9,668	22.29%	1,126	182	No
PJM East			PRE MERGER					POST MERGER				Status of screen failure?	POST MERGER WITH APPLICANTS' ORIGINAL MITIGATION				Is mitigation enough?	
Season	Period	Destination Market Price	Exelon MW	Exelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI		HHI Change	EEG MW	EEG Market Share	HHI		HHI Change
SUMMER	Extreme	1	125	6,091	18.53%	8,200	24.95%	32,868	1,233	14,291	43.68%	2,157	925	9,414	28.64%	1,270	38	Yes
SUMMER	Top 10%	1	87	6,370	17.69%	7,095	23.31%	30,295	1,150	12,445	41.00%	1,975	825	8,498	28.00%	1,232	81	Yes
SUMMER	Rest of Peak	1	69	5,116	20.93%	5,940	24.30%	24,449	1,245	11,057	45.22%	2,282	1,017	7,110	29.08%	1,253	7	Yes
SUMMER	Offpeak	1	41	5,045	25.74%	3,726	18.66%	19,569	1,243	8,767	43.90%	2,183	942	6,565	32.88%	1,148	205	No
WINTER	Top 10%	1	129	6,390	19.72%	7,453	23.04%	32,360	1,190	13,835	42.75%	2,098	908	9,273	30.20%	1,325	136	No
WINTER	Rest of Peak	1	80	5,528	25.22%	4,683	21.38%	21,912	1,321	10,713	46.61%	2,399	1,079	6,151	28.07%	1,267	(94)	Yes
WINTER	Offpeak	1	43	5,100	25.82%	3,557	17.64%	20,189	1,219	8,657	42.99%	2,114	896	6,567	31.82%	1,382	162	No
SHOULDER	Top 10%	1	86	5,310	18.81%	6,148	21.78%	28,294	1,120	11,458	40.58%	1,939	810	8,229	29.13%	1,267	148	No
SHOULDER	Rest of Peak	1	68	5,050	22.11%	5,264	23.04%	22,837	1,245	10,316	45.17%	2,265	1,020	7,084	31.02%	1,339	93	Yes
SHOULDER	Offpeak	1	40	4,705	25.14%	3,240	17.20%	18,835	1,203	7,975	42.34%	2,067	865	6,175	32.78%	1,436	234	No

6.4 Supplemental Capacity Credit market under the newly proposed mitigation plan

Exhibit 39. Supplemental Competitive Analysis Screen for PJM Capacity Credit market under new mitigation plan with all non-nuclear mitigation acquired by the largest supplier

	PRE-MERGER		POST-MERGER WITH APPLICANTS' NEW MITIGATION		POST-MERGER WITH LEI'S MITIGATION		MINIMUM AMOUNT OF MITIGATION (MW)			
	PJM East	PJM Expanded	PJM East	PJM Expanded	PJM East	PJM Expanded	PJM East		PJM Expanded	
Dr. Hieronymus (ICAP, no forced outage)							ICAP	UCAP	ICAP	UCAP
HHI	1,278	799	1,377	996			5,325		2,200	
HHI Change			99	199						
SCREEN PASSES!										
Scenario 1: LEI (UCAP-adjusted with imports allocated to four largest players, excl. Applicants)										
HHI	1,490	907	2,063	1,127	1,977	1,123	not meaningful		not meaningful	
HHI Change			573	221	487	216				
SCREEN FAILURE!					SCREEN FAILURE!					
Scenario 2: LEI (UCAP-adjusted with imports allocated in equal-sized blocks, incl. Applicants)										
HHI	1,214	829	1,731	1,048	1,555	1,039	not meaningful		not meaningful	
HHI Change			518	219	341	210				
SCREEN FAILURE!					SCREEN FAILURE!					

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Exhibit 40. Supplemental Competitive Analysis Screen for PJM Capacity Credit market under new mitigation plan with all non-nuclear mitigation acquired by the four largest suppliers

	PRE-MERGER		POST-MERGER WITH APPLICANTS' NEW MITIGATION		POST-MERGER WITH LET'S MITIGATION		MINIMUM AMOUNT OF MITIGATION (MW)			
	PJM East	PJM Expanded	PJM East	PJM Expanded	PJM East	PJM Expanded	PJM East		PJM Expanded	
							ICAP	-UCAP	ICAP	UCAP
Dr. Hieronymus (ICAP, no forced outage)										
HHI	1,278	799	1,377	996			5,325		2,200	
HHI Change			99	199						
SCREEN PASSES!										
Scenario 1: LEI (UCAP-adjusted with imports allocated to four largest players, excl. Applicants)										
HHI	1,490	907	1,966	1,100	1,589	1,026	8,490	7,834	not meaningful	not meaningful
HHI Change			476	193	99	119				
SCREEN FAILURE! SCREEN PASSES! SCREEN FAILURE!										
Scenario 2: LEI (UCAP-adjusted with imports allocated in equal-sized blocks, incl. Applicants)										
HHI	1,214	829	1,635	1,021	1,313	999	5,680	5,241	5,750	5,306
HHI Change			421	192	99	170				
SCREEN FAILURE! SCREEN PASSES!										

6.5 Supplemental Capacity Credit market under the original mitigation plan

Exhibit 41: Supplemental Competitive Analysis Screen for PJM Capacity Credit market under the initial mitigation plan (using class-average EFOR)

	PRE-MERGER		POST-MERGER WITH HIERONYMUS' MITIGATION		POST-MERGER WITH LEI'S MITIGATION		MINIMUM AMOUNT OF MITIGATION (MW)			
	PJM East	PJM Expanded	PJM East	PJM Expanded	PJM East	PJM Expanded	PJM East		PJM Expanded	
Dr. Hieronymus (UCAP, no forced outage)							ICAP	UCAP	ICAP	UCAP
HHI	1,282	799	1,380	997			5,325		2,200	
HHI Change			98	198						
SCREEN PASSES!										
Scenario 1: LEI (UCAP-adjusted with imports allocated to four largest players, excl. Applicants)										
HHI	1,490	907	1,540	1,102	1,540	1,005	5,325	4,913	7,150	6,597
HHI Change			50	196	50	99				
			SCREEN PASSES!	SCREEN FAILURE!	SCREEN PASSES!					
Scenario 2: LEI (UCAP-adjusted with imports allocated in equal-sized blocks, incl. Applicants)										
HHI	1,214	829	1,290	1,029	1,290	999	5,325	4,913	3,620	3,340
HHI Change			76	200	76	170				
			SCREEN PASSES!	SCREEN FAILURE!	SCREEN PASSES!					

Exhibit 42. Supplemental Competitive Analysis Screen for PJM Capacity Credit market under the initial mitigation plan (using Dr. Hieronymus' preferred class average EFORD)

	PRE-MERGER		POST-MERGER WITH HIERONYMUS' MITIGATION		POST-MERGER WITH LEI'S MITIGATION		MINIMUM AMOUNT OF MITIGATION (MW)			
	PJM East	PJM Expanded	PJM East	PJM Expanded	PJM East	PJM Expanded	PJM East		PJM Expanded	
							ICAP	UCAP	ICAP	UCAP
Dr. Hieronymus (ICAP, no forced outage)										
HHI	1,282	799	1,380	997			5,325		2,200	
HHI Change			98	198						
SCREEN PASSES!										
Scenario 1: LEI (UCAP-adjusted with imports allocated to four largest players, excl. Applicants)										
HHI	1,483	878	1,565	1,074	1,565	999	5,325	4,913	6,070	5,601
HHI Change			82	196	82	121				
			SCREEN PASSES!	SCREEN FAILURE!	SCREEN PASSES!					
Scenario 2: LEI (UCAP-adjusted with imports allocated in equal-sized blocks, incl. Applicants)										
HHI	1,222	806	1,329	1,006	1,321	999	5,400	4,983	2,560	2,362
HHI Change			107	200	99	192				
			SCREEN FAILURE!		SCREEN PASSES!					

6.6 Supplemental seasonal market share screen analysis

Exhibit 43. Summary results of the market share analysis per Section 205, adjusted for import allocation

Pre-Mitigation	Calculations	Winter	Spring	Summer	Fall
Applicant's Affiliated Uncommitted Supply	A	40,304	40,304	40,304	40,304
Native Load	B2	14,160	12,853	13,193	13,798
Operating Reserves	B	1,155	1,155	1,155	1,155
Planned Outages	C	1,303	447	857	513
Hydro Derates	D	0	0	0	0
Applicant Uncommitted Capacity	E = A-B-B2-C-D	23,686	25,849	25,599	24,838
Local Generation in PJM Classic and PJM West	F	161,149	161,149	161,149	161,149
Hydro Derates	G	0	0	0	0
Other Native Load Commitments	H	79,608	73,747	75,147	74,713
Operating Reserves (relative to Avg Daily Peak)	I	4,618	4,618	4,618	4,618
Planned Outages	J	5,211	1,789	1,427	2,051
Competing Imports from 'first-tier' markets	K	6,781	6,781	6,781	6,781
Total Uncommitted Supply	L = F-G-H-J+K	78,493	87,776	86,738	86,548
Applicant's Affiliated Market Share	M = E/L	30.2%	29.4%	29.5%	28.7%
Do Applicant and its affiliates pass the Market Share Test?	N = M < 20%	no	no	no	no

Post-Mitigation (6,600 MW)	Calculations	Winter	Spring	Summer	Fall
Applicant's Affiliated Uncommitted Supply	A	33,704	33,704	33,704	33,704
Native Load	B2	14,160	12,853	13,193	13,798
Operating Reserves	B	966	966	966	966
Planned Outages	C	1,090	374	298	429
Hydro Derates	D	0	0	0	0
Applicant Uncommitted Capacity	E = A-B-B2-C-D	17,488	19,511	19,247	18,511
Local Generation in PJM Classic and PJM West	F	161,149	161,149	161,149	161,149
Hydro Derates	G	0	0	0	0
Other Native Load Commitments	H	79,608	73,747	75,147	74,713
Operating Reserves (relative to Avg Daily Peak)	I	4,618	4,618	4,618	4,618
Planned Outages	J	5,211	1,789	1,427	2,051
Competing Imports from 'first-tier' markets	K	6,781	6,781	6,781	6,781
Total Uncommitted Supply	L = F-G-H-J+K	78,493	87,776	86,738	86,548
Applicant's Affiliated Market Share	M = E/L	22.3%	22.2%	22.2%	21.4%
Do Applicant and its affiliates pass the Market Share Test?	N = M < 20%	no	no	no	no

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6.7 Supplemental Concentration Test of Spare Capacity

Exhibit 44. Summary results of the Test for Spare Capacity

PJM Expanded			PRE MERGER							POST MERGER				Status of screen failure?
Season	Period	Destination Market Price	Exelon MW	Exelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI	HHI Change		
SUMMER	Extremes	\$ 113	591	10.65%	905	16.31%	5,550	1,101	1,496	26.96%	1,448	347	Fail	
SUMMER	Top 10%	\$ 84	1,346	10.57%	2,545	19.98%	12,742	1,174	3,891	30.54%	1,597	422	Fail	
SUMMER	Rest of Peak	\$ 65	4,521	14.93%	2,931	9.68%	30,289	829	7,452	24.60%	1,118	289	Fail	
WINTER	Top 10%	\$ 120	783	9.56%	1,880	22.93%	8,196	1,219	2,663	32.49%	1,658	438	Fail	
WINTER	Rest of Peak	\$ 76	4,947	13.32%	4,428	11.92%	37,137	761	9,375	25.25%	1,079	318	Fail	
SHOULDER	Top 10%	\$ 83	1,141	10.45%	2,346	21.49%	10,916	1,187	3,486	31.94%	1,636	449	Fail	
SHOULDER	Rest of Peak	\$ 65	4,051	15.13%	2,672	9.98%	26,775	831	6,723	25.11%	1,133	302	Fail	
Pre 2004 PJM			PRE MERGER							POST MERGER				Status of screen failure?
Season	Period	Destination Market Price	Exelon MW	Exelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI	HHI Change		
SUMMER	Extreme	\$ 113	591	12.70%	905	19.46%	4,652	1,397	1,496	32.16%	1,891	494	Fail	
SUMMER	Top 10%	\$ 84	1,346	13.47%	2,545	25.47%	9,993	1,482	3,891	38.94%	2,169	686	Fail	
SUMMER	Rest of Peak	\$ 65	1,538	9.20%	2,931	17.53%	16,721	1,029	4,469	26.73%	1,351	322	Fail	
WINTER	Top 10%	\$ 120	783	11.07%	1,080	26.57%	7,070	1,521	2,660	37.65%	2,110	588	Fail	
WINTER	Rest of Peak	\$ 76	1,684	7.31%	4,428	19.21%	23,046	938	6,112	26.52%	1,218	281	Fail	
SHOULDER	Top 10%	\$ 83	1,141	13.36%	2,346	27.47%	8,538	1,519	3,486	40.83%	2,253	734	Fail	
SHOULDER	Rest of Peak	\$ 65	1,313	8.84%	2,672	17.99%	14,851	1,027	3,985	26.83%	1,345	318	Fail	
PJM East			PRE MERGER							POST MERGER				Status of screen failure?
Season	Period	Destination Market Price	Exelon MW	Exelon Market Share	PSEG MW	PSEG Market Share	Market Size	HHI	Merged Entity MW	Merged Entity Market Share	HHI	HHI Change		
SUMMER	Extreme	\$ 125	588	21.96%	770	28.76%	2,677	2,098	1,958	50.73%	3,362	1,263	Fail	
SUMMER	Top 10%	\$ 87	1,343	26.06%	1,910	37.07%	5,153	2,369	3,253	63.13%	4,297	1,932	Fail	
SUMMER	Rest of Peak	\$ 69	1,535	14.60%	2,928	27.84%	10,515	1,636	4,462	42.44%	2,449	813	Fail	
WINTER	Top 10%	\$ 123	780	17.98%	1,736	40.01%	4,340	2,478	2,517	57.99%	3,917	1,438	Fail	
WINTER	Rest of Peak	\$ 80	1,681	12.31%	4,425	32.39%	13,660	1,642	6,106	44.70%	2,440	797	Fail	
SHOULDER	Top 10%	\$ 86	1,138	24.17%	1,901	40.38%	4,709	2,502	3,040	64.55%	4,454	1,952	Fail	
SHOULDER	Rest of Peak	\$ 68	1,310	13.73%	2,669	27.96%	9,544	1,589	3,979	41.69%	2,357	768	Fail	

6.8 Revised fuel prices

Exhibit 45. Fuel Prices

		Delivered Coal Prices (2006 \$/MMBtu)		
		Winter	Summer	Shoulder
Commodity Price	Sandy River	\$2.11	\$2.04	\$2.05
<i>Destination market</i>	<i>States</i>			
PJM Control Area	DC	\$2.61	\$2.58	\$2.58
PJM Control Area	DE	\$2.61	\$2.58	\$2.58
PJM Control Area	IL	\$1.95	\$1.90	\$1.92
PJM Control Area	IN	\$2.06	\$1.99	\$2.00
PJM Control Area	KY	\$2.09	\$2.01	\$2.02
PJM Control Area	MD	\$2.26	\$2.25	\$2.51
PJM Control Area	MI	\$2.24	\$2.15	\$2.14
PJM Control Area	NC	\$2.65	\$2.59	\$2.60
PJM Control Area	NJ	\$2.71	\$2.57	\$2.55
PJM Control Area	OH	\$2.11	\$2.04	\$2.05
PJM Control Area	PA	\$2.11	\$2.12	\$2.13
PJM Control Area	TN	\$2.14	\$2.14	\$2.12
PJM Control Area	VA	\$2.44	\$2.33	\$2.38
PJM Control Area	WV	\$2.15	\$2.09	\$2.09
<i>First-tier markets</i>	<i>States</i>			
NYISO	NY	\$2.24	\$2.35	\$2.29
TVA	TN	\$2.14	\$2.14	\$2.12
Duke	average NC/SC	\$2.57	\$2.51	\$2.52
CPL (Progress)	average NC/SC	\$2.57	\$2.51	\$2.52
MISO	average MI/WI/IL/IN/OH/KY	\$2.07	\$2.00	\$2.01

		Delivered FO#2 Prices (2006 \$/MMBtu)		
		Winter	Summer	Shoulder
Commodity Price	New York Harbor	\$11.65	\$10.87	\$11.19
Destination market	States Rack Price Location			
PJM Control Area	DC Baltimore, MD	\$13.90	\$13.12	\$13.44
PJM Control Area	DE Wilmington, DE	\$14.78	\$14.00	\$14.32
PJM Control Area	IL Chicago Citygate	\$13.25	\$12.47	\$12.79
PJM Control Area	IN Chicago Citygate	\$13.25	\$12.47	\$12.79
PJM Control Area	KY Knoxville, TN	\$14.19	\$13.41	\$13.74
PJM Control Area	MD Baltimore, MD	\$13.90	\$13.12	\$13.44
PJM Control Area	MI Chicago Citygate	\$13.25	\$12.47	\$12.79
PJM Control Area	NC Charlotte, NC	\$14.11	\$13.33	\$13.66
PJM Control Area	NJ Newark, NJ	\$14.00	\$13.22	\$13.55
PJM Control Area	OH Aurora, OH	\$14.30	\$13.52	\$13.84
PJM Control Area	PA Altoona, PA	\$14.35	\$13.57	\$13.89
PJM Control Area	TN Knoxville, TN	\$14.19	\$13.41	\$13.74
PJM Control Area	VA Norfolk, VA	\$13.61	\$12.82	\$13.15
PJM Control Area	WV Montvale, VA	\$13.97	\$13.19	\$13.51
First-tier markets	States Rack Price Location			
NYISO	NY New York, NY	\$14.29	\$13.50	\$13.83
TVA	TN Knoxville, TN	\$14.19	\$13.41	\$13.74
Duke	- Charlotte, NC	\$14.11	\$13.33	\$13.66
CPL (Progress)	- Charleston, SC	\$14.23	\$13.45	\$13.78
MISO	- Chicago Citygate	\$13.25	\$12.47	\$12.79

		Delivered FO#6 Prices (2006 \$/MMBtu)		
		Winter	Summer	Shoulder
Commodity Price	New York Harbor	\$8.03	\$7.98	\$7.89
Destination market	States Rack Price Location			
PJM Control Area	DC Baltimore, MD	\$9.22	\$8.82	\$8.82
PJM Control Area	DE Wilmington, DE	\$8.98	\$8.49	\$8.51
PJM Control Area	IL Philadelphia, PA	\$9.00	\$8.60	\$8.61
PJM Control Area	IN Philadelphia, PA	\$9.00	\$8.60	\$8.61
PJM Control Area	KY Norfolk, VA	\$9.04	\$8.66	\$8.66
PJM Control Area	MD Baltimore, MD	\$9.22	\$8.82	\$8.82
PJM Control Area	MI Philadelphia, PA	\$9.00	\$8.60	\$8.61
PJM Control Area	NC Wilmington, NC	\$8.78	\$8.45	\$8.44
PJM Control Area	NJ New York, NY	\$9.31	\$8.92	\$8.90
PJM Control Area	OH Philadelphia, PA	\$9.00	\$8.60	\$8.61
PJM Control Area	PA Philadelphia, PA	\$9.00	\$8.60	\$8.61
PJM Control Area	TN Norfolk, VA	\$9.04	\$8.66	\$8.66
PJM Control Area	VA Norfolk, VA	\$9.04	\$8.66	\$8.66
PJM Control Area	WV Norfolk, VA	\$9.04	\$8.66	\$8.66
First-tier markets	States Rack Price Location			
NYISO	NY New York, NY	\$9.31	\$8.92	\$8.90
TVA	TN Norfolk, VA	\$9.04	\$8.66	\$8.66
Duke	- Wilmington, NC	\$8.78	\$8.45	\$8.44
CPL (Progress)	- Wilmington, NC	\$8.78	\$8.45	\$8.44
MISO	- Philadelphia, PA	\$9.00	\$8.60	\$8.61

			Delivered Natural Gas Prices (2006 \$/MMBtu)		
			Winter	Summer	Shoulder
Commodity Price	Henry Hub		\$8.49	\$7.30	\$7.59
Destination market	States	Trading Hub			
PJM Control Area	DC	Tetco M3	\$10.91	\$7.86	\$8.19
PJM Control Area	DE	Tetco M3	\$10.91	\$7.86	\$8.19
PJM Control Area	IL	Chicago Citygate	\$8.02	\$7.33	\$7.52
PJM Control Area	IN	Chicago Citygate	\$8.02	\$7.33	\$7.52
PJM Control Area	KY	Dominion	\$9.25	\$7.78	\$8.06
PJM Control Area	MD	Transco Z6	\$12.12	\$7.84	\$8.18
PJM Control Area	MI	Chicago Citygate	\$8.02	\$7.33	\$7.52
PJM Control Area	NC	Dominion	\$9.25	\$7.78	\$8.06
PJM Control Area	NJ	Tetco M3	\$10.91	\$7.86	\$8.19
PJM Control Area	OH	Dominion	\$9.25	\$7.78	\$8.06
PJM Control Area	PA	Transco Z6	\$12.12	\$7.84	\$8.18
PJM Control Area	TN	Tennessee Zone 0	\$8.04	\$7.11	\$7.34
PJM Control Area	VA	TCO	\$8.85	\$7.65	\$7.97
PJM Control Area	WV	Dominion	\$9.25	\$7.78	\$8.06
First-tier markets	States	Trading Hub			
NYISO	NY	NY Citygate	\$10.90	\$7.86	\$8.19
TVA	-	Tennessee Zone 0	\$8.04	\$7.11	\$7.34
Duke	-	TCO	\$8.85	\$7.65	\$7.97
CPL (Progress)	-	TCO	\$8.85	\$7.65	\$7.97
MISO	-	Chicago Citygate	\$8.02	\$7.33	\$7.52

6.9 Reference list of selected empirical studies and papers on generation, transmission and market power

Exhibit 46. Select list of academic papers discussing transmission, generation, market power, and strategic behavior

- Borenstein, S. and J. Bushnell, and C.R. Knittel, "Comments on the use of computer models for merger analysis in the electricity industry," FERC Docket No. PL98-6-000, June 1998.
- California ISO Market Surveillance Committee (F.A. Wolak, B. Barber, J. Bushnell, B.F. Hobbs), "Managing Congestion Costs in the Miguel-Imperial Valley Region", January 12, 2004 (draft).
- Day C.J. and B.F. Hobbs, and J.-S. Pang (2002): "Oligopolistic Competition in Power Networks: A conjectured Supply Function Approach," IEEE Transactions on Power Systems, Vol. 27, No. 3, 2002.
- Gedra, T.W. "On Transmission Congestion and Pricing", IEEE Transactions on Power Systems, Vol. 14, No. 1, February 1999.
- Gribik, P. and G.A. Angelidis and R.R. Kovacs, "Transmission Access and Pricing with Multiple Separate Energy Forward Markets", IEEE Transactions on Power Systems, Vol. 14, No. 3, August 1999.
- Hobbs, B.F. and F.A.M. Rijkers (in press): "Strategic Generation with Conjectured Transmission Price Responses in a Mixed Transmission System I: Formulation," IEEE Transactions on Power Systems.
- Hobbs, B.F., F.A.M. Rijkers, and A.F. Wals (in press): "Strategic Generation with Conjectured Transmission Price Responses in a Mixed Transmission System II: Application," IEEE Transactions on Power Systems.
- Koesrindartoto, D. and L. Tesfatsion, "Testing the Reliability of FERC's Wholesale Power Market Platform: An Agent-Based Computational Economics Approach," 24Th USAEE/IAEE North American Conference, Washington, D.C., July 2004.
- Oren, S. and P. Spiller, P. Varaiya and F.F. Wu, "Nodal Prices and Transmission Rights: A Critical Appraisal", POWER Report PWP-025, University of California Energy Institute, Berkeley, December 1994.
- Wilson, R., "Report to the Competition Bureau of Industry Canada Efficiency Considerations in Designing Electricity Markets," March 1998.
- Wolak, F.A. and R.H. Patrick, "The Impact of Market Rules and Market Structure on the Price Determination Process in the England and Wales Electricity Market", POWER Report, PWP-047, University of California.
- Wu, F.F. and P. Varalva, P. Spdler, S. Oren, "Folk Theorems on Transmission Access - Proofs and Counterexamples," Journal of Regulatory Economics 10(1). pp 5-23, July 1996.
- Younes, Z. and M. Ilic, "Generation Strategies for Gaming Transmission Constraints Will the Deregulated Electric Power Market Be an Oligopoly?" Thirty-First Annual Hawaii International Conference on System Sciences-Volume 3, Kohala Coast, HI, January 1998.

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9-22-05
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BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DOCKETED
NOV 10 2005

RE: JOINT APPLICATION OF PECO ENERGY COMPANY
AND PUBLIC SERVICE ELECTRIC AND GAS
FOR APPROVAL OF THE MERGER OF
PUBLIC ENTERPRISE GROUP INCORPORATED
WITH AND INTO EXELON CORPORATION

DOCKET NO. A- 110550F0160

**DOCUMENT
FOLDER**

SURREBUTTAL TESTIMONY
OF
JULIA FRAYER

**Surrebuttal to Joint Applicants' Rebuttal Concerning:
Analysis of Applicants' Market Power Mediation Steps**

SURREBUTTAL TESTIMONY OF JULIA FRAYER

1 **Q. Please state your name, business affiliation and address.**

2 A. My name is Julia Frayer. I am a Partner and Managing Director of London
3 Economics International LLC ("LEI"). My business address is 717 Atlantic
4 Avenue, Suite 1A, Boston, MA 02111.

5

6 **Q. Have you previously filed testimony in this proceeding?**

7 A. Yes. I have filed written direct testimony on behalf of Metropolitan Edison
8 Company ("Met-Ed"), Pennsylvania Electric Company ("Penelec") and
9 Pennsylvania Power Company ("Penn Power"), which has been designated as
10 Met-Ed/Penelec/Penn Power Statement No. 3.

11

12 **Q. What is the purpose of this further testimony?**

13 A. The purpose of this surrebuttal testimony is to respond to portions of written
14 rebuttal testimony, filed on behalf of the Joint Applicants by Dr. Hieronymus
15 (PECO Statement No. 3-R), concerning matters I discussed in my direct
16 testimony. For purposes of this surrebuttal, I refer to Met-Ed, Penelec and Penn
17 Power, collectively, as the "FirstEnergy Companies".

1 **Q. What fundamental point about your testimony and the FERC Order has Dr.**
2 **Hieronymus glossed over and mischaracterized?**

3 A. I made the point in my direct testimony both in this Commission proceeding and
4 at FERC that, with the withdrawal of restrictions on the purchasers of divested
5 capacity, the impact on competition of the merger cannot be known; and, thus, the
6 merger cannot be shown definitively to be in the public interest at this point. In
7 other words, until the specific units of the Applicants to be divested are known
8 and their purchasers are known, the impact of the proposed merger on
9 competition cannot be known, and the final and definitive public interest
10 determination cannot be made.

11
12 The FERC Order has specifically provided that agency with a further opportunity
13 to look at the proposed merger in light of the actual results of the Applicants'
14 divestiture activities. Yet, Dr. Hieronymus would recommend that this
15 Commission approve the merger unconditionally, without the benefit of any
16 further review *as required* by the FERC Order.

17
18 I do not believe the Commission can discharge its obligation to ensure that the
19 proposed merger results in no adverse impact on retail competition in
20 Pennsylvania, without reserving the same type of examination that the FERC
21 Order provides. Without such a reservation of judgment, this Commission would
22 be approving the merger in a vacuum.

1 Contrary to the FERC Order, Dr. Hieronymus argues to this Commission (at
2 pages 2, 3 and 40 of his rebuttal) that the merger as currently proposed to be
3 mitigated by the Applicants (and as conditionally approved by the FERC Order)
4 “will not harm competition in electricity markets”. He goes on to state (at page 3
5 of his rebuttal) that “[n]o additional mitigation is required...”

6
7 I think these statements and requests for such specific findings by this
8 Commission are misleading and disingenuous, and inappropriately attempt to pre-
9 empt or undermine the relevant and meaningful analysis that is yet to occur,
10 following the actual facts of the divestiture activities as opposed to the predicted
11 and untested assurances that are now of record.

12
13 **Q. What is the effect of the FERC order, which Dr. Hieronymus has**
14 **mischaracterized?**

15 A. The FERC Order conditionally authorized the proposed merger and internal
16 restructuring, subject to the FERC’s acceptance of the Applicants’ various
17 compliance filings as discussed in the body of the FERC Order. Furthermore, the
18 FERC has retained authority under sections 203(b) and 309 of the Federal Power
19 Act to issue supplemental orders as appropriate.

20
21 Applicants are required to make a compliance filing to the FERC within 30 days
22 of the completion of their divestiture, providing a complete analysis of the
23 merger’s effect on competition in energy and capacity markets, given actual

1 plants divested and the actual acquirers of the divested assets and energy contracts
2 from virtual divestitures. This requirement is consistent with the overriding
3 concerns expressed in my testimony.

4
5 If the required analysis shows that the merger's harm to competition has not been
6 sufficiently mitigated, then the Applicants must propose additional mitigation.
7 (FERC Order at pages 74-75).

8
9 Dr. Hieronymus skips over such fundamental points in his rebuttal. In fact, he
10 presumes conclusively that "[a]ny additional divestiture found necessary by
11 interveners" would be "due either to misapplication of Applicant's mitigation
12 commitments, misunderstanding of the screens themselves, or market definitions
13 that are not applicable". (Dr. Hieronymus rebuttal, at page 3).

14
15 Dr. Hieronymus then recommends (on the basis of his untested presumptions,
16 above) that the Commission "find that this transaction does not have a
17 competitive effect on relevant markets and will not impede the ability of
18 Pennsylvania consumers to benefit from competitive electricity markets."

19
20 This recommendation from Dr. Hieronymus flies directly in the face of the
21 FERC's Order imposing additional requirements on the Applicants to
22 affirmatively show no adverse impact on competition; and, if accepted, would

1 result in this Commission providing approval for the competitive impacts of a
2 merger that as yet have not been finally approved at FERC.

3
4 **Q. Should the FERC Order eliminate any and all concerns by this Commission
5 about the proposed merger's potential impact on retail competition?**

6 A. No. The Applicants must come back to FERC once specific units to be divested
7 and purchasers have been identified, and present a new "Appendix A" analysis to
8 FERC, demonstrating that any harm to competition has been mitigated. As
9 Paragraph 142 of the FERC Order makes clear, if this analysis fails to show that
10 the merger's harm to competition has not been sufficiently mitigated, the FERC
11 will require additional mitigation at that time.

12
13 **Q. What recommendation do you make to the Commission in view of the FERC
14 Order?**

15 A. In view of the FERC Order, which reserves to a later time the ultimate approval of
16 the mitigation plan outlined in the proposed merger, based upon the outcome of
17 the actual divestiture activities undertaken by the Applicants, I would recommend
18 that this Commission should similarly postpone its final approval of the
19 mitigation plan for the merger pending the outcome of such divestitures.

20
21 **Q. Does this complete your surrebuttal testimony?**

22 A. Yes, it does.