UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.) Docket No. ER04-539-000

DECLARATION OF JOSEPH E. BOWRING

I, Joseph E. Bowring, Manager of the PJM Interconnection, L.L.C. Market Monitoring Unit depose and say as follows:

Structural Issues in the Northern Illinois Control Area ("NICA") Markets

1. This declaration responds to the statements regarding mitigation measures in the NICA markets proposed by the PJM Interconnection, L.L.C. ("PJM") Market Monitoring Unit ("MMU"). The primary objections to the proposed mitigation measures were made by the EME Companies[1] and were supported by an Affidavit from Dr. Roy Shanker.

2. In reviewing the issues related to the proposed mitigation measures, it is important to keep these measures in context. Mitigation measures for the energy market are expected to have a maximum potential application period of approximately 5 percent of total hours. If participants in the NICA energy markets behave competitively, the mitigation measures will never be applied, as their offers will be no higher than the mitigation caps. If participants in the NICA capacity markets behave competitively, the capacity market mitigation measures similarly will never result in limiting an offer in the capacity market. Given the actual conditions in the capacity markets in NICA, it is very unlikely that the capacity market mitigation measures will actually have an impact. Nonetheless, these mitigation measures are required in order to assure market participants that the NICA markets will be competitive.

3. The NICA Competitiveness Report and the appendix to that report[2] analyze the structural conditions within NICA markets and the expected impact of

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[1] The EME Companies collectively refers to Edison Mission Energy, Edison Mission Marketing & Trading, Inc. and Midwest Generation EME, LLC.

[2] "Report Regarding the Expected Competitiveness of Markets in the Northern Illinois Control Area after Integration into PJM" (Aug. 7, 2003) at pp. 1-2 ("NICA Competitiveness Report"). The report is attached as Exhibit 1 to PJM's transmittal filed in this docket on February 5, 2004 and also is available at http://www.pjm.com/markets/market-monitor/downloads/mmu-reports/20030807-nica-integration.pdf. On September 24, 2003, the PJM market monitor released an appendix to the NICA Competitiveness Report with additional information regarding the methods used, the assumptions, and the results of its NICA market

external competitive pressures from the PJM market and from areas surrounding NICA. The report concluded that competitive pressures deriving from integration with the PJM markets would significantly increase the level of competition in the NICA markets over 95 percent of the hours of the year. The report also concluded that for 5 percent or fewer hours of the year, competitive pressures from the PJM market and from external resources would not be adequate to ensure these improved competitive conditions in the NICA energy market. The mitigation measures are designed to ensure that the NICA markets experience competitive outcomes during 100 percent of the hours.

4. Dr. Shanker's fundamental claims are that the MMU has not demonstrated a structural issue with the markets in the NICA and that the MMU did not take account of imports from areas surrounding the NICA.

5. Both of Dr. Shanker's claims are incorrect. The MMU examined the structural conditions in the NICA market on both a stand-alone basis and accounting for imports and exports. The MMU concluded that there are significant structural issues in the NICA energy market, that competition will be increased due to the proposed integration during 95 percent of annual hours but that neither PJM markets nor imports from surrounding areas will ensure this increase in competition during the remaining 5 percent of the hours. In addition, imports cannot provide the load following services in NICA currently supplied only by NICA mid-merit generation and Dr. Shanker has not asserted that imports can fill that role.

6. Dr. Shanker's position on the structural conditions in the NICA market is not based on a quantitative analysis. Dr. Shanker's position regarding imports is ultimately based on his assumption of competitively priced imports, made without any empirical support.

7. The MMU analyzed the market structure of the NICA. The result of that analysis showed that there is a structural issue in the NICA market based on very high levels of ownership concentration in the base load and mid-merit segments of the supply curve. The MMU was aware of the existence of multiple Power Purchase Agreements ("PPAs") and reviewed the extant, publicly available, PPAs. These are bilateral agreements between generation owners and Commonwealth Edison Company ("ComEd") providing that the output of identified generating stations, located in the NICA, would be available to ComEd for a specified capacity and energy price over a defined time period. The PPAs have a finite life. The remaining EME PPAs all have expiration dates of December 31, 2004, so it is important not to overstate the

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power analysis ("NICA Report Appendix"). This appendix is attached as Exhibit 2 to PJM's transmittal letter filed on February 5, 2004 in this docket and also is available at http://www.pjm.com/markets/market-monitor/downloads/mmu-reports/20030925-mmu-appendix-nica-report.pdf.

importance of the PPAs when analyzing the structure of generation ownership.

8. Ownership of generation in the NICA is highly concentrated. The structure of generation ownership in NICA is not a mystery. ComEd owns nuclear power plants that comprise 96 percent of base load capacity in the NICA. EME Companies owns 5,577 MW of the total 7,200 MW of mid-merit generation, or 77 percent. The mid-merit portion of the supply curve is highly concentrated, with two owners and an HHI of 6508. All of the EME Companies' current PPAs end at December 31, 2004 so their existence is not relevant to the market analysis after that time. Accounting for the current PPAs covering mid-merit plants, the HHI is 5571, showing that the mid-merit portion of the supply curve is highly concentrated even with the PPAs. The ownership of peaking assets is more diversified, but EME Companies is the largest single owner of peaking plants with a 27 percent share and the HHI is 1492, indicating a moderate level of concentration, while the individual market share is a serious market structure concern. After accounting for PPAs, the HHI for peaking plants is 2303, indicating a high level of concentration. Dr. Shanker did not report the results of his analysis of the ownership structure of generation or the impact on that structure of PPAs.

9. The high level of concentration in the mid-merit portion of the supply curve is important because of the nature of the load duration curve in NICA. The NICA load is within the mid-merit portion of the supply curve 52 percent of all hours during the year and is within base load or mid-merit 91 percent of all hours. During the hours that the proposed mitigation measures could be effective, mid-merit generation is the marginal source of energy to serve load for 82 percent of the hours.

10. The high level of ownership concentration in the mid-merit portion of the supply curve is also especially important because mid-merit units provide load following characteristics not available from the base load or peaking facilities in the NICA or from imports.

11. The NICA Competitiveness Report and the appendix to that report[3] state repeatedly that the expected role of competition from both PJM markets and from surrounding control areas was included as an integral part of the analysis. As an example, the first sentence of the NICA Competitiveness Report states: "The PJM Market Monitoring Unit has performed an analysis of expected market conditions in the Northern Illinois Control Area (NICA) after integration into PJM, including the expected role of competition from the surrounding control areas." Likewise, page two of the report states: "Relevant competitive pressures can come both from the PJM area via the pathway and from the areas around the NICA, including PJM, via non-pathway imports. In order to better evaluate the external competitive pressures, the MMU ran a

[3] See fn 2 supra.

series of analyses using the GE MAPS model." The logic of the report was to examine to the structural conditions within the NICA market and then to determine the likely level of competition from external sources, including both PJM markets and areas surrounding NICA.

12. There is no question that imports from the control areas surrounding NICA occur routinely and that they are a source of competitive pressure. The issue is whether this competitive pressure is adequate to offset the market position of the dominant generation owners in NICA during the 5 percent of annual hours where there is an identified issue. For the reasons detailed in the NICA Competitiveness Report and below, the answer is clearly no. Competitive pressures from external resources are not adequate to offset the market position of the dominant generation owners in NICA during the 5 percent of annual hours where there is an identified issue with the lack of competition. In addition, imports cannot provide the significant levels of load following capability in NICA that are currently provided only by NICA mid-merit generation.

13. In addition to the NICA Competitiveness Report, the MMU communicated directly to the EME Companies the methods used to address external competitive pressures and the sensitivity analyses used to evaluate such pressures. The MMU met with EME Companies on several occasions. The MMU made clear in the NICA Competitiveness Report and the appendix to that report that the GE MAPS model was used for the detailed analysis. Dr. Shanker has not reported the results of any analysis that contradicts the MMU analysis regarding the expected level of competition from imports. Dr. Shanker has not provided any details about the sources and expected prices of the competitive offers from surrounding control areas. Dr. Shanker's conclusions are general and they are without factual basis.

14. In order to test the expected role of imports more directly, the MMU performed a sensitivity analysis using GE MAPS. In this sensitivity, a 3,000 MW block of mid-merit generation was eliminated in the NICA and then the entire Eastern Interconnection was economically redispatched, in order to determine how the generation would be replaced. This is a direct test of the extent to which there are competitive external resources that can be imported to compete with base load and mid-merit generation resources within NICA. (This sensitivity was reported in a presentation to stakeholders at a meeting on October 7, 2003 and the slides posted to the PJM web page.[4])

15. The results of this sensitivity analysis showed that competition from external areas has a very limited impact on the mid-merit segment of the supply curve. During peak hours, 91 to 96 percent of the 3,000 MW deficit was replaced by

[4] The results of this sensitivity test were presented to the PJM stakeholders at a stakeholder meeting on October 7, 2003. This presentation is available on the PJM website at http://www.pjm.com/markets/market-monitor/downloads/mmu-presentations/20031007-stakeholders-rev.pdf.

NICA internal resources and not external resources. During off peak hours, 96 to 100 percent of the 3,000 MW deficit was replaced by NICA internal resources. Based on a pure economic dispatch of the entire eastern interconnection, the lost mid-merit generation in NICA was almost entirely replaced by internal NICA generation and not by external sources. The economic dispatch is done on a cost basis and thus reflects the most efficient, competitive outcome, unaffected by the institutional realities of regulated utilities or attempts to exercise market power. The evidence supports the conclusion that there are not external resources that can compete with the mid-merit units in NICA via import.

16. What Dr. Shanker misses is that the simple existence of imports does not assure competition. The imports must be demonstrably competitive with NICA generation. The MMU identified the lack of competition in the base load and mid-merit portions of the NICA supply curve as being issues. The MMU analysis shows that imports do not adequately address this issue during the 5 percent of annual hours when there is an identified issue with the level of competition and during which, therefore, mitigation could occur.

17. Dr. Shanker also mistakenly assumes that the simple existence of generation in surrounding control areas in excess of native load plus reserve margins necessarily results in competition over the relevant range of the supply curve in the NICA.[5] If the regulated utilities in the surrounding control areas dedicate their most economic resources to their own load, then the remaining generation, while excess, does not assure a viable source of competitive pressure on NICA generation.[6] Moreover, the conclusion is that even if, under economic dispatch, there were resources that could economically displace the NICA mid-merit generation (which there are not), there are institutional barriers to that competition. Even with the elimination of through and out rates, as detailed in the NICA Competitiveness Report and below, imports do not obviate the need for mitigation during the limited number of hours in question.

18. Dr. Shanker did not attempt to demonstrate that there are viable competitive alternatives to NICA base load and mid-merit generation in external areas that could compete with NICA resources. Rather, Dr. Shanker simply assumes that competition from imports exists. Dr. Shanker states his central conclusion and

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[5] Motion For Leave To Intervene And Protest of Edison Mission Energy, Edison Mission Energy, Edison Mission Marketing & Trading, Inc. and Midwest Generation EME, LLC, Docket No. ER04-539-000 (Feb. 26, 2004) Exh.A (Affidavit of Roy J. Shanker PH.D) at p. 32, ¶ 48 ("Shanker Aff.").

[6] The MMU analysis shows that even if these regulated utilities relied entirely on pure economic dispatch, the generation in the surrounding areas would not adequately address the issue of competition during the identified 5 percent of the hours.

the basis for that conclusion at page 11 of his affidavit: "Thus, the market concentration ignores literally thousands of megawatts of import capability into NICA which, in and of themselves, presumably are more than adequate to compete with internal base-load and mid-merit units." In other words, Dr. Shanker assumes that there is adequate competition while providing no evidence to support that assumption.

19. In addition to the above evidence presented by the MMU that demonstrated the lack of external competitive resources, Dr. Shanker ignores a key feature of the mid-merit portion of the supply curve. Mid-merit coal units owned by EME Companies are an essential source of load following capability in the NICA. The nuclear generation owned by ComEd is not capable of following load. Peaking units are not generally capable of, or competitive sources of, load following. EME Companies has a 77 percent share of this mid-merit generation that is capable of ramping up and down in responses to changes in load. This load following capability is essential to operating a control area as it permits the matching of generation to load across time. It is virtually impossible for imports to substitute for load following. The unique load following characteristics of the EME Companies generation makes the market share and HHI statistics for mid-merit especially significant as there is no competitive substitute for this generation.

20. It is also important to understand that the appropriate definition of cost under the mitigation proposal must include the costs associated with units providing load following services. It is a relatively straightforward technical matter to define the costs associated with load following services and such costs will be included, as appropriate, in the implementation of the mitigation measures.

21. Dr. Shanker asserts that data presented in the appendix to the NICA Competitiveness Report supports his claims regarding the sensitivity of imports to price changes. Although there is some import sensitivity to price changes, as the MMU report and appendix state explicitly, Dr. Shanker misinterprets the data when suggesting that this is evidence that imports can provide an effective source of competition for NICA mid-merit generation.[7] The figure below summarizes the results of GE MAPS cases simulating the import/export behavior of NICA under various hurdle rate scenarios.[8] Dr. Shanker points to the fact that under the assumption of lower hurdle rates, import and export levels increased relative to the higher hurdle rate cases. A comparison of the data for the higher hurdle rate (15/9 Hurdle Case) and lower hurdle rate (Variable Hurdle Case) cases during the hours when the pathway is constrained from PJM to NICA and mitigation could occur, shows a maximum difference in imports, between scenarios, of 750 MW that occurs during off peak hours and lasts only 18 hours. This increase in imports, with a

[7] Shanker Aff. at p. 20.

[8] See NICA Report Appendix.

duration of only 18 hours, represents about 6 percent of the average NICA load and about 8 percent of the capacity controlled by the EME companies. The increase in imports resulting from lower hurdle rates and the duration of that increase was not large enough to displace a significant level of NICA generator resources for a significant number of hours and thus does not represent a significant level of competition. The level of total net imports during the time period relevant for potential mitigation (pathway constrained from PJM to NICA) under any scenario analyzed was 2,248. This level of imports occurred during the off peak period and lasted only 18 hours.

22. Dr. Shanker states that when the pathway was constrained from PJM to NICA, and "through and out" rates were eliminated, higher levels of imports from other control areas flowed into NICA. The data relevant to this assertion is found in a comparison of two cases in which the only change is the elimination of “through and out” rates. Import differences between these cases could reasonably be attributed to the removal of the through and out rates as all other model parameters were held constant. The two cases to compare are the Variable Hurdle Case and the Variable RTOR Hurdle Case. The Variable RTOR Hurdle Case is the same as the Variable Hurdle Case except that the through and out rates were removed. Contrary to Dr. Shanker’s assertion, during a PJM to NICA pathway constraint, the only time period during which mitigation measures could be imposed, NICA net imports actually decreased when through and out rates were removed. The removal of through and out rates did result in a 95 MW increase in imports during periods when the pathway was unconstrained, but this occurs when there is no issue with competition in NICA and no mitigation could occur under the proposal. The removal of through and out rates did also lead to an increase in wheeling through NICA. These increased wheeling flows did not displace NICA resources, but instead served load in higher priced adjacent regions. In short, the removal of through and out rates did not obviate the need for mitigation for the approximately 5% of total hours in question.

Variable Hurdle Case			
Peak Hours	**Constraint Direction**		
	PJM-NICA	NICA-PJM	Unconstrained
Net Import	1,779	-903	460
Wheel	0	313	112
% Annual Hours	7%	65%	28%
Off Peak Hours	**Constraint Direction**		
	PJM-NICA	NICA-PJM	Unconstrained
Net Import	2,248	-2,658	-1,143
Wheel	0	0	25
% Annual Hours	0%	94%	6%

Variable RTOR Hurdle Case			
Peak Hours	**Constraint Direction**		
	PJM-NICA	NICA-PJM	Unconstrained
Net Import	1,449	-799	555
Wheel	790	972	945
% Annual Hours	6%	66%	28%
Off Peak Hours	**Constraint Direction**		
	PJM-NICA	NICA-PJM	Unconstrained
Net Import	239	-2,997	-1,534
Wheel	1,665	5	403
% Annual Hours	1%	92%	7%

15/9 Hurdle Case			
Peak Hours	**Constraint Direction**		
	PJM-NICA	NICA-PJM	Unconstrained
Net Import	1,322	-927	178
Wheel	0	14	43
% Annual Hours	16%	35%	49%
Off Peak Hours	**Constraint Direction**		
	PJM-NICA	NICA-PJM	Unconstrained
Net Import	1,498	-1,346	-631
Wheel	0	0	16
% Annual Hours	1%	87%	12%

15/9 Reduced Capacity Hurdle Case			
Peak Hours	**Constraint Direction**		
	PJM-NICA	NICA-PJM	Unconstrained
Net Import	1,587	-877	360
Wheel	0	12	32
% Annual Hours	29%	22%	49%
Off Peak Hours	**Constraint Direction**		
	PJM-NICA	NICA-PJM	Unconstrained
Net Import	916	-1,259	-516
Wheel	51	0	21
% Annual Hours	3%	82%	15%

23. Dr. Shanker misstates the level of import and export capability into and out of the NICA.[9] What is relevant for competition is the maximum simultaneous import capability of the control area and not the separately calculated interface Total Transmission Capability (TTC) numbers. TTC levels are calculated under the assumption that all interchange for the region occurs on the single interface analyzed. Clearly, the relevant number for competition is the simultaneous import capability and not the sum of individual interface TTCs. The maximum simultaneous import capability is between 3,400 MW and 4,900 MW.

Proposed Energy Market Mitigation

24. Dr. Shanker criticizes the proposed energy market mitigation measures proposed by the MMU as "regulatory overkill." Rather, the proposed energy market mitigation measures are tailored to ensure that the benefits of increased competition include all hours and to limit the potential hours of mitigation to 5 percent or less of total hours. This targeted mitigation is required based on the structural problem in the NICA markets and the absence of adequate competitive forces from any source during these hours. Contrary to Dr. Shanker's position, the MMU analysis explicitly recognizes the increase in competition that results from the proposed integration of the NICA into PJM. During the approximately 95 percent of all hours that the pathway is

[9] See e.g., Shanker Aff. at p. 18 .

unconstrained or constrained from NICA to PJM, the integration creates competitive pressures on NICA generation that do not exist today.[10] Dr. Shanker focuses on the approximately 5 percent of all hours during which the ability to exercise market power may exist. The MMU analysis recognizes that in order to operate a competitive market in the NICA market during these hours, the identified mitigation measures are required. The MMU proposals are designed to ensure that the benefits of increased competition occur for 100 percent of the hours. The mitigation measures will never be triggered if participants in the NICA energy market behave in a competitive manner.

25. PJM, in its February 5th filing in this docket stated that the MMU would monitor imports to determine if competitive constraints on NICA market behavior emerge based on potential or actual imports. It should be clear that this does not change the conclusion, based on simulations of the entire eastern interconnection and thus including all imports to and exports from the NICA, that imports do not prevent the exercise of market power by units in the NICA when all units are economically dispatched during the 5 percent of all hours that are of concern. While imports, given the current set of generation resources, do not prevent the potential exercise of market power, it is possible that the markets could evolve to the point where imports do so. The proposed mitigation measures are inherently self limiting. The mitigation measures have effect only if there is non-competitive behavior. If imports prevent the exercise of market power, the mitigation measures will not have any impact.

26. The MMU will monitor the NICA markets to determine if such evolution occurs to the point where NICA markets no longer need the proposed mitigation and make a related filing, if appropriate. The proposed mitigation measures are only interim, in any event, and will expire upon the integration of AEP.

27. While Dr. Shanker fails to provide a specific alternative recommendation for an import criteria, the general suggestion made by Dr. Shanker mistakenly assumes that the appropriate threshold is a simple measure of aggregate imports.[11] Aggregate imports can reflect increased wheeling, as they do in the reduced through and out rate scenarios analyzed by the MMU. The relevant measure of competition is whether there are external resources that compete with the resources in the NICA, including, when relevant, base load, mid-merit and peaking resources.

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[10] At page 17, paragraph 23 of his affidavit, Dr. Shanker misstates the MMU position regarding competition and constraints on the pathway. This is clear from the documents published by the MMU. Dr. Shanker's memory of alleged statements in the stakeholder process is clearly incorrect and is contradicted by the published MMU documents.

[11] Shanker Aff., at p. 30.

28. In addition to the potential mitigation which could occur during the 5 percent of hours when the pathway is constrained from PJM to NICA, the MMU also proposed mitigation during the less than 0.2 percent of the hours during which there are extreme demand conditions in PJM and there are not extreme demand conditions in the NICA. This mitigation is also based on the identified structural problems in the NICA markets referenced above and the fact that under these conditions, generating resources in PJM will not serve as a competitive constraint on generation in the NICA.

Proposed Capacity Market Mitigation

29. The concentration of ownership of generation assets in the NICA was discussed above. Dr. Shanker offers no analysis or evidence as support for his general dissatisfaction with the results of the MMU analysis.12

30. Dr. Shanker has not made the claim that the offer caps proposed for the capacity market would result in less than competitive capacity market prices in the context of PJM/NICA capacity market rules. Nor did Dr. Shanker assert that a competitive bidder in the capacity markets would offer capacity for more than the proposed offer cap. In the absence of that claim, the general complaints about mitigation are just that and there are no further implications to draw. Dr. Shanker ignores the fact that the proposed offer caps explicitly allow for units with higher going forward costs to offer capacity at levels consistent with such demonstrated costs. Dr. Shanker also appears not to have taken account of the filed capacity market mitigation measures, preferring to critique an earlier version.[13] Dr. Shanker ignores the fact that the MMU independently developed the $30 going forward cost estimates based on manufacturers data and asserts, mistakenly, that the estimate is taken from an earlier study done for New England. Rather, the fact that the numbers are the same was taken as support for the relatively conservative estimate by the MMU as unit costs of all types were higher during the time frame of the New England study.

31. The scarcity price was established at the capacity market penalty rate of $160 per MW day. This is consistent with the current PJM/NICA capacity market design and appropriately reflects 100 percent of the total going forward and carrying costs of a new combustion turbine without any energy market net revenue offset. Dr. Shanker's issue with the PJM penalty rate is an argument with the fundamental PJM capacity market design which is being addressed in a separate stakeholder process. The proposed capacity market mitigation measures are entirely consistent with the current PJM capacity market design, as proposed for implementation in NICA.

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12 Shanker Aff., at p 54, ¶¶ 53 and 54.

13 Shanker Aff. at p 36, ¶ 37, and p. 39 ¶ 61.

32. Dr. Shanker appears to recognize that, with a demonstration of market power, a cost-based method of mitigation is appropriate.[14] Dr. Shanker concludes that the best approach would be to "possibly devise a more 'tailored' mitigation scheme." The MMU capacity market mitigation proposal is based on competitive behavior in the context of the PJM capacity market rules and is appropriately tailored to the realities of the generation fleet in NICA.

Proposed Monopsony Mitigation

33. The MMU report stated that "the potential exercise of monopsony power in the energy market will be carefully monitored by the MMU as the market develops." Dr. Shanker does not actually conclude that there is identifiable monopsony power, only that it is possible. That is the same conclusion reached by the MMU. Dr. Shanker's conclusion is that "it seems that such bilateral agreements in the capacity markets and subsequent market activity should be the subject of explicit MMU review." I agree.

Revenue Sufficiency

34. There is nothing in the proposed mitigation measures that will limit revenue sufficiency for generators in NICA.[15] The essential facts are that energy market mitigation will occur for no more than 5 percent of all hours and will not occur when market participants behave in a competitive manner and will not occur under conditions of high demand and associated scarcity. Capacity market mitigation will not occur when participants behave in a competitive manner and will appropriately reflect scarcity should it occur. Revenue sufficiency derives from the operation of competitive markets and the MMU mitigation proposals are designed to ensure that competitive conditions exist in the NICA markets during all hours of the year. No plausible arguments have been made that the mitigation proposals suppress the market price below the competitive level.

I declare under penalty of perjury that the foregoing is true and correct.

Executed this 12th day of March 2004.

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Joseph E. Bowring

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14 Shanker Aff. at pp. 42-43, ¶ 68.

15 See Motion to Intervene and Protest of NRG Companies, Docket No. ER04-539-000 (Feb. 26, 2004).