

ATTACHMENT II

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

Central Hudson Gas & Electric Corporation)	
Consolidated Edison Company of New York, Inc.)	
Long Island Lighting Company)	
New York State Electric & Gas Corporation)	Docket No. ER03-647-000
Niagara Mohawk Power Corporation)	
Orange & Rockland Utilities, Inc.)	
Rochester Gas and Electric Corporation and)	
New York Power Pool)	

SUPPLEMENTAL AFFIDAVIT OF DAVID B. PATTON, PH.D.

I. Qualifications and Purpose

1. My name is David B. Patton. I am an economist and President of Potomac Economics. Our offices are located at 4029 Ridge Top Road, Fairfax, Virginia 22030. Potomac Economics is a firm specializing in expert economic analysis and monitoring of wholesale electricity markets. I currently serve as the Independent Market Advisor for the New York ISO.
2. I previously filed an affidavit, dated March 21, 2003, supporting the proposed capacity demand curves. The purpose of this affidavit is to comment on a number of the issues raised in the interventions and protests related to the capacity demand curves.

II. Justification for the Demand Curve

A. Basis for the Demand Curve

3. The motion to intervene in this proceeding filed by Consolidated Edison Company of New York, Inc., and Orange & Rockland Utilities, Inc. includes an affidavit of Dr. William H. Hieronymus. Dr. Hieronymus' assertion in his affidavit that the capacity demand curve is not, in fact, a genuine demand curve is not a meaningful criticism of the proposed demand curve. He argues that a genuine demand curve would be based on the value of lost load (VOLL) and the loss of load probability (LOLP). There are at least two flaws with this argument.
4. First, Dr. Hieronymus' argument applies equally to the existing capacity market design that similarly is not based on the expected cost of losing load. Hence, regardless of the merit of his argument, it does not support the retention of the current vertical demand curve for capacity.
5. Second, Dr. Hieronymus fails to recognize the relationship between energy, operating reserves, and capacity payments. Capacity prices alone need not recover the expected value of lost load since supply resources will receive payments in the

energy and ancillary services markets during shortage conditions that ideally should be related to the expected value of lost load. The safety-net bid cap for energy established at \$1000 per MWh implicitly values operating reserves at \$1000 per MWh since one additional MW of energy produced in an hour allows the ISO to maintain an additional MW of operating reserves. To the extent that the VOLL and LOLP parameters are known or can be estimated, they most appropriately would be used to establish the safety-net bid cap (or preferably a demand curve for operating reserves). With this as a starting point, the benefit of the additional capacity to the load will be primarily related to its effect on the frequency of operating reserve shortages and associated price spikes, which is discussed in my prior affidavit.

B. Estimated Benefits of the Demand Curve

6. My prior affidavit describes long-term benefits for consumers that are attributable to reductions in the frequency of shortage conditions that produce energy market price spikes. The benefits of a one-percentage point increase in capacity margin were estimated over a range of capacity levels, averaging to approximately \$100 million annually. Dr. Hieronymus incorrectly asserts that these estimated long-term benefits of the capacity demand curve are flawed, challenging the analysis in three respects.
7. First, he argues that the benefits “decay quickly as additional generation is added” so that additional capacity would result in smaller benefits than I cite. This argument is not a meaningful criticism of the analysis of potential benefits. As I explained in my prior affidavit, the analysis was repeated for capacity margin levels up to 3 percentage points lower and higher than the current capacity margin. The \$100 million estimate is an average of the results across this range, with higher incremental benefits occurring at lower capacity margins and lower incremental benefits occurring at higher capacity margins.
8. Second, Dr. Hieronymus claims that the estimated benefits are overstated because they are based on an assumption that all customers pay real-time prices, ignoring that a considerable amount of the supply is purchased through bilateral contracts.

He claims that the bilateral contracts considered in the transition cost should have been included in the benefits analysis as well. This would be inappropriate because the transition cost analysis is an analysis of the first year, while the benefits estimate is intended to address the long-term. In the long-term, the bilateral contracts will expire and/or be renegotiated with pricing provisions that are based on price expectations from the energy spot market.

C. Effect of the Demand Curve

9. Dr. Hieronymus argues that the demand curve will not have the desired effect in preventing inefficient retirement of high cost resources. He claims that the demand curve will not contribute to keeping higher-cost resources in operation because the existing capacity prices are likely sufficient to cover their on-going costs of operation. He draws this conclusion based primarily on the capacity prices from the Summer 2001 capability period when the surplus was relatively limited, which ranged from \$6 to \$8 per kw-month. More recent results, however, do not support Dr. Hieronymus' conclusion. The monthly prices during summer 2002, when the market exhibited a significant surplus, cleared at less than \$1 per kw-month on average. This is expected under the current market design and underscores the value of the demand curve proposal.
10. Dr. Bowring, the market monitor for PJM, filed a declaration in this proceeding in which he claims that the demand curve will not effectively motivate new investment, but provides little basis for this assertion. Dr. Hieronymus draws a similar conclusion and cites a number of reasons. First, he asserts that the supply and demand conditions are subject to uncertainty that would limit investment in new capacity. I agree with Dr. Hieronymus that the capacity supply over time is subject to significant uncertainty. However, this reinforces the value of the capacity demand curve, which will serve to substantially increase the stability of the capacity prices and address the very issue Dr. Hieronymus cites.
11. Second, he claims that once long-run equilibrium is achieved, the lower average energy prices related to the reduced frequency of shortage conditions will eliminate

the incentive to build. This is certainly the case, but is not a criticism of the demand curve. When the market reaches a long-run equilibrium (with or without the capacity demand curve) the incentive to build will be limited. The relevant point for the Commission to consider is that the long-run equilibrium is affected by the structure of the capacity market. The likelihood that the more stable capacity demand curve structure will reduce investment uncertainty by improving the stability of capacity prices is the source of the consumer benefits discussed above and in the prior affidavit.

12. Lastly, Dr. Hieronymus questions the investment incentives provided by the demand curve due to lumpiness of investment (that the most economic scale of resource might be greater than the optimal quantity of capacity in a given location, resulting in reduced capacity prices). The example in his affidavit describes how lumpy investment may cause the capacity market to clear below the Target price (i.e., the price at the minimum requirement), which is set to recover the annual fixed costs of a new gas turbine. He asserts that because the price clears below the Target price, it will be “below the price needed to support that new entry”. The flaw in this argument and elsewhere in his affidavit is that it presumes the capacity payment alone must provide the incentive for new investment. This is not the case. The capacity revenue will be augmented by revenues from the energy and ancillary services markets.
13. In fact, the demand curve serves to mitigate the effect of lumpy generation investment options on the current capacity market. The issue Dr. Hieronymus describes is a much more serious issue under the current market structure. The vertical demand curve underlying the current structure can result in relatively modest investments causing the capacity prices to fall from the deficiency price levels to close to zero.

D. Bilateral Contracting

14. Dr. Hieronymus asserts in his affidavit that the capacity demand curve will reduce the incentive for loads to engage in bilateral contracts because it reduces the

potential risks of being deficient. This assertion is logically inconsistent with his prior argument that capacity supply conditions over time are uncertain, an argument suggesting that risk-averse load-serving entities will continue to benefit from forward contracting.

15. Nonetheless, it is important to recognize that most of the load continues to be served by load-serving entities under state regulation. Increased uncertainty and volatility associated with capacity prices in the future will actually decrease the incentive for LSEs to forward contract since the likelihood is increased that regulators could find the forward contracts imprudent and disallow the recovery of the contract costs.
16. For example, if spot capacity prices will clear either close to zero or at \$150 per kw-year two years in the future, a rational LSE may purchase capacity at \$40 per kw-year to hedge the risk of paying \$150 per kw-year later. If prices in that year actually clear at close to zero, the LSE will be in a position of requesting to pass through substantial costs to its customers that appear to have been avoidable in hindsight. The capacity demand curve mitigates this regulatory risk by establishing a more stable and predictable set of future market outcomes.
17. Finally, Dr. Hieronymus argues that because the precise capacity obligation is unknown until the monthly auction is completed, the proposal creates a risk that cannot be hedged. This is not true. LSEs will have the opportunity to purchase any quantity of capacity they desire in the forward market and the spot market provides a means to sell back any excess capacity purchased forward. This is analogous to the energy markets where LSEs must make contracting decisions associated with managing the risks of serving peak loads that are uncertain. In addition, the risk could be managed through the negotiation of derivative instruments, such as options on capacity. Hence, the capacity demand curve does not create risks that are either unfamiliar or unhedgable.

III. Market Power Considerations

A. General Market Power Concerns Raised in Protests

18. Dr. Hieronymus asserts in his affidavit that the market power conclusions in my prior affidavit do not hold for New York City. However, his example illustrates incentives to withhold that are substantially lower than exist under the current capacity market. Further, his estimates do not appear to recognize the capacity price cap that applies to all resources divested by Consolidated Edison within New York City. These resources constitute approximately two-thirds of the capacity needed to meet the NYC requirements with the vast majority of the remaining generation owned by the load-serving entities in NYC.
19. Dr. Hieronymus also claims that market monitoring cannot be relied on to address market power that may remain after the implementation of the demand curve. He suggests that I, as Market Advisor, was “aware that capacity was withheld and [took] no steps to sanction it”. The assertion is not accurate. With few exceptions, the capacity was completely offered. It was simply offered at prices that are higher than one would expect in a less concentrated market. As I stated in my prior affidavit and in my annual report for 2001, the outcomes are consistent with expectations given the design of the current market and the concentration of supply. These factors were known from the start of the market and were addressed by a mandatory offer provision and a capacity price cap on the divested generation owners. More aggressive mitigation under this market design would have further exacerbated the incentive problems associated with capacity in New York City, which is close to deficiency.
20. Lastly, Dr. Bowring claims that “to the extent that market power is exercised in the NYISO capacity markets, the impact of that market power could extend to the PJM capacity market.” I agree completely with Dr. Bowring, which is one reason I support the adoption of the capacity demand curve. As I showed in my prior affidavit, the demand curve virtually eliminates any incentive to withhold resources

to raise prices in the statewide market. Since capacity exports generally serve this market, the capacity demand curve should address Dr. Bowring's concern.

Alternatively, the current system provides substantial incentives to withhold as the capacity surplus decreases, which could have the effects on the PJM markets that Dr. Bowring articulates.

B. Supplemental Supply Fee

21. Both Drs. Hieronymus and Bowring cite the supplemental supply fee as a potential market power concern. They argue, as I did in my prior affidavit, that it could create the incentive for an existing generator to withhold resources from the capacity market to receive a higher payment through the supplemental supply fee. Since the filing, however, the stakeholders have approved a mitigation approach to address this concern that would require the NYISO's Market Monitoring Unit ("MMU") to review and approve payments above the demand curve.
22. The rationale for such payments would be that a generator could have going-forward costs that are higher than the capacity prices set by the demand curve in a deficiency. Going forward costs are the costs that must be covered to make it economic for a unit to remain in operation (i.e., the costs that can be avoided by shutting the unit down). Absent such a showing by a generator under the mitigation approach approved by the stakeholders, no generator could receive a payment higher than the capacity-clearing price. Some have argued that the tariff provision should be deleted that allows an existing generator to receive a payment higher than the capacity clearing price, as I did in my prior affidavit. This mitigation approach has the same effect as deleting the tariff provision altogether, but allows for the possibility that the supplemental supply fee could be used appropriately to prevent a unit that is needed for reliability from retiring. This mitigation approach, which is pending approval by the NYISO Board of Directors, would fully address the concerns surrounding the supplemental supply fee provision.

IV. Effect on Adjacent Markets

23. Dr. Bowring raises concerns that the proposal, which he labels a “regulatory intervention”, could affect PJM by increasing capacity exports from and, hence, capacity prices in PJM. While these arguments are understandable, they do not support denial of the capacity demand curve proposal for the following reasons.
24. First, the capacity market itself is a “regulatory intervention” for very specific purposes. To suggest that the current vertical demand curve is any less of a regulatory intervention than the proposed demand curve is misleading. The Commission should instead focus on the objectives of the capacity market and the extent to which the current market design and the demand curve proposal achieve those objectives.
25. Second, the fact that the proposal may increase capacity exports to New York should not be a concern. PJM is a large net exporter of energy to New York, averaging more than 1000 MW each hour in 2002. If the proposal increases capacity exports somewhat to New York, which have historically been very low, the net result would be consistent with the energy market dynamics. Hence, it would not create counter-intuitive results for the region. Further, if the Commission determines that the demand curve fairly recognizes the incremental value of capacity above the minimum requirement level, then incremental exports from PJM when PJM capacity prices are expected to be significantly lower are warranted until equilibrium is achieved between the two areas.

V. Issues Raised in the Joint Answer of Consolidated Edison, Orange and Rockland, New York State Electric and Gas, and Rochester Gas and Electric Regarding Entry Costs and Demand Curve Offsets

26. The Joint Answer raises a number of concerns regarding the factors underlying the capacity demand curve, including the cost of new entry and the need for offsets to account for energy and ancillary services revenue.

A. Demand Curve Offsets

27. The inclusion and magnitude of offsets was widely debated through the stakeholder process. Ultimately, the stakeholders agreed on consensus demand curve levels significantly below the cost of new entry at the minimum capacity requirement amount, effectively including an agreed level of offsets in the first two years.
28. However, the argument that offsets are required that reflect the full expected value of net revenue from the energy and ancillary services markets is flawed for two reasons. First, if the full expected value of these revenues at the minimum requirement level was subtracted from the demand curve prices, investing in new capacity when the market is at the minimum capacity level is, at best, a break-even proposition. Due to the inherent risk of investing in long-term assets and the significant legal and regulatory barriers to investment, the total market revenues (capacity revenue plus energy and ancillary service revenue) would necessarily be insufficient to sustain the minimum capacity requirements.
29. Second, any offset to the capacity demand curve should be a fixed amount to ensure the market achieves a stable long-run equilibrium. An offset amount that would grow as energy revenues grow would potentially cause the long-run capacity equilibrium to be unstable. This could occur because as the capacity margin decreases, the frequency of shortage conditions and associated energy revenue would increase, increasing the offset to the demand curve and reducing the capacity revenue, causing the equilibrium level of capacity to decrease further. This cycle could accelerate in the downward direction since the offsets should grow exponentially. This cycle could also occur in the upward direction as well, but the change in the offset would tend to slow as the capacity margin increases.
30. Hence, any offsets to the capacity demand curve should not be explicitly set to the actual net revenue expected from the energy and ancillary services markets. The judgment on the appropriate level of offsets would be best informed by the equilibrium level of capacity that emerges in the market, with excessive sustained

capacity margins justifying an increase in the offset. This assessment would likely be a component of the proposed evaluation that will occur after two years of experience with the capacity demand curve.

31. Given my analyses of the benefits of additional capacity above the minimum requirement level in New York, I find that the consensus capacity demand curves are reasonable for the initial implementation of the capacity demand curve framework.

B. 2002 Annual Report

32. The Joint Answer identifies changes in the estimated costs of new entry that were contained in my 2002 Annual Report, claiming that these changes raise concerns. This argument is not material to the consideration of the capacity demand curve because it affects neither the justification for the demand curve nor the parameters defining the demand curve. Nevertheless, I address these changes in this section.
33. The entry costs of \$73 and \$220 for new gas turbines in New York State and New York City were based on (i) a study by the firm e-Acumen of actual entry costs incurred in New England and (ii) the estimated costs incurred by the New York Power Authority (NYPA) to install LM 6000 gas turbines in New York City in 2001. The statewide value was adjusted upward to reflect the higher applicable taxes in New York. The New York City estimate of \$220 was adjusted downward to reflect the cost savings associated with installing a lower cost technology (Frame 7 rather than the LM6000 models installed by NYPA).
34. The adjustments, which were developed with stakeholder input in the ICAP working group, resulted in entry cost estimates in New York State of \$85 per kw-year and in New York City of \$159 per kw-year. The adjustments included in the estimates in the 2002 Annual Report result in similar entry costs of \$80 and \$180 in the State and New York City, respectively. These differences have no bearing on the proposed capacity demand curve. The consensus capacity demand curves are

set at reasonable levels, well below both the working group's estimates and the estimates in the 2002 Annual Report.

35. Furthermore, the changes in the entry cost estimates do not affect the analytic conclusions that the net revenues available from the New York markets in 2002 were not sufficient to cover the annual entry costs of a new gas turbine, either statewide where a surplus exists or in New York City where the capacity levels are close to the minimum requirement.
36. Lastly, the Joint Answer asserts that the demand curve for capacity is unnecessary due to the pricing rule changes related to shortage conditions. However, we have estimated that the net revenue effects of these changes would be approximately \$14 per kw-year in Eastern New York. This additional net revenue would not be sufficient to cause the net revenue within or outside of New York City to exceed the estimated costs of new entry. Therefore, these changes do not undermine the justification for the capacity demand curve.
37. This concludes my affidavit.

ATTESTATION

I am the witness identified in the foregoing affidavit. I have read the affidavit and am familiar with its contents. The facts set forth therein are true to the best of my knowledge, information, and belief.

/s/ David B. Patton
David B. Patton

May 2, 2003

Subscribed and sworn to before me
this ____ day of May 2003

Notary Public

My commission expires: _____