

**A REVIEW OF THE ECONOMIC ANALYSIS OF  
THE DEMAND CURVE PROPOSAL**

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## **I. Summary**

The New York Independent System Operator (NYISO) governance process currently is considering whether and how to change the existing Installed Capacity (ICAP) market. The proposal under consideration, the “Demand Curve” proposal, initially proposed by the staff of the New York Department of Public Service (Staff). Staff’s proposal attempts to address the immediate concern over revenue adequacy for divested generation, and a concern that some generators will shut down, reducing the level of reliability and increasing the level of price volatility in New York. The proposal’s unique characteristic is that it establishes an auction, based upon an administratively-determined demand curve. The use of the administrative demand curve is an explicit recognition of the externality value of reliability. The proposed change in market rules would have a short-run revenue impact in the hundreds of million dollars, and in the long-run would generate billions of dollars of increased revenues for generators.

Power Economics, Inc. has been retained by Multiple Intervenors (MI) to evaluate whether the analysis presented to support the adoption of the Demand Curve proposal is adequate. Our conclusion is that the analysis presented to the Business Issues Committee is not sufficient to support adoption of the Demand Curve proposal. In reaching this conclusion, we recognize that there have been extensive discussions in committee processes in which some of the issues raised in our report may have been evaluated. If this is the case, then the analysis should have demonstrated why the Demand Curve proposal is the preferred approach. Inasmuch as it does not, for the reasons set forth below more analysis clearly is required prior to adopting the proposed fundamental change to the NYISO’s ICAP market.

The NYISO Independent Market Monitor (NYISO-IMM), Dr. David Patton, has reviewed the Staff Demand Curve proposal and has estimated the first year cost of the proposal. No impact analysis beyond the first year has been proffered. On behalf of MI, Power Economics, Inc.

has reviewed the Demand Curve proposal and the analytical support for that proposal. For the reasons set forth herein, we do not believe that the analytical support performed to date enables the NYISO to make a prudent decision as to the adoption of the Demand Curve proposal. First, the analysis of the Demand Curve proposal presented to parties has been limited and is missing key components that one would expect in a comprehensive analysis. Moreover, the portrayal of only the first-year costs yields an unrealistic and artificially-low estimate of the cost to New York consumers of implementing the Demand Curve proposal.

## **II. The Demand Curve Proposal**

The Demand Curve proposal is designed to replace the structure of the existing ICAP/UCAP market. The current value of capacity outside of New York City, its proponents argue, is too low to maintain the continued operation of low-capacity-factor generating units and too low to attract needed investment to meet the State's future needs. Despite the current overcapacity situation in the rest of State ("ROS") ICAP market, proponents of the Demand Curve proposal, including PSC Staff, have expressed specific concerns about the continued operation of certain upstate generating plants that could rapidly change a capacity surplus into a deficit. A key feature of the proposal is to pay a market clearing price for capacity above the ICAP requirement established by the New York State Reliability Council. That market clearing price is projected to exceed recent ICAP prices by a substantial amount.

The capacity proposal creates a single price auction, in which potential capacity suppliers offer capacity at different prices. The NYISO would adopt a linear market demand curve that reflects its willingness to procure capacity at different prices. This demand curve would replace LSE bids for capacity in the current capacity acquisition process. The demand curve is a straight line from the quantity axis (X-axis) at 112% (118% for NYCA) of load plus reserve requirements through an administratively-set equilibrium price at the target reserve margin. The proposal would be implemented in three zones: New York City, Long Island and

ROS. The slope of the demand curve is defined by the assumed value of capacity at the target reserve margin and the point at which the value of capacity is assumed to be zero.

Potential sellers of capacity would bid into the NYISO the amount of capacity that they are willing to make available at a given price. Those bids would form the locational capacity supply curves. The market clearing price is the intersection of the supply and demand curves in each sub-region within New York State. Only sellers that have submitted costs less than or equal to the market clearing price would sell capacity. All sellers in each location will receive the same price. Capacity procured through bilateral transactions would not be priced automatically based on the operation of the Demand Curve proposal. However, as described below, one predictable impact of the Demand Curve proposal not accounted for in Dr. Patton's analysis is the impact of the proposal on the future price of capacity procured through bilateral transactions.

During a three-year period, the price that the NYISO will be willing to pay at the target reserve margin would increase significantly. In the third year, a collaborative study would be commissioned that would determine the value of capacity at the target reserve level. It is our understanding that, at this point, the expectation is that the target price at equilibrium would be set equal to (or some variant of) the annual carrying cost of a peaker.

### **III. The Framework for Evaluating the Demand Curve Proposal Is Inadequate**

During these difficult economic times, financial resources for New York consumers, including Multiple Intervenors members, as well as generators have become an increasing scarce commodity. As such, changes of policy that require expenditures of large sums of money should be scrutinized carefully. For instance, Governor Pataki recognized this need in [Executive Order #20](#) (signed November 30, 1995), putting in place a rigorous process and set of standards for state regulations. One aspect of the Governor's process of regulatory reform

was the adoption of the Cost-Benefit Handbook: A Guide for New York State's Regulatory Agencies<sup>1</sup> prepared by the Governor's Office of Regulatory Reform (GORR). A key feature of cost-benefit analysis is that it looks at both the cost of a change in policy and the expected benefits of that change in policy. Although the Handbook is not binding on the NYISO or its committees, it does outline a number of key features of an effective cost-benefit analysis. Such an analysis should:

- 1) document the basis cited for the incremental benefits that are expected to accrue to affected parties;
- 2) identify uncertainties concerning the timing, probabilities, and range of benefits;
- 3) include data on the incremental benefits that would likely occur for alternative regulatory strategies and other options that have been evaluated but not selected for adoption;
- 4) state cost estimates should be stated in terms of incremental or marginal annual costs over the period covered by the proposed regulation, representing the changes in costs compared to the *status quo*; and
- 5) state assumptions clearly, with thorough documentation.

Importantly, this type of cost-benefit analysis has not been conducted with respect to the Demand Curve proposal. Instead, the analysis proffered to date: (1) makes no attempt to quantify the purported benefits of the Demand Curve proposal; (2) fails to identify or evaluate the uncertainties that the proposal would produce; (3) does not evaluate other alternatives to the proposal; (4) reflects only the first-year costs of the proposal, when the costs will

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<sup>1</sup> (<http://www.gorr.state.ny.us/gorr/cba-hdbk.html>).

substantially in future years; and (5) uses assumptions that have not been the subject of broad debate or input.

#### **IV. The Independent Market Monitor Has Presented Only Limited Analysis**

The NYISO Independent Market Monitor (NYISO-IMM), Dr. David Patton, has reviewed the Demand Curve proposal and presented his analysis of a prior version of the Demand Curve, “Estimated Effects of the Proposed Capacity Demand Curves,” prepared for the NYISO Management Committee (January 9, 2003). The NYISO-IMM subsequently issued a one page update to his analysis to account for the revised Demand Curve proposal currently under consideration. While the NYISO-IMM is not necessarily charged with performing cost-benefit analyses of proposed market design fixes, it is important to analyze whether the net effects of the Demand Curve proposal would increase or decrease capacity costs to consumers and by how much. Thus, the cost-benefit principles listed above provide a useful framework for evaluating the adequacy of the analysis that was performed.

The analysis presented by Dr. Patton is framed by a single policy alternative -- that of no action -- and capacity cost recovery through increased revenues during price spikes. Dr. Patton, as the NYISO-IMM, is in a unique position to provide an objective comparison of competing proposals, such as the proposal for “NYISO Capacity Market Enhancements”<sup>1</sup>. However, neither that option, nor other options, such as financial-based options, were evaluated. If one of the objectives of market reform is to build investor confidence, that may be achieved more effectively by an alternate product definition. For example, longer term instruments provide flexibility to tailor terms that match revenue streams with the needs of

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<sup>1</sup> Advanced by New York State Electric & Gas Corporation, Rochester Gas and Electric Corporation, Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., City of New York, Luthin Associates for Refined Sugars, Inc., Columbia University, New York University, New York Presbyterian Hospital, Beth Israel Health Care System, Mount Sinai Medical Center, Long Island Power Authority, New York State Consumer Protection Board, and Multiple Intervenors.

investing and maintaining new generation. However, alternatives based on a longer-term capacity instrument have not been evaluated.

With regard to the assessment of the Demand Curve proposal versus the current system, the critical problem with acceptance at this stage is that it is not clear whether the proposal offers any net benefits. The proposal clearly would increase costs significantly in the short-term transition. However, the analysis does not demonstrate that those short-term costs would be recovered over the longer-term. What the Business Issues Committee has before it is analogous to the investment decision of a private firm or governmental agency. In order to make a prudent decision, the Committee should know the full costs of the investment. In this case, these costs are the costs of the transition period relative to the current rules, and these costs go beyond just the first year of transition, and most likely include costs of capacity not presently affected by the pricing rules. Right now, the Committee does not have the information to assess what is best estimate of the transition costs of the Proposal.

Equally important, a prudent decision must account for the expected net benefits once the transition (investment) period is over. The analysis presented to the Committee claims that the Demand Curve proposal would result in reduced annual spike costs of approximately \$100 million on average if the long-run capacity equilibrium is increased by 1%. Power Economics cannot verify this assertion. Despite its importance, there is no supporting analysis for this assertion, which should be evaluated rigorously. Furthermore, part of assessing whether this Proposal would produce net benefits is an estimate of the expected increase in capacity resulting from its adoption. This information has not been presented to the Committee.

As part of understanding the costs and benefits of the Demand Curve proposal, an analysis should include an evaluation of the appropriate level and shape of the demand curve. As the NYPSC's Appendix A to its recent comments on the Standard Market Design point out, "In contrast [to deficiency charges], the demand curve approach requires a much more carefully

estimated set of values ..”<sup>1</sup> The Commission further argues (at pg. 17) that one should be conservatively high, say 10%, in establishing the price at the minimum reserve level. That safety margin imposes real costs on customers. We do not believe it is prudent to dismiss these costs as the Commission does with the assertion “A slight overstatement causes little harm since, if the new entry truly is less costly than the estimate, the additional new entry will add to the system’s reserve margin and move down the demand curve to the point at which the demand curve’s price equals the cost of new entry.” A 5% addition to the paid capacity, even if the resulting price is equal to the entry cost of new capacity, likely would add costs in the order of \$50 million annually, which reduces significantly the expected benefits of the proposal.

Dr. Patton’s analysis has started the process of evaluation of the net benefits of the Demand Curve proposal, but that analysis is just that: a start, not a complete analysis. It simply is imprudent to incur the transition costs without a clear understanding of the expected net benefits and the conditions under which those benefits vary.

## **V. The Analysis of a Single Year’s Costs Under-Represents The Transition Costs of Adopting the Demand Curve**

As noted in Section IV, the Independent Market Monitor’s analysis covers only the first year. A primary purpose of the Demand Curve proposal is to mitigate the spikes associated with a deficiency charge system. Currently, New York is in a price valley. The theory is that implementation of the Demand Curve proposal would increase the capacity costs during the valley periods, which hopefully then would be offset by the savings during the price spike periods. The experience in the electric generation market

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<sup>1</sup> [New York Public Service Commission, “Additional comments of the New York State Public Service



argues that the duration of the valleys is longer than the duration of the spikes. Thus, showing a single year's costs under-represents the cost side of the proposal. Instead, it is necessary to view the costs and benefits over a series of price cycles.

Moreover, the problem with Dr. Patton's first year analysis is not simply that it depicts only one year of the cycle of valleys and spikes. Under the Demand Curve proposal, the first year is different from other years. There will be an increase in the price (at the minimum reserve level point of the demand curve) in the second and presumably third years, and the amount of affected capacity will increase as the bilateral contracts end. These changes will affect the cost side of the proposal and should be explicitly estimated and analyzed.

We have expanded Dr. Patton's first year analysis to develop a rough idea of the costs for the first three years of the Demand Curve implementation. Our starting point on estimating the baseline cost of the transition is Dr. Patton's estimate of a first year statewide impact of approximately \$ 180 million. Simply implementing the changes in the demand curve pricing at the minimum reserve level increases the costs to approximately \$250 million year two to near \$300 million in year three. Thus, utilizing Dr. Patton's analysis, the added cost for the three-year phase in could exceed \$700 million

Moreover, if we change the assumptions underlying the analysis, the impact could be even greater. For example, it is reasonable to assume that the amount of capacity that would be affected by the pricing from the demand curve would increase over time due to the expiration of current bilateral contracts. In the first year analysis, approximately 40 percent of the capacity is affected by the demand curve pricing. If the capacity subject to the demand curve increases to 80 percent, for example, the costs increase by over \$100 million annually relative to the 40 percent level. If the prices from the second and third year demand curves are used, the impact is much greater.

Clearly, there are very significant transition costs from implementing the Demand Curve proposal. Expanding on Dr. Patton's analysis, the estimate of the three-year impact is more than \$700 million. This impact easily could increase to more than \$1.0 billion as the demand curve prices increase and the curve impacts increasing amounts of capacity.<sup>1</sup> Given the magnitude of the investment that New York consumers are being asked to make, they deserve a comprehensive cost-benefit analysis that incorporates the factors discussed above. They do not have such a comprehensive analysis at this time. It simply would be imprudent to commit to the Demand Curve in the absence of adequate analytical support.

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<sup>1</sup> While a sensitivity of the benefits of reducing price spikes has not been shown; it is more than reasonable to believe that it will be equally sensitive to assumptions concerning the level of the spikes and duration of those spikes.