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

New York Independent System Operator, Inc. ) Docket No. ER11-\_\_\_-000

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

November 30, 2010

#### I. Qualifications

- My name is David B. Patton. I am an economist and President of Potomac Economics. Our offices are located at 9990 Fairfax Boulevard, Fairfax, Virginia 22030. Potomac Economics is a firm specializing in expert economic analysis and monitoring of wholesale electricity markets, and is the Market Monitoring Unit ("MMU") for the New York Independent System Operator, Inc. ("NYISO"). Potomac Economics serves in a substantially similar role for ISO New England, Inc., the Midwest Independent Transmission System Operator, and the Electric Reliability Council of Texas, Inc.
- 2. As the MMU for the NYISO, Potomac Economics is responsible for assessing the competitive performance of the markets, including assisting in the implementation of a monitoring plan to identify and remedy market design flaws and abuses of market power. This has included preparing a number of reports that assess the performance of these markets and providing advice on numerous issues related to market design and economic efficiency. Prior to Potomac Economics' role as the MMU, I served as an independent Market Advisor to the NYISO.
- 3. I have worked as an energy economist for twenty years, focusing primarily on the electric utility and natural gas industries. I have provided strategic advice, analysis, and expert testimony in the areas of electric power industry restructuring, pricing, mergers, and market power. I have also advised other existing and prospective Regional Transmission Organizations on transmission pricing, market design, and congestion management issues. With regard to competitive analysis, I have provided expert testimony and analysis regarding market power issues in a number of mergers and market-based pricing cases before the Federal Energy Regulatory Commission ("Commission"), state regulatory commissions, and the U.S. Department of Justice.
- 4. Prior to my experience as a consultant, I served as a Senior Economist in the Office of Economic Policy at the Commission, advising on a variety of policy issues including transmission pricing and open-access policies, market design issues, and electric utility mergers. As a member of the Commission's advisory staff, I worked on policies reflected in Order No. 888, particularly on issues related to power pool restructuring, independent

system operators, and functional unbundling. I also analyzed the competitive characteristics of alternative transmission pricing and electricity auctions proposed by Independent System Operators ("ISOs").

- 5. Before joining the Commission, I worked as an economist for the U.S. Department of Energy. During this time, I helped to develop and analyze policies related to investment in oil and gas exploration, electric utility demand side management, residential and commercial energy efficiency, and the deployment of new energy technologies.
- 6. I have a Ph.D. in Economics and a M.A. in Economics from George Mason University, and a B.A. in Economics with a minor in Mathematics from New Mexico State University.

# II. Purpose and Summary of Affidavit

- The purpose of this affidavit is to provide a brief summary of my opinion regarding the new Installed Capacity ("ICAP") Demand Curves as proposed by the NYISO for Capability Years 2011/2012, 2012/2013 and 2013/2014.
- 8. In my role with the MMU, I reviewed the NERA/S&L Report<sup>1</sup> and underlying assumptions and the NYISO staff recommendations and report ("NYISO Report"). Many of the NERA/S&L Report's specific assumptions incorporate a measure of independent judgment. I believe that the assumptions used, as adjusted in the NYISO Report and as included in the NYISO's filing, fall within a reasonable range for such assumptions with one exception: the assumed excess capacity levels in New York City ("NYC") and Long Island ("LI").
- Hence, I conclude that with a modification to the excess capacity assumption, the set of Demand Curves filed by the NYISO would be reasonable and are consistent with the overall objectives of the NYISO's sloped Demand Curves.
- The next section discusses some of the individual assumptions that underlie the proposed Demand Curves, including the excess capacity assumption.

<sup>&</sup>lt;sup>1</sup> Capitalized terms that are not specifically defined in this affidavit have the meaning set forth in the NYISO's filing letter and if not defined therein, in the Services Tariff.

#### III. Key Assumptions Underlying the NYISO's Proposed ICAP Demand Curves

### A. Choice of Peaking Unit

- 11. The choice of peaking technology is a significant issue affecting the 2010 ICAP Demand Curves. The NYISO Report concluded that the LMS100 should be the technology choice upon which to develop the Demand Curves in NYC and LLI. I agree with the NYISO Report's proposal of the LMS100 as the basis for setting the ICAP Demand Curve reference values in NYC and LI.
- 12. I also agree with the NYISO Report's recommendation to use the 7FA unit for determining the reference values for the New York Control Area ("NYCA") Demand Curve. The 7FA, with lower fixed costs and higher variable costs, comports with the requirements in the Market Administration and Control Area Services Tariff ("Services Tariff").

# **B.** Deliverability Costs

- 13. The NYISO has proposed to exclude System Deliverability Upgrade ("SDU") costs from the net Cost of New Entry ("CONE") for the new peaking resources. This issue is primarily important for the NYCA Demand Curve because the peaking unit for the NYCA is located in an area that may require the supplier to incur SDU costs to sell Capacity from the new unit.
- 14. In general, the Demand Curves should be designed so that when new resources are needed to meet the minimum capacity requirements, the revenue produced from the NYISO markets will be adequate to support investment in the new resource. Upon initial examination, this might appear to argue that the SDU costs be included in the net CONE for the peaking resource that is used to establish the Demand Curves. However, I do not believe this would be appropriate for at least four reasons.
- 15. First, as the system approaches a long-run equilibrium state with much less excess capacity than exists today, new resources may be more deliverable than they are under current circumstances. Therefore, the new resource may not be exposed to the SDU costs. As a practical matter, it is likely that the particular deliverability issue facing the Demand Curve peaking resource in the NYCA today will continue to exist over the longer-term when the

excess capacity is eliminated. However, SDU costs should be addressed consistently in the determination of future Demand Curves, and this may not be true for other perceived deliverability issues. In light of the other factors I will discuss below, therefore, it is reasonable to adopt a policy of excluding the SDU costs.

- 16. Second, the new investor may not have to incur the SDU costs in order to sell capacity from the default peaking resource. NYISO allows suppliers to procure deliverability rights from existing resources that are retiring. There is currently a sizable surplus of Capacity in western New York, which generally lowers NYISO market revenues in that area. If the reduced revenues in these areas cause any of the older existing resources to be uneconomic to keep in operation, the new supplier may be able to purchase deliverability rights from the retiring unit at a substantial discount to the SDU costs.
- 17. Third, investors in new transmission have the right to acquire Transmission Congestion Contracts ("TCCs") associated with the additional transmission capability created by their investment. It has been shown that efficient transmission investment will result in new TCCs with a value that is roughly equivalent to the cost of the transmission investment.<sup>2</sup> While it is true that excessive amounts of new transmission will inefficiently reduce congestion on the path and reduce the value of the new TCCs, this should not be the case for efficient transmission investment. Since efficient investment in both generation and transmission must be the objective of the NYISO markets broadly and the deliverability construct specifically, it is reasonable to assume that the value of the new TCCs the investor will receive will offset substantially, if not entirely, the SDU costs it will incur.
- 18. Lastly, including the SDU costs in the Demand Curves is not an efficient means of providing long-term economic signals to prospective investors in new resources. As was described in detail in the 2009 State of the Market Report ("2009 SOM Report") for the NYISO, when a deliverability issue arises in the Capacity market, a new Capacity zone must be created to allow the Capacity prices in either side of the relevant constraint to

<sup>&</sup>lt;sup>2</sup> S.M. Harvey, W.W. Hogan and S.L. Pope, "Transmission Capacity Reservations and Transmission Congestion Contracts," Harvard University, June 6, 1996, (revised October 14, 1996).

efficiently indicate the marginal value of Capacity in each area.<sup>3</sup> Absent the new zone, it is highly unlikely that the Capacity market will provide efficient economic signals in either area, which is illustrated in the 2009 SOM Report. The NYISO is already working with its stakeholders to establish criteria for establishing new Capacity zones. When new zones are implemented, a new resource would only have to be deliverable within its own zone, so there would be no longer be an interzonal SDU costs to consider in establishing the Demand Curves. Since efficient economic signals can be achieved by the completion of this effort and implementation of one or more new zones, it is reasonable to exclude the interzonal SDU costs from the Demand Curves as proposed by the NYISO.

#### C. Excess Capacity Assumption for New York City and Long Island

- 19. The only assumption that I do not support is the proposed excess capacity levels in NYC and LI. This assumption plays an important role in determining the level of the Demand Curves. Larger excess capacity levels lead to lower Energy and Ancillary Service revenues because they reduce the frequency of shortages and lower average prices. Conversely, smaller excess capacity levels will increase Energy and Ancillary Services revenues, which lowers the price of the Capacity on the Demand Curves.
- 20. The design of the Capacity market in New York requires that the assumptions used to establish the Demand Curves be realistic because the Capacity revenues are necessary to ensure that investors will build new resources to meet the system's Capacity needs. If the assumptions are not realistic, then there can be no expectation that the market will facilitate efficient investment as reality differs substantially from the assumptions. In particular, unrealistic assumptions that lower the Demand Curve will produce economic signals that will likely be insufficient to incent investors to build new resources when necessary to satisfy the minimum capacity requirements if the new resources have costs similar to the peaking resource that is used to establish the Demand Curves.
- 21. It may well be that the most economic type of resource to build today has entry costs that are lower than those for the peaking resource. However, that fact would not justify

<sup>&</sup>lt;sup>3</sup> Potomac Economics, LLC, 2009 State of the Market Report (2010), Section IV.D. available at: www.nyiso.com/public/webdocs/documents/market\_advisor\_reports/2009/NYISO\_2009\_SOM\_Final.pdf

adopting unrealistic assumptions for setting the new Demand Curves, but rather would support considering whether to change the basis of the Demand Curves in the future so that they are based on the most economic type of resource. While I would support such a change, it is beyond the scope of this proceeding. Therefore, the Commission should evaluate the currently proposed Demand Curves to determine whether they are based on realistic assumptions regarding the costs of the identified peaking resource and future market conditions.

- 22. To determine whether the excess capacity assumption is reasonable, the Commission should assess whether the assumed level of excess capacity is likely to correspond to the average excess capacity level that will actually occur. The NYISO has proposed a 1 percent level of excess for New York Control Area ("NYCA"), a 1.1 percent level of excess for NYC and a 2.1 percent level of excess for LI. These assumptions represent, approximately, a 360 MW excess for NYCA, and 98 MW excess (one-half of the peaking resource) for NYC and LI.<sup>4</sup>
- 23. In order for the levels for NYC and LI to be achieved without any shortages (*i.e.*, the local requirement is satisfied continuously), a new peaking resource would have to enter precisely when capacity levels fall to the minimum requirement. After entry of the peaking resource, the excess capacity level would equal the size of one peaking resource. The level of excess would then gradually fall until it reaches zero and another resource enters. The only way that this pattern of entry could be considered realistic is if:
  - Entry is perfectly coordinated; and
  - Forecasting is perfect.
- 24. Unfortunately, these conditions do not hold in the real world. First, investment is far from perfectly coordinated in competitive markets. Multiple investors frequently build to enter in the same year when they independently forecast that investment will be profitable. Additionally, suppliers sometimes decide to defer retirements or to repower units that would otherwise retire. All of these investment and retirement decisions, which can be

<sup>&</sup>lt;sup>4</sup> For NYCA, the NYISO calculated that the level of excess should be 0.6 percent, but concluded that this was unreasonably low. The NYISO instead decided to propose 1.0 percent.

made unexpectedly by competing suppliers, can result in unexpected excess capacity that would substantially exceed the percentages assumed by the NYISO.

- 25. Second, neither investors nor the NYISO have perfect foresight. There are substantial forecast uncertainties associated with peak electricity demand (which are the basis for the NYISO's Capacity requirements). This has been dramatically illustrated over the past two years. The recent economic downturn has resulted in a contraction in demand rather than the modest growth in demand that had been forecasted. This over-forecast of long-term demand (in the 3-5 year timeframe necessary to invest in new resources) has resulted in large levels of excess capacity currently present in most ISO markets throughout the U.S. These types of over-forecasts happen periodically and the resulting excess capacity should cause the average excess capacity over the long-term to exceed the NYISO's assumptions.
- 26. One could argue that under-forecasts may offset the over-forecasts, but this is highly unlikely for two reasons. First, the under-forecasts are unlikely to be as large as the over-forecasts. The economic factors that lead to unforecasted demand increases (*i.e.*, unexpected economic growth) tend to be less severe than the economic contractions that can lead to over-forecasts. Second, the NYISO's markets and actions by regulators mitigate potential capacity shortages resulting from under-forecasts. This includes procuring resources that can enter quickly, such as demand response resources or peaking resources.
- 27. Hence, long-term demand forecast uncertainty should lead to higher excess capacity levels than the perfect forecast assumption implied by the NYISO's proposal for NYC and LI. While there is no one correct assumption regarding the long-term average level of excess capacity, the assumption should fall within a reasonable range. While I do not believe that the one-half the size of the peaking resource is within such a range, I do believe that the size of the peaking resource (*i.e.*, 195 MW) would be within the reasonable range for this assumption. This assumption would account for the fact that two investors may enter simultaneously. In addition, it would account for the loss of one to two years of typical demand growth due to economic slowdowns.

# **IV.** Conclusion

- 28. Based on the foregoing arguments, I would recommend that the Commission consider requiring the NYISO to increase its assumed long-term average level of excess capacity for NYC and LI that underlies the proposed Demand Curve for the local Capacity zones of NYC and LI.
- 29. However, I support the other assumptions that underlie the proposed Capacity Demand Curves for NYCA, NYC and LI. Therefore, with the one modification noted above, I recommend that the Commission find the proposed capacity Demand Curves just and reasonable.
- 30. This concludes my affidavit.

#### ATTESTATION

I am the witness identified in the foregoing Affidavit of David B. Patton, Ph.D. dated November 30, 2010 (the "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.

David B. Patton November 30, 2010

Subscribed and sworn to before me this 30th day of November 2010

Notary Public Mittin James CM

My commission expires: November 30 2013

MAITHEW JAMES CARRIER Notary Public City/County of <u>Fa:(Jax</u> Commonwealth of Virginia Notary registration number - 7233763 My CORMISSION Excircs - Nov. 30; 2013