# Attachment V

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

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| **New York Independent System Operator, Inc.** | **)** | **Docket No. ER15- xxx-000** |

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

**NOVEMBER 25, 2014**

## I. Qualifications and Purpose

1. My name is David B. Patton. I am an economist and the 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. Potomac Economics serves as the Market Monitoring Unit ("MMU") for the New York Independent System Operator ("NYISO"). Potomac Economics serves in a substantially similar role for ISO New England ("ISO-NE"), the Midwest Independent Transmission System Operator, Inc., and the Electric Reliability Council of Texas.

2. As the MMU for the NYISO, Potomac Economics is responsible for assessing the competitive performance of the markets that the NYISO administers, including the ICAP[1] market, and for assisting in the implementation of a monitoring plan to identify and remedy potential market design flaws and abuses of market power. This work 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 becoming the MMU, I served as the independent Market Advisor to the NYISO.

3. I have worked as an energy economist for 23 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 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, advocating on a variety of policy issues including

[1] Terms with initial capitalization not defined herein have the meaning set forth in the NYISO's Market Administration and Control Area Services Tariff ("Services Tariff'), and if not defined therein, then as defined in the NYISO's Open Access Transmission Tariff ("OATT").

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

6. The purpose of this affidavit is to explain why the NYISO's proposed changes to its Transmission Demand Curve will lead to more efficient congestion management and pricing outcomes during periods when limited resources are available to relieve transmission constraints.

## II. Proposed Transmission Demand Curve is Reasonable

7. The NYISO has proposed to use a Graduated Transmission Demand Curve in the market models that has a reasonable multipoint shortage demand curve. Specifically, the NYISO proposes to use $350/MWh for shortages of 0 to 5 MW, $1,175/MWh for shortages of 5 to 20 MW, and $4,000/MWh for shortages of 20 MW. This multipoint point demand curve would replace the current single value of $4,000/MWh for all shortages over 0 MW. The proposed multipoint demand curve is a significant improvement over the current single value because it will lead the real-time market model to make scheduling decisions and set market clearing prices that are more consistent with the operational needs of the system for several reasons.

8. First, the multipoint demand curve will avoid extremely costly actions to resolve small constraint violations, since the multipoint demand curve is based on the 20 MW reliability

margin that is already used to discount transmission limits in normal market operations. For example, the model will normally schedule resources to maintain flows at or below a scheduling limit of 480 MW for a facility that has a physical limit of 500 MW.

- Under the current single value, the model would set an unreasonably high shadow price of $4,000/MWh for a 4 MW violation of the scheduling limit even though the flows would be substantially below the physical transmission limit.

- Under the proposed multipoint demand curve, the model would set a more reasonable shadow price of $350/MWh—sufficiently high to ensure that nearby resources ramp quickly to secure the facility, but not so high that it would result in the commitment of expensive peaking resources or the re-dispatch of remote generation resources.

Hence, the proposed multipoint demand curve will result in more reasonable pricing and scheduling outcomes during minor violations of the scheduling limit.

9. Second, the multipoint demand curve will prioritize appropriately between two transmission constraints that cannot be resolved simultaneously. For example, suppose the market model uses all available resources to secure two transmission constraints, and there is a particular generator that has a -40 percent shift factor on Constraint A and a +30 percent shift factor on Constraint B. In this case:

- The use of a single $4,000/MWh constraint value would lead the market model to ramp the generator up until it reaches its maximum limit or fully resolves Constraint A, since this would relieve Constraint A slightly more than it would load Constraint B. This would occur even if the flow on Constraint A was 20 MW below the physical transmission limit while the flow on Constraint B was 10 MW above the physical limit.

- The use of the multipoint demand curve would lead the real-time model to place a higher priority: (a) on bringing the flow over Constraint B down to the physical limit than (b) on bringing the flow over Constraint A down below the 20 MW

reliability margin. Consequently, the flow on Constraint B would be brought down to the physical limit, while the flow on Constraint A would rise 13.3 MW to 6.7 MW below the physical limit.

Hence, the proposed multipoint demand curve will result in scheduling outcomes more consistent with the reliability needs of the system.

10. Overall, the proposed multipoint curve will result in scheduling decisions that are more reasonable and consistent with the NYISO's reliability needs during tight real-time operating conditions. This will, in turn, lead to market clearing prices that are more consistent with the values of the services provided by individual resources.

## IV. Conclusion

11. I support the NYISO's proposal to replace the current single transmission shortage cost with the proposed multipoint demand curve. The NYISO's proposed cost tiers are reasonable because they relate pricing outcomes to the severity of constraint violations. Moreover, they are likely to result in dispatch and pricing incentives that are more consistent with the reliability needs of the system.

12. 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.

_____
David B. Patton

November 25, 2014

Subscribed and sworn to before me
this 25th day of November, 2014

_____
Notary Public

My commission expires: _____

## 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.

David B. Patton

November 25, 2014

MATTHEW JAMES CARRIER
NOTARY PUBLIC
REG. #7233763
COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES NOVEMBER 30, 2017

Subscribed and sworn to before me
this 25th day of November, 2014

Notary Public

My commission expires: 11/30/2017