STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

Case No. 14-E-0454 -- *In the Matter of New York Independent System Operator, Inc.'s Proposed Public Policy Transmission Needs for Consideration*

Comments of the New York Independent System Operator, Inc.

I. Introduction

The New York Independent System Operator, Inc. ("NYISO") respectfully submits these comments in the above-captioned proceeding. It has prepared these comments in response to the New York Public Service Commission's ("the Commission" or "NYPSC") April 3, 2015 *Notice Seeking Supplemental Comments* regarding transmission capability in Western New York ("April 3 Notice).

A. Background

To initiate the Public Policy Transmission Planning Process ("PPTPP"), the NYISO issued a letter on August 1, 2014 inviting stakeholders and interested parties to submit proposed transmission needs driven by Public Policy Requirements to the NYISO on or before September 30, 2014.[1] Under the NYISO's Open Access Transmission Tariff ("OATT"), "[a]fter the end of the 60-day period, the ISO will post all submittals on its website, and will submit to the [New York State Department of Public Service ('NYDPS')]/NYPSC all submittals proposed by stakeholders, other interested parties, and any additional transmission needs and criteria identified by the ISO." [2]

In accordance with the tariff provision, on October 3, 2014, the NYISO filed with the

[1] Capitalized terms in this document are defined by Attachment Y to the NYISO OATT, and otherwise in its OATT and Market Administration and Control Area Services Tariff.

[2] OATT § 31.4.2.

NYPSC Secretary eight proposed transmission needs driven by Public Policy Requirements provided to the NYISO by: (i) H.Q. Energy Services (U.S.), Inc. (ii) Iberdrola, USA, Inc.; (iii) National Grid; (iv) New York Power Authority ("NYPA"); (v) New York Transmission Owners (not including Long Island Power Authority); (vi) NextEra Energy Transmission New York, Inc.; (vii) North America Transmission, LLC; and (viii) New York State Electric and Gas Corporation and Rochester Gas and Electric Corporation.[3] The Commission's April 3 Notice seeks additional input on how New York ratepayers could benefit from addressing the transmission congestion conditions identified by National Grid and NYPA in their proposed transmission needs.

B. The NYISO's Interest and Position in this Proceeding

The NYISO is an independent not-for-profit entity that is responsible for the reliable operation of the bulk power transmission system in New York State, for planning for that system's continued reliability, and for administering competitive wholesale electricity markets. Because of those responsibilities, the NYISO has a keen interest in the outcome of this proceeding. The NYISO has no financial interest in the NYPSC's rulings or in the construction of new transmission infrastructure. It has no affiliation with the NYPSC, any transmission project sponsor, or any other entity. Although the NYISO supports the identification of a Public Policy Transmission Need ("PPTN") in Western New York, the NYISO is not at this time advocating the identification of any particular transmission project that may be proposed to address a PPTN. As further discussed in these comments, the NYISO has observed constraints in the Western New York area of the New York State bulk power transmission system. As such, the NYISO sees potential benefits in addressing the transmission congestion conditions that

[3] The NYISO has posted these submittals on its website at the following location: http://www.nyiso.com/public/markets_operations/services/planning/documents/index.jsp under "Planning Notices."

result from the constraints in Western New York, and recommends that the Commission identify a Public Policy Transmission Need for which solutions would be requested by the NYISO.

II. Comments

A. New York's Energy Infrastructure Is Aging and in Need of Replacement to Meet Expected Future Needs

The New York State bulk power system is reliable today and, under conditions that exist at this time, is expected to continue to be reliable for the remainder of the NYISO's ten year planning horizon.[4] But this does not mean that there is no need for new transmission or generation infrastructure to meet the expected future needs of New York consumers. The NYISO 2014 Reliability Needs Assessment ("2014 RNA") examines only violations of minimum transmission system reliability standards.[5] Having sufficient transmission to avoid violations does not mean that transmission upgrades would not provide important reliability and economic benefits to New Yorkers. In reality, New York's transmission infrastructure is aging and needs to be upgraded and replaced. In comments filed in this proceeding on December 29, 2014 ("December 29 Comments"), the NYISO highlighted the benefits of improved transmission to the New York bulk power system overall, including Western New York. The NYISO discussed the broad range of benefits of transmission upgrades as outlined in a July 2013 report by the Brattle Group, *The Benefits of Electric Transmission: Identifying and Analyzing the Value of Investments* ("Brattle Report"). The NYISO submitted that report into the record of this proceeding, and it hereby reiterates and incorporates by reference its December 29 Comments

[4] *See, e.g., NYISO: Market Developments Postpone Reliability Needs, in NYISO media room at:* http://www.nyiso.com/public/webdocs/media_room/press_releases/2014/ (explaining that recent developments in response to price signals from the NYISO-administered markets have addressed reliability needs that would have otherwise begun in 2019.)

[5] The 2014 RNA is *available at:* http://www.nyiso.com/public/webdocs/markets_operations/services/planning/Planning_Studies/Reliability_Planning_Studies/Reliability_Assessment_Documents/2014%20RNA_final_09162014.pdf

with respect to the Western New York transmission needs.

Last year the NYISO published *Power Trends 2014: Evolution of the Grid* ("*Power Trends 2014*").[6] This annual publication is designed to contribute to an informed discussion of New York State energy policy. *Power Trends 2014* clearly highlights the need to update the transmission system. Over three-quarters of New York State's high voltage transmission lines are over thirty-five years old, having gone into service before 1980. Given the age of the infrastructure, in order to maintain a reliable and economically feasible system, roughly 4,700 circuit miles of the 11,000 circuit miles in the system will need to be replaced over the next three decades at a projected cost of $25 billion.[7]

Power Trends 2014 also references the *Energy Highway Blueprint ("Blueprint")* issued by Governor Cuomo in 2012. The *Blueprint* recommended actions and policies to attract significant investments in New York State's energy infrastructure. It called for 3,200 megawatts ("MW") of new generation and transmission capacity, funded by an investment of up to $5.7 billion in public and private funds. Beyond the upstate to downstate transmission paths, it is also imperative to improve the bulk power transmission system's ability to move power from the Niagara Power Project and other major economic resources located in western New York and Ontario to central and eastern New York. This area of the transmission system is constrained today (a more detailed description of the nature of these constraints and their impacts is provided in Sections B through F below), depriving New Yorkers of the full amount of clean and economic electricity that could otherwise be available to them. Additional transmission capacity

[6] POWER TRENDS 2014: EVOLUTION OF THE GRID (New York Independent System Operator, 2014) *available at:* http://www.nyiso.com/public/webdocs/media_room/publications_presentations/Power_Trends/Power_Trends/ptrends_2014_final_jun2014_final.pdf.

[7] *Id.* at 29 and 31, *citing New York State Transmission Assessment and Reliability Study Phase II Study Report, STARS Technical Working Group* (March 30, 2012).

is needed to address these constraints. The need will only increase if aging generation facilities in New York State retire, causing greater statewide dependency on the resources upstream of the existing transmission constraints.

As NYISO stated in its December 29 Comments, additional transmission capacity would enhance competition in the markets by allowing new resources to compete, thereby increasing liquidity. It would make the system more resilient and able to withstand extreme weather conditions and storms. These include the traditional challenges presented by summer peaks on hot days as well as the less familiar issues that can arise during winter "polar vortex" events. Increased transmission would also give the NYISO greater operational flexibility, *e.g.*, by making it possible to dispatch more generating resources, allow for more emergency assistance from neighboring regions, to gain access to operating reserves and ancillary services, and to remove transmission for maintenance when needed.

Increased transmission capacity may further enable the integration of renewable energy resources in New York State. In the last year New York has seen substantial growth in wind power and hydropower. In 2014, wind power capacity increased seven percent over 2013, reaching 1,730 MW of capacity. Wind generation grew by 16%, reaching 3,541 gigawatt-hours of electricity. Most of this growth in capacity and output is taking place upstate and in the western portion of New York. More transmission capacity may increase the NYISO's ability to dispatch renewable resources more frequently, which would help to attract additional renewable development while lowering emissions.

Similarly, adding transmission would help to take better advantage of fuel diversity. The mix of fuels used to generate power affects the economics of electricity and the reliability of the power system. A balanced blend of fuels can assist in addressing issues such as electricity price

volatility, fuel availability during winter cold snaps, and attainment of public policy goals related to environmental quality and resource sustainability.[8] Compared to other parts of the country, New York State has a relatively diverse mix of generation resources. An effective way to address statewide imbalances would be to add transmission capacity that increases the ability of hydropower and other diverse resources to serve statewide loads.

B. Transmission Constraints in Western New York

Congestion or a "constraint" occurs on the transmission system when transmission lines have inadequate capacity to carry the amount of power that is being generated ("generation") to the places it is needed ("load"). Clean and inexpensive generation may be available in large supply but, due to constrained transmission paths, is unavailable to the load it might otherwise serve. When congestion occurs more expensive generation must run in order to serve the load, which results in wholesale electricity market prices being higher than they would be if the constraints did not exist. The additional costs created by these constraints, which are paid by those making energy purchases from or through the NYISO, is defined as "Demand$ Congestion." The cost of Demand$ Congestion is, as a matter of course, ultimately borne by ratepayers. Demand$ Congestion for load in the western portion of New York's transmission system, or New York Control Area ("NYCA") Load Zone A (see Figure 1), has increased significantly over the last few years. That congestion is primarily reflected on the Dysinger East interface, which is the collective transmission capability from Zone A to Zones B and C to the east.

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8 http://www.nyiso.com/public/webdocs/media_room/publications_presentations/Power_Trends/Power_Trends/ptrends_2014_final_jun2014_final.pdf

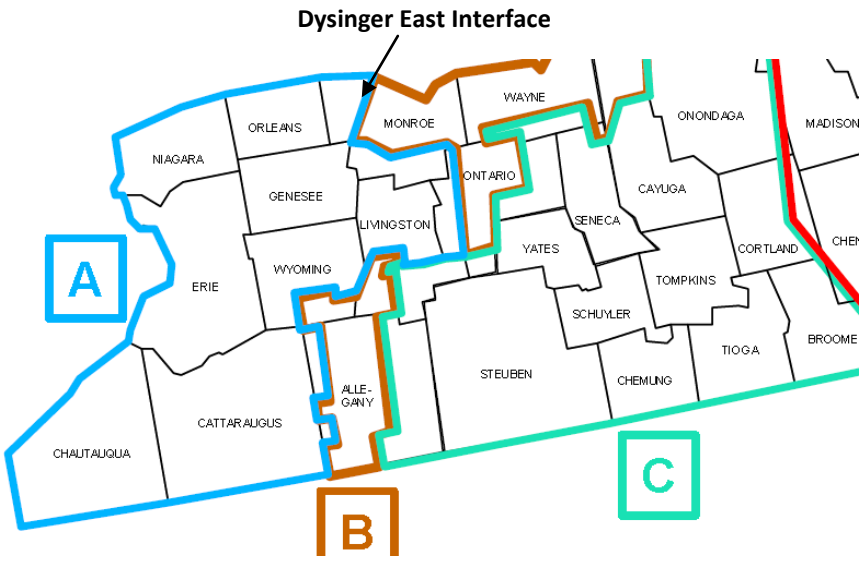


Figure 1. Western New York Area in NYCA Load Zones A, B, and C

The Niagara area is home to the largest hydroelectric generation plant in New York State, and is the primary interconnection between the NYCA and Ontario, Canada – also a source for clean and relatively inexpensive power. The primary transmission facilities to transfer power eastward out of the Niagara area consist of two 345 kV lines and three 230 kV lines, plus several underlying 115 kV lines. The majority of the power out of the Niagara area flows on the higher voltage 230 kV and 345 kV lines, and the transfer of large amounts of available power in that area is constrained by the 230 kV transmission lines between the Niagara and Gardenville substations. Figure 2 depicts the transmission system in this area.

According to the NYISO 2015 Summer Operating Study, of the 1,925 MW of import capability on the Ontario-New York ties lines into the Niagara area, only 150 MW could be imported under summer peak conditions due to the Niagara-Gardenville 230 kV constraints.[9] The study also demonstrates that the Dysinger East interface is limited by the Niagara-

[9] New York Independent System Operator 2015 Summer Operating Study. See at: http://www.nyiso.com/public/webdocs/markets_operations/market_data/reports_info/operating_studies/thermal_transfers/Summer2015_Operating_Study_Report.pdf

Gardenville 230 kV constraints.

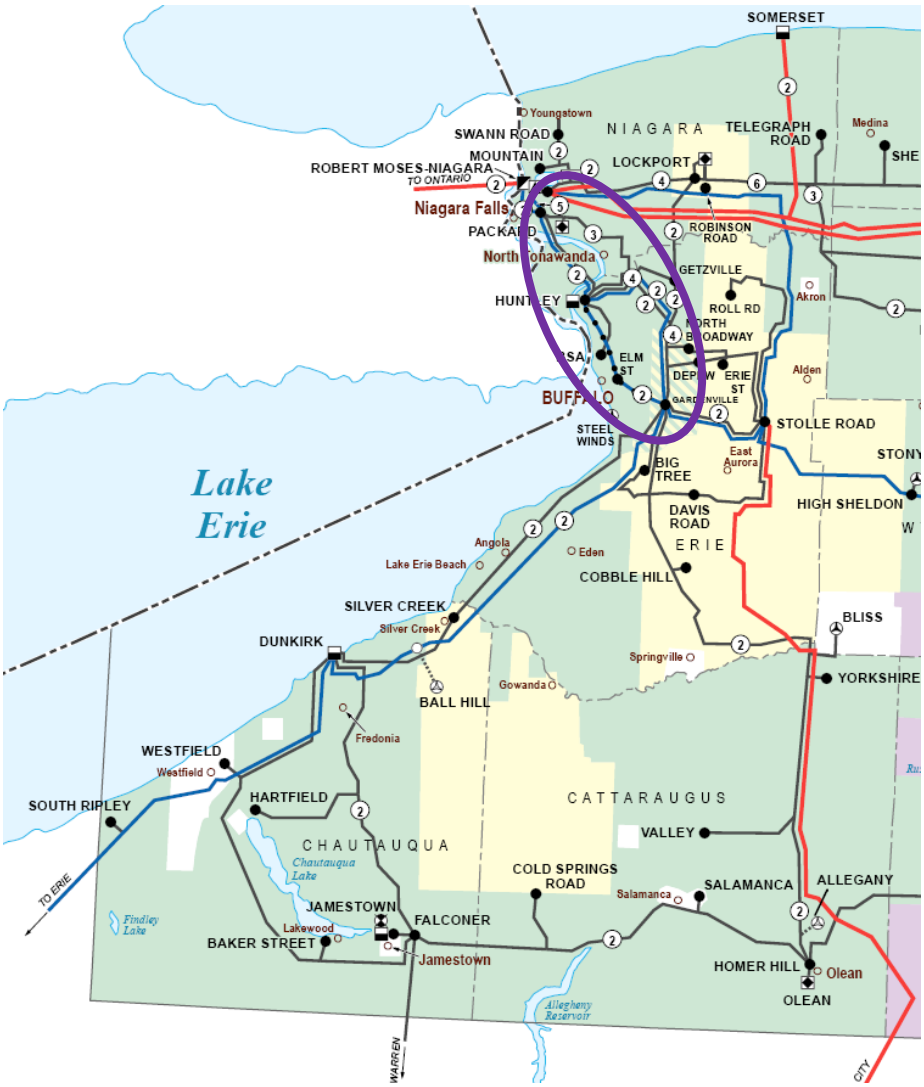
The constraints on the 230 kV transmission lines result in frequent real-time congestion that limits Ontario imports and Niagara hydropower generation from flowing east. These facilities have become more congested in recent years following the mothballing of capacity at the Dunkirk generation plant and retirement of several PJM units that had previously helped relieve congestion on this corridor.[10]

Demand$ Congestion in Zone A rose from an annual average of $1.5M in 2009-2011 to an average of $9.5M per annum in 2012-2014. Consistent with the recent trend, Demand$ Congestion reached over $12.6M in the first quarter of 2015.[11] Specifically, Demand$ Congestion associated with the Niagara-Gardenville constraints has increased from $0 in 2010 and 2011, to $2.9M in 2012, to $20.7M and $18.2M, in 2013 and 2014, respectively.[12]

[10] Patton, LeeVanSchaick, Chen (Potomac Economics), 2014 STATE OF THE MARKET REPORT FOR THE NEW YORK ISO MARKETS ("2014 State of the Market Report") (May 2015). See http://www.nyiso.com/public/webdocs/markets_operations/documents/Studies_and_Reports/Reports/Market_Monitoring_Unit_Reports/2014/NYISO2014SOMReport__5-13-2015_Final.pdf .

[11] As reported in NYISO's annual and quarterly reports of historic congestion. See http://www.nyiso.com/public/markets_operations/services/planning/documents/index.jsp.

[12] Developed by NYISO in identifying historic congestion by constraint for its upcoming 2015 CONGESTION ASSESSMENT AND RESOURCE INTEGRATION STUDY ("2015 CARIS study").



Key: red lines = 345kV; blue lines = 230kV; black lines = 115kV
Purple circle = constrained 230 kV lines

Figure 2. Western New York Transmission Lines

C. Surplus MW in Zone A are Unavailable Statewide

The total summer generation capability in Zone A is currently 4,493 MW and, as mentioned above, there is an import capability of 1,925 MW from Ontario. This combined total of 6,418 MW, after serving a forecasted 2015 summer peak load for Zone A of 2,635 MW, leaves a 3,783 MW surplus of power available to transfer eastward out of Zone A. This surplus will increase by 360 MW when the Dunkirk Plant repowering is complete. However, the NYISO 2015 Summer Operating Study demonstrates that power transfers eastward out of Zone

A across the Dysinger East interface (see Figure 1) are limited to approximately 2,000 MW due to the Niagara-Gardenville 230 kV line constraints. [13] With a surplus of 3,780 MW but an export capability of only 2,000 MW, there is as much as 1,780 MW bottled behind the 230 kV constraints with all transmission lines in-service. The construction of additional transmission out of the Niagara area would alleviate much of this bottling.

D. System Reliability

The NYISO's 2014 RNA identified transmission security thermal overloads in the case of an N-1-1 contingency on the 230 kV circuits under baseline load forecast conditions. These overloads are created by the need for resources in Western New York to serve statewide load and, therefore, the overloads increase as the statewide load increases over time or under extreme weather conditions. The thermal overloads were observed with the assumption of zero imports from Ontario. Operationally however, it is reasonable to expect economic imports from Ontario at any time, including under outage conditions (N-1-1). The overloaded lines observed under these conditions not only prevent any imports from Ontario, but require curtailment of other generation upstream of the constraint, such as Niagara, thus exacerbating the congested conditions.

While the overloads identified in the baseline conditions were resolved with the consideration of the Dunkirk repowering project, the findings highlight the high sensitivity of the Western New York transmission system to the status of local generation resources.

[13] A Dysinger East interface limit of 1,675 MW is reported in the NYISO 2015 Summer Operating Study. This interface captures flows only within New York. For power transfers across Dysinger East, typically 83% flows within New York and 17% flows on tie lines to neighboring regions. Therefore, the overall limit for power transfers out of Zone A is approximately 2,000 MW (1,675 / 83%).

E. Elimination of Transmission Constraints

As noted above, transmission constraints can have significant negative consequences for New York electric consumers. In the 2014 State of the Market Report for the New York ISO Markets, Potomac Economics reported that in 2014, transmission constraints in Zone A restricted the delivery of inexpensive power from the Niagara hydroelectric plant and inexpensive imports from Ontario and that, during periods in which the western system was congested, wholesale electric prices were particularly high and volatile.[14]

By comparison, elimination of transmission constraints and the associated congestion in the Western New York system will have significant economic benefits to New York State electric consumers. The specific benefits can be estimated by looking back at historic periods, eliminating the transmission constraints, and analyzing how the NYISO's day-ahead commitment results are impacted. For example, in a recent simulation study the NYISO analyzed the impacts of eliminating the 230 kV constraints in Zone A for November 2013 and September 2014 (the peak congestion months in Western New York in those respective years). The study showed that average wholesale electric prices in Zone A would have been reduced by $5.47/MWh (or 14%) in November 2013 and $4.89/MWh (15%) in September 2014. Demand$ Congestion on the Western New York system would have decreased by $10M (or 89%) in November 2013 and $8.5M (86%) in September 2014. Finally, Niagara output and imports from Ontario would have been 12% (109 MWh) and 7% (50 MWh) higher, respectively, in November 2013; and 15% (128 MWh) and 9% (77.5 MWh) higher in September 2014. [15]

The benefits of eliminating transmission constraints can also be studied by analyzing

[14] 2014 State of the Market Report.

[15] Internal NYISO Study performed utilizing its Congestion Reporting for Off-Line SCUC (CROS) software.

future system conditions and market results through production cost simulations.[16] In 2013, the NYISO performed, and presented at an October 31, 2013 NYDPS technical conference, several analyses of Western New York system congestion on behalf of the NYDPS.[17] In one study, the NYISO relieved all of the 230 kV line constraints in the western system and estimated the impacts for 2019 and 2022 on key congestion-related metrics. Relieving or relaxing the 230 kV constraints could be achieved through a significant transmission upgrade. The study found that there would be $17.0M and $29.9M in NYCA-wide production cost savings in 2019 and 2022 respectively, due to such a relaxation. Because of its location on the transmission system, the impacts were even greater in the event that the Huntley Generating Station was out-of-service, with $21.7M saved in 2019 and $49M saved in 2022. Annual NYCA-wide savings in wholesale market load payments ranged from $2M in 2019 and $54M in 2022 (with Huntley in-service) to $42M in 2019 and $95M in 2022 (with Huntley out-of-service). Finally, in a study of 2013 system conditions, relaxing a subset of the 230 kV system lines (Niagara-Packard, Packard-Huntley, and Huntley-Sawyer) yielded a reduction of $30.6M in Demand$ Congestion; $7.2M in production cost savings; and an increase in flows from Ontario of 345 GWh.[18] It is important to note that these are the same lines cited by the NYISO's Market Monitoring Unit in its 2014 State of the Market Report as being most frequently congested.

F. Capacity Market Impacts

Capacity market benefits, *i.e.*, reductions in statewide and local capacity requirements, are another important way that congestion relief is good for consumers. Such capacity market

[16] Simulations performed using GE-MAPS Software

[17] REPORT ON NYSDPS-REQUESTED ANALYSES - UPDATED, New York Independent System Operator (Updated November 13, 2013). See at: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={659A744E-0777-45BE-92B8-31851EEED420}

[18] *Id.*

savings could result from reduced statewide or locational installed capacity requirements when transmission upgrades are added to the system. These upgrades would permit higher levels of flows between regions of the state and allow for increased emergency assistance from Ontario and, therefore, enable New York to meet its reliability requirements with potentially fewer capacity resources. The NYISO's preliminary analyses indicate that relieving congestion in Western New York may result in a reduction in the statewide capacity requirement of greater than 120 MW or approximately $4.75M in annual capacity payments.

G. Demand Response

In the April 3 Notice, the Commission seeks comments whether there are demand resource-based measures that can be pursued in order to resolve or mitigate the transmission congestion and potential reliability issues in the Western New York portion of the bulk electric system. Generally, the NYISO provides markets for demand response, treats demand response resources equivalent to other capacity resources in its planning studies, and supports the Reforming the Energy Vision (REV) initiatives to further enhance demand response capability. Nevertheless, in this case the transmission constraints in Western New York described in these comments are not driven by an inability to serve load in the local area under peak load conditions when demand response would be useful, but rather are due to a lack of transmission capability under all system load conditions to export the full potential power from the Niagara hydropower plant and Ontario to the rest of New York State. Significant transmission upgrades are necessary to resolve these transmission constraints.

III. Conclusion

Expanding the bulk power transmission system as contemplated in PSC AC transmission proceedings and the Governor's Energy Highway initiative would better position New York's

bulk power transmission system to mitigate potential threats to reliability by providing greater operational flexibility and increased access to emergency assistance from neighboring regions. New transmission would alleviate congestion and, therefore, as noted above, enhance the NYISO's ability to manage the system during extreme weather and storms. Such improvements should reasonably be expected to lead to substantial savings for consumers.

Incremental transmission additions would improve reliability, make markets more efficient, and serve various public policy objectives such as transmitting energy from more renewable resources, lowering air emissions, and making the transmission grid more resilient.

For the foregoing reasons, the NYISO respectfully requests that the Commission consider these comments and recommends that the Commission identify a Public Policy Transmission Need in Western New York for which solutions would be requested by the NYISO.

Respectfully submitted,

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May 18, 2015

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Rensselaer, NY this 18th day of May, 2015.

/s/ John C. Cutting

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