

November 6, 2015

Hon. Kathleen H. Burgess
Secretary to the Commission
New York State Public Service Commission
Agency Building 3, 19th Floor
Albany, NY 12223-1350

Subject:

- CASE 12-T-0502 - Proceeding on Motion of the Commission to Examine Alternating Current Transmission Upgrades.
- CASE 13-E-0488 - In the Matter of Alternating Current Transmission Upgrades - Comparative Proceeding.
- CASE 13-T-0454 - Application of North America Transmission Corporation and North America Transmission, LLC for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII of the Public Service Law for an Alternating Current Transmission Upgrade Project Consisting of an Edic to Fraser 345 kV Transmission Line and a New Scotland to Leeds to Pleasant Valley 345 kV Transmission Line.
- CASE 13-T-0455 - Part A Application of NextEra Energy Transmission New York, Inc. for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII of the Public Service Law for the Marcy to Pleasant Valley Project.
- CASE 13-T-0456 - The Part A Application of NextEra Energy Transmission New York, Inc. for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII for the Oakdale to Fraser Project.
- CASE 13-M-0457 - Application of New York Transmission Owners Pursuant to Article VII for Authority to Construct and Operate Electric Transmission Facilities in Multiple Counties in New York State.
- CASE 13-T-0461 - Application of Boundless Energy NE, LLC for a Certificate of Environmental Compatibility and Public Need Pursuant to Article VII for Leeds Path West Project.

Dear Secretary Burgess:

Submitted for filing herewith in the above-entitled cases are “Comments of the New York Independent System Operator, Inc.” in response to the Notice Extending Deadlines that was issued September 23, 2015 in the above captioned proceedings.

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Please contact me at (518) 356-6220 or at cpatka@nyiso.com if you have any questions or concerns.

Very truly yours,

/s/ Carl F. Patka

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**STATE OF NEW YORK
PUBLIC SERVICE COMMISSION**

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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 proceedings (collectively, “AC Transmission Proceedings”).

The NYISO has prepared these its comments in response to the New York Public Service Commission’s (“the Commission” or “NYPSC”) September 23, 2015 Notice Extending Deadlines, which set forth deadlines by which to file initial and reply comments on the

September 22, 2015, New York Department of Public Service (“NYDPS” or “DPS”) Trial Staff (“Staff”) final report entitled *Comparative Evaluation of Alternating Current Transmission Upgrade Alternatives* (“Final Report”) and motion entitled *Motion of DPS Trial Staff for Commission to Declare a Public Policy Need & Take Further Action Regarding Alternating Current Transmission Proposals* (“Motion”). On the same day Trial Staff submitted its Final Report and Motion, the Hudson Valley Smart Energy Coalition (“HVSEC”) submitted reports by London Economics International LLC (“LEI”) and Dr. Gidon Eshel (“Dr. Eshel”) into the AC Transmission Proceedings.

On October 9 and 10, 2015, the NYPSC conducted a Technical Conference as a forum for Trial Staff to present, explain, and discuss its Final Report and Motion and “for the parties to pose questions of the presenters and to otherwise discuss the Report and Motion and its implications in these proceedings.”¹ Staff agreed to permit HVSEC to present its report and invited the NYISO to present an updated powerflow analysis of the 22 portfolios of projects proposed in the AC Transmission proceedings. The NYISO served as an independent technical resource for the powerflow analyses, which Staff entered into the record of these proceedings.²

A. The NYISO’s Interest and Position in these Proceedings

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. In light of those responsibilities, the NYISO has a strong interest in the policy issues presented in

¹ *Notice of Technical Conference*, NYPSC Case No. 12-T-0502, et al. (September 15, 2015).

² *NYISO Technical Conference Presentation*, NYPSC Case No. 12-T-0502, et al. (October 14, 2015) available at <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={C5408EBC-9403-4B1A-9691-131BBC63B81E}>.

these proceedings. 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. The NYISO is not advocating that the NYPSC identify any specific transmission project to address the proposed Public Policy Transmission Need ("PPTN") identified by Trial Staff. If the NYPSC identifies a PPTN, the NYISO will solicit and evaluate solutions to address the need through its Public Policy Transmission Planning Process. The following comments by the NYISO support the Trial Staff's finding of need for additional transmission capacity in New York State, address the Trial Staff's Final Report and Technical Conference presentation, and support the Trial Staff's Motion to declare a PPTN. Further, these comments refute the reports and presentations by LEI and Dr. Gidon Eshel.

II. NYISO supports the Trial Staff Proposed Public Policy Transmission Need

A. NYISO Supports Increased Transmission Capacity Based on Quantitative and Qualitative Reasons.

In their September 22 Motion, Trial Staff recommended that the Commission issue an order finding and determining that there is a transmission need driven by public policy requirements for the portfolio of identified projects. The NYISO bases its support of Staff's recommendation on numerous quantitative and qualitative benefits that transmission expansion in the identified corridors will create for New York's transmission grid and New York State consumers/residents including production cost savings, improved reliability, generation capacity cost savings, energy market benefits, environmental benefits, updating of grid infrastructure, and other public benefits.³

³ See *Comments of the New York Independent System Operator, Inc.*, NYPSC Case No. 12-T-0502, et al, (December 29, 2014).

Increased transmission capacity will provide many benefits to New York’s power grid, not only in Southeastern New York but in Western New York as well.⁴ New York’s bulk power transmission system and generation fleet is aging, and new and upgraded facilities are needed. Adding transmission and other resources to serve those regions will “alleviate congestion, help avoid future reliability problems, lower consumers’ energy costs, and enhance operational flexibility.”⁵

Allowing new transmission resources to enter into service will enhance competition and, in turn, will increase liquidity in the NYISO’s wholesale electric markets. Additional transmission resources will make the system more resilient and better able to withstand extreme weather conditions including summer peaks on hot days, extreme winter weather events, and shoulder season storms.

Further, additional transmission resources enhance the reliability of New York’s power grid. Additional transmission resources will give the NYISO greater operational flexibility by making it easier to dispatch necessary resources, providing greater access to operating reserves and ancillary services, and facilitating removal of generation and transmission facilities for maintenance when needed. Moreover, given the limited transfer capability into downstate New York from neighboring regions in New England and PJM, an effective way to address the regional imbalances between upstate and downstate New York will be to add transmission capacity that increases the ability of upstate resources to serve downstate loads.

⁴ See NYPSC Case No. 14-E-0454, In the Matter of New York Independent System Operator, Inc.’s Proposed Public Policy Transmission Needs for Consideration, *Order Addressing Public Policy Requirements for Transmission Planning Purposes* (July 20, 2015).

⁵ 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

Renewable resource integration in New York State will also benefit from increased transmission capacity. Assuming the availability of an additional 1,000 MW of transmission capability to carry energy from renewable resources, the incremental transfer capability from upstate to downstate New York would allow the power system to supply up to 9,000 gigawatt hours (GWh) more energy from renewable resources to loads in New York each year, avoiding up to four million tons of carbon dioxide (CO₂) emissions annually. Cumulatively, assuming the availability of this new transfer capability between upstate and downstate New York together with the additional transmission capability contemplated by the Commission's Western New York Public Policy Transmission Need, the total additional transfer capability would allow the power system to provide up to 17,500 GWh more energy from renewable resources within and outside of New York, avoiding up to 8 million tons of annual CO₂ emissions.⁶ This additional renewable energy would represent a 48 percent increase to the existing annual renewable energy production in New York State. Building transmission between upstate and downstate New York will open opportunities to the investment community to add new renewable resources in New York, benefitting the state's economy, the environment, and interstate and international commerce. Accordingly, adding transmission capacity in New York will increase the NYISO's ability to dispatch renewable resources more frequently, helping to attract additional renewable development while lowering emissions.⁷

⁶ See NYPSC Case No. 14-E-0454, In the Matter of New York Independent System Operator, Inc.'s Proposed Public Policy Transmission Needs for Consideration, *Order Addressing Public Policy Requirements for Transmission Planning Purposes* (July 20, 2015).

⁷ See GROWING WIND: FINAL REPORT OF THE NYISO 2010 WIND GENERATION STUDY §5.7 (New York Independent System Operator, 2010), available at http://www.nyiso.com/public/webdocs/services/planning/special_studies/GROWING_WIND_-_Final_Report_of_the_NYISO_2010_Wind_Generation_Study.pdf.

B. London Economics Makes Faulty Assumptions and Incorrectly Focuses on Congestion as the Only Determinant of the Public Need for Transmission Infrastructure Upgrades.

HVSEC challenges the need for transmission, and offers a report produced by LEI in support of its position. The report relies on LEI's own proprietary modeling. This model incorrectly determines that increased transmission capacity downstate is unnecessary. Its report focuses on congestion as the sole reason to increase transmission, while ignoring the long list of other benefits that increased transmission capacity will provide.

First, the LEI study correctly identifies the differential in natural gas prices between upstate and downstate New York as a primary driver of congestion. However, the study assumes that such differentials will simply disappear over the next few years as new generic pipeline capacity is assumed to be built. The study does not cite specific projects under development or, even if such projects were proposed, how they would yield the natural gas prices forecasted in the LEI model. Such infrastructure development is critical to the study findings. LEI admits as much, stating that “Similarly, if the new pipeline capacity assumed to be built over time ... is delayed, the locational differences in prices might continue longer than anticipated, delaying LEI’s forecast of a reduction in congestion across the C/E and UPNY/SENY interfaces and thereby catalyzing higher congestion costs than predicted under LEI’s base case.”^{8,9}

⁸ OUTLOOK FOR THE NEW YORK WHOLESALE POWER MARKET AND ANALYSIS OF THE DRIVERS OF TRANSMISSION CONGESTION WITHIN THE NEW YORK MARKETS 61 (London Economics International LLC, 2015) (“LEI”).

⁹ “UPNY/SENY” is the Upstate New York to Southeast New York transmission interface, “C/E” is the Central to East transmission interface.

Moreover, the study readily admits that “there is a lot of uncertainty in how natural gas prices will evolve in the future.”¹⁰ The scenarios designed to address this uncertainty, however, are flawed. Each of the three scenarios uses gas price differentials well below current levels. While scenarios can certainly be useful tools in bounding the range of potential outcomes, the scenarios analyzed in the LEI study inappropriately restrict forecasted gas price differentials to near zero, leading to a rather one-sided view of future congestion.

Second, LEI’s capacity model suggests that significant capacity additions will be made in the downstate area, relieving congestion and thus relieving the need for transmission improvements altogether. LEI’s assertion that new capacity is economic rests on an assumed cost of new entry far below the levels determined in the latest Demand Curve Reset study.¹¹ Further, it is unclear how LEI’s model arrives at this conclusion while accounting for Special Case Resources or imports from external control areas in the form of Unforced Capacity Deliverability Rights. Proper accounting for these factors would reduce the locational capacity clearing prices and make new entry less attractive. Any deviation down from LEI’s optimistic new generation forecast in New York City and the lower Hudson Valley would increase the forecasted levels of congestion across Central East and UPNY/SENY.

Third, LEI’s proprietary analysis tool, POOLMod, provides an oversimplified representation of the electric transmission system (utilizing a “pipe and bubble” or “a transportation model”) which cannot model the complexities of the New York system. Given its proprietary nature, the LEI model is not widely used in the electric power industry, and the LEI

¹⁰ LEI at p. 8.

¹¹ *Proposed NYISO Installed Capacity Demand Curves For Capability Years 2014/2015, 2015/2016 and 2016/2017*, Federal Energy Regulatory Commission Docket No. ER14-500-000 Attachment IV (November 27, 2013).

report does not provide any benchmarking or backcasting analysis to support the validity of the software or the underlying databases.

In contrast to LEI's proprietary POOLMod tool, the GE-MAPS software used by the Brattle Group in its analysis is an industry-standard software package that models the interconnected electricity transmission together with supply and demand.¹² It is used by the NYISO to perform its own economic planning studies such as Congestion Assessment and Resource Integration Studies ("CARIS") and by several of the New York Transmission Owners, as well as the NYDPS. The GE-MAPS software and the CARIS databases Brattle used were fully vetted through a transparent stakeholder process. The NYISO supports the Brattle Group's methodology for establishing the benefits associated with each of the proposed AC Transmission projects. The techniques employed are appropriate and provide reasonable projections of the impact of developing the transmission facilities studied.

Moreover, GE-MAPS includes a full nodal representation of not only New York, but also PJM, New England and Ontario. Modeling neighboring systems is important when forecasting congestion patterns and performing long-term transmission planning studies. As each system's resource mix and costs change, inter-control area transactions can be dynamically modeled and optimized. POOLMod, on the other hand, treats imports and exports as a pre-determined input. Such transactions strongly influence congestion patterns across New York's system.

There are also a number of unique characteristics of the New York transmission system that should be accounted for in any modeling exercise. For example, it is not clear how POOLMod models the Central East voltage limits or the impact of the Athens Special Protection

¹² The Brattle Group's presentation, *Benefit-Cost Analysis of Proposed New York AC Transmission Upgrades*, was submitted as Appendix 1 of Trial Staff's Final Report.

System. Both of these variables significantly impact the congestion across Central East and UPNY/SENY.

Finally, the LEI study does identify significant capacity market benefits from additional transmission capacity, and acknowledges that such benefits would have to be weighed against costs, a factor already incorporated in the Brattle Group's study. But LEI's overall conclusion that transmission is not needed ignores these capacity market benefits and many of the other benefits described and analyzed in the Brattle Group's report. By confining its analyses to congestion, the study provides limited insight into the value of transmission across Central East and UPNY/SENY. The study simply asserts that future congestion will be minimal and thus transmission expansion has little merit. As noted above this congestion analysis is flawed.

III. NYISO's Load Forecast Modeling Assumptions are Sound.

HVSEC challenges the NYISO's load forecasting modeling assumptions that underlie the economic modeling conducted by the Brattle Group for Trial Staff in these proceedings. The PSC should accept the NYISO's load forecasting methodologies as consistent with industry practice, as described below.

A. NYISO's Electric Demand Forecast is Based on Industry Standard Practices.

The downstate peak demand forecast is one of many factors taken into consideration in the decision to expand transmission capacity. Due to the effects of congestion, both annual energy consumption and peak demand factor into an assessment of the costs and benefits of a transmission expansion plan.

The NYISO 2014 forecast showed slow but steady demand growth for the downstate delivery zones over the ensuing twenty years.¹³ Consistent with updated projections of economic conditions and impacts of state energy policy and programs, the NYISO 2015 Gold Book reduced the prior energy and peak demand forecasts.¹⁴

NYISO forecast results: (a) are consistent with the downstate economic growth projections, (b) are based on a methodology that is used by nearly every electric utility and Transmission System Operator in the country, and (c) were reviewed by the NYISO's Electric System Planning Working Group, which is composed of stakeholders from all market sectors including every electric utility company in New York State, and (d) are updated annually to reflect new and changing economic conditions and impacts of state energy policy and programs.

B. Gross Domestic Product is a Major Factor in Electric Demand Forecast Models.

The NYISO forecast model, like the majority of leading electric demand forecast models, relates energy demand to weather conditions, population growth, and economic activity using a linear regression model. One of the most important measures of population and economic growth is the Gross Domestic Product ("GDP") or Gross Regional Product ("GRP"). GDP is a measure of the goods and services produced in the United States; GRP is a measure of goods and services produced in a defined regional economy such as New York City. GDP and related economic variables such as household income and employment are universally used in forecasting electricity demand; these variables capture both increases in regional population growth and economic activity. GDP increases over time as a result of growing population that in

¹³ 2014 LOAD & CAPACITY DATA "GOLD BOOK" , (New York Independent System Operator, Inc., 2014).

¹⁴ 2015 LOAD & CAPACITY DATA "GOLD BOOK" (New York Independent System Operator, Inc., 2015).

turn drives demand for business services and supplies employment to industries that produce and sell goods both inside and outside the region. As such, GDP and GRP capture population growth, capital investment, productivity growth, and demand for products and services.

Electricity use forecasts factor in GDP because electricity is a critical input into GDP growth. Electricity is used to cool and light homes and businesses, refrigerate food, heat water, electrify the subway system, run machinery, and charge cell phones and myriad other end-use electronic devices that contribute to creating New York's economy and generating GDP growth. Electricity demand and GDP are strongly related. As the demand for electricity is driven by the demand in goods and services, increase in GDP will drive increased electricity demand.

C. Population and Age Cohorts Are Not a Major Factor in Electric Demand Forecast Models.

GDP is a better predictor of future energy and peak demand than variables such as population and age cohorts. While population is an important factor driving future energy requirements, population growth fails to capture the patterns of energy demand driven by business activity and the export of goods and services outside the service area. The NYISO's objective is to understand the factors that drive electricity use and to use economic proxies to reflect these factors. This means looking for causation, not merely correlation, in estimating annual energy and demand forecast models. As discussed above, GDP and demand for electricity have a causal relationship. This causal relationship creates a more reliable correlation with energy demand than population growth or age cohorts alone.

Population growth is a metric captured in the overall picture of GDP. In consideration of certain input to the record in these proceedings that population growth rather than GDP provides

a sound empirical basis for forecasting peak demand,¹⁵ the NYISO compared several monthly linear regression models with different economic drivers including GDP, population, employment, and per capita GDP. The models estimated with GDP (including per capita GDP) had the highest model Adjusted R-Squared and smallest model standard error.¹⁶ In other words, GDP had a higher correlation to actual peak demand than any other variable tested.

Because GDP reflects economic activity better than population alone, as a variable it tends to correlate more closely with demand for energy both in periods of economic growth and decline. While a strong historical correlation does not guarantee that GDP will always generate the best forecast, the evidence shows that, historically, GDP is more strongly correlated with peak demand than population. Given that GDP is more strongly correlated with demand than population, and given the causal relationship between GDP and energy demand, the NYISO expects GDP to be a better predictor of future energy and peak demand requirements.¹⁷ Age cohorts are even more attenuated from the drivers of electricity demand, as they are a subset of population. The NYISO has not found any electric utility, regulatory agency, or transmission system operator that uses age cohort distributions to forecast regional annual electric energy load or peak demand.

In summary, GDP is a much better measure of the factors that drive electricity demand, while population growth and age cohorts are implicitly embedded in GDP growth. Using

¹⁵ Eshel December 2014.

¹⁶ The Adjusted R-Squared is a measure of the variation in demand from its mean value that the model is able to explain; the standard error is a measure of the overall model error.

¹⁷ Consistent with industry practice, the NYISO also considers energy efficiency, public policy initiatives, and regional forecasting in its modeling.

population or age cohorts alone as a forecast driver will result in an erroneously low demand forecast.

D. NYISO Forecasts Are Proven to be Valid and Stand the Test of Time.

The NYISO's forecasting methodologies are consistent with well-established industry practices that have been proven effective and appropriate through widespread application. Dr. Eshel's arguments to the contrary provide no sound basis to change the proven methods employed by the NYISO and the utility industry as a whole.

IV. Conclusion

For the foregoing reasons, the NYISO respectfully requests that the New York State Public Service Commission consider these comments in considering Trial Staff's Motion and Final Report and recommendations in the Alternating Current Transmission Upgrade proceedings.

Respectfully submitted,

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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 these proceedings.

Dated at Rensselaer, NY this 6th day of November 2015.

/s/ Joy A. Zimmerlin

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