Attachment J
Exhibit No. TRANSCO-500
Testimony of John Tsoukalis

Docket No. ER24-___-000
Exhibit No. TRANSCO-500

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

NEW YORK TRANSCO LLC) DOCKET NO. ER24-____-000

DIRECT TESTIMONY OF
JOHN TSOUKALIS

TABLE OF CONTENTS

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I. INTRODUCTION

Q1: PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A1: My name is John Tsoukalis. My business address is 1800 M Street NW, Suite 700N, Washington, DC 20036.

Q2: ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A2: I am testifying on behalf of New York Transco LLC (NY Transco).

Q3: BY WHOM ARE YOU EMPLOYED AND IN WHAT POSITION?

A3: I am a Principal at The Brattle Group.

Q4: PLEASE DESCRIBE THE BRATTLE GROUP.

A4: The Brattle Group is a consulting firm with a professional staff in excess of 400 individuals and offices in North America, Europe, and the Asia-Pacific region. The firm was founded in 1990 in Cambridge, Massachusetts. We have a large electric power practice focused on market, regulatory, and financial matters in the industry. We are an industry leader in electricity rate design, transmission planning, analysis of the benefits and risks of electricity

assets and contracts, and analysis of wholesale electricity markets. We provide expert testimony in matters related to market analysis. We also advise clients on the design, pricing, and risk management of wholesale and retail services, and provide testimony on these matters before regulatory agencies for electric and gas utilities.

Q5: PLEASE DESCRIBE YOUR PROFESSIONAL AND EDUCATIONAL BACKGROUND.

A5: I am an energy economist and regulatory expert with an educational background in economics and over 10 years of experience advising clients in the electric power industry. For multiple clients, I have assisted in preparing transmission rate filings, helped Regional Transmission Organization/Independent System Operator (RTO/ISO) clients design transmission rates, conducted benefit-cost analyses of transmission assets, analyzed the economic value of transmission infrastructure, and supported clients in analyzing market opportunities and creating investment strategies in the transmissions sector in the United States. I have analyzed and modeled the power system in various parts of North America, advised clients on regulatory matters, market design, and compliance with market power rules. I have authored numerous reports and presented analyses detailing the economic issues associated with participation in wholesale power markets, generation and transmission investments, system modeling, and transmission rate design. In addition, I have assisted clients in comprehensive organizational strategic planning and developing regulatory policies.

I have provided testimony before the Federal Energy Regulatory Commission (the FERC or the Commission) on several occasions related to transmission rates and

transmission cost allocation, and have provided testimony before the Alberta Utilities Commission related to transmission rate design. I have also provided expert testimony before a U.S. District Court.

I hold a Bachelor of Arts in Economics from Washington and Lee University, a Master of Science in Economics from The Barcelona Graduate School of Economics, and a Master of Science in Economic Analysis from the Universitat Autònoma de Barcelona. A more complete description of my experience and qualifications is provided in Exh. No. TRANSCO-501.

Q6: WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A6: I am testifying on behalf of NY Transco with respect to their application for transmission incentive rate treatments for the Propel NY Energy transmission project (Propel NY Energy Project or the Project). My testimony will cover the following topics:

- A review of the characteristics of the Propel NY Energy Project, including the New York Independent System Operator, Inc. (NYISO) process that determined the need for the Project, the competitive solicitation that selected the Project, and the benefits analyses conducted by NYISO;
- An overview of the types of incentives requested by NY Transco and discussion of the justification for such incentives as risk-reducing measures for transmission owners as well as the benefits they provide to ratepayers;
- A summary of the specific characteristics and risks associated with the Propel NY Energy Project that support NY Transco's application for incentives;

- A review of FERC policy and recent decisions granting or denying transmission incentives.

Q7: PLEASE SUMMARIZE THE CONCLUSIONS OF YOUR TESTIMONY.

A7: Based on my analysis in preparing this testimony, I conclude that the Propel NY Energy Project satisfies the criteria used by the FERC to grant the requested transmission incentives in recent decisions. Specifically, the Propel NY Energy Project should qualify for the Construction Work in Progress (CWIP) Incentive, Project Abandonment Incentives, and an Incentive Return on Equity (ROE) to account for extraordinary risks. My conclusion is supported by the following specific facts about the Project:

- The Project was selected as part of a fair and open regional planning process that considered the reliability and economic benefits of the Project (the NYISO Public Policy Transmission Planning Process), which the FERC has identified as a criteria for receiving incentives in the past. As part of the regional planning process, the New York State Public Service Commission (NYPSC) determined the need for the Project, which demonstrates that the local regulator supports the Project, and the NYISO determined that the Project has reliability benefits from supporting the integration of offshore wind and by creating a new 345 kV backbone system on Long Island, as well as economic benefits from congestion relief and capacity investment savings due to the increased export capability from Long Island to the rest of New York.

- The NYISO chose the Project from among nineteen different options, through a competitive process in which the NYISO determined that the Propel NY Energy Project

was the "more efficient or cost-effective transmission solution,[1]" reducing the cost borne by ratepayers and increasing the benefits that will accrue to ratepayers in New York due to the Project. This supports a policy objective in establishing transmission incentives, as laid out in the Federal Power Act Section 219, to attract investment in transmission infrastructure that lowers costs to customers.[2]

- As part of their bid into the NYISO competitive solicitation process, the Project developers offered a cost containment mechanism, leaving them to bear 20% of cost overruns over the initial estimate ($2.554 billion) of NYISO-defined Included Capital Costs.[3] The cost containment mechanism includes a cost escalation limitation that is quite limited relative to actual inflation.[4] This cost containment mechanism increases the financial risk for the Project owners and the cost savings that will accrue to ratepayers, further supporting the policy objectives for establishing transmission incentives.

- The Propel NY Energy Project is a large project that faces extraordinary risks and development challenges, well beyond the risks faced by recent projects that have been awarded incentives by the FERC:

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1 NYISO, Long Island Offshore Wind Export Public Policy Transmission Planning Report, June 13, 2023, p. 10.

2 Section 219 of the "Federal Power Act," 16 U.S.C. §§ 824s.

3 NYISO, Long Island Offshore Wind Export Public Policy Transmission Planning Report, June 13, 2023, pp. 80–81.

4 Direct Testimony of Robert Caso, Exh. No. TRANSCO-300 at 20.

- At an estimated total cost of $3.26 billion developed by the NYISO independent consultant,[5] this is the single largest transmission project proposed in New York. Experience and research demonstrate the unique and disproportionately higher risk of large infrastructure projects, supporting NY Transco's application for ROE incentives.
- The NYISO has established a required in-service date of May 2030. Although NY Transco is confident they can meet the required in-service date, the scope of the Project greatly increases the risk of delays outside their control, increasing the possibility that the Project may ultimately be abandoned.
- A large share of the Project's total cost relates to the complex, lengthy, and risky task of routing and installing underground and submarine cables, covering the entire length of the Project. The unique nature of the Project creates regulatory, construction, logistical, and supply-chain challenges that can increase the cost of the Project and delay the in-service date. Specifically, the 264 circuit-miles of underground cable require excavating across an urban area with dense existing infrastructure, navigating environmental sensitivities, and includes a segment under the East River that requires directional drilling. The 40 circuit-miles of submarine cable crosses environmentally-sensitive coastlines of the Long Island Sound. The inherent logistical, regulatory, and permitting challenges in these endeavors can lead

[5] NYISO, Long Island Offshore Wind Export Public Policy Transmission Planning Report, June 13, 2023, p. 27. Note that this estimate includes investments to be made by the incumbent transmission owners. NY Transco and NYPA included an initial cost estimate for the portion of the Project that they are responsible for of $2.7 billion (Direct Testimony of Paul Haering, Exh. No. TRANSCO-200 at 23). NY Transco is responsible for no less than 70% ($1.89 billion) of the investment for this portion of the project, and potentially as much as 85% (Direct Testimony of Robert Caso, Exh. No. TRANSCO-300 at 15).

to cost overruns and delays that create significant financial risk for the Project owners. All of these risks support NY Transco's application for transmission incentives.

II. BACKGROUND ON THE PROPEL NY ENERGY PROJECT

Q8: PLEASE DESCRIBE THE PROPEL NY ENERGY PROJECT.

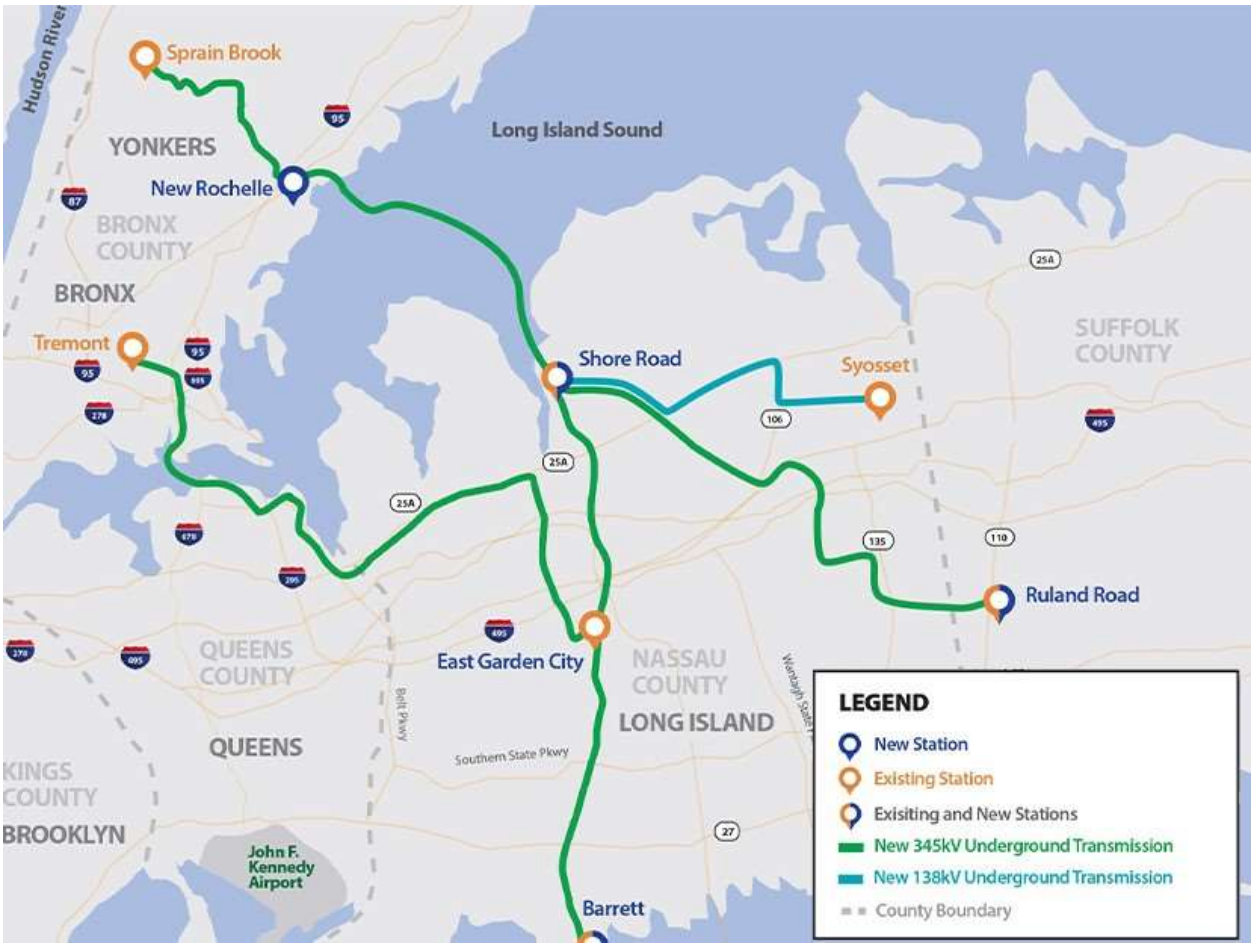
A8: The Propel NY Energy Project is a major new transmission project being developed by the New York Power Authority (NYPA) and NY Transco to address the State's public policy transmission needs. The Project requires 88 miles of excavation to install 230 circuit-miles of 345kV underground transmission line, 34 circuit-miles of 138kV underground transmission line, as well as the installation of 40 circuit-miles of submarine cable. The Project was selected by the NYISO as part of a competitive bid process to create a more resilient and reliable transmission grid on Long Island, to expand the transmission capacity between Long Island and the rest of New York State (NYS), and to help integrate offshore wind reliably and with acceptable congestion within and out of Long Island. The Propel NY Energy Project creates a new backbone 345 kV system on Long Island, improving the resilience and reliability of the existing grid, as well as creating three new 345 kV circuits that connect Long Island to the rest of the New York State. More than 3,000 MW of New York's 9,000 MW offshore wind generation is expected to interconnect on Long Island and between 14,000 and 25,000 MW of offshore wind is expected to be needed to help the state

meet its clean energy goals outlined in its Climate Leadership & Community Protection Act (CLCPA) and New York Clean Energy Standard (NY CES or CES).[6]

The Propel NY Energy Project is unlike most other transmission projects—larger in scale and involving underground cable installation at an unprecedented scale in a densely populated urban area, submarine transmission lines across Long Island Sound, and directional drilling for over a mile stretch under the East River. The Project is estimated to cost $2.7 billion, and will take seven years to develop and construct. Figure 1 below provides an illustration of the Project's proposed route and highlights the new underground segments that will be developed through Nassau County on Long Island, Queens and Bronx counties in New York City, and Westchester County.

[6] New York, New York's Climate Leadership and Community Protection Act, 2019. New York State Climate Council Scoping Plan, December 19, 2022, at 221, Table 13 (16–19 GW by 2050). R. Lueken, S. A. Newell, J. Weiss, J. Moraski, S. Ross, The Brattle Group, New York's Evolution to a Zero Emission Power System, May 18, 2020, at 44 (14–25 GW by 2040).

FIGURE 1: TRANSMISSION LINES AND SUBSTATIONS THAT MAKE UP THE PROPEL NY ENERGY PROJECT



II.A. New York Competitive Solicitation Process

Q9: PLEASE DESCRIBE THE NEED FOR THE PROPEL NY ENERGY PROJECT AND THE COMPETITIVE PROCESS THAT RESULTED IN ITS SELECTION.

A9: The CLCPA and CES mandate the development of 9,000 MW of offshore wind capacity by 2035. Some will interconnect in New York City and some on Long Island. The Power Grid Study suggested at least 3,000 MW would need to interconnect on Long Island due to

limitation interconnecting to New York City.[7] Both will require new transmission to support the interconnection of planned offshore wind generation.

The NYISO conducts a Public Policy Transmission Planning Process to address transmission needs driven by public policy requirements identified by the NYPSC, such as the mandate for offshore wind created under the CLCPA and CES. In August 2020, the NYISO began the 2020–2021 cycle of the Public Policy Process and submitted potential transmission needs to the NYPSC. In addition, the Long Island Power Authority (LIPA) submitted its request for a public policy need determination for transmission in Long Island. In March 2021, the NYPSC issued an order identifying the Long Island need to increase export capability from Long Island to the rest of the state.[8]

The NYISO issued a solicitation for solutions to the Long Island need in August 2021. It received nineteen proposals and evaluated them based on quantitative and qualitative criteria established in the NYISO's Open Access Transmission Tariff (OATT or Tariff) and specified by the NYPSC. The evaluation criteria included the proposals' capital cost, voluntarily submitted cost cap, cost per MW of capacity created, potential for expanding the project, operability, performance, property rights and routing, potential issues associated with construction delays, production cost savings created by the project, capacity savings, and other metrics.[9] NYISO staff recommended the selection of Propel NY Energy's T051 Alternate 5 proposal as the more efficient or cost-effective solution to address the

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7 New York Department of Public Service Staff, New York Energy Research and Development Authority Staff, The Brattle Group. "Initial Report on the New York Power Grid Study," p. 2, 62, 66, January 2021.

8 NYISO Board of Directors Decision on Approval of Long Island Offshore Wind Export Public Policy Transmission Planning Report and Selection of Public Policy Transmission Project, June 13, 2023, p. 2.

9 *Id.* at p. 3

Long Island Need. The NYISO staff recommendation was reviewed in a stakeholder process, reviewed by the NYISO Market Monitoring Unit, and approved by the NYISO Board of Directors.[10]

Q10: DOES THE FACT THAT THE PROPEL NY ENERGY PROJECT WAS AWARDED AS PART OF THE COMPETITIVE PUBLIC POLICY PROCESS LEND WEIGHT TO ITS APPLICATION FOR INCENTIVES?

A10: Yes. As I will discuss later in my testimony, the NYISO's Public Policy Transmission Planning Process is an open and fair regional planning process that considers and evaluates projects for reliability benefits and customer cost savings. It is FERC policy to presume that projects selected through such regional processes provide reliability and congestion benefits, which match the criteria for receiving incentives established in the Federal Power Act.[11]

However, several characteristics of the NYISO process lend additional support to NY Transco's application for incentives. First, that the Project was selected as part of a competitive solicitation provides assurance to the Commission that the Project is the best solution to address the identified need, as it has been vetted against other options based both on the cost and the benefits of the various options proposed. Furthermore, for the first time, the 2020–2021 NYISO Public Policy Transmission Planning Process included cost sharing and cost containment arrangements for all project submissions.[12] Therefore, ratepayers are partially shielded from cost overruns on Included Capital Costs, minimizing the possibility

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[10] *Id.* at p. 5

[11] *See* 18 C.F.R. §35.35(i); *see also* Section 219 of the "Federal Power Act," 16 U.S.C. §§ 824s.

[12] NYISO Board of Directors Decision on Approval of Long Island Offshore Wind Export Public Policy Transmission Planning Report and Selection of Public Policy Transmission Project, June 13, 2023, p. 3.

that customer benefits are reduced by escalating costs. While this provides ratepayers more certainty of realizing net benefits, it exposes the Project developers to significantly more financial risk than traditional transmission investments.

The fact that all bidders included cost containment mechanisms in their bids for the 2020–2021 NYISO Public Policy Transmission Planning Process demonstrates the success of the competitive process in reducing costs for ratepayers, while delivering beneficial transmission infrastructure projects. That is consistent with the objective established for awarding transmission incentives. The continued success of the competitive process in reducing costs for ratepayers is contingent on attracting several transmission developers to submit bids, and incentivizing bidders to continue offering cost containment mechanisms, realistic cost estimates,[13] or other provisions that reduce the final costs borne by ratepayers for beneficial transmission projects in spite of the added risk to developers created by these measures. If the FERC signals to the market that transmission owners will not be compensated adequately for taking on those risks, it may jeopardize the success of future competitive processes and ultimately increase costs for ratepayers to develop necessary and cost-saving transmission projects.

Q11: PLEASE DESCRIBE THE COST CONTAINMENT MECHANISM PROVIDED FOR THE PROPEL NY ENERGY PROJECT.

[13] Note that NY Transco and NYPA did not inflate the cost estimate in their bid, as confirmed by the NYISO's independent cost estimate. See NYISO, Long Island Offshore Wind Export Public Policy Transmission Planning Report and Selection of Public Policy Transmission Project, June 13, 2023, p. 23–31.

A11: The bid submitted by NY Transco and NYPA included two measures that shield ratepayers from cost overruns and escalations. First, the Propel NY Energy Project includes an escalation factor to shield ratepayers from changes to the initial cost estimate included in NY Transco and NYPA's bid due to inflation and other increases in materials or labor costs. The initial cost estimate from the bid can only be increased by 2% per year for a limited period. The proposed escalation of 2% is considerably lower than inflation.[14] If prudently incurred costs for the Project increase above the initial estimate, plus the escalation factor, they will be subject to a cost containment mechanism.

The Project owners offered a cost containment arrangement in which they agreed to take on 20% of certain cost increases above the estimated costs of the Project. Therefore, only 80% of any cost increases on NYISO-defined Included Capital Costs are passed through to ratepayers, unlike most transmission projects where 100% of cost increases are passed through to customers.[15]

II.B. Customer Savings and Benefits from the Propel NY Energy Project

Q12: WHAT CUSTOMER SAVINGS AND OTHER BENEFITS WILL THE PROPEL NY ENERGY PROJECT DELIVER?

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[14] For example, the Bureau of Labor Statistics reports that the Consumer Price Index increased by 10.3% in the 20 months from when the Project was submitted in October 2021 to when the Project was selected in June 2023 (the index increased from 276.589 to 305.109). Escalation of 2% per year over 20 months yields an increase of roughly 3.4%, approximately one third the rate of inflation from October 2021 to June 2023. See inflation statistics here: Consumer Price Index Historical Tables for U.S. City Average : Mid–Atlantic Information Office : U.S. Bureau of Labor Statistics (bls.gov)

[15] Note that certain costs are excluded from the cost containment mechanism, as defined in the NYISO Transmission Tariff. The NYISO's independent consultant estimated that $430 million of the total project cost (including investments made by the incumbent utilities) fall into the excluded cost category. NYISO, Long Island Offshore Wind Export Public Policy Transmission Planning Report, June 13, 2023, pp. 26–27.

A12: Transmission infrastructure upgrades from the Propel NY Energy Project are expected to play a critical role in integrating 9,000 MW of off-shore wind resources to the grid to meet CLCPA requirements in a cost-effective manner. However, the benefits of the Project are not limited to the integration of clean energy resources. The NYISO's Long Island Offshore Wind Export Public Policy Transmission Planning Report outlines several key benefits of the Propel NY Energy Project in addition to reliably integrating offshore wind resources under development in the state. These benefits include increasing the export capability from Long Island to the rest of the state, which will reduce the cost of power for customers by unbottling wind energy production and reducing curtailment of low-variable-cost wind resources. The Project will improve reliability and resource adequacy, and have environmental benefits in the form of lower carbon emissions.[16]

- **Reliability Benefits:** The Propel NY Energy Project is expected to increase transfer capability between Long Island and the rest of New York State, which provides NYISO with additional operational flexibility during times of system stress (*i.e.*, outage conditions). Given the limited existing transmission connection between Long Island and the rest of the State, building the new 345 kV backbone transmission system on western Long Island, that interconnects with the rest of the New York State will improve reliability and system resiliency. With the addition of the Propel NY Energy Project, the

[16] NYISO, Long Island Offshore Wind Export Public Policy Transmission Planning Report, June 13, 2023, pp. 45–65.

Out of the 16 Public Policy Transmission Projects that passed NYISO's Viability and Sufficiency Assessment, submitted by 3 developers, NYISO's Board of Directors recommended selecting Propel NY's alternate 5 proposal as offered cost-effective expandability, operability, and performance benefits cost effectively and had lower procurement, permitting, and construction risks.

local system on Long Island and surrounding areas will be able to reliably accommodate the increased variability caused by adding up to 6 GW of offshore wind connected to Long Island.[17] From a system strength and resilience perspective, the NYISO additionally finds that the Propel NY Energy Project will allow it to better respond to system disturbances during outage conditions.[18] The reliability benefits of the Project will continue to accrue to customers in New York for decades after the Project is placed in service, regardless of how the future resource mix evolves.

- **Production Cost Benefits:** Unbottling wind resources in Long Island is expected to reduce wind curtailments that will result in a reduction in energy imports from other regions, reducing costs associated with producing electricity to meet demand. For example, the NYISO found that the Project would reduce renewable generation curtailments by between 2.3% and 10.6%, depending on the scenario analyzed. As a result, over a 20-year period the Propel NY Energy Project is estimated to provide between $104 million and $609 million (in real 2022 dollars) in production cost savings for customers.[19]

- **Capacity Benefits:** NYISO's capacity market provides a mechanism of maintaining resource adequacy by procuring capacity to meet the New York Control Area's

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[17] *Id.* at p. 44.

[18] *Id.* at p. 42.

[19] NYISO, Long Island Offshore Wind Export Public Policy Transmission Planning Report, June 13, 2023, p. 47.
The baseline scenario assumes the addition of 3.1 GW of additional offshore wind generation in Long Island (out of 9 GW total) by 2045, while the Policy and Policy + B-VS scenarios assumes an additional 6 GW of offshore wind generation in Long Island (out of 12 GW total).
Production cost savings are calculated over the 20-year period from 2030 (expected in-service) to 2049 and are discounted using a 7.1% rate to present the numbers in 2022 real dollars. See Potomac Economics, NYISO MMU Evaluation of the Long Island Offshore Wind Export PPTP Report, May 2023, p. 12.

(NYCA's) peak demand forecast plus an install reserve margin. Capacity benefits are estimated by assessing the impact improving reliability by reducing the Loss of Load Expectation (LOLE) of 0.1 event-day/year (or one event every 10 years). Improving resource adequacy will result in a reduction in the NYCA LOLE, which is extremely valuable in the downstate area due to the limited import capabilities into the downstate region. The Propel NY Energy Project is expected to improve resource adequacy by reducing the NYCA LOLE by about 0.046 event days per year, which results in an annual capacity benefit of between $106 million and $114 million (in 2022 real dollars), by reducing downstate capacity requirements.[20]

- **Avoided Capital Costs:** By reducing the curtailment of the offshore wind resources under development and by increasing the import capability into Long Island, the Project will reduce the need for additional generation resources to reliably serve load and reduce the number of renewable resources needed to meet the CES and CLCPA requirements in future years. The NYISO found that the Propel NY Energy Project is expected to provide, depending on the future scenario analyzed, anywhere from $2.9 billion to over $3 billion ($2022) in capital cost savings.[21,22] This benefit metric alone, the avoided investment in generation resources due to the Project, is almost enough to cover the entire estimated overnight capital cost of the Project.

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[20] *Id.* at p. 61. The capacity benefits are discounted in the same manner as production cost benefits (see footnote 19 in this testimony)

[21] *Id.* at pp. 64–65.

[22] The Policy scenario estimate of avoided capital cost savings of $2.9 billion includes $2.1 billion from increases in the Transmission Security Limit (TSL) into Long Island (NYISO's Zone K) and $0.8 billion from reductions in offshore wind curtailments. The Policy + B-VS scenario estimate of avoided capital cost savings of about over $3.0 billion includes over $2.0 billion from Zone K TSL increases and about $1 billion from reductions in offshore wind curtailments.

III. EXPLANATION OF INCENTIVES

Q13: PLEASE DESCRIBE THE INCENTIVES REQUESTED BY NY TRANSCO FOR THE PROPEL NY ENERGY PROJECT.

A13: NY Transco has requested that the Commission grant four types of transmission incentives:

- **Construction Work in Progress (CWIP) in Ratebase (the CWIP Incentive):** The CWIP Incentive allows public utilities to recover the return on prudently-incurred investments during construction. CWIP is included in ratebase as it is incurred during the construction of the transmission project, which implies that the return on CWIP will be reflected in rates during the construction period.

- **Cost Recovery in the Case of Project Abandonment (the Project Abandonment Incentive):** The Project Abandonment Incentive allows public utilities to recover 100% of prudently-incurred costs of transmission projects that were cancelled or abandoned due to factors beyond the control of the developer.

- **A ROE Adder for Extraordinary Project Risk (the Risks and Challenges ROE Adder):** The Risks and Challenges ROE Adder provides utilities additional return on equity for new transmission projects that present "special risks or challenges" beyond the risks accounted for in the base ROE.

- **A ROE Adder for RTO Participation (the RTO Participation Adder):** The RTO Participation Adder provides utilities additional return on equity if they are a voluntary member of a RTO/ISO. NY Transco is a voluntary member of the NYISO, which should

qualify them for this incentive. Therefore, I do not discuss this incentive further in my testimony.

These incentives were established by the Energy Policy Act of 2005, which amended the Federal Power Act and added language instructing the FERC to establish a rule to encourage investments in transmission infrastructure that improves grid reliability and reduces congestion.[23] The FERC issued Order Nos. 679 and 679-A in 2006 and a subsequent policy statement in 2012 that established policy for granting these incentives. I provide a detailed discussion of each incentive in the following sections.

III.A. CWIP in Ratebase Treatment

Q14: PLEASE EXPLAIN THE MECHANICS OF CWIP IN RATEBASE TREATMENT.

A14: Under the CWIP in ratebase treatment, the return on investment costs incurred during construction is recovered in current rates rather than being capitalized and deferred for future recovery. This means that the earnings recorded on a utility's income statement during the construction period are supported by concurrent cash flows. While CWIP in ratebase does not change the utility's recorded earnings, it does improve its cash flows during the construction period relative to the traditional treatment, in which the return is deferred and capitalized. CWIP in ratebase treatment does not allow the utility to recover its investment prior to the project being put in service. The recovery of invested capital, though depreciation expense, would not occur until after the project is put in service, which is the same treatment as would occur without the CWIP Incentive. The CWIP Incentive allows the utility to

[23] Section 219 of the "Federal Power Act," 16 U.S.C. §§ 824s.

recover the *return on* investment during construction, but depreciation of that investment (allowing *return of* capital) would not occur until after the project is in service.

Q15: IF THE CWIP INCENTIVE IS NOT GRANTED BY THE COMMISSION, WHAT IS THE ALTERNATIVE APPROACH FOR TREATMENT OF CWIP AND HOW DOES IT DIFFER FROM CWIP IN RATEBASE TREATMENT?

A15: The traditional regulatory treatment would place CWIP in ratebase only after the transmission project is placed in service. The traditional regulatory treatment of CWIP allows a utility to account for the financing costs incurred during the construction period, through an allowance for funds used during construction (AFUDC). The return on CWIP calculated annually as AFUDC consists of both the cost of debt and a return on equity for the funds invested during construction. These annual AFUDC amounts are then accumulated (with a return on the accumulated investments) over the construction period by charging AFUDC costs to the project and, thereby, increasing the ratebase of the project at the time it is placed in service. This traditional regulatory treatment is referred to as the "AFUDC approach," which capitalizes and defers the return on investments during construction. When the new transmission asset is placed in service, the "plant in service" account in ratebase reflects the sum of both the direct capital expenditures and the deferred, capitalized return on that investment during the construction period, which will be larger for projects with higher construction costs and longer construction periods. The larger the investment and capitalized returns on the investment at the end of the construction period, the larger the book value of the plant placed in service and, consequently, the higher the utility's future ratebase and revenue requirements. In other words, the traditional CWIP treatment

capitalizes and defers the return on investment during the construction period and recovers these deferred investment returns through higher future rates after the asset is placed in service.

Q16: IS CWIP IN RATEBASE TREATMENT BENEFICIAL FOR ELECTRICITY CUSTOMERS?

A16: Yes. The CWIP Incentive is desirable for customers because it avoids significant overnight rate increases, and results in lower rates once the project is in service. Relative to the traditional AFUDC approach, customers trade higher rates during the construction period for lower rates in the decades after the project is in service, until the project is fully depreciated. Under the CWIP Incentive, the nominal sum of cumulative project costs are lower for customers, as they do not need to pay compounded return on investment. Because the return on investment is recovered sooner under the CWIP in ratebase treatment, fewer dollars need to be collected from customers over the life of the project to provide the same return on investment to equity investors in the project.

In addition, in some instances, the CWIP Incentive may reduce the overall cost of a new transmission project and provide higher benefits to customers compared to the counterfactual outcome under the AFUDC treatment. This may occur on some projects, as cash flows received during construction may improve the credit metrics of the project developer and lead to lower overall financing costs for the project. This is especially likely to be the case for an extremely large project relative to the developer's existing ratebase, as is the case with the Propel NY Energy Project and NY Transco.

The Commission's Order No. 679, which established federal policy on transmission incentives, recognized the view that customers benefit from CWIP in ratebase, because its implementation would result in "greater rate stability for customers by reducing the 'rate shock' when certain large-scale transmission projects come online."[24] This is especially true for very large projects that have a long construction period, such as the Propel NY Energy Project.

In addition, customers benefit from the CWIP Incentive because the cash flow provided during the construction period facilitates investments in beneficial transmission projects that improve the reliability of the system and reduce the cost of supplying power. This is particularly true for major projects that result from competitive solicitation, such as the NYISO Public Policy Transmission Planning Process. Transmission incentives will attract more bidders and increase options for transmission planners and regulators, leading to lower cost and more beneficial outcomes for customers. This ability of transmission incentives to attract investment in transmission infrastructure is recognized in Section 219 of the Federal Power Act as a key objective for the FERC's policy in granting incentives.

Given the scale of the Propel NY Energy Project and other utility ratebase increases expected to meet the goals of the CLCPA, I believe the price stability and the mitigation of rate shock offered by the requested CWIP Incentive provides benefit and yields more reasonable rates trajectories for New York's electricity customers, which helps to better inform their energy efficiency investment decisions.

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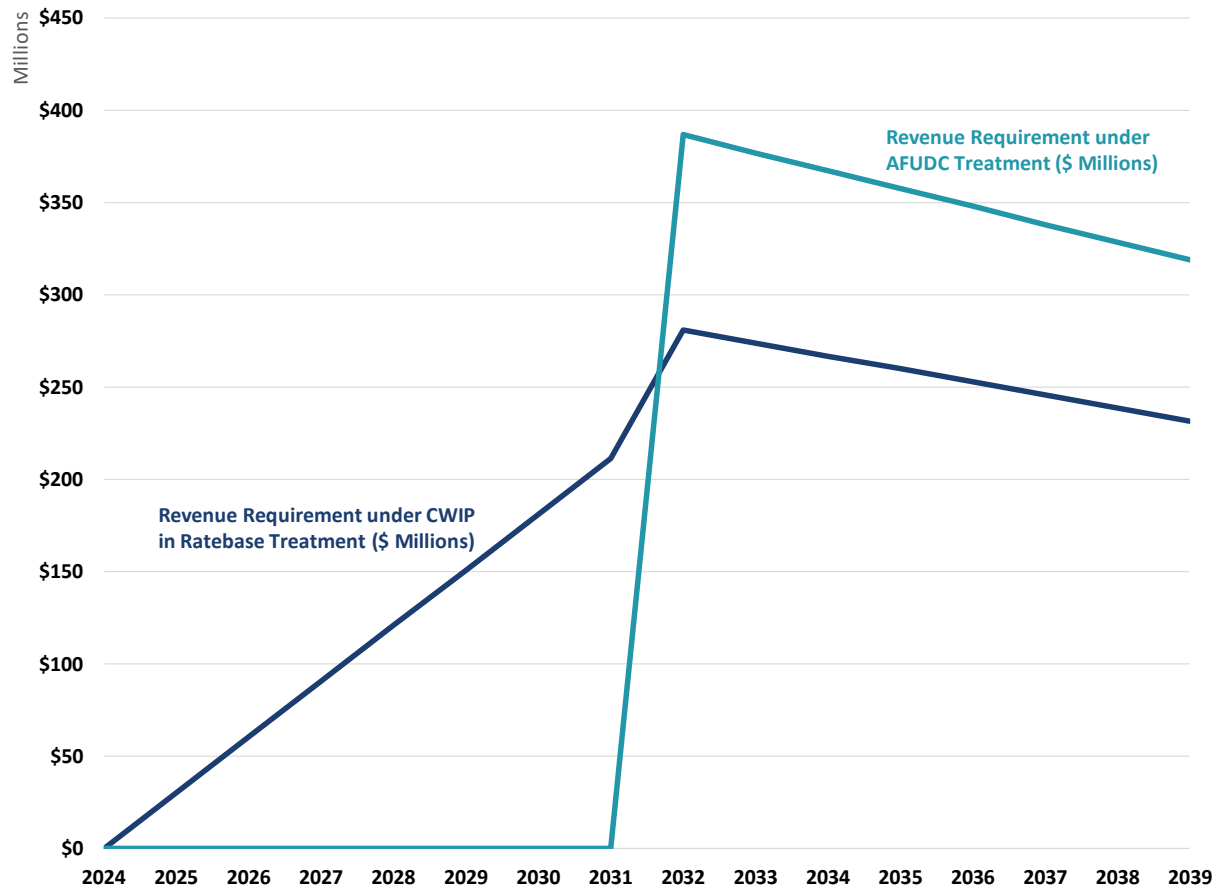
[24] *Promoting Transmission Investment through Pricing Reform*, 18 CFR Parts 2 and 35, 141 FERC ¶ 61,129, November 15, 2012, ("FERC Policy Statement") at ¶ 12.

Q17: CAN YOU ILLUSTRATE WITH AN EXAMPLE HOW THE CWIP INCENTIVE REDUCES RATE SHOCK FOR CUSTOMERS?

A17: Yes. I constructed an example of a hypothetical $2.1 billion transmission project. In this example, I assume the project has a seven year development and construction timeframe with capital investments equal to $300 million in each year of construction. For this illustrative example, shown in Figure 2, I assume the project is financed by 50% debt and 50% equity, with a cost of debt of 6% and an after-tax cost of equity of 10% and a 29% income tax rate. Therefore, under CWIP in ratebase treatment, as the transmission owner invests $300 million each year of construction, $300 million of CWIP will pass into ratebase in the next year, which means by the time the project is placed in service exactly $2.1 billion of invested capital will have passed into ratebase. During construction, the transmission owner's revenue requirement will include the return on equity, cost of debt, and income taxes—totaling roughly $30 million after the first year's investment enters ratebase (2025 in Figure 2), and increasing by roughly $30 million each year during construction until the project is placed in service and ratebase begins to decline due to depreciation expense. Under AFUDC treatment, nothing enters the revenue requirement during construction. Instead, the return on equity and cost of debt are added to the invested capital in each year during construction and once the project is placed in service the invested capital plus the return on equity and cost of debt accumulated during construction will all be added to ratebase. In my illustrative example, this amounts to almost $2.9 billion added to ratebase after the project is placed in service, compared to the $2.1 billion added to ratebase with CWIP in ratebase treatment. Because there is more added to ratebase under AFUDC treatment, the return on

equity, cost of debt, and income taxes will be higher in all years after the project is placed in service until it is fully depreciated. In this illustrative example, the revenue requirement jumps from $0 in 2030 to roughly $390 million in 2031, compared to a gradual increase from $0 to roughly $280 million over a seven year period under CWIP in ratebase treatment.

FIGURE 2: ILLUSTRATIVE REVENUE REQUIREMENT PATHS: AFUDC VS. CWIP IN RATEBASE TREATMENT



Q18: WHY IS THE CWIP INCENTIVE DESIRABLE FOR PROJECT DEVELOPERS?

A18: The CWIP Incentive is attractive for project developers because it better aligns reported income with cash flows. Because high cash outflows during major construction projects are not linked with any cash inflows, under the traditional AFUDC treatment of CWIP, a utility's

credit metrics can deteriorate during such construction projects. The deferred annual AFUDC amounts are reported as net income for the year in which they were incurred and are thus reflected in the utility's earnings during the construction of the facilities.[25] However, because the AFUDC amounts are deferred rather than actually recovered in rates during the construction phase, these earnings reported on the utility's income statement are not associated with any cash flows that could actually be used to support the company's financial obligations.

The FERC's policy on granting incentives, established in Order No. 679, explicitly recognizes this benefit of allowing CWIP in rate base treatment. Order No. 679 states that the Commission adopted the rule to "give public utilities, where appropriate, the ability to include 100 percent of prudently incurred transmission-related CWIP in rate base. These rate treatments will further the goals of section 219 by providing up-front regulatory certainty, rate stability, and improved cash flow for applicants thereby easing the pressures on their finances caused by transmission development programs."[26]

The benefits of the CWIP Incentive are more pronounced for a project that involves very large construction costs and requires a longer construction period. That type of project can create outsized financial risk for the utility during the construction period, potentially resulting in lower credit ratings and higher cost of capital. NY Transco is projected to have a total ratebase of less than $800 million in 2024 and is projected to earn a return on ratebase

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[25] The American Public Power Association, "Public Utility Accounting: A Public Power System's Introduction to the Federal Energy Regulatory Commission Uniform System of Accounts," 2012, p. 93–94

[26] *Promoting Transmission Investment through Pricing Reform*, Order No. 679, 116 FERC ¶ 61,057, July 20, 2006, ("Order No. 679") at ¶ 115.

of approximately $65 million in 2024.[27] By comparison, NY Transco is expecting average annual capital expenditures between roughly $270 million and $330 million per year during the seven year development and construction of the Propel NY Energy Project.[28] The relative magnitude of expected capital expenditures for the Project compared to NY Transco's projected annual income, coupled with the Project's relatively long expected seven year development timeframe, demonstrates the financial risk to the company under the traditional AFUDC treatment. The misalignment of cash outflows for project development and cash inflows to pay the return on equity and cost of debt under AFUDC treatment risks harming NY Transco credit metrics and increasing the cost of financing the Project.

III.B. Cost Recovery in the Case of Project Abandonment

Q19: PLEASE EXPLAIN THE DETAILS OF THE PROJECT ABANDONMENT INCENTIVE.

A19: The Project Abandonment Incentive allows a utility to recover 100% of prudently incurred project costs of transmission projects that are abandoned for reasons beyond its control.[29] In these instances the utility would file with the Commission and would need to support the

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[27] NY Transco, Projected Annual Transmission Revenue Requirement for the 12 Months Ended 12/31/24, accessed here: https://www.nyiso.com/documents/20142/40368284/NY-Transco-2024-Annual-Projection.pdf/74d3984a-5209-0e6e-19a1-bf8d7907b075.

[28] NY Transco's expected average annual capital expenditures are calculated as NY Transco's estimated total capital expenditures on the Project of $1.89 billion to $2.3 billion (depending on NYPA's ownership share) and dividing by seven.

[29] Order No. 679 at ¶ 163.

decision to abandon the Project. The Commission would then evaluate the change in circumstances that motivated the decision to abandon the Project and determine if it was out of the utility's control.[30] Order No. 679 establishes that the incentive is limited to the FERC's definition of "beyond the control" of the developer. Additionally, as part of the filing for the Project Abandonment Incentive, "the Commission will evaluate the public utility's cost recovery to ensure there is no double recovery of costs."[31]

Note that the Project Abandonment Incentive does not remove the prudency standard. A utility's claim to recover investment costs in the case of project abandonment could be rejected if those investments were found to be imprudent. If a utility wished to recover costs due to project abandonment through rates, it would require a Section 205 filing with the FERC, at which time the Commission could determine that the costs were not prudently incurred and deny recovery.[32]

Q20: HOW DO ELECTRICITY CUSTOMERS BENEFIT FROM THE PROJECT ABANDONMENT INCENTIVE?

A20: The Project Abandonment Incentive is meant to attract investment for beneficial transmission projects that improve system reliability and reduce the cost of power. The Project Abandonment Incentive was initially established to encourage transmission development by reducing the risk of non-recovery of costs.[33]

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30 Order No. 679 at ¶ 165
31 Order No. 679 at ¶ 166
32 Order No. 679 at ¶ 164–166
33 Order No. 679 at ¶ 163.

The Project Abandonment Incentive can help reduce project costs. The incentive is meant to compensate utilities for the risk of project abandonment, which is not accounted for in the standard calculation of ROE. If utilities are denied the ability to recover prudently incurred investments abandoned due to circumstances outside their control, financial markets will demand a higher cost of debt and higher return on equity to provide financing for future projects, which will ultimately require a higher allowed ROE for the utility to maintain its credit and attract capital for future investments. The Project Abandonment Incentive removes regulatory risks that a project could be cancelled in the future, and is especially critical for high cost projects that will be developed over many years. This incentive also helps provide access to funds under reasonable terms, including lower risk debt rates and more reasonable ROEs for needed and beneficial transmission infrastructure investments, which keeps customers rates lower.

For the Propel NY Energy Project, there are many factors increasing the risk of project abandonment for reasons outside of its control relative to a typical transmission project, as discussed later in my testimony, which are not mitigated solely by the Project Abandonment Incentive. Mitigation of the extraordinary risks facing NY Transco in their development of the Propel NY Energy Project would require additional ROE incentives.

III.C. The Risks and Challenges ROE Adder

Q21: PLEASE EXPLAIN THE PURPOSE OF THE RISKS AND CHALLENGES ROE ADDER.

A21: As with the CWIP and Project Abandonment Incentives, the Risks and Challenges ROE Adder is intended to help attract investment in beneficial transmission projects. A utility's allowed ROE is established to be commensurate with other enterprises having corresponding risks. Therefore, the allowed ROE accounts for the risks of the utility's operations and investments, but does not necessarily account for extraordinary risks associated with specific capital investments. The Risks and Challenges ROE Adder accounts for risks related to the transmission project beyond the ordinary risks of the utility's operations and investments that are accounted for in the allowed ROE. The incentive accounts for these project-specific extraordinary risks by allowing the utility to earn a higher return on the investment made in the project.

Q22: WHY IS GRANTING THE RISKS AND CHALLENGES ROE ADDER BENEFICIAL FOR ELECTRICITY CUSTOMERS?

A22: As with all transmission incentives established by Section 219 of the Federal Power Act, the main customer benefit is from attracting capital for beneficial transmission infrastructure, by improving credit ratings, reducing financial risk, and lowering borrowing costs. Without adequate compensation, utilities may avoid projects that carry extraordinary risk. This is particularly true for projects that are awarded as part of a competitive solicitation process, in which utilities do not have an obligation to submit a bid.

IV. EXTRAORDINARY RISKS RELATED TO THE PROPEL NY ENERGY PROJECT

Q23: PLEASE DESCRIBE YOUR REVIEW OF RISKS ASSOCIATED WITH THE PROPEL NY ENERGY PROJECT.

A23: I provide an overview of specific risks associated with the Propel NY Energy Project to support NY Transco's claim for transmission incentives. The Commission has relied on the nexus test, requiring applicants to establish the nexus between their requested incentives and the risks associated with their project. I provide evidence to establish the connection between the incentives sought by NY Transco in its application and specific risks they and NYPA will face in developing the Project. All of the risks discussed in this section of my testimony have the potential to increase the cost of the Project (only some of which would be borne by ratepayers), reduce the profitability of the Project for the developers, or increase the likelihood that the Project is abandoned. I discuss two types of risk: (1) unique risks associated with very large infrastructure projects in the power sector and other areas of the economy; and (2) specific extraordinary risks associated with the development and construction of the Propel NY Energy Project.

IV.A. Extraordinary Risks Associated with Large Infrastructure Projects

Q24: IS THERE EVIDENCE THAT VERY LARGE INFRASTRUCTURE PROJECTS, LIKE THE PROPEL NY ENERGY PROJECT, FACE RISKS THAT EXCEED THE RISKS OF TYPICAL INVESTMENTS IN TRANSMISSION INFRASTRUCTURE?

A24: Yes. Academic research indicates that large infrastructure projects carry special risks, and evidence from credit rating agencies indicates that the investor community demands higher rates of return on larger infrastructure projects. These billion dollar large-scaled infrastructure projects, like the Propel NY Energy Project, are considered inherently risky due to long planning horizons and complexities that typically involve multiple public and private stakeholders and may impact millions of people.[34]

The International Program in the Management of Engineering and Construction (IMEC) conducted a study of large infrastructure projects between 1995 and 1999.[35] The IMEC study included sixty large engineering projects (LEPs) with investment value averaging approximately $1 billion, including hydroelectric dams, nuclear power plants, tunnels, bridges, and other projects.[36] The results of the IMEC study illustrates that, of the 60 large infrastructure projects surveyed, 16.6% had to be restructured after experiencing crises, 6.6% were abandoned after high levels of development expenditure, and 10% were taken over by public authority after sponsors' bankruptcy.[37]

The higher risk associated with large infrastructure projects is reflected in the higher returns demanded by the investor community to fund such projects. This is demonstrated by how the credit rating agencies evaluate the risks associated with the large infrastructure projects, like the Propel NY Energy Project. Fitch evaluates the completion risk of projects

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[34] Flyvbjerg, Bent. "What you should know about megaprojects and why: An overview." Project Management Journal 45.2 (2014): 3–19.

[35] Hobbs, B., Andersen, B., "Different Alliance Relationships for Project Design and Execution," International Journal of Project Management, Volume 19, Issue 8, November 2001, pp. 465–469.

[36] See R. Miller and D. Lessard, "The Strategic Management of Large Engineering Projects: Shaping Institutions, Risks and Governance," MIT Press, Cambridge, MA, March 12, 2001.

[37] *Id*. at p. 14.

as part of its rating process for infrastructure and project finance obligations and issuers.[38] Fitch's completion risk methodology evaluates project details including the project's complexity, the proposed technology to be used in the project, the expected completion time frame, the scale of the project, the duration of construction, and investment size to assess specific infrastructure projects. Fitch assigns lower scores in its risk assessment methodology to projects that employ untested technology, or proven technology at an uncommon scale, or that face supply chain risks, permitting challenges, environmental risk, and logistical complexity. Lower scores are also assigned to projects that exceed $2 billion in cost, have large construction footprints, exceed 5 years in duration, and have highly unpredictable costs.[39] Similarly, Moody's uses a rating methodology for electric transmission companies, in which 10% of the rating is derived from the scale and complexity of the company's capital projects.[40]

IV.B. Unique Development and Construction Challenges for the Propel NY Energy Project

Q25: PLEASE DESCRIBE YOUR APPROACH FOR IDENTIFYING UNIQUE DEVELOPMENT AND CONSTRUCTION CHALLENGES THAT THE PROPEL NY ENERGY PROJECT MAY BE EXPOSED TO.

A25: To validate the NY Transco application for transmission incentives, I assessed the risk of the Project based on prior industry experience during the development and construction

[38] FitchRatings, "Completion Risk Rating Criteria," July 2023.

[39] FitchRatings, "Completion Risk Rating Criteria," July 2023, Appendix A.

[40] Moody's Investors Service, "Rating Methodology: Regulated Electric and Gas Networks," 2022.

phases of large infrastructure projects, particularly in challenging environments within downstate New York. I researched extraordinary risks that the Project would be exposed to based on industry press, regulatory proceedings and processes, court proceedings, and other news sources.

Q26: PLEASE IDENTIFY THE EXTRAORDINARY RISKS ASSOCIATED WITH DEVELOPMENT AND CONSTRUCTION OF THE PROPEL NY ENERGY PROJECT.

A26: Given the size and scope of the Project, and the densely populated urban area and sensitive waterways and coastlines on which it will be constructed, the development of the Propel NY Energy Project will face extraordinary risk. The risks I discuss in this section of the testimony are related to the topics listed below.

- **Article VII Process:** This public review process can cause delays or tabling of the Project if it is not compliant with local environmental and social regulations.
- **Parkland Alienation:** Planned cable landing spots in parkland will have to get state legislative approval and potentially provide compensation before construction on parkland commences.
- **Jones Act:** Laws concerning foreign vessels laying submarine cable can complicate and increase the cost or delay NY Transco's plans for developing the Propel NY Energy Project.
- **Directional Drilling:** NY Transco's plan to directionally drill for 6,000 feet involves engineering and permitting risks.

- **Environmental Justice:** Transmission cable will traverse densely populated areas, and impacted communities may move to stop construction or cause costly rerouting of the Project.
- **Supply chain risks:** Limited availability of raw materials and skilled labor, coupled with the number of firms around the world that produce cable, demonstrates the potential delays and cost increase the Propel NY Energy Project could experience when procuring materials for construction.
- **Excavation for Underground Cable:** the Propel NY Energy Project requires nearly 90 miles of excavation for underground cable in urban areas, posing several permitting and construction-related risks.

Q27: WHAT IS THE ARTICLE VII PROCESS IN NEW YORK, AND HOW DOES IT CREATE RISK FOR THE PROPEL NY ENERGY PROJECT? PLEASE PROVIDE EXAMPLES OF OTHER INFRASTRUCTURE PROJECTS THAT ILLUSTRATE THE POTENTIAL RISK FOR THE PROPEL NY ENERGY PROJECT.

A27: Article VII of the New York State Public Service Law requires major transmission facilities to review the environmental impact of siting, construction, and operation.[41,42] There are four application phases (pre-application, application, hearing and decision, and post-certification) where community members can participate in the review process. As a major transmission facility, the Propel NY Energy Project is subject to this requirement. The Article VII process

[41] Projects that exceed 100 kV and 10 miles or 125 kV and 1 mile are designated as major transmission facilities.

[42] New York Department of Public Service, "The Certification Review Process For Major Electric and Fuel Gas Transmission Facilities," 2022 at p. 2–3.

allows the surrounding community to voice concerns. However, the NYPSC had the ultimate authority in granting project approval.[43] Recently, many projects have faced opposition in these proceedings. I provide several examples of projects that have faced challenges during the Article VII process:

- **Clean Path New York, LLC and New York Power Authority:** Initially the application was deemed deficient by the NYPSC, which requested additional public environmental impact studies, the identification if affected cultural resources, and document its correspondence with local communities. The additional and unexpected materials requested by the NYPSC delayed the application by eight months and added significant costs for the project owners. After completing the application, the project has seen several municipalities and other stakeholders express opposition to the project. As of now, the public process is underway and the developer is waiting on approval from the NYPSC.[44]

- **Empire Offshore Wind, LLC:** The initial application, submitted in June 2022, was deemed deficient twice by the NYPSC, adding unanticipated delays and costs to complete their application.[45,46] The application was met with opposition from several

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43 *Id.*

44 New York Department of Public Service, Case 22-T-0558, Letter from Secretary Phillips to Ekin Senlet, Esq. Regarding Application Deficiencies, December 13, 2022. See Case 22-T-0558 here: https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=22-T-0558

45 New York Department of Public Service, Case 22-T-0346, Letter from Secretary Phillips to Matthew Brotmann, Esq., Dan Chorost, Esq. and Ekin Senlet, Esq. Regarding Application Deficiencies, August 16, 2022.

46 New York Department of Public Service, Active Article VII Cases, June 7, 2023.

parties, and the project developers are engaged in settlement discussions with opposition parties, which may lead to increased costs or additional delays for the project.[47]

- **Beacon Wind, LLC:** The initial application, filed May 2022, was deemed deficient for failure to submit a Marine Archeological Survey Report as part of its environmental impact studies, and its failure to provide an analysis of the project's intended use of a "vehicle-based boulder grab," among other shortcomings.[48] Beacon Wind, LLC's application has faced opposition from multiple parties, and the project developers have been engaged in settlement discussions since January 2023.[49] The delay to the project and potential cost increases that may result from settlement is unknown.

Given the Project's large-scale nature, the Article VII process can expose it to delays and additional costs related to additional impact studies and or other analyses supporting its application, as well as potential settlement discussions that may result in costly changes to the project or other costs and delays. In fact, the New York State Power Grid Study outlines several risks (environmental, permitting, and stakeholder) associated with traversing infrastructure crossings, sensitive species and habitats, cultural sites, and limited land in New York City and Long Island.[50] Navigating these challenges as well as conducting these thorough studies and reviews can expose the Propel NY Energy Project to significant delays and additional costs.

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47 See Case 22-T-0346 filings for notices of settlement discussions, beginning in February 2023. https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=22-T-0346

48 New York Department of Public Service, Case 22-T-0294, Letter from Secretary Phillips to Matthew Brotmann, Esq., Dan Chorost, Esq. and Ekin Senlet, Esq. Regarding Application Deficiencies, July 12, 2022.

49 See Case 22-T-0294 here: https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?Mattercaseno=22-T-0294

50 New York Department of Public Service Staff, New York Energy Research and Development Authority Staff, The Brattle Group. "Initial Report on the New York Power Grid Study," p. D-119–D-120, January 2021.

Q28: WHAT IS PARKLAND ALIENATION AND HOW DOES IT CREATE RISK FOR THE PROPEL NY ENERGY PROJECT? PLEASE PROVIDE EXAMPLES OF OTHER INFRASTRUCTURE PROJECTS THAT ILLUSTRATE THE POTENTIAL RISK FOR THE PROPEL NY ENERGY PROJECT.

A28: Parkland Alienation in New York State refers to when a municipality wishes to sell, lease, or discontinue the use of parkland. Given several proposed cable landing spots for the Project are located on parkland,[51] NY Transco must go through the Parkland Alienation process to build on these sites. This process requires drafting legislation with a legislative sponsor and the New York State Office of Parks, Recreation and Historic Preservation Counsel's office, conducting reviews under the State Environmental Quality Review Act, and passing a Municipal Home Rule Request. Furthermore, it is necessary to identify whether state or Federal funding has been allocated to the parkland that is being alienated and to identify whether substitute parkland is needed. In the past, local representatives in New York have manifested significant opposition to selected landing spots that lie on public parkland. Equinor's Empire Wind 2 faced these issues with communities around their proposed points of interconnection (Long Beach, Island Park, and Oceanside).[52] Equinor filed a memo that discussed their proposal of a $264 million community benefits package, and discussed how delays in approval for the use of parkland can lead to project failure.[53] And although the New York State Assembly and Senate approved legislation that would have allowed the

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[51] Direct Testimony of Paul Haering, Exh. No. TRANSCO-200 at 11-12.

[52] Citizens Campaign for the Environment, "State lawmakers approve bill to expedite wind power development, allow Long Beach project to proceed," July 11, 2023.

[53] Equinor, "Memorandum in Support RE: S. 6218-A/A. 7764 The Planned Offshore Wind Transmission Act," 2023

project to utilize parkland for its landing point, the Governor vetoed the bill, which is likely to delay the project and potentially cause design changes or add other costs to the project.[54] Any similar kind of opposition that may come up against the Project's proposed cable landing spots pose a material risk to the Project that can lead to costly redesigns, delays, or even project abandonment.

Q29: WHY DOES THE JONES ACT CREATE RISK FOR THE DEVELOPMENT OF THE PROPEL NY ENERGY PROJECT? PLEASE PROVIDE EXAMPLES OF OTHER INFRASTRUCTURE PROJECTS THAT ILLUSTRATE THE POTENTIAL RISK FOR THE PROPEL NY ENERGY PROJECT.

A29: The Jones Act, mandates that goods transported by maritime vessel between U.S. ports be reserved for U.S.-built, owned, and operated vessels. However, the U.S. Customs and Border Protection reaffirmed in a ruling on September 2, 2022 that foreign ships are allowed to pick up submarine cable from any U.S. port and lay it from point to point since laying cable does not constitute as transportation of goods, but there are certain restrictions on the operation of foreign vessels with respect to loading of cable, unloading of excess cable, installation of concrete mattresses or rock bag devices, and dredging in U.S. waters.[5556] The restrictions placed on foreign vessels may present challenges for the Propel NY Energy Project to lay

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54 CBS News, "Governor Kathy Hochul vetoes bill that would expedite planned wind farm off Long Island," October 20, 2023, https://www.cbsnews.com/newyork/news/gov-kathy-hochul-vetoes-bill-to-expedite-equinor-wind-farm-long-beach-long-island/

55 U.S. Customs and Border Protection, "H322233: Coastwise Transportation; Offshore Cable; Cable Protection Materials; 46 U.S.C. § 55102; 46 U.S.C. § 55103; 46 U.S.C. § 55109; 19 C.F.R. § 4.80a; 19 C.F.R. § 4.80b," September 2, 2022.

56 Winston & Strawn, LLP, "U.S. Customs Clarifies Foreign Vessel Scope For Offshore Wind Cable Installation," September 12, 2022.

extensive submarine cable and may limit the supply of contractors willing and able to take on the project. Furthermore, there is a bill on the floor of the House of Representatives that aims to remove the ability for foreign vessels to lay cable between two U.S. points, unless they have been granted exemptions.[57]

Q30: PLEASE DESCRIBE DIRECTIONAL DRILLING, HOW IT WILL BE USED IN THE PROPEL NY ENERGY PROJECT, AND HOW IT CREATES POTENTIAL RISK FOR THE DEVELOPMENT OF THE PROPEL NY ENERGY PROJECT. PLEASE PROVIDE EXAMPLES OF OTHER INFRASTRUCTURE PROJECTS THAT ILLUSTRATE THE POTENTIAL RISK FOR THE PROPEL NY ENERGY PROJECT.

A30: Directional drilling, or horizontal directional drilling (HDD) is a method of installing underground cable or pipelines where a directional drilling machine creates a pilot hole, then a reamer is pushed through the other way after the pilot hole is made, enlarging and stabilizing the drilled hole. Finally, a drill rod and reamer goes in the same direction, pulling the attached pipe or cable into place.[58]

The Propel NY Energy Project will require 6,000 feet of directional drilling**,** which can pose several risks and require innovative, time-consuming solutions.[59] By comparison, the longest HDD transmission cable project ever completed in North America is the Bergen

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[57] U.S. Congressman John Garamendi, "Garamendi Introduces Bill to Close Anti-American Worker Loopholes," December 14, 2022.

[58] Hadlee and Brunton Ltd., "What is Directional Drilling?," 2019

[59] Direct Testimony of Stephen Cole-Hatchard, Jr., Exh. No. TRANSCO-400 at 12-13.

Linden Corridor Underground project, a 6,600 feet underground crossing of the Newark Bay that cost $1.2 billion to complete.[60] The HDD portion of the Propel NY Energy Project is of a commensurate size and scope with the Bergen Linden project, making it one of the longest segments of transmission cable ever laid in North America using HDD.

Q31: PLEASE DESCRIBE THE POTENTIAL FOR ENVIRONMENTAL CONCERNS BEING RAISED BY STAKEHOLDERS DURING THE DEVELOPMENT OF THE PROPEL NY ENERGY PROJECT. PLEASE PROVIDE EXAMPLES OF OTHER INFRASTRUCTURE PROJECTS THAT HAVE HAD COMMUNITY OBJECTIONS.

A31: Yes. Despite the fact that the Propel NY Energy Project will help provide Long Island and New York City with significant reliability benefits, reduced congestion, and access to location constrained wind resources, local stakeholders, particularly from vulnerable communities may have concerns over the short and long-term impacts a large infrastructure project will have on their communities. The transmission cables and submarine landing points needed to better interconnect Long Island with the rest of the state will traverse some of the most densely populated areas with significant amounts of infrastructure crossings and marine traffic. Installing cables near the shoreline may concern commercial or recreational fisheries, the maritime community, and communities reliant on coastal/offshore resources. Additionally, linear infrastructure such as pipelines, transportation tunnels that support train, roads, and subway systems may have to be crossed during shore approach landings, and

[60] POWER Engineers, "Bergen Linden Corridor Underground Projects," 2023.

transmission routing could possibly cause disruptions in service for local residents. In fact, over the last 5 years there have been several efforts in southern New York State to delay or cancel infrastructure projects on environmental justice grounds. Examples of these efforts are below:

- **MTA Underground Substation.** Community members in the Chelsea neighborhood in Manhattan not only voiced opposition to the construction of an $80 million underground substation, but also filed a lawsuit with the New York State Supreme Court seeking an injunction to stop the project and force an environmental review.[61,62] The residents expressed concerns about disruptions caused by construction (including social services that thousands of senior citizens and other vulnerable groups in the area rely on), elevated noise levels, reduced air quality, roadway impacts on traffic, perceived long-term health impacts from electromagnetic fields, radiation levels, and threats of fires or explosions.

- **The National Grid Metropolitan Replicability Infrastructure Project ("North Brooklyn Pipeline").** Environmentalists and community organizers have been protesting the construction of the North Brooklyn Pipeline in Brooklyn that is routed through several environmental justice neighborhoods since 2020. The intervenors are objecting to the construction of the North Brooklyn Pipeline because the New York

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[61] The Villager, "Chelsea residents protest planned MTA substation as construction starts at Penn South," January 16, 2023.
Spectrum News, "Residents oppose plan for MTA substation," September 22, 2022.

[62] *Mutual Redevelopment Houses, Inc. v. Metropolitan Transportation Authority, Metropolitan Transportation Authority Construction and Development, New York City Transit Authority, and New York City Department of Transportation*, Index No. 160085/2022, Supreme Court of The State of New York, November 23, 2022.

State Department of Environmental Conservation (DEC) and Department of Public Service failed to consider health and safety impacts on minority communities that have historically been burdened with some of the worst health disparities in New York City. They view the North Brooklyn Pipeline as further investment in expanding fossil-fuel infrastructure and will continue to burden vulnerable communities. As a result, interveners have filed a racial discrimination complaint against the State of New York and National Grid.[63,64]

- **Astoria Gas Turbine Power Replacement Project.** A proposal for NRG to build a new 437 MW peaking unit in the Astoria neighborhood of Queens was ultimately canceled due to the denial of a Title V Air Permit by the DEC.[65] The DEC found the project would interfere with the attainment of statewide emissions limits and general Climate Act requirements. Additionally, the project may have a disproportionate burden on disadvantaged communities given the emissions and co-pollutants from the peaking unit. The project also faced opposition from community organizers and public officials due to the site's legacy of pollution that contributed to poor air quality in the area and high asthma rates. The land for the project was ultimately sold to Beacon Wind for a 1,230 MW wind interconnection project.[66]

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63 The Guardian, "'A slap in the face': pipeline violates civil rights, say New Yorkers," February 22, 2022.

64 National Center for Law and Economic Justice and the New York Law School Civil Rights and Disability Justice Clinic, "Re: Complaint Under Civil Rights Act of 1964, 42 U.S.C. § 2000d," August 30, 2021

65 New York State Department of Environmental Conservation, "Re: Notice of Denial of Title V Air Permit, DEC ID: 2-6301-00191/00014, Astoria Gas Turbine Power - Astoria, Queens County," October 27, 2021

66 The Sierra Club, "NRG Files Petition to Sell Land Under Astoria Peaker Plant to Beacon Wind," September 16, 2022

- **Battery Storage Facility.** A group of residents in the neighborhood of Hampton Bays, Long Island protested plans from Canal Southampton Battery Storage, LLC to build a 100 MW battery storage facility due to concerns that safety, environmental, and noise pollution.[67] As a result, local officials voted to put a 6-month moratorium on battery energy storage systems, which effectively freezes the pending application from Canal Southampton Battery Storage, LLC.[68]

Given that the Propel NY Energy Project is a much larger-scale project than the examples provided above, there is a high likelihood of delays or unforeseen cost increases due to community opposition, despite the fact that the Project improves local reliability of the transmission grid, reduces the cost of power for local residents, and supports clean energy growth.

Q32: PLEASE DESCRIBE THE SUPPLY CHAIN RISKS FACING THE PROPEL NY ENERGY PROJECT.

A32: The growth in the deployment of offshore wind worldwide has led to significant supply chain constraints associated with sourcing materials and labor for transmission and submarine cable needed to connect renewable resources to the grid. In its baseline scenario, the International Energy Agency (IEA) estimates that annual offshore wind net capacity additions will exceed 10 GW annually in 2023 to 2025, up from roughly 5 GW in 2020.[69]

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67 News 12 Long Island, "'Potential nightmare:' Hampton Bays residents protest proposed lithium battery storage facility near homes," June 14, 2023.

68 Town of Southampton, "L.L No. 28-2023, Chapter 314: Moratorium on Battery Energy Storage Systems," August 22, 2023.

69 IEA, "Renewables 2020: Analysis and forecast to 2025," p. 79–80, 2020.

The market for submarine cable for electricity transmission is concentrated, with only five key players, ABB Ltd, Siemens AG, Prysmian SpA, NKT A/S, and Nexans SA. Market concentration is due to high barriers of entry from the high capital cost associated with developing uniquely designed cable manufacturing facilities, having a well-trained, stable, and highly skilled workforce, and access to wharves capable of accommodating large deep sea cable-laying vessels.[70] The U.S. imports most of its submarine cable from Europe and currently has only one facility from Nexans SA in Charleston, SC that can develop cable.[71]

The growing demand for cable has led to difficulty in securing raw materials and has driven the cost of equipment used to develop specialized facilities for submarine cables to double over the last five years.[72] For example, the lack of skilled labor, material constraints, and rapidly accelerating project costs have created "unforeseen cable market congestion" causing offshore projects linking Denmark and Britain; as well as France and Spain to be delayed.[73] The National Renewable Energy Laboratory (NREL) conducted a recent pathway study, outlining the limited transmission manufacturing capacity in the U.S. and found the need for at least four purpose-built manufacturing facilities for cable, which will require up to 45 acres, and a specialized workforce to support 30 GW of offshore wind capacity by 2030.[74]

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70 Power Magazine, "Domestic Manufacturing of Export Cables Key for U.S. Offshore Wind Industry," May 31, 2023. https://www.mordorintelligence.com/industry-reports/global-submarine-electricity-transmission-systems-market-industry Mordor Intelligence, "Submarine Electricity Transmission Systems Market Size and Share Analysis," 2023

71 Power Magazine, "Domestic Manufacturing of Export Cables Key for U.S. Offshore Wind Industry," May 31, 2023.

72 Financial Times, "Will there be enough cables for the clean energy transition?," July 30, 2023

73 *Id.*

74 NREL, "A Supply Chain Road Map for Offshore Wind Energy in the United States," January 2023

Q33: PLEASE DESCRIBE THE RISKS ASSOCIATED WITH UNDERGROUND EXCAVATION IN URBAN AREAS, AND PROVIDE EXAMPLES OF SIMILAR PROJECTS AND THE RISKS ASSOCIATED WITH THEM.

A33: The Propel NY Energy Project will require almost 90 miles of excavation in order to lay new 345 kV and 138 kV transmission cable underground, mostly in densely populated urban areas.[75] This brings several environmental and logistical risks to the Project, as it will have to carefully plan for any needed road closures, while maintaining distance from sensitive existing underground equipment and/or endangered habitats.[76] During the Article VII process, they will have to engage in close discussions pertaining to the issues the line could bring to local communities. In the past, underground transmission cable projects have faced the following complications with laying underground cable, which are issues that the Propel NY Energy Project could face:

- Los Angeles Department of Water and Power's longest underground transmission line, the 11.4 mile long Scattergood-Olympic Cable A Transmission Project, had to conduct a two-year environmental study to obtain permits to connect the cable across Lincoln Bridge through Ballona Creek.[77]

- The Champlain Hudson Power Express, a transmission line that is poised to become the longest underground HVDC in the United States at 339 miles when it goes into service in 2026, has faced several challenges with its excavation plans. The line was forced to

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[75] New York Power Authority, "Propel NY Energy Fact Sheet," June 20, 2023

[76] Burns and McDonnell, "Underground Transmission," 2023

[77] LADWP Intake, "Longest Power System Underground Transmission Line Completed," December 6, 2018

reroute from the Hudson River due to environmental concerns around fish species in Haverstraw Bay. As an alternative, developers sought to bury 7.7 miles of the line under Rockland County. The community was strongly opposed to this, citing threats to historical sites and public safety. State senators introduced legislation that would ban out-of-state transmission lines, which if passed, would have halted the project. Only after re-routing to avoid historic sites and offering a large compensation package to the Rockland community, an agreement was finally reached.[78]

Q34: DO THESE REGULATORY, DEVELOPMENT, AND CONSTRUCTION RISKS COMPOUND THE FINANCIAL RISK FACED BY NY TRANSCO?

A34: Yes. All of the risks discussed in this section of my testimony compound the financial risk for NY Transco in developing the Project. Every single issue discussed here has the potential to cause delays and increase the risk of project abandonment, as well as creating unanticipated costs for the Project. Because NY Transco has proposed to absorb 20% of any of the cost overruns of the Project, this creates a tremendous financial risk for the utility.

Q35: DOES THE PROPEL NY ENERGY PROJECT WARRANT THE RISKS AND CHALLENGES ROE ADDER FOR OTHER EXTRAORDINARY RISKS?

A35: Yes. The regulatory, supply chain, construction, development, and financial risks highlighted in my testimony, as well as the testimonies of NY Transco witnesses Paul Haering and Stephen Cole-Hatchard, demonstrate that the Propel NY Energy Project is an

[78] EnergyWire, "How a $6B transmission project made it in New York," 3 January, 2023

extraordinarily risky project creating uniquely large financial risks for NY Transco. These risks not only support NY Transco's application for the Risks and Challenges ROE Adder, but they support the application for the CWIP Incentive (to alleviate the tremendous financial risk faced by NY Transco) and the Project Abandonment Incentive (to mitigate the risk of project abandonment for the Project due to the numerous regulatory and permitting challenges the Project must go through).

V. RECENT FERC DECISIONS GRANTING CWIP IN RATEBASE, PROJECT ABANDONMENT, AND RISKS AND CHALLENGES ROE ADDER

Q36: PLEASE EXPLAIN THE REVIEW YOU CONDUCTED OF PREVIOUS APPLICATIONS FOR TRANSMISSION INCENTIVES AND FERC ORDERS GRANTING OR DENYING INCENTIVES FOR TRANSMISSION.

A36: I conducted a thorough review of several recent applications and associated FERC Orders for transmission rate incentives. The focus of my review was on applications made in recent years to capture FERC's current decision making, particularly after the FERC's 2012 Policy Statement on transmission incentives. I reviewed applications for transmission owners seeking the same types of incentives as NY Transco is for the Propel NY Energy Project: the CWIP Incentive, the Project Abandonment Incentive, and the Risks and Challenges ROE Adder. I mostly focused on applications that were ultimately approved by the FERC, to make a comparison of those projects to the Propel NY Energy Project and illustrate that the Propel Energy Project is significantly more risky, is larger in scope and size, and faces a longer development and construction timeline than many projects that have recently been granted incentives by the Commission. I reviewed applications of planned projects in several ISOs,

including California ISO (CAISO), Midcontinent ISO (MISO), and NYISO, and of both large and small projects. In some cases, I reviewed additional materials to understand the particular conditions of a project, including how and why the project was chosen by the ISO. I recognize that each project is unique, and I considered the specifics of every project as I evaluated the arguments laid out by each company, comments from interveners, and the determination of the Commission.

I also reviewed past rulemakings and policy statements from the FERC, including FERC Order No. 679, FERC Order No. 679-A, FERC's 2012 Policy Statement titled "Promoting Transmission Investment Through Pricing Reform," FERC's 2020 Notice of Proposed Rulemaking, and the recent 2022 FERC Notice of Proposed Rulemaking[79] to compare the risks and challenges faced by transmission projects that the FERC has grated incentives in the past with the risks in developing the Propel NY Energy Project.

Q37: WHAT RECENT APPLICATIONS FOR TRANSMISSION INCENTIVES DID YOU REVIEW?

A37: I reviewed 13 recent dockets in which transmission owners applied for the same incentives NY Transco is applying for. All of these applications for transmission rate incentives were approved by the FERC, mostly without any contest or conditions, except for two exceptions that would not apply to NY Transco:[80]

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[79] Order No. 679, order on reh'g, Order No. 679-A, 117 FERC ¶ 61,345 ("Order No. 679-A") (December 22, 2006); FERC Policy Statement; 170 FERC ¶ 61,204 (March 20, 2020); 179 FERC ¶ 61,028 (April 21, 2022).

[80] Two applications were not approved, Dayton Power & Light's application for the RTO Participation Adder for its membership in PJM and Niagara Mohawk's application for the Risks and Challenges ROE Adder. Both applications were rejected for reasons that would not apply to NY Transco. In the case of Dayton Power & Light,

- NextEra Energy Transmission New York requested and was granted the CWIP Incentive, the Project Abandonment Incentive, and the Risks and Challenges ROE Adder, along with one other ROE adders for the Empire State Line Project. The proposed $181 million project consists mainly of a 20-mile high voltage transmission line in Western New York that was the selected project in NYISO's Public Policy Planning Process.[81] To support its case for incentives, the company pointed to the risks and challenges for developing a project that relieves chronic or severe grid congestion. These include financial challenges associated with a "newly formed company that is focused on transmission," as well as other regulatory and siting risks.[82]

- NYPA applied for and was granted the Project Abandonment Incentive and the Risks and Challenges ROE Adder for the Smart Path Connect Project.[83] NYPA's share of the project consists of $641.3 million of the total cost of a two-segment transmission project to be located in northern New York. The company highlighted the project's many risks, including potential legal challenges, siting risks, and other construction risks (including

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the FERC found that their RTO participation was not voluntary. *The Dayton Power & Light Co.*, 178 FERC ¶ 61,102 (2022). In the case of Niagara Mohawk, the FERC found that granting the Risks and Challenges ROE Adder would be in violation of a previous settlement entered into by the company. *Niagara Mohawk Power Corp.*, 180 FERC ¶ 61,026 (2022).

81 *NextEra Energy Transmission N.Y., Inc.*, 162 FERC ¶ 61,196, at P 6 (2018).

82 *Id.* at P 59.

83 The Commission approved each of NYPA's requested incentives conditioned upon its receipt of a Certificate of Need from the New York Public Service Commission. *See New York Power Auth.*, 178 FERC ¶ 61,172 (2022) (Order addressing request for the Project Abandonment Incentive); *New York Sys. Operator, Inc*, 180 FERC ¶ 61,004 (2022) (Order addressing requests for the 50 basis point Risks and Challenges ROE adder, Performance-based ROE Incentive, and proposed amendments to NYISO's OATT). The Commission approved NYPA's compliance filing demonstrating that it received the Certificate of Need on January 19, 2023. *New York Power Auth.*, 182 FERC ¶ 61,017 (2023).

the labor market, outage coordination, and material procurement), and financial strains associated with the largest transmission expense NYPA had undertaken to date.[84]

- Niagara Mohawk Power Corporation (Niagara Mohawk) applied for the CWIP Incentive, the Project Abandonment Incentive, the Risks and Challenges ROE Adder, the RTO Participation Adder, and the Performance-based ROE Incentive for its portion of Smart Path Connect Project.[85] In two separate orders, Niagara Mohawk was granted the Project Abandonment Incentive,[86] the RTO Participation Adder,[87] and the CWIP Incentive, but it was denied the Risks and Challenges ROE Adder, because the FERC found it to be inconsistent with a previous settlement reached by the company.[88] The company was selected as a co-participant with NYPA to develop the $1.2 billion transmission project in northern New York (Niagara Mohawk's share was the other

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84 *New York Sys. Operator, Inc,* 180 FERC ¶ 61,004 (2022).

85 *See Niagara Mohawk Power Corp.*, 178 FERC ¶ 61,173, at P 28 (2022) (Order Addressing Project Abandonment Incentive); *Niagara Mohawk Power Corp.*, 180 FERC ¶ 61,026, at P 39 (2022) (Order denying requests for Risks and Challenges ROE Adder, Performance-based ROE incentive, and approving the previously authorized RTO Participation Adder); *Niagara Mohawk Power Corp.*, 184 FERC ¶ 61,059 (2023) (Order addressing Risks and Challenges ROE Adder and CWIP Incentive).

86 On March 11, 2022, the Commission approved the Abandoned Plant Incentive for Niagara Mohawk's investment in the Smart Path Connect Project conditioned upon receipt of a Certificate of Need from the New York Public Service Commission. *Niagara Mohawk Power Corp.*, 178 FERC ¶ 61,173, at P 28. The Commission approved Niagara Mohawk's compliance filing on October 24, 2022. *Niagara Mohawk Power Corp.*, 181 FERC¶ 61,065, at P 19 (2022).

87 Niagara Mohawk received authorization for the RTO Participation Adder in 2008 for its ongoing involvement in NYISO. *See Niagara Mohawk Power Corp.*, 124 FERC ¶ 61,106, at P 35 (2008). The Commission noted that even though Niagara Mohawk already received authorization for the RTO Participation Adder, this authorization is still subject to the terms of the 2015 TSC ROE Settlement. *See Niagara Mohawk Power Corp.*, 180 FERC ¶ 61,026, at P 46.

88 *See Niagara Mohawk Power Corp.*, 184 FERC ¶ 61,059 (2023). The Risks and Challenges ROE Adder was not granted to Niagara Mohawk due to an existing transmission service charge ("TSC") ROE Settlement that it was not able to justify a departure from. *Id.* In July 2023, FERC approved revising the TSC and granted the project the CWIP Incentive. *Id.* NYISO and Niagara Mohawk did not submit a request for the Risks and Challenges ROE Adder in this later application..

$535 million).[89] In its application, the company highlighted that the project is particularly exposed to risks and challenges that merit transmission incentives. For example, it highlighted the extremely large project cost estimate, numerous regulatory and permitting risks, and similar construction risks mentioned in NYPA's incentive application for the same project.[90]

- NV Energy (a joint filing company comprised of Nevada Power Company and Sierra Pacific Power Company) petitioned for and was granted the CWIP, Project Abandonment, and the Regulatory Asset Incentives for the Greenlink Nevada Transmission Project.[91] The project proposal consisted of a 235-mile transmission line (Greenlink North) and a 358-mile transmission line (Greenlink West) spanning large portions of Nevada.[92] While neither the result of a regional transmission planning process nor a competitive solicitation process, the project was granted construction authorization by the Public Utilities Commission of Nevada.[93] The company pointed to specific, inescapable risks outside of its control, including regulatory and siting risks due to the need of approval from federal, state, and local governments.[94] It also highlighted that the significant capital estimate (greater than $2.5 billion) signifies the largest transmission investment in the company's history, and that the CWIP Incentive

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89 *See Niagara Mohawk Power Corp.*, 184 FERC ¶ 61,059 at P 6.

90 *See* 178 FERC ¶ 61,173, at P 22 (Describing the risks and challenges associated with developing the Smart Path Connect Project); *cf New York Sys. Operator, Inc*, 180 FERC ¶ 61,004, at P 30.

91 *Nevada Power Co.*, 182 FERC ¶ 61,186 (2023).

92 *Id.* at P 2.

93 *Id.* at P 4.

94 *Id.* at P 38.

helps mitigate customer rate shock and improves the company's ability to finance the project.[95]

- Great River Energy (GRE) requested and was granted the CWIP, Project Abandonment, and Hypothetical Capital Structure Incentives for the $969.9 million Iron Range Project (with GRE's investment being approximately $507.6 million) and for the $573.5 million Big Stone Project (with GRE's investment being approximately $27.5 million).[96] The Iron Range Project is a 150-mile transmission line from Minnesota Power's existing Iron Range Substation to Great River Energy's existing Benton County Substation in Minnesota.[97] The Big Stone Project is a 128-mile transmission line crossing from South Dakota to Minnesota.[98] Both projects were chosen by MISO in the 2021 MISO Transmission Expansion Plan (2021 MTEP) and designated as Multi-Value Projects (MVPs).[99] The company highlighted several risks that the incentives respectively help mitigate. It argued successfully that CWIP improves company cash flows, decreases the total amount of long-term debt required, and avoids compounding of AFUDC.[100] GRE argued that the Project Abandonment Incentive reduces the potential for non-recovery that is posed by regulatory and siting risks, construction risks, and the project

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95 *Id.* at P 60.
96 *Midcontinent Indep. Sys. Operator, Inc.* 182 FERC ¶ 61,039 (2023).
97 *Id.* at P 4.
98 *Id.* at P 7.
99 *Id.* at P 18.
100 *Id.* at P 23.

complexity. The company pointed out that the Project Abandonment Incentive protects GRE members from rate increases that would otherwise need to be fully absorbed.[101]

- Dayton Power and Light Company (Dayton) applied for and was granted the CWIP and Project Abandonment Incentives for the company's Transmission Enhancement Plan (TEP) II projects.[102] TEP II consists of 18 baseline upgrades and supplemental projects located in PJM divided into two categories.[103] Seven of the projects in Category 1 were approved for inclusion in PJM's Regional Transmission Expansion Plan (RTEP) and two of the projects in Category 2 were approved by the state siting board.[104] The remaining projects were eligible for the rebuttable presumption conditioned on them being included in the RTEP or the state siting board.[105] The company's application focused on the unavoidable risks of developing such a costly project ($226.4 million) and face risks of project cancellation. In particular, the company argued that CWIP Incentive avoids financial risks such as lowered credit ratings, prevents volatile rate changes, and that it only impacts the timing of cost recovery rather than the amount of cost recovery.[106] On the Abandoned Project Incentive, the company stated that it would help mitigate the risk of cancellation for reasons outside its control, such as cancellation by PJM or state, regional, or federal permitting that might prevent siting of projects.[107]

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[101] *Id.* at P 26.
[102] *The Dayton Power and Light Company,* 182 FERC ¶ 61,147 (2023).
[103] *Id.* at P 20
[104] *Id.* at PP 20-22.
[105] *Id.* at PP 20, 22.
[106] *Id.* at PP 24-25.
[107] *Id.* at P 35.

- LS Power Grid applied for and was granted the Project Abandonment and the Regulatory Asset Incentives for four transmission projects that had been identified by CAISO as part of the ISO's 2021–2022 regional transmission planning process.[108] The four projects—Collinsville Project, Manning Project, Newark Project, and Metcalf Project—have a total estimated cost of approximately $800 million to $1.2 billion.[109] In the application, the company highlighted the particular risks associated with various levels of regulatory review (local, state, and federal) facing the projects.[110] It pointed to significant competition for third-party financing that might prevent the project from progressing.[111]

- Transource Energy and Transource Pennsylvania, LLC (Transource) applied for and was granted the CWIP and Project Abandonment Incentives for the construction of a new substation in eastern Pennsylvania that forms the North Delta Substation Project.[112] The North Delta Substation Project is one of six projects that are part of the broader North Delta Project selected by the New Jersey Board of Public Utilities and approved through PJM's RTEP to help address reliability issues projected to be caused by new offshore wind in the PJM system.[113] Transource argued that as a company with a limited credit record, the CWIP Incentive would improve cash flow stability, avoid compounding in the counterfactual, and ease pressure on its credit rating, which helps

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[108] *LS Power Grid California, LLC,* 182 FERC ¶ 61,201 (2023).
[109] *See generally Id.* at PP 4-5, 7-6.
[110] *Id.* at PP 20-23.
[111] *Id.* at P 23.
[112] *Transource Pennsylvania, LLC,* 184 FERC ¶ 61,091 (2023).
[113] *Id.* at P 10.

the company obtain financing.[114] In support of its request for the Abandoned Plant Incentive, Transource stated that the Project is subject to multiple layers of federal, state, and local agency review and environmental permitting.[115]

- Otter Tail Power Company (Otter Tail) applied for and was granted several transmission rate incentives, including the CWIP and Project Abandonment Incentives, for its share of two regional transmission projects in MISO.[116] The Jamestown Project and the Big Stone South Project are MVPs approved by the MISO Board of Directors in an addendum to the 2021 MISO Transmission Expansion Plan and together represent more than $400 million in expenditure from Otter Tail.[117] In its application, the company explained that the financial scale of the project poses a risk to its cash flows and credit rating, and that the CWIP Incentive would relieve much of this risk and avoid unnecessarily higher borrowing costs while avoiding a significant rate impact when the project would be completed.[118] The company also stated that the Project Abandonment Incentive mitigates the risks associated with cancellation outside of its control, which is a possibility due to the numerous local, regional, and federal approvals required. It argued that there is a risk of MISO cancelling the regional projects.[119]

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[114] *Id.* at PP 31-32.

[115] *Id.* at P 46.

[116] *Otter Tail Power Co.*, 183 FERC ¶ 61,121 (2023).

[117] *Id.* at PP 5, 8. The Jamestown Project consists of an 85 to 95 mile section of 345 kV transmission line, along with several substation upgrades and other new installations. Otter Tail's anticipated ownership and investment share is 53%. The Big Stone South Project consists of 95 to 105 miles of 345 kV transmission line and similar equipment upgrades and installations. Otter Tail's ownership and investment share of this project is approximately 33%. *Id.* at PP 4-7.

[118] *Id.* at PP 24-25.

[119] *Id.* at P 31.

- Northern Indiana Public Service Company, LLC. (NIPSCO) applied for and was granted the CWIP and Project Abandonment Incentives for two projects, the Indiana portion of Project 15 and the entirety of Project 16, estimated to cost a combined $280 million.[120] Both projects were chosen by MISO in the 2021 MISO Transmission Expansion Plan and designated as MVPs.[121] The company highlighted several risks that the incentives respectively help mitigate. It argued that the CWIP Incentive improves company cash flows, helps prevent downward pressure on the company's credit ratings, reduce rate shock concerns, and does not impact the total level of cost recovery.[122] NIPSCO asserted that the Project Abandonment Incentive reduces the potential for non-recovery that is posed by regulatory and siting risks, as well as the coordination required for a project of this scale.[123] The company pointed out that the project is of a size and scope where completion risks are much greater than the average transmission infrastructure project.[124]

- Republic Transmission, LLC (Republic Transmission) applied for and was granted the Project Abandonment Incentive for the construction of a double-circuit 345 kV transmission line from a substation in Indiana to an undefined point of interconnection in Michigan.[125] The Hiple project was selected as a MVP as part of the 2021 MISO

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120 *Midcontinent Indep. Sys. Operator, Inc.*, 184 FERC ¶ 61,034 (2023).
121 *Id.* at P 3.
122 *Id.* at PP 20-22.
123 *Id.* at PP 43-44.
124 *Id.* at P 43.
125 *Midcontinent Indep. Sys. Operator, Inc.*, 184 FERC ¶ 61,040 (2023).

Transmission Expansion Plan, and estimated to cost at least $77 million.[126] The company argued that the project exposes it to several risk categories, including regulatory risks, financial risks, and design uncertainties that are outside its control.[127] For example, the company must begin spending of capital before all approvals and permits are received, and likely before the Michigan Public Service Commission decides on a point of interconnection in the state.[128] The company also asserted that construction in Indiana is inherently risky because the state legislature recently determined that incumbent transmission owners have a right of first refusal on transmission lines that interconnect with their existing facilities.[129] Finally, the company argued that the financial scale of the project is such that the company's financial stability is at risk if the project were cancelled.[130]

- ITC Midwest applied for and was granted the Project Abandonment Incentive for its share (the Iowa portion) of the Skunk River-Ipava 345 kV Long Range Transmission Plan Project located in MISO.[131] The project was selected as part of the 2021 MISO Transmission Expansion Plan, and consists of approximately 125 miles of 345 kV transmission line with a total estimated cost of $594 million.[132] In its application, the company explained that the Project Abandonment Incentive would help support the

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126 *Id.* at PP 2-4.
127 *Id.* at PP 15-18.
128 *Id.* at P 15.
129 *Id.* at P 16.
130 *Id.* at P 17.
131 *ITC Midwest, LLC*, 184 FERC ¶ 61,083 (2023).
132 *Id.* at PP 4, 14.

financial stability of the company.[133] The company argued that the risks of project abandonment include but not limited to: local, regional, and federal permitting, construction risks, and macroeconomic uncertainty.[134]

- Silver Run Electric, LLC (Silver Run) applied for and was granted the Project Abandonment Incentive for the Silver Run Expansion Project, which includes the expansion of transmission facilities that span across parts of Delaware and New Jersey.[135] The project was recommended by PJM and selected by the New Jersey Board of Public Utilities after a competitive solicitation process that is a supplement to PJM's 2020–2021 regional transmission expansion plan.[136] The proposed project has a total estimated cost of $74 million. In its application, the company explained that there is a reasonable possibility of cancellation for reasons beyond its control. For example, the long timeline associated with a buildout of offshore wind generation presents a possibility that state policy and priorities may change.[137] In addition, the particular construction challenges, including submarine and underground work, labor shortages, and supply chain issues, may threaten the viability of the project.[138]

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133 *Id.* at P 18.

134 *Id.* at PP 17-19.

135 *Silver Run Electric, LLC*, 184 FERC ¶ 61,092 (2023).

136 PJM's regional transmission planning process permits states to propose specific transmission needs outside of PJM's own determinations as part the ISO's State Agreement Approach. The FERC recognizes that this process is different from the standard regional planning process; however, the Commission found that the process still satisfies the conditions of the Order No. 679 rebuttable presumption. 184 FERC ¶ 61,092 (August 11, 2023). *Id.* at PP 19-20.

137 *Id.* at P 24.

138 *Id.* at P 25.

Q38: BASED ON YOUR REVIEW OF RECENT APPLICATIONS FOR TRANSMISSION INCENTIVES, DOES THE PROPEL NY ENERGY PROJECT SATISFY THE SAME CONDITIONS?

A38: Based on current FERC policy and the Commission's recent decisions to grant incentives in the cases summarized above, I believe that the Propel NY Energy Project meets conditions established by the FERC to be granted the CWIP Incentive, the Project Abandonment Incentive, and Risks and Challenges ROE Adder. In addition, NY Transco's voluntary participation in NYISO qualifies it for the RTO Participation Incentive. There are several features of the Propel NY Energy Project that qualify it for these incentives, consistent with recent FERC decisions; in fact, the Propel NY Energy Project faces significantly larger risks than most, if not all, of the transmission projects that have recently been granted these same incentives by the Commission.

The following characteristics of the Propel NY Energy Project support NY Transco's application for incentives:

- The Propel NY Energy Project resulted from the NYISO's Public Policy Process, the regional transmission planning process for public policy needs. NYISO's Public Policy Transmission Planning Process is consistent with what the FERC has identified to support granting incentives in recent applications, such as:
  - The need for the Propel NY Energy Project was identified by the NYPSC, indicating support for the Project from the local regulatory authority.

- The Project was selected through a competitive solicitation process from nineteen different proposed solutions, in which the Propel NY Energy Project was identified as the "more efficient or cost-effective transmission solution."[139]
- The process assessed the reliability impacts and economic benefits (estimates of production cost savings, capacity savings, and avoided congestion) of each proposal and chose the Propel NY Energy Project. Analysis completed by NYISO found that the increased transfer capability created by the Project and avoided congestion will result in up to $900 million in cost savings over the first 20 years of the Project.[140]

- As part of the competitive solicitation, NY Transco and NYPA offered a cost containment arrangement that shares potential cost overruns between the companies and ratepayer. This sets the Propel NY Energy Project apart from most of the transmission projects that have recently been granted incentives from the FERC, which allow for recovery of 100% of cost overruns to ratepayers.

- The Propel NY Energy Project has proposed a cost escalation factor that capped the Project's cost estimate by 2% per year for a limited period, leaving the developers exposed to the risk of inflation. This also sets the Propel NY Energy Project apart from other transmission projects that have recently been granted incentives by the FERC, which are able to pass through to ratepayers 100% of their incurred costs regardless of how much costs increased from the original estimate.

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[139] NYISO, Long Island Offshore Wind Export Public Policy Transmission Planning Report, p. 10.

[140] *Id.*, p. 9.

- The size and scope of the Propel NY Energy Project is larger than any of the projects that have recently been granted incentives by the FERC. The estimated expense of the Project is $2.7 billion, with a seven year development and construction timeframe. Implying that the amount of CWIP accumulated by the Project will be substantially larger than most of the transmission projects that have recently been granted the CWIP Incentive. Incurring such an excessive amount of capital expenditures without the ability to recover any of it during a seven year development period would put outsized pressure on the companies' finances during construction compared to the smaller projects that have been granted CWIP in ratebase treatment. Large infrastructure projects of this scale have additional unique risks, which I discussed in the previous section.

- The Propel NY Energy Project is expected to take seven years to put in service, which is a longer development and construction timeline than the transmission projects that have recently been granted incentives. The longer timeline augments the financial risk of the cost containment mechanism provided by NY Transco and NYPA, increases the risk of project abandonment for reasons outside the developers' control, and magnifies the financial risk created by the inability to ratebase CWIP during the seven year timeline.

- The long development and construction timeline combined with the large size of the Project compound financial risk for NY Transco. Due to the size of the Project, the amount of CWIP accumulated will be substantially larger than most projects that have received the CWIP Incentive, and due to the timeline will remain unrecovered for a longer period of time if the Project does not receive the same incentive. Similarly, the

combination of a longer timeline and large project size magnifies the financial impact and likelihood of project abandonment for reasons outside the control of NY Transco.

- The Project will utilize directional drilling to lay underground cable for over a mile beneath the East River, a characteristic not present in the other transmission projects granted incentives that were discussed above. The use of advanced technology—using directional drilling for over a mile—has been identified by the FERC as a factor that can justify the Risks and Challenges ROE Adder based on a project's risks and challenges to recognize those risks.

The Propel NY Energy Project will face multiple development, construction, and logistical risks and challenges, all of which support NY Transco's application for transmission incentives.

VI. CONCLUSIONS

Q39: PLEASE SUMMARIZE THE CONCLUSIONS OF YOUR TESTIMONY.

A39: I find that the Propel NY Energy Project satisfies the criteria used by the FERC to grant the requested transmission incentives in recent decisions. In fact, the circumstances faced by NY Transco in developing the Propel NY Energy Project are significantly more risky and challenging than the circumstances faced by project owners that were recently granted incentives by the FERC. The Propel NY Energy Project is exactly the type of project envisioned for incentives by the policy established in Section 219 of the Federal Power Act, and subsequent FERC orders and policy statements. In short, the Propel NY Energy Project is a beneficial project for customers, provides reliability and cost savings, has a uniquely

long development timeline, is relatively large in size and scale compared to other transmission projects, faces unique project abandonment risks, and presents tremendous financial risk for the Project owners. For all those reasons, the Propel NY Energy Project is the precisely the type of beneficial transmission project for which transmission incentives can help attract capital investment.

Q40: DOES THIS CONCLUDE YOUR TESTIMONY?

A40: Yes.

LIST OF ACRONYMS

AFUDC	Allowance for Funds Used During Construction
CAISO	California Independent System Operator
CES	New York Clean Energy Standard
CLCPA	Climate Leadership & Community Protection Act
CWIP	Construction Work in Progress
DEC	New York State Department of Environmental Conservation
FERC	Federal Energy Regulatory Commission
GRE	Great River Energy
GW	Gigawatt
HDD	Horizontal Directional Drilling
HVDC	High Voltage, Direct Current
IEA	International Energy Agency
IMEC	International Program in the Management of Engineering and Construction
ISO	Independent System Operator
kV	Kilovolt
LADWP	Los Angeles Department of Water and Power
LEP	Large Engineering Project
LIPA	Long Island Power Authority
LOLE	Loss of Load Expectation
MISO	Midcontinent Independent System Operator
MTA	Metropolitan Transit Authority
MTE	MISO Transmission Expansion Plan
MVP	Multi-Value Project
MW	Megawatt
NIPSCO	Northern Indiana Public Service Company, LLC.
NREL	National Renewable Energy Laboratory
NY	New York
NY CES	New York Clean Energy Standard
NYCA	New York Control Area
NYISO	New York Independent System Operator, Inc.
NYPA	New York Power Authority
NYPSC	New York State Public Service Commission
NYS	New York State
OATT	Open Access Transmission Tariff
ROE	Return on Equity
RTEP	Regional Transmission Expansion Plan
RTO	Regional Transmission Organization
TEP	Transmission Enhancement Plan

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

New York Transco, LLC	)	**Docket No. ER24-____-000**

AFFIDAVIT OF JOHN TSOUKALIS

Pursuant to 28 U.S.C. § 1746, I, John Tsoukalis, under penalty of perjury, state under oath that the information contained in the foregoing "Prepared Direct Testimony of John Tsoukalis" on behalf of New York Transco, LLC is true, correct, accurate, and complete to the best of my knowledge and belief.

Executed this 16 day of October 2023

John Tsoukalis

John Tsoukalis

Exhibit No. TRANSCO-501

John H. Tsoukalis

PRINCIPAL

Washington, DC 1 (202) 527-0219 John.Tsoukalis@brattle.com

Mr. John Tsoukalis is a Principal at The Brattle Group specializing in electric power sector economics, modeling, and regulation. John has worked with Independent System Operators (ISO), Regional Transmission Organizations (RTO), cooperatives, public power authorities, and investor-owned utilities on a wide range of issues related to wholesale power markets. His expertise includes analyzing and designing alternative transmission rate designs, assessing the effectiveness of transmission planning processes and designing improvements to planning processes, conducting benefit-cost analysis of generation and transmission infrastructure, assessing the value of transmission rights, analyzing the effectiveness of transmission cost allocation processes, and helping transmission developers to analyze investment opportunities in the US and Canada. John's experience extends to conducting nodal production cost and power flow simulations of wholesale markets and regional power systems. His work in this area has been used to assess the benefits of transmission infrastructure, participation in wholesale power markets, joint regional unit commitment and/or dispatch, a joint regional transmission tariff, and consolidated balancing area operations. He has conducted production cost simulation models to value regional transmission infrastructure and trading rights, assess the operation of regional transmission systems, analyze the operation and value of generation assets in bilateral and organized regional power markets, and for the assessment of potential market manipulation and market power abuse in wholesale power markets. John has extensive experience helping ISOs/RTOs and utility clients analyze and design market rules to increase the efficiency of existing wholesale market operations, including the design of transmission charges, operating reserve products, and market power mitigation rules and procedures.

John has testified in front of the U.S. Federal Energy Regulatory Commission (FERC) and the Alberta Utilities Commission (AUC) in matters related to transmission rate design, transmission cost allocation, and as part of a transmission rate case. He has testified in U.S. District Court in a dispute related to emergency wholesale market transactions. He has provided expert opinions to FERC related to the development and improvement of effective regional transmission planning and cost allocation processes, as well as the efficient design of ancillary services. His work on market design and the simulation of wholesale power markets has been filed with FERC and U.S. state regulatory authorities, and he has supported the development of testimony in front of FERC and state regulatory authorities to assist with the design of ancillary service products, the appropriate tariff provisions to allow for adequate cost recovery, and to help develop tests for identifying and mitigating potentially manipulative behavior.

AREAS OF EXPERTISE

- Transmission rate design and cost of service studies
- Transmission cost-benefit analyses
- Production cost simulation
- Benefits of wholesale power market formation and pooled regional utility operations
- Market design in wholesale power markets
- Electric utility strategic planning
- Market manipulation detection and damages analysis
- Analysis and mitigation of market power
- Competitive transmission

EDUCATION

- **Universitat Autònoma de Barcelona, Spain**
  M.Sc. in Economic Analysis, 2012
- **Barcelona Graduate School of Economics, Spain**
  M.Sc. in Economics, 2010
- **Washington and Lee University**
  B.A. in Economics with Honors, 2006

PROFESSIONAL EXPERIENCE

Transmission Benefits Analysis, Rate Design, and Investment

- **Testimony in Transmission Rate Design Proceeding.** On behalf of Capital Power, provided expert testimony in front of the Alberta Utilities Commission (AUC) analyzing the impacts of a proposed new transmission tariff design provided by the Alberto Electricity System Operator (AESO). Analyzed the increase in uneconomic bias caused by the proposed tariff design and cost shifting to other customers in the province. Provided written and oral testimony in front of the AUC.
- **Testimony in Support of Transmission Rate Case Filing.** On behalf of Portland General Electric, provided testimony before the FERC in support of their transmission rate case.

Testimony supported the transmission cost of service study filed as part of the rate case, and provided explanation on key input and components of the cost of service study, including how what was driving any changes in the company's costs service.

- **Testimony in Transmission Cost Allocation Proceeding.** On behalf of GridLiance High Plains LLC, provided testimony before the FERC on the benefits of transmission assets. Conducted a shift factor analysis to determine how the assets are used to support regional power transfers. Analyzed transmission contingencies to assess if the assets alleviated system overloads under contingency conditions.
- **Testimony in Transmission Cost Allocation Proceeding involving the Seven Factor and Mansfield Tests.** On behalf of GridLiance High Plains LLC, provided testimony before the FERC applying FERC's Seven Factor Test and Mansfield Test to a set of assets the company was seeking to place in the SPP regional transmission tariff. Applied shift factor and electrical distance analysis to determine how the integration of the assets the relevant zone of SPP. Testimony resulted in a favorable initial decision from the FERC ALJ.
- **Design of Transmission Access Charges.** For the California ISO, developed an analysis of cost shifts between participating transmission owners due to different Transmission Access Charges (TAC) structures. Results of the analysis were used by the CAISO in stakeholder engagement during an initiative aimed at re-designing the TAC.
- **Strategic Transmission Planning and Rate Analysis.** For an integrated electric utility client, analyzed the qualitative and quantitative benefits of participating in a joint transmission tariff with interconnected transmission owners. Analyzed the impact on transmission rates for this utility. Identified and assessed additional regional integration options for this utility client, including participation in an existing energy imbalance market, membership in an adjacent RTO, and developing new regional markets with interested neighbors.
- **Transmission Investment Opportunities Assessment.** For several transmission owner and developers, projected the investment need for transmission infrastructure over the next 10 years in all U.S. planning regions. Provided analysis of the different drivers of this investment need, and studied the implementation of competitive bidding processes for transmission projects as mandated by FERC Order 1000. Helped create forecasts on the amount and type of competitively sourced transmission investment in each planning region across the U.S.
- **Analysis of the Benefits of Transmission Investment.** For an investor owned utility, analyzed the reliability and economic impact of over $3.5 billing in capital expenditures to upgrade and harden their existing transmission assets. The reliability benefits analysis

estimated a reduction in lost load due to the transmission investments and applied a value of lost load to the reduction. The economic benefits analysis relied on an input-output model analysis to determine the economic activity, job creation, and tax revenues generated by the upgrades to existing transmission facilities. The results of the analyses were used to support internal decision making on capital expenditures and for discussion purposes with policy makers in the states where the utility operates.

- **Analysis of the Benefits of New Transmission Assets.** For an investor owned utility, analyzed the economic impact of investing in a new transmission line. The analysis relied on an input-output model analysis to determine the economic activity, job creation, and tax revenues generated by the construction of the new transmission facility. The results were used in testimony in front of two states regulatory commissions.
- **Competitive Transmission Opportunity Assessment.** On behalf of a competitive transmission developer, assessed the opportunity for competitive transmission projects. Analyzed transmission investment needs in each region of the United States, and reviewed the transmission planning processes and competitive project requirements in each region. Conducted a focused analysis of competitive opportunities in several RTO markets.
- **Analysis of Transmission Rate Design.** For a transmission owner in an ISO market, analyzed the performance of the transmission rate design based on criteria established by the market administrator. Developed alternative rate design proposals for use in the public stakeholder process.
- **Long-Term Transmission Planning.** Supported the development of testimony filed on behalf of a regional transmission planning entity in front of a state regulatory commission. Analyzed the forecasts and model utilized by the planning entity to recommend specific transmission projects. Provided guidance to the commission on the reasonableness of the process implemented by the planning entity relative to industry practices.
- **Evaluation of a Transmission Utility.** For a potential investor, contributed in the effort to evaluate a transmission utility. Helped estimate the size of future rate base through a study of proposed transmission projects within the utility's service territory. Leading to an assessment of the likelihood each project would get regulatory approval and ultimately be built and contribute to rate base.

Power System Simulations

- **Valuation of Generation Asset in the Bilateral Power Markets in Florida.** On behalf of a independent power producer, developed a market simulation and resource planning model of the Florida power system. Analyze the value of a new gas-fired generation resource in

Florida in the existing bilateral market structure in the state and under various assumptions on future resource costs. Calculated unit-level operation for a new gas-fired resource, and determined the net present value of the asset.

- **Analysis of Benefits and Costs of Market Reforms for Customers in South Carolina.** On behalf of the South Carolina legislature, analyzed the benefits and costs to customers of numerous different market reform options for the state, including wholesale, retail, and system planning reforms. Developed a customized model, with input and data from a group stakeholders, of the entire Southeastern U.S. including the Carolinas, Southern Company, all of the Florida utilities and cooperatives, TVA, PJM, and MISO. Simulated the Southeast Energy Exchange Market (SEEM) and the other bilateral markets that exist through the Southeastern U.S., and compared the operation of those markets to various types of potential wholesale market designs and footprints.
- **Analysis of Extended Day-Ahead Market.** On behalf of a group of utilities in the WECC, simulated the proposed Extended Day-Ahead Market (EDAM) and estimated the benefits of the joint unit commitment and dispatch, pooled transmission rights, and reserve sharing and joint provision under the proposed market structure. Represented the proposed GHG-accounting structure in the EDAM market footprint for transactions across states with GHG policies and states without policies. Represented the bilateral markets in the WECC, including utility-specific unit commitment and dispatch decision-market, trading hubs, block trading, trading margin requirements, wheeling fees, and limited transmission rights/transfer capability between utilities. The bilateral market was compared to the regional market case to estimate benefit metrics.
- **Simulation of Alberta Power Market under Proposed Federal GHG Reduction Policies.** On behalf of a generation owners in Alberta, simulated investment and operational outcomes for the Alberta power pool through 2050 accounting for proposed federal GHG reduction policies. Analyzed the change in resource mix in the province needed to comply with proposed policies, operational outcomes for client-owned generation assets (and other asset-types in the province), pool prices in the province, and the impact of new generation assets on the exercise of market power on pool prices. Supported client in discussions with federal policy makers.
- **Analysis of Market Participation Benefits under GHG Policies.** On behalf of a cooperative in Colorado, simulated participation in the proposed SPP West RTO under the proposed Colorado GHG policy. Simulated the dispatch cost of GHG in Colorado resources, and the

cost of importing generation from out-of-state emitting resources in both a bilateral market setting and the RTO setting.

- **Analysis of Market Participation Benefits.** On behalf of a group of cooperatives, municipal utilities, and federal power authorities in the WECC, simulated the benefits of joining the proposed SPP West RTO. Modeled the bilateral markets in the region and the joint unit commitment, economic dispatch, optimization of the DC ties between SPP and the WECC, and then pooled reserve procurement under the proposed SPP West RTO.
- **Analysis of the Western Energy Imbalance Service and SPP West RTO.** On behalf of the Southwest Power Pool, conducted a production cost simulation of the Eastern Interconnection and WECC to assess the benefits from creating the Western Energy Imbalance Service (WEIS) and from extending the SPP RTO market into portions of the WECC. Analyzed how the transmission systems would operate under the new market structure, including the DC interties that connect the Eastern Interconnection and the WECC and the transmission systems in both interconnections. Calculated benefits for market participation for the utilities interested in .joining the new market and for the existing utilities in SPP.
- **Analysis of Participation in Regional Energy Imbalance Markets.** On behalf of Black Hills Corp., Colorado Springs Utilities, Platte River Power Authority, and Xcel Energy, analyzed the production cost benefits from participation in the CAISO-administered Western Energy Imbalance Market and the proposed SPP-administered Western Energy Imbalance Service. Conducted several production cost simulations testing multiple scenarios and wrote report summarizing procedure and findings. The report was filed with the Colorado PUC in a proceeding to explore market participation for Colorado utilities.
- **Analysis of Participation in Regional Energy Imbalance Markets.** For an investor owned utility in the western U.S., estimated the benefits of participating in an energy imbalance market. Simulated membership in two energy imbalance market options and analyzed the relative gains from each option.
- **Analysis of Regional Market Alternatives for the Mountain West Transmission Group.** For the eight members of the Mountain West Transmission Group in Colorado, Wyoming, and neighboring states analyzed the costs and benefits of alternative regional transmission and market options. The regional transmission and market analysis included detailed market simulations and estimation of member costs and benefits for (a) retaining the current bilateral market construct; (b) forming a regional transmission group with de-pancaked transmission service; and (c) forming or joining a full “Day 2” regional wholesale power

market. The results informed the clients' decision to explore regional market alternatives with existing RTOs.

- **Analysis of Resource Planning Options.** For a municipal utility in the western U.S., simulated system operations and estimated production costs under several potential future resource portfolios and potential market participation scenarios under consideration by the utility. Results were relied upon by the utility to inform resource planning and market participation decisions.
- **Analysis of Participation in a Regional Wholesale Power Market.** For a group of electric cooperatives, public power authorities, and investor owned utilities in the western U.S., estimated the benefits of participating in a regional wholesale power market. Simulated membership in a proposed regional wholesale power market under different potential future scenarios and estimated the benefits from participation for each member in the group. Results of the simulations, including the estimated benefits of membership in the market, were shared with the group and relied upon to inform their decision making in regards to joining the proposed market.
- **Valuation of Strategic Investments.** For a private equity firm, estimated the long-term value of two generation assets owned by the firm. Simulated energy revenues for the generation assets under multiple future scenarios to consider the impact of energy policy changes, renewable energy penetration, fuel price changes, and participation in regional wholesale powers markets.

Wholesale Market Design

- **Expert Report in U.S. District Court in Contract Dispute Related to Bilateral Transactions at SPP Seam.** On behalf of an electric cooperative, provided expert report in front of a U.S. District Court. Analyzed the cost of providing bilateral energy sales at the SPP market seams compared to the revenues
- **Wholesale Market Price Formation and Fast-Start Resource Integration.** For a SPP market participant, analyzed inefficiencies in wholesale price formation and the commitment and dispatch of fast-start resources. Worked with client and SPP teams to developed recommendations and presented them in an affidavit before FERC.
- **Ramping Product Design.** On behalf of an SPP market participant, drafted a white paper on efficient and effective methods and best practices for designing an ancillary service product to procure ramping capacity. Collaborated with SPP staff and the SPP market monitor to

develop the best design principles for the ramping product and to integrate that product into SPP's existing day-ahead and real-time energy and ancillary services markets.

- **Design of Ontario Market Power Mitigation Regime in Capacity Auction.** For the IESO, developed methodology for calculating the resource-specific offer caps to be used as part of the market power mitigation regime in the Capacity Auction in Ontario. Public report was issued with recommended approach for use in the stakeholder process and to inform public discussion on the offer cap design.
- **Capacity Auction Design.** For ISO client, analyzed proposed auction design and provided recommendations on improving the design. Tested the auction clearing and price formation mechanisms to ensure optimal outcomes are achieved and efficient prices are produced from the auction. Provided several recommended changes to the clearing mechanism and price formation procedure, which were utilized by the client to improve the auction design.
- **Financial Transmission Rights Market Design.** For an ISO client, reviewed the existing transmission rights market in the region and developed recommendations for amending FTR market design, including an examination of whether the FTR market provides benefits for load in the region.
- **Ontario TR Market Design.** On behalf of the IESO, reviewed experiences in other regional markets and advised IESO staff on the methodology for allocating surplus congestion rents and TR auction revenues. Co-authored a public report with recommendations on updating the method for distributing congestion account surplus to Ontario market participants.
- **Alberta Capacity Market Design.** On behalf of the AESO, collaborated with AESO staff to develop features of the proposed forward capacity market for Alberta.
- **Ontario Capacity Market Design.** On behalf of the IESO, advised IESO staff on the design of the proposed forward capacity market for Ontario.

Retail Ratemaking and Environmental Regulation

- **Analysis of Proposed EPA GHG Standards.** For a group of utilities in the WECC, analyzed the impact of the proposed rule on their generation assets, reviewed alternative compliance paths with the utility subject matter experts, and assisted in the preparation of the comments to be submitted to EPA.
- **Review of GHG Accounting Mechanisms in the WECC.** For WEST Associates, a group of utilities in the WECC, cataloged the GHG and clean energy accounting methodologies in use

across the Western U.S., including RPS, energy supply disclosures, GHG reporting and reduction rules, and voluntary reporting. Wrote a white paper presenting the findings.

- **Assessing the Impact of Dynamic Pricing.** For a regional transmission organization, analyzed the impact of different dynamic rate designs on their system. Focused on determining the reduction in peak load and total energy consumption. Estimated the monetary benefits derived from those reductions. Presented results and the models utilized to internal stakeholders.
- **Electric Utility Rate Disputes.** As part of an electric utility rate case, aided in the development of testimony analyzing the financial wellbeing of a large industry customer. The testimony centered on determining the validity of the industrial customer's claimed need for rate relief.
- **Environmental Regulation Impact.** For a merchant power producer, assessed the impact of changes in the regulatory environment on the economic viability of coal-fired generation, particularly focused on the MATS rule.
- **Retail Electric and Water Rate Design.** For a municipal electric and water utility in the western U.S., reviewed utility's electric retail rate structure and retail water rate structure. Conducted benchmarking study against similarly positioned electric and water utilities in the region. Provided recommended changes to the rate structures for both water and electric power. Analyzed the rate impact of incorporating on new water customers for existing water customers.

Analysis of Market Manipulation and Development of Compliance Systems

- **Compliance Investigation in New Zealand.** For Meridian Energy, analyzed claims made by other market participants and by the Electricity Authority (EA) alleging an undesirable trading situation (UTS) due to Meridian's behavior, and submitted comments to the EA.
- **Compliance Plans for Generation Owners.** For a generation owner in Europe, assisted in-house compliance team in the development of compliance procedures and rules tailored to the specific offer strategies and forecasting methodologies relevant to their generation fleet.
- **Wholesale Electricity Market Manipulation.** For a generation and transmission cooperative in SPP, developed analyses to detect potential manipulative behavior in the methodology used to offer their units into the wholesale market. These analyses were used to assess the exposure to regulatory liability and present arguments in front of the FERC.

- **Development of Screens to Detect Manipulation in Electricity Markets.** For several generation owners or power trading firms, designed screens to assist with the detection of a wide variety of behavior relevant to electric power market, including the inappropriate withholding of generation to benefit related positions, the uneconomic or fraudulent offer of generation to garner out-of-market payments, use of uneconomic physical or virtual price-making trades to impact the value of price-taking positions, specific types of "gaming" behavior, and other types of trades (such as circular schedules, "sham" schedules or "wash-like" transactions) that could be viewed as manipulative.
- **Wholesale Electricity Market Manipulation.** For a generation owners in PJM, supported the construction of analyses to detect uneconomic behavior in the methodology used to offer their units into the wholesale market, as well as estimate any potential price suppression and harm caused to other generators. These analyses were used to assess the exposure to regulatory liability and to calculate possible damages.
- **Uneconomic Bidding.** For a merchant power provider, helped draft testimony filed with a regulatory body to provide clarity in its attempt to establish the proper definition of uneconomic bidding in the wholesale electricity market. Specific focus was paid to the bidding behavior of coal-fired power plants in Day-Ahead markets.
- **Prevention of Manipulation in Capacity Markets.** Assisted in writing testimony filed in a tariff revision proceeding in front of FERC. Provided guidance for an RTO in crafting tariff provisions to prevent and properly mitigate manipulative bidding behavior in its capacity market.
- **Prevention of Manipulation in Capacity Markets.** Assisted in writing testimony filed in front of FERC. Provided guidance on developing market rules and procedures to prevent the manipulation of capacity auctions by imported resources.

Electric Power Strategic Planning

- **Strategy Planning for Energy Transformation.** For a public power authority in SPP, led a strategic planning initiative to address myriad issues confronting the utility in the near future. The initiative covered de-carbonization, evolving customer preferences, human resource issues, reliability, data and IT challenges, and customer costs. Conducted strategic planning sessions with the executive team at the utility, which lead to the development of a strategic plan and de-carbonization proposal.
- **Integration of Emerging Technologies and Services.** For two distribution cooperatives, conducted a long-term strategic planning effort with executives and managers. Presented

materials on technology trends, rate structure challenges and solutions, and challenges with regional transmission cost allocations and facilitated the development of long-term industry scenarios and strategic responses for a comprehensive corporate strategy.

TESTIMONY AND REGULATORY FILINGS

- Before the United States District Court for the Western District of Missouri, Associated Electric Cooperative, Inc. vs. Southwest Power Pool, Inc., Case No. 6:22-cv-03030-BCW, *Expert Report of John H. Tsoukalis*, September 2, 2022.
- Before the Alberta Utilities Commission, Proceeding No. 26911, *Written Evidence of Johannes P. Pfeifenberger and John Tsoukalis*, on behalf of Capital Power Corporation, *re:* AESO Bulk and Regional Rate Design and Modernized DOS Rate Design Application, March 28, 2022.
- "Technical Review Committee's Review of Duke Energy's Solar Integration Service Charge (SISC)," coauthored with J. Pfeifenberger and S. Ross, filed with the North Carolina Utilities Commission, Docket No. E-100 Sub 175, November 1, 2021.
- Before the Federal Energy Regulatory Commission, Docket No. ER22-233-000, *Testimony of John Tsoukalis,* on behalf of Portland General Electric, *re:* Portland General Electric Company's Transmission Rate Filing and Limited Revisions to Open Access Transmission Tariff, October 28, 2021.
- "Transmission Planning for the 21st Century: Proven Practices that Increase Value and Reduce Costs," coauthored with J. Pfeifenberger, K. Spokas, J. Hagerty, R. Gramlich, M. Goggin, J. Caspary, and J. Schneider, filed with the Federal Energy Regulatory Commission, Docket No. RM21-17-000, *Comments of the American Council on Renewable Energy*, Exhibit 6, October 12, 2021.
- Before the Federal Energy Regulatory Commission, Docket No. ER18-99-005, *Rebuttal Testimony of John Tsoukalis,* on behalf of GridLiance High Plains LLC, *re:* Benefits of Transmission Assets and Regional Cost Recovery under the SPP OATT, July 15, 2021.
- Before the Federal Energy Regulatory Commission, Docket No. ER18-99-005, *Direct Testimony of John Tsoukalis,* on behalf of GridLiance High Plains LLC, *re:* Benefits of Transmission Assets and Regional Cost Recovery under the SPP OATT, April 20, 2021.
- "Response to Third Party Submissions Regarding Alleged UTS of 2019," coauthored with P. Bagci and J. Reitzes, 10 November 2019 Undesirable Trading Situation Preliminary Decision Cross Submission filed with The New Zealand Electricity Authority, September, 16, 2020.
- "New Zealand Electricity Authority's Preliminary Decision on UTS," coauthored with P. Bagci and J. Reitzes, 10 November 2019 Undesirable Trading Situation Preliminary Decision Submission filed with The New Zealand Electricity Authority, August, 18, 2020.

- Before the Federal Energy Regulatory Commission, Dockets No. ER18-2358-001 and ER19-1357-000, *Rebuttal Testimony of John Tsoukalis,* on behalf of GridLiance High Plains LLC, *re:* Regional Cost Recovery under the SPP OATT for GridLiance transmission assets, March 27, 2020.
- "GridLiance System Analysis: Transmission Facility Classification," prepared for GridLiance High Plains LLC, coauthored with J. Chang, March 27, 2020. Filed with the Federal Energy Regulatory Commission, Dockets No. ER18-2358-001 and ER19-1357-000.
- Before the Federal Energy Regulatory Commission, Docket No. ER20-644-000, *Affidavit of Johannes P. Pfeifenberger and John Tsoukalis,* on behalf of Golden Spread Electric Cooperative, *re:* Comments on SPP Compliance Filing Revising Fast Start Pricing Practices, January 21, 2020.
- "Joint Dispatch Agreement Energy Imbalance Market Participation Benefits Study," prepared for Black Hills Corporation, Colorado Springs Utilities, Platte River Power Authority, Public Service Company of Colorado, coauthored with J. Chang, J. Pfeifenberger, S. Leamon, and C. Peacock, January 14, 2020. Filed with the Colorado Public Utilities Commission on January 28, 2020, Processing No. 19M-0495E, filing No. G 762524.

ARTICLES, PUBLICATIONS, AND PRESENTATIONS

- "MISO South Tranch 3 Transmission Planning and Cost Allocation," Entergy Regional States Committee Meeting, copresented with M. Hagerty, September 8, 2023.
- "Extended Day-Ahead Market Benefits Study," EDAM Forum, August 30, 2023.
- "Greenhouse Gas and Clean Energy Accounting Methology Catalog," prepared for the WEST Associates, coauthored with K. Spees, J. Grove, and L. Lam, June 2023.
- "Brattle EDAM Simulations: PacifiCorp Results," presentated to the Wyoming Public Service Commission, Oregon Public Service Commission, Idaho Public Utilities Commission, and the Public Service Commission of Utah, and the Washington Utilities and Transportation Commission, coauthored with J. Pfeifenberger and E. Bennett, May-July, 2023.
- "Assessment of Potential Market Reforms for South Carolina's Electricity Sector," prepared for the South Carolina General Assembly, coauthored with K. Spees, J. Pfeifenberger, A. Levitt, A. Thompson, O. Kuzura, E. Bennett, S. Pon, M. Diehl, E. Curtis, S. Tang, and R. Nelson, April 27, 2023.

- "A Roadmap to Improved Interregional Transmission Planning," prepared for Natural Resources Defense Council, coauthored with J. Pfeifenberger, K. Spokas, and J. Hagerty, November 30, 2021.
- "The Benefit and Cost of Perserving the Option to Create a Meshed Offshore Grid for New York," prepared for New York State Energy Research and Development Authority, coauthored with J. Pfeifenberger and S. Newell, November 9, 2021.
- "Transmission Investment Needs and Challenges," presented for JP Morgan Renewables and Grid Transformation Series, coauthored with J. Pfeifenberger, June 1, 2021.
- "2020 CAISO Blackouts and Beyond: The Future of California Resource Planning," presented for LSI Electric Power in the West Conference, coauthored with F. Graves and S. Leamon, January 29, 2021.
- "Western Energy Imbalance Service and SPP Western RTO Participation Benefits," prepared for the Southwest Power Pool, coauthored with J. Pfeifenberger, M. Celebi, S. Leamon, C. Peacock, and S. Ganjam, December 2, 2020.
- "Understanding Wholesale Power Market Designs and Their Benefits," Infocast Southeast Renewable Energy Conference, November 19, 2020.
- "Building Support for Grid Transformation," EUCI Workshop, August 18, 2020.
- "Recommendations on Resource-Specific Offer Caps March 2021 Capacity Auction for Commitment Period May 2022 to April 2023," prepared for the Ontario Independent Electricity System Operator, coauthored with K. Spees, J. Pfeifenberger, and C. Haley, March 4, 2020.
- "Analysis of TRCA Surplus Allocation Methodology," prepared for the Ontario Independent Electricity System Operator, coauthored with S. Ledgerwood, E. Shorin, and J. Higham, October 4, 2019.
- "Renewable Energy Development and IT Sector Load Growth," Law Seminars International Electric Power in the Southwest Conference, July 15, 2019
- "Potential Benefits of a Regional Wholesale Power Market to North Carolina's Electricity Customers," commissioned by the North Carolina Clean Energy Business Alliance, Carolina Utility Customers Association, and Conservatives for Clean Energy – North Carolina, coauthored with J. Pfeifenberger and J. Chang, April, 2019.

- "SPP's Proposed Ramp Product: Initial Recommendations for Maximizing the Benefits of a Ramping Product," presented to SPP's Holistic Integrated Tariff Team, coauthored with J. Pfeifenberger, J. Chang, and K. Spees, September 11, 2018, and October 23, 2018.
- "Initial Comments on SPP's Draft Ramp Product Report," prepared for Golden Spread Electric Cooperative, Inc. (with J. Pfeifenberger, J. Chang, and K. Spees), August 30, 2018.
- "Framework-Based Approach to Building an Effective Trade Surveillance System and Compliance Program," EUCI Financial Transmission and Auction Revenue Rights Conference, January 31, 2018
- "Trade Surveillance Should Not Deter Traders," coauthored with Shaun Ledgerwood, December 27, 2017, *published by Risk.net.*
- "Building an Effective Trade Surveillance System: A Framework-Based Approach using Guidance from Two Recent FERC White Papers," coauthored with Shaun Ledgerwood, March 20, 2017, *published by The Brattle Group.*
- "Production Cost Savings Offered by Regional Transmission and a Regional Market in the Mountain West Transmission Group Footprint," Prepared for Basin Electric Power Cooperative, Black Hills Corporation, Colorado Springs Utilities, Platte River Power Authority, Public Service Company of Colorado, Tri-State Generation and Transmission Cooperative, and Western Area Power Administration (with J. Chang and J. Pfeifenberger), December 1, 2016.
- "FERC's Market Manipulation Rule: Impact on FTRs and the Virtual Market," Energy Bar Association Midwest Chapter Annual Meeting, March 8, 2016.
- "The Critical Role of Transmission in Clean Power Plan Compliance," Kinetic Conference for Competitive Bidding for Transmission Expansion, November 17, 2015.
- "Investment Trends and Fundamentals in U.S. Transmission and Electricity Infrastructure," JP Morgan Investor Conference, July 17, 2015.
- "Market Manipulation Push is Widening the Compliance Gap," coauthored with Shaun Ledgerwood, January 23 2015, *published on Risk.net*
- "Dynamics and Opportunities in Transmission Development," TransForum East (Washington DC), December 2, 2014.
- "The Power of Dynamic Pricing," coauthored with Ahmad Faruqui and Ryan Hledik, *The Electricity Journal*, April 2009, pp. 42-56.