STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 20-E-0197 **Proceeding on Motion of the Commission to Implement Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act**

COMMENTS OF POTOMAC ECONOMICS, LTD. ON DEPARTMENT OF PUBLIC SERVICE STAFF QUESTIONS

Potomac Economics, Ltd. ("Potomac Economics") respectfully submits these comments on the Department of Public Service Staff Questions submitted in this proceeding on February 3, 2021. Potomac Economics Ltd. serves as the Market Monitoring Unit for the New York Independent System Operator, Inc. ("NYISO").

The Commission issued its Order on Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act on May 14, 2020. On January 19, 2021, DPS Staff filed an Initial Report on the Power Grid Study ("Power Grid Study"). The Power Grid Study includes three studies related to meeting goals of the Climate Leadership and Community Benefit Act ("CLCPA") – the Utility Study, the Offshore Wind Study, and Zero Emissions Study. DPS Staff issued a set of related questions on February 3, 2021. The Commission solicited comments concerning the Power Grid Study and DPS Staff Questions.

Our limited comments address three DPS Staff Questions under the Planning heading. As the market monitoring unit for the NYISO, we regularly evaluate NYISO planning processes and their interaction with the operation of New York's transmission system and wholesale power markets. As such, these comments provide our perspective on the planning processes and how they may be improved, which may be of use to the Commission.

I. Introduction and Summary

At the outset of this proceeding, the Commission stated its intent to develop planning processes to achieve the goals of the CLCPA in a cost-effective manner.[1] Large investments in the electricity system will be needed to support the CLCPA, which requires a complete transformation of New York's energy sector. Consequently, there is high value in pursuing these investments as efficiently as possible. Inefficient planning decisions will lead to inefficient outcomes in the NYISO markets and inflated costs for ratepayers.

Planning presents a dilemma because while there is a need for a variety of investments that each complement each other, the State lacks visibility into the best combination of projects. There is a risk that planned investments will fail to produce the level of benefits expected or will foreclose opportunities for more cost-effective projects. These outcomes are particularly costly when planned projects are backed by cost recovery or other ratepayer guarantees.

Hence, planning processes should follow principles designed to identify the most beneficial projects while minimizing risks to ratepayers – including the risk that more beneficial projects will not be pursued. These principles include:

- Planning processes should elicit a variety of creative project proposals, so that efficient avenues to reach the ultimate goal are not left unconsidered.
- Planning processes should compare alternative projects in common, apples-to-apples terms. This will allow projects across different locations, technologies, and processes to be considered in a consistent manner that allows for the best projects to go forward.

New York relies on a combination of open-access wholesale electricity markets and centralized planning processes to coordinate investments in its power sector. A well-designed wholesale market provides opportunities for developers to advance efficient generation and

[1] *Order on Transmission Planning Pursuant to the Accelerated Renewable Energy Growth and Community Benefit Act*, May 14, 2020.

storage projects that contribute to policy goals and system reliability, without requiring a centralized plan for these projects.[2]

Transmission planning happens in multiple processes, including the Public Policy Transmission Planning Process, NYISO's Economic Planning Process, and the individual plans of local utilities.[3] These processes currently suffer from restrictions on the variety of projects that may be considered and approved, and from inconsistent evaluation methodologies that may lead to inefficient outcomes. Additionally, modeling approaches used in these processes do not adequately contemplate how incentives for generation investment may be impacted by proposed transmission projects – a key consideration for planning to achieve CLCPA goals.

We apply these principles and objectives to the DPS Staff Questions under the Planning heading in this proceeding and recommend the following:

- Avoid planning specific energy storage projects and locations, and instead allow decentralized investment guided by NYISO market signals to determine the efficient locations, quantity, and design of storage projects;
- Encourage reforms to NYISO's Economic Planning Process so that it can effectively support CLCPA goals by addressing congestion that is not specifically identified as a Public Policy Need;
- Improve the Public Policy Transmission Planning Process by evaluating a transmission project's impact on the total cost of satisfying CLCPA goals;
- Identify Public Policy Transmission Needs by focusing on the underlying public policy objective, rather than identifying specific projects or paths to be upgraded; and

[2] Although many renewable generation projects enter into long-term contracts with NYSERDA, the projects are proposed by developers and not planned in a coordinated fashion by the State. The Fixed and Index REC contract structures offered by NYSERDA expose developers to market risks, including those related to nodal pricing, hourly pricing patterns, and capacity market accreditation. Hence, developers are incentivized to identify the locations and technologies that they anticipate will provide the highest value and manage the corresponding risks. Centralized planning of all generation projects would undermine these incentives.

[3] Additionally, NYISO plans bulk transmission upgrades required to address reliability needs through its Reliability Planning Process.

- Align LT&D and bulk system planning processes by developing common modeling scenarios and methods for evaluating benefits.

The remainder of these comments are organized according to the DPS Staff Questions. Section II addresses how the need for coordinated planning can be balanced with competitive open-access markets. Section III addresses how planning across seams between local and bulk transmission planning can be improved. Section IV discusses the Commission's role in the Public Policy Transmission Planning Process. Section V summarizes and concludes.

II. How can the State achieve balance between the need for coordinated planning of renewable generation, energy storage, and transmission and the requirements of competitive energy markets and open access tariffs?

We recommend that the State distinguish between those investments that require centralized planning and those that can be effectively pursued by decentralized investment. In some cases, planning approaches may be needed to address a gap in market incentives or interdependency of projects – such as when a transmission project with a long lead time is a precondition for other projects to proceed. However, planning carries major disadvantages because: (1) planners cannot anticipate the full range of potential projects that individual developers could devise, and (2) planning requires the use of guarantees which place the burden of risk on ratepayers. Hence, it is preferable to avoid centralized planning for investments that can be guided by market incentives.

A. Open-Access Markets Can Coordinate Investment to Achieve Policy Goals

Competitive wholesale markets provide an effective means of coordinating investment in generation. This is because price signals reveal the incremental value of a project *given the other generation, load, and transmission in the system*. Developers must therefore consider how their project interacts with other existing, planned, and potential future projects. For example, if there

is an over-saturation of solar resources, market prices are likely to decline during hours of high solar output, signaling to investors that other renewables or storage would be more beneficial.

Open-access markets can coordinate investment to achieve a policy goal through generalized requirements which are reflected in price signals. For example, New York ensures overall resource adequacy by means of an Installed Reserve Margin (IRM) and Locational Capacity Requirements (LCRs) that are designed to result in a minimum reliability criteria. Although NYISO's generation fleet is not centrally planned, it has never fallen short of these planning requirements since the capacity market was adopted, and market-based investment has usually occurred at a lower cost than the theoretical cost of entry for new generation. Investment in merchant resources has occurred in areas where major retirements or load growth were anticipated to take place. State policies to achieve goals such as deployment of clean energy or phaseout of polluting resources can serve as anchors for investors' plans when they are backed by concrete regulations with predictable implications for market prices.

It is vitally important to note that this coordinating function of open-access markets cannot be perfectly replicated by a fully planned approach. This is because individual developers are best equipped to identify beneficial projects and manage the risk that conditions will change. Although sophisticated modeling approaches may appear to show an optimal plan, they necessarily rely on a vast simplification of the many possibilities and available choices. Hence, it is preferable to rely on decentralized decision-making by investors.

B. Storage Investments are Suitable for Market-Based, not Centralized, Coordination

The Power Grid Study recommends that the Commission review its planning and procurement approach in order to 'optimize' deployment of energy storage. We agree that it is likely that storage investments will be valuable when large quantities of intermittent renewables

enter the system. However, we caution against a centralized procurement approach to energy storage which targets specific projects and locations. Such an approach would run a high risk of failing to select the most cost-effective projects and crowding out creative market investments. Rather, we recommend the Commission support NYISO market design projects that will ensure storage is appropriately compensated for energy, ancillary services, and capacity.

Efficient Market Signals Coordinate Storage and Generation Investment Appropriately

Energy storage is especially suitable for a decentralized investment approach. Batteries have much faster development timeframes than conventional resources, and so present much less of an interdependency dilemma than other investments. They can be paired or co-located with renewable resources, so the same developer may consider them alone or in combination. They can vary widely in terms of size, duration, interconnection point (including at distribution or retail levels), technology and operating strategy, making alternative projects potentially challenging to compare. These features suggest that (1) storage developers can coordinate with existing and proposed generation projects without the need for centralized direction if transparent price signals are available, and (2) centralized procurement of storage is at a distinct informational disadvantage due to the variety and complexity of alternative storage projects.

NYISO market prices can fully signal the value that storage projects provide:

- When a storage resource charges from renewable generation that would otherwise be curtailed and then discharges in a higher-priced period, it earns a price spread that reflects the value of the avoided curtailment. This includes the value of any REC generated by the renewable resource, which is reflected in a negative energy price that rewards the storage unit for charging when there is excess renewable generation.

- Higher levels of renewable penetration are expected to cause the capacity market credit (and therefore, compensation) of storage resources to increase.

- Higher levels of renewable penetration are expected to cause ancillary services requirements, including reserve and frequency regulation, to increase. Increased

demand for ancillary services would increase revenues of flexible storage resources.

These factors will tend to guide storage investment towards the best quantities and locations, in anticipation of the market impacts of renewables. Our analysis of the NYISO's high-renewable CARIS 70x30 Case showed revenues of storage were broadly sufficient to justify substantial levels of unsubsidized investment.[4] The Power Grid Study found that a large amount of storage investment is economically rational in the long term. These studies help to demonstrate that as renewable deployment grows, incentives for storage investment will naturally tend to increase as well. However, market incentives for storage investment could be stifled by policies to subsidize future storage investment because such policies would put unsubsidized projects at a major disadvantage.

Additional Improvements to NYISO Market Design are Needed

NYISO market design enhancements are needed to ensure that prices accurately reflect the value that storage provides. In the NYISO stakeholder process, efforts are underway to develop a hybrid storage participation model and to enhance the energy and operating reserve markets to improve compensation for resources that can flexibly respond to system needs or help to manage reserve requirements and congestion.[5]

The Power Grid Study claims that NYISO price signals will not be sufficient to encourage storage investment that complements offshore wind, because certain interconnection and transmission reliability functions will not be priced.[6] Where specific deficiencies in the

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4 For additional detail, see *NYISO MMU Review of the 2019 CARIS Phase I Study*, June 2020, available here.

5 For a brief overview, see NYISO Market Project descriptions for "Reserve Enhancements for Constrained Areas", "Ancillary Services Shortage Pricing", "Hybrid Co-Located Model", and "Hybrid Aggregation Model" in NYISO's *2021 Approved Market Projects*, available here. See also analysis of expected impact of recommended market design enhancements on net revenues of energy storage projects in New York City in our *2019 State of the Market Report for the New York ISO Markets*, p. A-228, available here.

6 Power Grid Study at p. 88-89.

NYISO markets are identified, they should be addressed promptly through market design enhancements to improve incentives for efficient investment.[7] The benefits that storage can provide are complex and vary based on location and system conditions – especially when considering aspects of grid operation such as transmission security and congestion management. There is no reason to expect that if they are not modeled within the co-optimized market solution, a planning process will be successful at accurately assessing their value.

C. Coordination of Transmission with Generation Investments Requires Effective Economic and Public Policy Planning Processes

Transmission investment is usually coordinated through a planning process because it often requires longer lead times and may influence generation investments. We recommend improvements to the existing planning processes to ensure the most efficient projects move forward. First, we recommend the Commission support improvements to make NYISO's Economic Planning Process more effective so that congestion can be addressed economically without the need for a separate Public Policy Need in each case. Second, we recommend that the Public Policy Transmission Planning Process be improved by considering how projects can support efficient generation investment and opening the process more to competing solutions.

1. A**n Effective NYISO Economic Planning Process is Needed**

A properly functioning NYISO economic planning process would support CLCPA goals by coordinating upgrades to relieve congestion as the resource mix evolves. Economic planning is important alongside Public Policy planning for several reasons:

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[7] For example, with respect to transmission reliability contributions, a current NYISO market design effort would compensate reserve providers that help to secure against transmission contingencies and therefore allow greater transmission system utilization. We have also recommended that NYISO adjust resources' capacity market compensation based on their contribution to transmission security. See project description for "Reserve Enhancements for Constrained Areas" in NYISO's *2021 Approved Market Projects*, available here, and *MMU Comments on 2020 Reliability Needs Assessment*, available here.

- The value of transmission that reduces congestion and curtailment depends on alternatives such as storage or additional renewable generation investment elsewhere, which could provide similar benefits in meeting CLCPA goals at lower cost.[8]

- Economic planning is needed to address congestion that is not addressed in a Public Policy Need or results as a byproduct of Public Policy projects. For example, an upgrades on one interface may shift congestion to a downstream bottleneck. An effective economic planning process would routinely address congestion where it is cost-effective to do so. This would avoid the need for identification of many Public Policy Needs that 'chase' congestion from one constraint to another over time.

- A standardized process which reliably approves new transmission when it is cost-effective can help to coordinate renewable generators' siting decisions.

NYISO's current economic planning process is inadequate at approving economic projects and should be improved. NYISO performs an initial system assessment of historic and projected congestion, then evaluates any projects that are proposed by transmission developers to alleviate congestion. The evaluation of proposed projects is restricted by assumptions that underestimate benefits, and approval requires a prohibitive supermajority vote by beneficiaries.

The economic planning process should be made effective by revising voting rules and project evaluation assumptions. These include more realistic anticipation of incoming generation projects, quantification of capacity market benefits, and use of a longer evaluation timeframe.[9] Making such changes now would position the economic planning process to identify and plan necessary upgrades as congestion patterns change in the coming years, without the need for many specific Public Policy needs. As such, we encourage the Commission to support improvements to the economic planning process within the NYISO stakeholder process.

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[8] Just as conventional transmission planning does not aim to wholly eliminate congestion, efficient planning for a grid with high renewable penetrations should not aim to wholly eliminate curtailment.

[9] See *2019 State of the Market Report for the New York ISO Markets*, p. 69, available here.

2. Enhancements to the Public Policy Transmission Process Would Help Identify More Efficient Investments

Improvements to the Public Policy Transmission Planning Process (PPTPP) could help ensure that the most beneficial projects go forward. These include: (a) modeling the interdependency between transmission and generation investment when evaluating transmission projects, and (b) defining Commission-issued Public Policy Needs based on the underlying goal instead of a specific solution, so that a variety of competing projects can be considered.

Transmission Planning Should Consider Impacts on Generation Investment

The PPTPP should focus on transmission needs that are not addressed by the economic planning process or wholesale market. For example, the economic planning process is not appropriate for transmission expansion to areas where there is significant renewable potential but limited transmission capability. It is unlikely that generators will build in such an area unless there is a plan to build transmission.

Current planning processes do not appropriately consider the value that transmission projects can provide in coordinating generation investment. This is because existing modeling approaches that are used to evaluate projects' benefits treat future generation investments as given rather than interdependent with transmission. This leads to unrealistic assumptions that cause transmission projects to be under or over-valued, depending on the locations of the future generation projects that are assumed to be in service.[10]

We recommend that transmission project evaluations make use of capacity expansion models or similar approaches. Such evaluations should consider how generation investment is

[10] For example, a project may appear cost-effective because it relieves congestion caused by generators that are assumed to enter at poor locations, resulting in a greater total cost than other possible combinations of generation and transmission projects. Alternatively, a potentially cost-effective project may be rejected because a realistic response by generation developers to locate upstream of the project is not modeled.

likely to be affected in a 'Project Case' compared to a 'Base Case' without the project. This approach has the advantage of: (a) avoiding the use of unrealistic base case resource mix assumptions that are not based on economic fundamentals, and (b) approximating how generation developers would realistically respond to the proposed project. This approach can be used to assess a project's overall impact on the overall cost of meeting CLCPA goals, including lower generation investment costs (and therefore, lower REC payments) when transmission projects would enable low-cost generation to be developed economically.

It should be noted that even the most sophisticated forecast models are dependent on many simplifying assumptions and do not contemplate the full range of possible combinations of generation projects. Hence, such models should be used to improve planning assumptions for transmission projects, not to replace market-based investment in general. Generation and storage projects typically have shorter lead times than major transmission projects and consequently can adapt to planned transmission investment to achieve the best total outcomes.[11]

Public Policy Needs Should be Designed to Encourage Competition

We recommend that the Commission define future Public Policy Needs broadly so that many possible projects that could contribute to the underlying policy goal can be considered, instead of prescribing specific projects or corridors. In particular, issuing a need for transmission projects that would reduce the cost of investing in generation to meet the Clean Energy Standard would allow for a wide range of projects that potentially contribute to this need. This would

[11] Although many renewable generation projects enter into long-term contracts with NYSERDA, the projects are proposed by developers and not planned in a coordinated fashion by the State. The Fixed and Index REC contract structures offered by NYSERDA expose developers to market risks, including those related to nodal pricing, hourly pricing patterns, and capacity market accreditation. Hence, developers are incentivized to identify the locations and technologies that they anticipate will provide the highest value and manage the corresponding risks. Coordinated planning of generation projects would undermine these incentives.

increase the likelihood that the best and most cost-effective projects go forward. Section IV of these comments provides further discussion of the Commission's role in the PPTPP.

III. How can planning processes be improved across seams to achieve better total system outcomes, between LT&D upgrade planning that is performed by the individual utilities and bulk-power system planning and generation interconnection processes that is led by the New York Independent System Operator (NYISO)?

Coordination between NYISO and Transmission Owners to develop a set of shared models and evaluation metrics would facilitate unbiased comparison of LT&D and bulk transmission projects. This section describes why common metrics are necessary and how a more uniform framework might be approached.

a. Local Transmission, Bulk Transmission, and Generation Provide Competing and Interrelated Benefits

LT&D projects often provide benefits that could also be provided by bulk transmission, merchant generation, or demand-side resources. For example, building storage downstream of a constrained local transmission facility may defer the need for regulated transmission upgrades.

Planning processes to achieve CLCPA goals will produce many situations where local transmission is one of many viable alternatives. For example, the Utilities Report proposes to use the expected reduction of renewable curtailment as a key metric for evaluating 'Phase II' LT&D projects. The underlying benefit – increased supply of renewable energy to load – could also be provided by alternative siting of renewable projects, energy storage, merchant or bulk transmission, or other alternatives.

The recent process to address local transmission reliability needs in New York City demonstrates that there can be considerable overlap between LT&D and bulk projects. In response to reliability needs identified in New York City due to expected retirement of peaking plants, Con Edison proposed three local transmission projects (the "TRACE Projects") to address

issues in local load pockets.[12] The projects are also expected to provide significant bulk system benefits, including resolving bulk transmission security needs, providing resource adequacy benefits that reduce the New York City capacity requirement by approximately 200 MW, reducing uplift costs, and helping deliver of renewable generation into constrained areas.[13]

The TRACE projects provide an array of bulk system benefits that could also be provided by other types of investments. Future Local Transmission Plans will include 'Phase II' projects whose value is primarily derived from such benefits and which could also be provided by other competing alternatives. It is important to ensure that projects that provide the same benefit are evaluated using consistent criteria, so that a bias is not created in favor of one type of investment, since this could increase the overall cost of meeting CLCPA goals. The following section discusses approaches to achieve this objective.

b. Greater Alignment Between Local and Bulk Planning Processes is Needed

We recommend the Commission encourage NYISO and the Transmission Owners to align their models, evaluation metrics, and processes that are used to achieve CLCPA goals. The following measures would better enable comparison of projects using consistent criteria and enhance opportunities for identifying projects that reduce the costs of achieving CLCPA goals:

- Utilize a common set of production cost modeling scenarios when evaluating Phase II and Multiple Value LT&D projects and in NYISO planning processes. This will ensure that key metrics affecting the value of transmission projects, such as congestion and renewable curtailment, are estimated consistently across processes.[14]

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[12] These needs are described in NYISO's 2020 Reliability Needs Assessment, available here.

[13] NYISO concluded that after considering the TRACE projects and other forecast updates, all thermal loading transmission issues identified in its 2020 Reliability Needs Assessment are resolved. See NYISO presentation *2020-2021 Reliability Planning Process: Post-RNA Base Case Updates* on February 23, 2021, available here.

[14] This will require development of a suitable set of common model scenarios. The '70x30 Case' developed by NYISO in its 2019 CARIS Phase 1 was designed for informative purposes and does not attempt to optimize assumed generation projects. Development of a more reliable forecast through use of capacity expansion modeling (as discussed in Section II.C), iterative inclusion rules and/or multiple scenarios is needed. We have

- Align methodologies for calculating benefits that are common across project types. Benefits should be calculated in comparable dollar terms for the following:

  - ✓ Congestion and losses – These can be quantified using the output of common production cost models.

  - ✓ Capacity value – The resource adequacy value of transmission can be quantified based on the avoided cost of generation that would provide the same reliability benefit.[15]

  - ✓ Environmental value (or value of renewable integration) can be quantified based on savings in the cost of generation investment needed to comply with the CLCPA. Quantifying this benefit accurately requires capacity expansion modeling or similar tools, as described in Section II.C.[16]

  - ✓ Assumptions for cost of capital and discount periods used to calculate project net present value should be aligned across processes and should avoid creating an advantage over generation solutions.

- Evaluate Phase II and Multiple Value LT&D projects in tandem with NYISO's Comprehensive System Planning Process (CSPP) cycle. LT&D projects should be evaluated after the initial system assessment phase of the economic planning process. This would allow them to use the congestion scenarios that are used to evaluate economic transmission and public policy transmission projects. Simulations that include projects proposed in both the local and bulk processes should be performed so that system benefits may be studied in aggregate.

- Require that solicitations for competing solutions (such as energy storage) be performed for Phase II and Multiple Value LT&D projects.

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provided a detailed discussion of this topic in our comments the Utilities Report in this proceeding. See : *MMU Comments on the Utilities Report*, available here.

[15] Specifically, the capacity value of a transmission investment can be calculated using the Net Cost of New Entry for a new generation or storage unit and transmission project's impact on reliability criteria (e.g. Loss of Load Expectation) relative to that of the generation project.

[16] For example, a proposed LT&D project may seek to expand capability in a pocket where the capability for new renewable resources to interconnect is limited. A "base case" would consider efficient generation investment to meet CLCPA goals in the status quo – which may require additional quantities renewable generation in other locations and higher overall curtailment. A "project case" may result in more generation being located in the area upstream of the transmission project and lower curtailment, resulting in lower overall costs. Importantly, this approach appropriately compares LT&D investment and other alternatives, without privileging one option.

IV. Considering the Power Grid Study findings, is there a need to revise the Commission's procedures for implementing its role under the NYISO's Order 1000 planning tariff? If so, how should those procedures be modified?

We recommend the Commission revise its procedures to focus on Public Policy Transmission Needs that define an ultimate policy objective rather than specific projects or paths. The variety and complexity of possible paths to achieve CLCPA goals, as revealed in recent system studies, make it impossible to identify the best set of projects prior to a competitive solicitation that compares projects in common terms.[17]

Previous cycles identified Public Policy Needs that were very prescriptive about the specific solutions the NYISO should solicit. Consequently, there was relatively little variation across the proposed solutions, particularly for the "AC Transmission" proceeding.[18] Past Public Policy Needs have resulted in only partial or incomplete solutions for meeting the ultimate goal because of subsequent changes in the resource mix. For example, NYISO's studies in the AC Transmission proceeding suggested that while congestion along the corridors targeted for upgrades would be significantly reduced, the locus of congestion would shift to other bottlenecks downstream. This resulted in a smaller expected increase in energy flows from upstate to downstate relative to the size and cost of the projects.

To achieve better outcomes, when issuing Public Policy Needs, the Commission should focus on the underlying public policy objective and avoid identifying the specific facilities or paths to be upgraded. To the extent that the Public Policy Need is overly-specific, it will limit

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[17] The results of the Power Grid Study and NYISO's CARIS 70x30 Case further highlight the need for broad designation of public policy needs. While both studies suggest that there is a potential need for long-term transmission investment, their results differ considerably with respect to the particular paths and timeframes on which congestion will occur. This is not surprising, as the two studies employ different methodologies and assumptions regarding the future resource mix. This result highlights the intrinsic challenge that planning studies face in seeking to identify the best set of investments a priori.

[18] See *NYISO MMU Evaluation of the Proposed AC Public Policy Transmission Projects*, June 2018, available here: https://www.potomaceconomics.com/wp-content/uploads/2018/06/MMU-Report-on-AC-TX-Projects.pdf.

the creativity of developers and likely foreclose opportunities for the most efficient and beneficial projects to come forward.

Hence, we recommend the Commission pursue open solicitation of transmission projects that would reduce the expected cost of achieving the Clean Energy Standard or other CLCPA goals. Such an approach would encourage a variety of solutions to be proposed. It would also lend itself to generic evaluation criteria that compare projects based on their impact on the ultimate policy goal, even if they have different characteristics and locations. For example, a project that would extend the transmission network to an area where there is low-cost renewable resource potential and a project that would debottleneck an existing major interface could be compared on common terms under this approach. Capacity expansion modeling techniques, as discussed in Section II.C, would allow the NYISO to perform such an evaluation by considering how transmission projects could impact generation investment possibilities.

V. Conclusion

In order to achieve CLCPA goals cost-effectively, a combination of decentralized investment and coordinated planning is needed. Planning processes should aim to consider a wide variety of competing solutions proposed by developers using transparent, apples-to-apples evaluation metrics. In these comments, we respectfully recommend improvements to various aspects of the approach proposed by the Power Grid Study and existing processes:

- Avoid planning specific energy storage projects and locations, and instead allow decentralized investment guided by NYISO market signals to determine the efficient locations, quantity and design of storage projects;
- Encourage reforms to NYISO's Economic Planning Process so that it can effectively support CLCPA goals and address congestion that is not specifically identified as a Public Policy Need;
- Improve the Public Policy Transmission Planning Process by evaluating a

transmission project's impact on the total cost of satisfying CLCPA goals;

- Identify Public Policy Transmission Needs by focusing on the underlying public policy objective, rather than identifying specific projects or paths to be upgraded; and
- Align LT&D and bulk system planning processes by developing common modeling scenarios and methods for evaluating benefits.

Respectfully submitted,

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