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 the WATT Coalition on the December 27, 2022 New York Utilities Coordinated Grid Planning Process Proposal

Submitted March 27, 2023

I. Introduction

The WATT Coalition commends the state of New York for their work undertaking implementation strategies for the ambitious goals of the Climate Leadership and Community Protection Act (CLCPA), which will serve residents by slowing climate change, adapting to its impacts, and mitigating future costs. WATT appreciates the opportunity to provide comment on the Coordinated Grid Planning Process (CGPP), which will be vital in preparing the New York electricity system for electrification and decarbonization. Grid Enhancing Technologies (GETs), including Dynamic Line Ratings (DLR), Advanced Power Flow Control (APFC) and topology optimization will be invaluable in meeting the timelines set out by the CLCPA.

We urge the New York Public Service Commission to ensure the final CGPP fully integrates grid optimization solutions and practices into the grid planning processes.

As proposed, the CGPP process does not adequately incorporate the value of GETs in transmission planning and operations. A better proposal would

- Include the optimization of existing assets before the design infrastructure expansion, to save customers money, increase the value of new investments, and achieve goals faster.
- Transparently evaluate economically driven transmission asset utilization improvements and empower stakeholders to propose GETs projects that cost-effectively resolves transmission congestion.
- Use GETs to mitigate congestion during the construction of traditional transmission upgrades

a. About the WATT Coalition and Grid Enhancing Technologies

The Working for Advanced Transmission Technologies (WATT) Coalition is trade association focused on facilitating the adoption of advanced technologies on the US electric transmission system that improve reliability, lower cost, and accelerate decarbonization—benefiting American citizens and businesses. The WATT Coalition represents Grid Enhancing Technology vendors and companies that

support broader deployment of GETs in the renewable energy, energy finance and transmission industries.

GETs are hardware or software that increases the capacity, efficiency, and/or reliability of transmission facilities. Grid operators use Dynamic Line Ratings, Advanced Power Flow Control and Topology Optimization for more usable grid capacity, more flexibility, and greater situational awareness. GETs reduce congestion costs, enable low-cost generation to interconnect to the grid, and maximize the value of new transmission investment.

II. Comments on the approach to achieving New York's climate goals

a. Utilities should undertake transmission system optimization before expansion.

i. Considering optimization before additional infrastructure saves ratepayer money and improves the value of investments.

GETs optimize the existing grid—making the most out of the infrastructure that already exists and ensuring that future investments are optimized. New transmission takes years to plan and construct and has a long pay-back period for customers. While new lines are certainly necessary, they must not be the only solution for creating transmission capacity to enable clean generation to meet decarbonization goals.

The value of GETs in decarbonization is well documented in studies and deployments worldwide. "Unlocking the Queue", a study by the Brattle Group which modeled the impact of GETs using the SPP grid and interconnection queue,[1] found that GETs enabled *twice as much renewable energy to interconnect on the existing transmission system*, with no additional lines built. The payback period was only 6 months of full operation through lower electricity production costs.

The Department of Energy's *Grid-Enhancing Technologies: A Case Study on Ratepayer Impact*[2] report modeling GETs in a limited footprint in New York found millions of dollars in yearly value to ratepayers. Other studies

[1] Tsuchida, Bruce T., Stephanie Ross, and Adam Bigelow. (2021). *Unlocking the Queue with Grid-Enhancing Technologies: Case Study of the Southwest Power Pool*. Brattle Group, February 1, 2021. https://watt-transmission.org/wp-content/uploads/2021/02/Brattle__Unlocking-the-Queue-with-Grid-Enhancing-Technologies__Final-Report_Public-Version.pdf90.pdf.

[2] United States Department of Energy, *Grid-Enhancing Technologies: A Case Study on Ratepayer Impact,* February 2022.

are described by the Idaho National Laboratory in their *Guide to Case Studies of Grid Enhancing Technologies.*[3]

By deploying the GETs represented by the WATT Coalition to fully utilize the grid's capacity, New York can ensure that all transmission construction is optimized and efficient in the short and long terms. This controls costs while accelerating progress toward meeting decarbonization targets in a non-disruptive and socially-just way.

ii. GETs are no-regrets investments and can be redeployed.

Even after getting through the interconnection queues, renewable developers report that transmission upgrade timelines can create delays up to 7 years [4]. GETs can be deployed in weeks or months to create extra capacity immediately.

As new transmission infrastructure comes online, optimal locations for GETs may change with the grid topology. Modularity is a key value of GETs solutions. In many cases, GETs pay for themselves in the span of only a few months due to reduced congestion costs, and through redeployment could continue offering value even if the initial constraints are reduced or resolved through long-term investments.

The Department of Energy's National Transmission Needs Study cites an optimized and strengthened transmission grid will not only be needed for electrification and decarbonization but as a shield from the increasing frequency of extreme weather conditions that harm the power grid.[5] GETs increase operators' situational awareness and can increase their optionality in responding to extreme conditions. These effects support the resilience and reliability of existing and new transmission investments.

b. Utilities should commit to using Grid Enhancing Technologies to accelerate renewable integration timelines, improve reliability and save customers money.

i. GETs can resolve constraints without the need for new infrastructure, speeding renewable integration.

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[3] *Guide to Case Studies of Grid Enhancing Technologies*, Idaho National Laboratory, October 2022, https://inl.gov/wp-content/uploads/2023/03/A-Guide-to-Case-Studies-for-Grid-Enhancing-Technologies.pdf

[4] Pine Gate Renewables LCC, *Comments on The Federal Energy Regulatory Commission (FERC) Notice of Proposed Rulemaking on Improvements to Greater Interconnection Procedures and Agreements,* Docket No. RM22-14-000, October 13 2022.

[5] Rep. *National Transmission Needs Study, Draft for Public Comment*. United States Department of Energy, February 2023. https://www.energy.gov/sites/default/files/2023-02/022423-DRAFTNeedsStudyforPublicComment.pdf.

Because GETs increase the capacity of the grid, they can reduce curtailment of existing renewable resources. Dynamic Line Ratings see the greatest increase in capacity under windy conditions,[6] which coincides with greater generation from wind energy. Topology optimization reduced curtailment of one wind farm by 77%.[7]

Advanced Power Flow Control deployments in the UK by National Grid[8] are expected to unlock capacity for 1.5 GW of new renewable energy. The deployment saved UK ratepayers over £500 million.[9]

ii. <u>GETs can provide a bridge solution until new infrastructure is in service.</u>

"Phase 2" projects in the implementation of the Accelerated Renewable Energy Growth and Community Benefit Act are designed to achieve CLCPA targets by increasing the capacity on the local transmission and distribution system to allow for greater interconnection of renewable generation resources. The Department of Energy's report focusing on these areas, "Grid-Enhancing Technologies: A Case Study on Ratepayer Impact"[10], notes that the use of GETs and other enabling technology can help facilitate this transition by making better use of existing transmission lines and potentially deferring or augmenting costly traditional transmission upgrades.

The Phase 2 upgrades will be in service between 2025 and 2030 – in the interim, GETs can reduce congestion and enable greater renewable energy. They will pay for themselves well within the 2-7 years (studies show a 6-month to 2-year payback period)[11] while the large-scale infrastructure upgrades are built. Utilities should always look to GETs to reduce negative impacts on customers while significant transmission projects are underway.

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[6] Wind Industry Viewpoint on Dynamic Line Rating, Lindsey Systems, https://lindsey-usa.com/wind-industry-dlr/
[7] "Our Solutions," New Grid Inc., https://newgridinc.com/our-solutions/#nservices
[8] Jay Caspary, "The Role for Grid-Enhancing Technologies", Energy Systems Integration Group (ESIG), January 27 2022, https://www.esig.energy/the-role-for-grid-enhancing-technologies/.
[9] "United Kingdom: Ambitious Renewable Energy Goals," SmartWires Inc., https://www.smartwires.com/global-impact/regional-story-united-kingdom/
[10] Rep. *Grid-Enhancing Technologies: A Case Study on Ratepayer Impact*. United States Department of Energy (DOE), February 2022. https://www.energy.gov/sites/default/files/2022-04/Grid%20Enhancing%20Technologies%20-%20A%20Case%20Study%20on%20Ratepayer%20Impact%20-%20February%202022%20CLEAN%20as%20of%20032322.pdf.
[11] See "Unlocking the Queue with Grid Enhancing Technologies" https://watt-transmission.org/unlocking-the-queue/ and "Grid-Enhancing Technologies: A Case Study for Ratepayer Impact." https://www.energy.gov/sites/default/files/2022-04/Grid%20Enhancing%20Technologies%20-%20A%20Case%20Study%20on%20Ratepayer%20Impact%20-%20February%202022%20CLEAN%20as%20of%20032322.pdf

c. GETs are fully commercialized solutions, deployed around the world. Utilities should hire consultants to build experience if needed.

GETs are already being used around the world, with successful deployments in New York state by Avangrid,[12] National Grid,[13] and Central Hudson.[14] However, the return-on-equity business model for transmission owners disincentivizes low-cost technologies like GETs.

Because of the incentive misalignment, U.S. utilities lack experience with GETs. Throughout the CGPP proposal, utilities suggest hiring consultants to manage labor constraints. WATT recommend that utilities hire consultants to integrate GETs into their planning and operations, and to build their staff competency over time.

III. Suggestions for improvements to the CGPP proposal

a. Utilities should optimize existing transmission assets as the initial step of the CGPP.

The current CGPP proposal does not include a process to optimize the existing infrastructure before investigating expansions. While new transmission lines and other upgrades are needed to meet the CLCPA goals, GETs are the lowest-cost tools to increase transmission capacity. If they are not fully utilized in transmission planning and operations, New York ratepayers will be footing higher bills for renewable energy integration. The initial step of the CGPP should be a transmission optimization and enhancement study.

b. Third parties should be able to propose solutions to transmission constraints, similar to the process used by the Midcontinent Independent System Operator.

MISO is developing a process for parties to propose reconfiguration solutions to alleviate congestion for economic reasons,[15] which will then be assessed and

[12] See projects shared by WATT Coalition members in this map: https://public.tableau.com/app/profile/abby.sherman/viz/WATTCoalitionGlobalDeploymentsofGrid-EnhancingTechnologies/Dashboard1

[13] See the map in the footnote above.

[14] Ivan Hojsak and Michael Longaria, "Improving Transfer Capacity Without Series Compensation Challenges," IEEE Power and Energy Magazine, April 2022, https://www.nxtbook.com/nxtbooks/pes/td2022/index.php?mkt_tok=NzU2LUdQSC04OTkAAAGDCeYiJjDg5joWqByICETSiRX0DqqpkOFAJ5zZY7t2-iQQ0DLZ2TBiF1UqHFW2Bp-oNPFeKMhJzIh9YaD-Zf5aAGBq8qaYTztZHMHF6VVzU7JaTQ+%28page+74%29#/p/74

[15] MISO. *Process to Support Congestion Cost Reconfigurations in the MISO Footprint.* Midcontinent Independent System Operator. Accessed March 13 2023.

evaluated by MISO and the transmission owners and operators. The solutions proposed can be approved or denied by MISO and the transmission owners/operators, and later implemented if the solution is feasible and likely to yield results.

This process is a model of the value of stakeholder engagement on transmission congestion solutions. The CGPP should include a process for stakeholders to submit proposals for GETs solutions to transmission constraints. This would generate a wider range of ideas and potential solutions for reducing customer costs through low-cost and fast-to-implement GETs.

c. <u>All transmission upgrades should evaluate GETs as interim solutions during construction and utilize them if they would be cost-effective.</u>

   GETs can bridge the timing gap while new transmission is being built. This extra capacity will allow more renewables to come online faster and reduce congestion costs. Additionally, GETs' modular nature allows them to redeployed in other locations after the larger upgrades are in service.

d. <u>NYISO should supplement utility power flow models with a production cost simulation to quantify the economic tradeoffs and deliverability benefits from different approaches.</u>

   Production cost simulations can demonstrate the value of GETs in reducing the delivered cost of energy to customers. This will complement the modeling outlined in the CGPP proposal. Without this additional modeling, economic value of transmission technologies will be overlooked. Should NYISO need assistance in staffing or resources to investigate economic benefits and where GETs can make a difference, the WATT coalition would be delighted to support this.

e. <u>Entities, processes created by the CGPP must be transparent and represent the public interest.</u>

   CGPP processes must be designed with high standard of transparency. On Page 7 of the CGPP proposal, the utilities "potentially" offer transparency beyond scenario assumptions and results. WATT believes this commitment could be much stronger and more specific.

   Entities and processes created by the CGPP, notably the Advanced Technologies Working Group (ATWG), the Energy Policy Planning Advisory Council and the

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https://cdn.misoenergy.org/20221020%20RSC%20Item%2008%20Congestion%20Cost%20Reconfiguration%20Process%20Redline626713.pdf

Public Policy Transmission Needs Process, must be transparent and responsive to stakeholder input in order to achieve the best results for New York.

IV. Conclusion

GETs optimize the existing transmission infrastructure to ease congestion and unlock capacity for more renewables to come online. GETs also improve reliability through flexibility and situational awareness - giving operators reconfiguration options and greater control over power flows, and offering real-time data on asset conditions.

These tools are critical to making New York's climate goals a reality at the lowest cost to customers – we encourage the Public Service Commission to approve a Coordinated Grid Planning Process that will support greater deployment of GETs in New York.

Respectfully submitted,

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