

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

At a session of the Public Service
Commission held in the City of
Albany on April 18, 2024

COMMISSIONERS PRESENT:

Rory M. Christian, Chair
James S. Alesi
David J. Valesky
John B. Maggiore
Uchenna S. Bright
Denise M. Sheehan

CASE 24-E-0165 - Proceeding on Motion of the Commission Regarding
the Grid of the Future.

ORDER INSTITUTING PROCEEDING

(Issued and Effective April 18, 2024)

BY THE COMMISSION:

INTRODUCTION

The Public Service Commission (Commission) has long recognized the importance of a customer-centered, flexible, and resilient electric grid in the attainment of New York State's climate goals. When the Commission instituted the Reforming the Energy Vision (REV) Proceeding, it did so to better align electric utility practices and the regulatory paradigm with technological advances in information management, power generation, and transmission and distribution.¹ At that time, the Commission identified six policy objectives: (1) enhancement of customer knowledge and development of tools to support effective management of total energy bills; (2) improved market

¹ Case 14-M-0101, Reforming the Energy Vision, Order Instituting Proceeding (REV Order) (issued April 25, 2014).

animation and leveraging of ratepayer contributions; (3) improved system-wide efficiency; (4) improved fuel and resource diversity; (5) improved system reliability and resiliency; and (6) reduction of carbon emissions.² The Commission has since instituted a number of proceedings and implemented policies and programs to enable investments in furtherance of the policy objectives of the REV Proceeding.

Over the last ten years, the Commission has directed the creation of programs that have led to significant growth across New York in the deployment of distributed energy resources (DER) such as rooftop solar, energy storage, building electrification, energy efficiency, demand response programs, and electric vehicles (EV). The Commission also approved rate plans providing significant funding for improvements in remote electric grid visibility and control, automated outage detection and recovery capabilities, as well as deployments of advanced metering infrastructure.³

² Case 14-M-0101, REV Order, p. 14.

³ Utility AMI deployment plans were approved by the Commission in the following proceedings: Cases 15-E-0050, et al., Con Edison - Rates, Order Approving Advanced Metering Infrastructure Business Plan Subject to Conditions (issued March 17, 2016); Cases 14-E-0493, et al., O&R - Rates, Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans (issued October 15, 2015); Cases 17-E-0238, et al., National Grid - Rates, Order Authorizing Implementation of Advanced Metering Infrastructure with Modifications (issued November 20, 2020); and Cases 19-E-0378, et al., NYSEG and RG&E - Rates, Order Approving Electric and Gas Rate Plans In Accord with Joint Proposal, with Modifications (issued November 19, 2020). Since the beginning of the REV proceeding, utility plans to invest in the listed capabilities have become a typical part of rate proceedings and are too numerous to list comprehensively here.

Today, New York has an opportunity to establish a comprehensive strategy to deliver a more reliable, affordable, and decarbonized grid for all New Yorkers, building upon the investments in a smart and connected grid made to-date. The objective of this "Grid of the Future" proceeding is to unlock innovation and investment to deploy flexible resources - such as DERs and virtual power plants (VPPs) - to achieve our clean energy goals at a manageable cost and at the highest levels of reliability.⁴ Drawing from insights gained through the Market Design and Integration Working Group (MDIWG) and many other efforts, this proceeding is designed to enable a comprehensive approach that incorporates critical investments in responsive loads and distributed generation as well as investments in the generation, transmission, and distribution systems.⁵

To ensure a holistic approach that supports the decarbonization goals codified in the Climate Leadership and

⁴ VPPs are aggregations of DER that can balance electricity demand and supply and provide utility-scale and utility-grade grid services like a traditional power plant.

U.S. Department of Energy, Pathways to Commercial Lift Off: Virtual Power Plants, September 2023 available at:

https://liftoff.energy.gov/wp-content/uploads/2023/10/LIFTOFF_DOE_VVP_10062023_v4.pdf

⁵ The MDIWG was formed in 2019 in compliance with the Commission's Energy Storage Order. Case 18-E-0130, Energy Storage Deployment Program, Order Establishing Energy Storage Goal and Deployment Policy (issued December 13, 2018) (Energy Storage Order). The MDIWG is a government-industry collaboration that has investigated issues and opportunities related to the coupling of grid operations with market operations, the integration of bulk electric system operations with distribution system operations, and the integration of the wholesale electricity market with non-wholesale markets - all in the context of rapid and substantial growth in electrification and DER deployment.

Community Protection Act (CLCPA), the Commission is commencing this proceeding to establish a clear set of needed grid capabilities, establish targets for deployment of those capabilities, identify required investments to effectuate those targets, and identify the anticipated customer benefits and savings achievable from meeting those targets. In this proceeding, Department of Public Service Staff (DPS Staff) will develop and file the first iteration of the "New York Grid of the Future Plan" (Plan) by December 31, 2024.

BACKGROUND

The CLCPA requires a 40 percent reduction in economy-wide greenhouse gas emissions compared to a 1990 baseline by 2030, and an 85 percent reduction by 2050.⁶ Additionally, the CLCPA requires that the Commission establish a program to require that at least 70 percent of the State's electrical load is supplied by renewable energy resources by 2030 (70 by 2030 Target), and that by 2040 the "statewide electrical demand system will be zero emissions" (Zero-Emissions by 2040 Target).⁷ To help achieve these goals, the Commission has authorized several procurement and incentive programs that will meet or expand upon a number of technology-specific targets established by the CLCPA, which include ten gigawatts (GW) of distributed solar capacity by 2030, nine GW of offshore wind capacity by

⁶ Environmental Conservation Law (ECL) §75-0107.

⁷ Public Service Law (PSL) §66-p.

2035, and three GW of energy storage capacity by 2030.⁸ The Commission has also established substantial programs to decarbonize both the building and transportation sectors, which include the Energy Efficiency, Clean Heat, and EV Make-Ready programs.⁹

The CLCPA, coupled with Commission policies and other New York State policies and programs, has stimulated both a change in energy use and a change in electric power generation across New York. As part of this change, the building and transportation sectors are expected to transition away from the use of fossil fuels, towards cleaner sources - the majority of which are electric. Similarly, the 70 by 2030 Target and Zero-Emissions by 2040 Target will require that the generation mix used to supply New York's electricity undergo a rapid transition to high levels of intermittent renewable energy which presents new operational needs. As the Commission noted in the Zero Emissions Order, several grid planning studies have identified

⁸ The CLCPA requires that six GW of solar be acquired by 2025, three GW of energy storage be acquired by 2030, and nine GW of offshore wind by 2035. PSL §66-p(5). The solar goal was subsequently increased by the Commission. See Case 21-E-0629, Advancement of Distributed Solar, Order Expanding NY-Sun Program (issued April 14, 2022). The Commission is currently considering the updated Energy Storage Roadmap, which proposes an increased target of six GW of energy storage by 2030. See Case 18-E-0130, Energy Storage Deployment Program, New York's 6 GW Energy Storage Roadmap: Policy Options for Continued Growth in Energy Storage (filed December 28, 2022) and New York's 6 GW Energy Storage Roadmap 2024 Update (filed March 15, 2024).

⁹ Case 18-E-0138, Electric Vehicle Supply Equipment and Infrastructure, Order Approving Midpoint Review Whitepaper Recommendations with Modifications (issued November 16, 2023); Case 18-M-0084, Comprehensive Energy Efficiency Initiative, Order Directing Energy Efficiency and Building Electrification Proposals (issued July 20, 2023).

that the future generation mix will require new, dispatchable emissions free resources, ranging from 18 - 45 GWs of new capacity by 2040.¹⁰ DER and VPPs have the potential to provide flexibility services that would address certain system and reliability needs identified in the Zero Emissions Order, and would benefit both the bulk and distribution levels of the electric system.¹¹

The Commission has previously ordered significant investments in programs and policies that support customer-side resources, through the creation of utility programs and beneficial rates. The NY Sun incentive program has enabled the distributed solar industry to grow from 325 megawatts (MW) of installed capacity in 2014 to approximately 4.3 gigawatts (GW) as of March 2024.¹² The Commission authorized energy storage goals and programs have enabled nearly 1.0 GW of deployments, awards, and contracts as of March 2024.¹³ Advancements to New York's distributed solar and storage markets have also benefited from and responded to innovative compensation rates which are described in the subsequent paragraphs. The New York State

¹⁰ Case 15-E-0302, Large-Scale Renewable Program and Clean Energy Standard, Order Initiating Process Regarding Zero Emissions Target (issued May 18, 2023) (Zero Emissions Order), pp. 10-11.

¹¹ In this context, grid flexibility services represent the grid's ability to shift either demand or supply to meet bulk power system and/or local distribution system needs.

¹² Case 21-E-0629, Advancement of Distributed Solar, Order Expanding NY-Sun Program (issued April 14, 2022).

NYSERDA, NYSERDA-Supported Solar Projects, Distributed solar installations supported by NY-Sun, accessible at: <https://www.nyserda.ny.gov/All-Programs/NY-Sun/Solar-Data-Maps/NYSERDA-Supported-Solar-Projects>.

¹³ Case 18-E-0130, Energy Storage Proceeding, 2024 Annual Energy Storage Report (issued April 1, 2024), p. 5.

Clean Heat program launched in 2020 to advance statewide building electrification has supported nearly 59,000 heat pump installations through 2023, representing over 4.5 trillion British thermal units (TBtu) of annual energy savings.¹⁴ Nearly 210,000 EVs have been registered in New York as of March 2024, and the Commission authorized EV Make-Ready program has supported approximately 20,000 level 2 charging stations and approximately 1,500 direct current fast charging stations either completed or in the process of being constructed as of March 2024.¹⁵ Furthermore, the Commission has approved the EV managed charging programs for residential customers and has directed the creation of commercial managed charging programs.¹⁶ Finally, approximately 1,375 MW of demand response capability were enrolled in the Commission directed utility programs in 2023.¹⁷

In addition to technological advances to modernize the grid, in the REV Proceeding the Commission also espoused ten Rate Design Principles to be followed in the development of future utility customer and DER compensation rates which: (1) reflect cost causation; (2) encourage desired market and policy

¹⁴ Case 18-M-0084, Comprehensive Energy Efficiency Initiative, NYS Clean Heat 2023 Annual Report Revision (issued April 4, 2024), pp. 7 - 9.

¹⁵ Case 18-E-0138, Electric Vehicle Supply Equipment and Infrastructure Proceeding, Order Approving Midpoint Review Whitepaper's Recommendations with Modifications (issued November 16, 2023).

New York EV registrations: <https://atlaspolicy.com/evaluateny/>

¹⁶ Case 18-E-0138, supra, Order Approving Managed Charging Programs with Modifications (issued July 14, 2022); Case 22-E-0236, Demand Charge Alternative Proceeding, Order Establishing Framework for Alternatives to Traditional Demand-Based Rate Structures (issued January 19, 2023).

¹⁷ Case 14-E-0423, Dynamic Load Management Programs, 2023 Annual DLM Reports (filed November 15 - 16, 2023).

outcomes; (3) provide explicit and transparent incentives supporting policy goals; (4) encourage economically efficient decision making; (5) provide fair and value-based compensation for services provided by customers; (6) are practical, understandable, and promote customer choice; (7) result in relatively stable customer bills over time; (8) ensure affordable access to electricity for low income customers through access to beneficial rates and programs; (9) avoids abrupt bill impacts during a customer's transition to new or modified rates, with changes implemented gradually over time; and (10) are economically sustainable, technology agnostic designs centered on long-term value.¹⁸

Since the REV Proceeding, the Commission has overseen the successful implementation of the Value of Distributed Energy Resources (VDER) proceeding and Value Stack tariff, which compensates DERs for net hourly injections based on the following values: (1) Energy Value; (2) Capacity Value; (3) Environmental Value; (4) Demand Reduction Value (avoided system-wide distribution costs); and (5) Locational System Relief Value (avoided local distribution costs).¹⁹ The Commission also directed an overhaul of the standby and buyback service rates paid by customers that partially or fully supply their own demand and energy needs, including providing those more advanced rates as an option for any interested customer. The standby rate separates the distribution system delivery costs into three

¹⁸ Case 14-M-0101, supra, Order Adopting a Ratemaking and Utility Revenue Model Policy Framework (issued May 19, 2016), Appendix A.

¹⁹ Case 15-E-0751, VDER Proceeding, Order on Net Energy Metering Transition, Phase One of Value of Distributed Energy Resources, and Related Matters (issued March 9, 2017) (VDER Order).

components: (1) Customer Charges; (2) Contract Demand Charges, which are a fixed charge based on the customers maximum demand and are comprised of the "local" infrastructure costs needed to serve the customer; and (3) Daily As-Used Demand Charges, based on daily maximum on-peak demands, and is comprised of the costs to maintain the "shared" distribution system facilities. Finally, the Commission has approved a myriad of rate design pilots to test customer acceptance and performance under new rate options.²⁰

As part of its REV proceeding, the Commission in 2015 established requirements for each electric utility to biennially file a Distributed System Implementation Plan (DSIP) describing the utility's progress and plans for implementing a Distributed System Platform (DSP) that will enable a timely transition to

²⁰ Rate pilots within the Con Edison service territory considering a wide range of customer types were approved in the following Orders: Case 16-E-0060, Con Edison - Rates, Order Approving Tariff Amendments with Modifications (issued January 19, 2018); Case 18-E-0397, Con Edison Innovative Pricing Pilot, Order Approving Tariff Amendments with Modifications (issued December 13, 2018); and Cases 19-E-0065, et al., Con Edison - Rates, Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plan (issued January 16, 2020).

Subsequently, the Commission has approved optional demand-based rates to be available for all customers as part of the VDER proceeding, Case 15-E-0751, supra, Order Establishing Updated Standby Service Rates and Implementing Optional Mass Market Demand Rates (issued October 13, 2023).

the envisioned future grid.²¹ Since then, the utilities filed their initial DSIPs in 2016, followed by three subsequent DSIP updates in 2018, 2020, and 2023. While the DSIPs have become more informative with each update, an in-depth review of them is necessary at this time to determine if they adequately identify, characterize, and plan for the full range of DSP capabilities that will be foundational to supporting the State's clean energy and electrification goals.

This proceeding seeks to build upon those prior orders by promoting significant investments in flexible resources that can provide flexible demand and flexible supply services. This proceeding will identify the long-term potential for flexible resources that are enabled by the investments occurring on both the distribution system and the customer side of the meter, to provide resiliency and flexibility services, improve grid reliability, and drive down costs.

DISCUSSION

New York State is committed to drastically reducing its carbon emissions and has set ambitious goals for vehicle electrification, renewable energy, and energy storage. To support the State's clean energy goals, the amount of energy generated by intermittent solar and wind resources at all grid levels will need to increase significantly between now and 2040. Similarly, meeting the State's climate targets will require a

²¹ Case 14-M-0101, Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015); Case 14-M-0101, supra, Order Adopting Distributed System Implementation Plan Guidance (issued April 20, 2016); and Cases 14-M-0101, et al., supra, Order on Distributed System Implementation Plan Filings (issued March 9, 2017).

rapid increase in the scale, distribution, and impact of electrification between now and 2050. Both the changing generation resources and increasing electricity needs will drive the need to deploy more flexible resources throughout the electric system. For the grid to handle future operating needs in the most efficient and cost-effective manner, while still maintaining reliability, the electric system must increasingly leverage new means and methods to provide needed flexibility services that are more dynamic and complex in comparison to existing electric system operations.

Therefore, the Commission is initiating this proceeding to determine possible future actions that it could take to substantially promote the timely and effective evolution of the electric grid. The overall goal of this effort is to produce and maintain the Plan to establish a comprehensive, integrated, cost-effective, and actionable framework for evolving the electric system. Implementation of the Plan should result in lower infrastructure costs, improvements to reliability, and customer savings by effectively and timely supporting the new and changing grid needs driven by increasing electrification and intermittent generation.

Throughout this proceeding, DPS Staff shall engage extensively with stakeholders to identify and characterize relevant opportunities, challenges, and best practices that could affect the products of this proceeding. DPS Staff is directed to convene at least one technical conference during the second half of 2024 to gather input from stakeholders. Further, parties participating in this proceeding are encouraged to identify and propose additional elements that would potentially improve the proceeding's results.

Foundational Context for the Plan

Achieving New York State's goals in a cost-effective manner will require significant investments by the investor-owned utilities, flexible resource providers, and government agencies (local, state, and federal), in resources and processes while also providing tangible customer benefits.²² Decision processes for determining grid structure and operations must prioritize reliably serving the needs of electricity users with minimal effects on their comfort, convenience, and capabilities. Price signals for customers to provide services to the grid to improve its operational flexibility, whether through deployment of enabling technologies or clever balancing of energy end-uses, need to be clear, understandable, and compelling, whether through observable bill savings or through off-bill compensation methods.

New York's transition to a more flexible, affordable, reliable, interconnected, and automated grid also needs to be value-driven to ensure that such transition is beneficial to all customers. The transition should focus on optimizing the use of existing resources thereby decreasing the need for incremental grid infrastructure upgrades, avoiding foreseeable costs where possible, and maximizing the value of avoidable emissions and other savings opportunities. This process should build on the successful implementation of the VDER proceeding and the Value Stack Methodology to provide actionable price-signals for

²² The major investor-owned utilities are: Central Hudson Gas & Electric Corporation (Central Hudson); Consolidated Edison Company of New York, Inc. (Con Edison); New York State Electric & Gas Corporation (NYSEG); Niagara Mohawk Power Corporation d/b/a National Grid (National Grid); Orange and Rockland Utilities, Inc. (O&R); and Rochester Gas and Electric Corporation (RG&E).

customers to follow for mutual benefit of the grid, program participants, and the broader body of customers at large.²³

Progress towards the goals and outcomes identified by the Plan must be visible and transparent to the industry and consumers on an ongoing basis. Data reporting that tracks the amounts of flexible resources available to the grid, along with the costs, benefits, customer savings, and flexible services provided over time should be visible and transparent, to ensure efficient decision making by grid planners and market participants considering investments.

Process for Developing the Plan

In order to more accurately determine the potential scale and value of flexible resources across the New York grid, the Commission directs DPS Staff to conduct a Grid Flexibility Study (Study) to produce, assess, and report on the present status and future potential for flexible resources in New York's electric system. As part of this Study, DPS Staff shall: (1) assess the present and potential future capabilities of flexible resources; (2) identify, characterize, and recommend means and methods for effectively integrating flexible resources into grid planning and operations under a range of different scenarios; and (3) recommend near term actions to better deploy identified resources. The scenarios to be examined must address both summer and winter peak loads; consider needs on different levels of the power grid; consider regional differences between upstate and downstate utilities; and identify barriers to resource deployment with estimates for potential deployment under current conditions and the potential once those barriers have been addressed. DPS Staff will complete and file this Study by

²³ VDER Order.

November 15, 2024. The Commission anticipates seeking stakeholder comments on the Study, once completed, and directs that both the Study and stakeholder comments be used as input toward development of the second iteration of the Grid of the Future Plan, to be filed by December 31, 2025, as discussed below.

Following the completion of the Grid Flexibility Study, the Commission directs Staff to complete and file the first iteration of the New York Grid of the Future Plan. The first iteration of the Plan shall leverage insights from the Study as well as begin to incorporate the elements described below, to the extent feasible, with a focus on the development of a more expansive DSIP process that is aligned with the goals set forth in this proceeding. Staff will complete and file the first iteration of the New York Grid of the Future Plan by December 31, 2024.

Staff is directed to provide an opportunity for stakeholders to review the initial Plan and solicit feedback through a robust stakeholder engagement process. Thereafter, Staff shall complete and file an update to the Plan no later than December 31, 2025. The updated Plan shall describe a workable and actionable path for evolving the combined technical and commercial architecture of the electric grid/industry in response to changing grid needs in New York State between now, 2030, and 2040, and must fully address each of the Plan elements described below.

The Plan resulting from this proceeding shall be the starting point for ongoing work, shall incorporate and build on outputs of the Grid Flexibility Study as well as other work already ongoing or completed, and will be further developed and maintained by Staff as the grid evolves. The Plan shall,

therefore, be developed and presented in a form that enables efficient and timely access, evaluations, and updates by multiple contributors.

Required Plan Elements

The Plan must provide an actionable path for the use of flexible resources to support meeting New York's climate and energy goals, including the CLCPA and its goals for renewable energy and for electrification, on time and with the greatest value for customers. Further, the design and use of all technical elements in the Plan must be governed by the physical laws applicable to safe and reliable generation, transport, and consumption of electric power. As an initial matter, the Plan shall focus on the areas identified below, however, stakeholders are encouraged to identify and propose additional elements that would potentially improve the Plan.

First, the Plan must provide clear resource deployment goals. For each identified resource category, the Plan must include a forecast of how much of that resource is needed and by when, must identify present barriers against and future opportunities for deploying that resource, and must identify the groups of consumers and suppliers that will be anticipated to provide these resources. Resources must be characterized by the grid services they provide, such as local or bulk capacity and/or resource adequacy services, energy-related services, and whether such resources might contribute toward avoiding the need for incremental grid infrastructure upgrades. The Plan must also identify whether these resources will need to be obtained through deployment of specific technologies; deployment of devices to remotely control customer equipment, such as smart thermostats; and whether new programs are necessary to enable

use of these resources, such as demand response programs or EV managed charging programs.

Second, the Plan must establish key DSP elements which must be implemented in a timely manner to support achievement of New York's decarbonization objectives. In doing so, the Plan must assess the utilities' most recent DSIPs to determine how well the utilities' plans will support the expected needs and innovation to optimize the evolution of the grid. Following this assessment, the Plan must recommend new and/or revised requirements for future DSIP content and the DSIP process to better align with the grid's evolving needs. The Plan should also recommend an improved framework for engaging stakeholders in the development and review of future DSIPs.

Third, the Plan must consider establishing new compensation structures, or modifications to existing compensation structures, to encourage the best use of these new resources by customers. Compensating flexible resources can include the value of avoided costs and increased benefits to the system, and incentives above and beyond those currently monetized through market structures if they are in the public interest. These values should be distinguished among, at minimum, the bulk system and distribution system levels. More location-specific distribution system values should also be considered to the extent such values can be identified and quantified. Further work to develop guidelines, requirements, and parameters for identifying values and providing compensation for such values is expected to be developed as part of this proceeding.

Fourth, the Plan must identify the potential for customer savings and benefits through improved, more economically efficient, and more customer-friendly price-signals

sent to utility customers through the rates and charges on utility bills. Customers presently have, or will soon have, the option to choose among the default rates applicable to their service classification, a more time-varying option, and standby rates.²⁴ The Plan should identify whether additional rate options providing stronger time-varying price-signals beyond those already available to customers should be implemented, such as a rate option which may be attractive for customers that install beneficial electrification technologies including ground-source and air-source heat pumps.

Fifth, the Plan must identify the needs and opportunity for changing roles and responsibilities of the distribution utilities, the New York Independent System Operator, Inc. (NYISO), and other market participants, while improving and then maintaining interoperability between them. New York's existing electric system is already a very large and complex assemblage of end-user and grid technologies that interoperate as needed to support both operational and commercial functions at the bulk, distribution, and grid edge levels. The need for interoperable technologies, operating practices, and commercial processes will increase greatly as the grid evolves to meet the State's electrification and clean

²⁴ For residential customers, these options are represented by the existing default volumetric rates, the existing time-of-use rates, and the mass market optional demand rates, which were recently approved by the Commission in Case 15-E-0751 on October 13, 2023, but have yet to become available for customer participation. For most commercial service classifications, customers may choose between default demand rates with a single demand amount set each month, a more time-varying demand rate option which distinguishes between peak and off-peak demand, or standby rates which further disaggregate different types of demand charges and provide different on-peak, super-peak, and off-peak demand rates.

energy goals. The Plan should identify opportunities and requirements for distribution utilities to apply the most productive and effective practices and resources for operating their systems and engaging with customers to ensure efficient decision making between customers and their grid interaction, and greater opportunities for bill savings. Similarly, the Plan should reflect the extent to which new market access and compensation methods are needed for customers to effectively participate in the NYISO markets and should provide a path for resolving telemetry and market participation requirement issues. Further, the Plan should provide pathways to best align NYISO, utility, service-provider, and customer actions with the goal of optimizing the use of flexible resources to balance load and supply throughout the electric system.

Sixth, The Plan must account for changes in digital technology, information infrastructure, and information asymmetries. As the grid evolves, the data, analyses, and controls needed for safe, reliable, and efficient grid operation will become much more time-sensitive; consequently, the need for real-time and near-real-time functions will increase greatly. Human and automated operators of the electric system at all grid levels will require the ability to view, manage, and use a wide range of information that includes, but is not limited to, grid topography, voltages, both real and reactive power flows, asset conditions, storage state-of-charge, availability of flexible resources, load forecasts, supply forecasts, and grid contingencies. Similarly, the scale and complexity of grid optimization, coordination, and control will increase greatly as the grid evolves; consequently, this trend is expected to render traditional, highly centralized, top-down approaches increasingly obsolete over time. The Plan must make it possible

to use flexible resources to react quickly to signals across multiple system levels, including the bulk system, distribution system, and at the grid edge, and from multiple system operators and entities, including the NYISO, utilities, aggregators, and DER owners themselves, to provide services where and when they are needed.

Seventh, the Plan shall apply rigorous physical- and cyber-security protocols. The cyber and physical elements of the electric system must have strong protections against events and/or conditions that could degrade the system's integrity, operation, and use, especially as information infrastructure becomes an even more integral part of grid operation. Threats to cyber and physical security can be intentional, accidental, or environmental, and range from current challenges with securing existing communications, platforms, and devices to future threats such as those associated with the predicted disruptive impacts of quantum computing on encryption schemes. Cyber-security recommendations identified in the Plan shall be integrated into existing and future cyber-security plans where appropriate.

Eighth, the Plan must address temporal and geographic variability in the need for operational flexibility through intelligent deployment and use of flexible resources. The use and operation of the State's electric system varies significantly, depending on the times and locations of use. For example, use and operation of the grid changes significantly as the seasons change, and the use and operation of the grid in a rural area differs from grid uses and operations in densely populated areas. This variability is expected to increase as the grid evolves to meet the State's climate goals, particularly in areas with large quantities of intermittent generation

resources. Further, the Plan produced by this proceeding shall identify, characterize, and consider the significant differences expected over time between New York's upstate and downstate electric power systems. Differences considered shall include, but not be limited to, transmission constraints, distribution constraints, environmental constraints, grid configuration (i.e., radial vs. meshed), demographics, local laws/moratoriums, and the scale and placement of generation, energy storage, and load.

Ninth, the Plan must consider equitable allocation of necessary costs and benefits among customers. Evolving the grid infrastructure and its operation to meet the State's goals will require large expenditures that can vary significantly, depending on the grid plan that is developed and implemented. The components, location, timing, complexity, scale, and purpose of any change - technical or commercial - will directly affect capital and operating costs associated with the change. Those costs, and their respective benefits, must be carefully identified, characterized, and considered when determining whether a potential change should be part of the Plan. Furthermore, the Plan must propose effective methods for fairly allocating costs and benefits among all grid stakeholders. Stakeholders that must be considered shall include, but not be limited to, utility customers, especially low- and moderate-income customers and customers within disadvantaged communities; grid owners, planners, and operators; market operators; NYISO market participants; and DER developers, owners, operators, and aggregators. In addition, the Plan should identify possible sources of federal funding or other funding sources not provided directly from utility customers and consider equitable

allocation to those areas where anticipated costs can be reduced, or benefits can be enhanced.

CONCLUSION

The Commission finds that a proceeding is needed to address the increasing demands on the New York State electric system. As part of this proceeding, DPS Staff will conduct a Grid Flexibility Study and thereafter develop a comprehensive New York Grid of the Future Plan that lays out actionable near-term and long-term roadmaps for grid evolution. These efforts will serve as an important step towards building out the programs, policies, utility and bulk system digital infrastructure, grid infrastructure, and operating practices needed to efficiently meet the State's clean energy and climate goals. The Commission finds that flexible resources have the potential to lower the costs of the energy transition now underway for the benefit of all customers, while unlocking opportunities for deeper savings and benefits for customers who participate in the programs, rates, and market opportunities developed in this proceeding.

The Commission orders:

1. A proceeding is instituted to develop a comprehensive Grid of the Future Plan.
2. Department of Public Service Staff are directed to develop and file a Grid Flexibility Study, consistent with the directives in the body of this Order, no later than November 15, 2024, and solicit input from stakeholders.
3. Department of Public Service Staff are directed to develop and file the first iteration of the Grid of the Future

Plan, consistent with the directives in the body of this Order, no later than December 31, 2024.

4. Department of Public Service Staff are directed to convene at least one technical conference during the second half of 2024.

5. Department of Public Service Staff are directed to conduct a review of the first iteration of the Grid of the Future Plan, solicit input from stakeholders, and develop and file an updated Grid of the Future Plan, consistent with the directives in the body of this Order, no later than December 31, 2025.

6. In the Secretary's sole discretion, the deadlines set forth in this Order may be extended. Any request for an extension must be in writing, must include a justification for the extension, and must be filed at least three days prior to the affected deadline.

7. This proceeding is continued.

By the Commission,

(SIGNED)

MICHELLE L. PHILLIPS
Secretary