July 1, 2022

VIA ELECTRONIC MAIL

Doreen Harris
President and Chief Executive Officer
New York State Energy Research and Development Authority
Doreen.Harris@nyserda.ny.gov

Basil Seggos
Commissioner
New York State Department of Environmental Conservation
Basil.Seggos@dec.ny.gov

Sarah Osgood
Executive Director
of the Climate Action Council
Sarah.Osgood@nyserda.ny.gov

CC: Climate Action Council members

RE: Comments of the Utility Consultation Group in Response to the draft Scoping Plan

Dear President Harris, Commissioner Seggos, and Executive Director Osgood:

On behalf of the Utility Consultation Group (UCG),[1] please accept the following comments on the Climate Action Council's (CAC) December 30, 2021 draft Scoping Plan. The UCG members support the responsible achievement of the emissions goals and benefits for disadvantaged communities that are included in the Climate Leadership and Community Protection Act (CLCPA). Over the course of the last several months, the UCG has issued topic-specific white papers on critical topics to the clean energy transition and meeting the ambitious goals of the CLCPA. Those white papers are appended here, and briefly summarized below. The UCG looks forward to collaboration and partnership as the CAC works to finalize the Scoping Plan and as the State moves forward with CLCPA implementation.

Energy System Reliability and Need to Address Resource Intermittency. Reliability of both gas and electric systems will continue to be critical to the well-being of the residents of New York State as the CLCPA is implemented. Outcomes in other states (Texas, California) and countries support this fact. High levels of reliability can be supported during the energy transformation but will require thoughtful timing and sequencing of additions of new dispatchable resources and

[1] The Utility Consultation Group (UCG) was formed in December of 2020 in connection with the Climate Action Council (CAC or Council) to provide expertise to the Council and act as a resource for its Advisory Panels as they develop recommendations for the Council. The participating utilities include: Consolidated Edison Company of New York, Inc.; Central Hudson Gas and Electric, Inc., The Municipal Electric Utilities Association of New York State; National Fuel Gas Distribution Corporation; National Grid; New York State Electric and Gas, Inc.; Orange and Rockland Utilities, Inc.; and Rochester Gas and Electric, Inc.

retirement of older conventional resources. The natural intermittency of renewable generation and the need for electric supply to meet customer energy demand every hour of the day can result in reliability issues if not proactively addressed. The State will need to use a wide variety of tools, consider changes to the rules that govern the State's competitive wholesale energy markets, addition of new electric infrastructure to serve customers, and mitigation of the impacts of increasing winter electric peak demand from heating electrification by leveraging existing pipe networks to deliver low-carbon fuels as an alternative to full electrification. Additional research, development and deployment of non-emitting long duration storage resources or other emerging technologies are required to address likely extended periods when there is low availability of intermittent renewable generation.

Gas System Transformation. A carbon reduction pathway that leverages existing gas infrastructure investments coupled with efficient expansion of the electric distribution and transmission grid will achieve decarbonization in a more cost-effective, lower risk way as called for by the CLCPA, while supporting overall energy system reliability and resiliency. The State's first focus in its energy transformation effort should be on increasing the efficiency of overall customer energy use, including gas use. Using existing gas networks to help meet CLCPA emissions targets will also require decarbonizing the energy sources that flow through the gas system, understanding geographical and regional differences – including differences between upstate, downstate, rural and urban areas, and coordinating the optimization of gas system use with the electric system to ensure service reliability and promote emissions reductions in a way that most benefits the State and its residents.

The Role of Utilities in CLCPA Implementation. The vast majority of the energy infrastructure in the State was built by independent utilities, and those same utilities operate and maintain that complex energy infrastructure today. Utilities' knowledge of their infrastructure makes them ideally suited to plan for and execute the clean energy transition the CLCPA requires. Beyond energy delivery, utilities also offer programs to help customers access clean energy today, and provide assistance to the most economically-vulnerable customers. These programs are advancing critical clean energy resources, like energy efficiency, electric vehicles, and heat pumps. Utilities stand ready to do more: electric utilities building renewables and making additional investments in the electric grid, utilities helping customers adopt clean energy technologies using innovative approaches, and taking steps to decarbonize the gas system.

Economy-Wide Strategies and Carbon Pricing. Any of the economy-wide strategies set forth in Chapter 17 of the draft Scoping Plan should be carefully analyzed and considered prior to adoption. If a carbon price is implemented, a well-designed program should consider these guiding principles: maximize geographic scope and economic reach, set an appropriate price, properly time implementation, protect vulnerable sectors, and complement other programs. Implementation should include quantitative analysis that holistically evaluates energy, economic and environmental costs and benefits of any change.

Sincerely,

The Brooklyn Union Gas Company d/b/a National Grid NY; KeySpan Gas East Corporation d/b/a National Grid; Niagara Mohawk Power Corporation d/b/a National Grid

/s/ Carlos A. Gavilondo

Carlos A. Gavilondo
Assistant General Counsel
National Grid
300 Erie Boulevard West
Syracuse, New York 13202
(315) 428-5862

Central Hudson Gas & Electric Corporation

/s/ Anthony Campagiorni, Esq.

Anthony Campagiorni, Esq.
Senior Vice President, Customer Services and Gas Operations
Central Hudson Gas & Electric Corporation
284 South Avenue
Poughkeepsie, New York 12601
(845) 486-5201
(914) 589-6146

Consolidated Edison Company of New York, Inc.

/s/ Christopher Raup

Christopher Raup
Vice President, State Regulatory Affairs
Consolidated Edison Company of New York, Inc.
4 Irving Place
New York, NY 10009
(212) 460-3651

Municipal Electric Utilities Association of New York State

/s/ Christopher Wentlent

Christopher Wentlent
Consultant, MEUA
Municipal Electric Utilities Association of NYS
6652 Hammersmith Drive
East Syracuse, NY 13057
(315) 453-7851

National Fuel Gas Distribution Corporation

/s/ Randy Rucinski

Randy Rucinski
Deputy General Counsel & Chief Regulatory Counsel
National Fuel Gas Distribution Corporation
6363 Main Street
Williamsville, NY 14221-5887
(716) 857-7237

New York State Electric & Gas Corporation and
Rochester Gas & Electric Corporation

/s/ Joseph Syta

Joseph Syta
Vice President, Controller & Treasurer
New York State Electric & Gas Corporation and Rochester Gas & Electric Corporation
755 Brooks Ave
Rochester, NY 14619
(585) 342-0802

Orange and Rockland Utilities, Inc.

/s/ Orville Cocking

Orville Cocking
Vice President – Operations
Orange & Rockland
390 West Route 59
Spring Valley, NY 10977

Managing Energy System Reliability During the Clean Energy Transformation

Managing Energy System Reliability During the Clean Energy Transformation

The transition from conventionally-fueled dispatchable resources to renewables – with unavoidable intermittency – to meet CLCPA goals must be accomplished in a way that maintains reliability.

New York's reliable energy systems are a result of long-established methodical planning that considers the long lead times needed for constructing new generation resources, transmission and distribution facilities, as well as the importance of continuous access to energy. It is imperative that implementation of the clean energy transformation is accomplished in a thoughtful and well-timed manner, while preserving the careful planning and robust process established over time. Adequate lead time is required for transmission and distribution investments, and conventional generation resources should not be retired before adequate and reliable renewable replacements are available.

"Reliability and resiliency of energy systems is critical to providing robust systems that respond to changing demand in real-time and withstand unexpected events."

Climate Action Council Draft Scoping Plan

Reliability can be maintained by optimizing the decarbonization of both the electric and gas delivery systems. In the same way that the electric generation mix continues to transition to less carbon emissions, the gas delivery system can also be decarbonized with a transition to no- and low-carbon fuels that provide diversified, safe and secure sources for dispatchable generation units.

The ambitious electrification efforts required to meet CLCPA goals also call for unprecedented load increases that necessitate advanced planning and forecasting for infrastructure build-out; in some cases a "build in advance" approach to electric infrastructure and decarbonization initiatives for the gas system – such as RNG, hydrogen and geothermal projects - will be needed to allow for timely, cost-effective provision of energy service. Customers also have increasing expectations of reliability given the "work-from-home" post-COVID phenomenon. Meeting these expectations while maintaining reliability will become more challenging with more frequent and severe weather events.

To meet CLCPA requirements, we must leverage existing infrastructure and invest in expanding transmission and distribution systems to increase access to new dispatchable clean resources. Integration of inverter-based resources (*e.g.*, long-duration battery, or offshore wind) presents unique challenges such as load and supply gaps, multi-day lulls, and seasonal variations in production that must be addressed through proper review and planning process working alongside State agencies, regulators, and stakeholders.

The State's utilities have actively engaged on reliability matters with the New York Independent System Operator (NYISO) and the New York State Reliability Council (NYSRC), given their valuable role and established expertise in maintaining electric system reliability. We have worked with NYISO on various studies, transmission planning, and permitting processes, and collaborate on NYISO's "Grid in Transition" effort to address the impact of clean energy transformation on the electric system. Utilities and regulators advanced strategic investments

like the Reliable Clean City transmission projects to address critical transmission needs in the most cost-effective and reliable manner.

Utilities will continue to collaborate with NYISO, NYSRC, and state and local regulators on a nimble and careful reliability planning approach to build a more flexible, reliable, cleaner future grid in the low-carbon transformation.

Maintaining Energy System Reliability During the Clean Energy Transformation

Report Date – June 23, 2022

By The Utility Consultation Group[1]

Key Insights

- We commend the Climate Action Council for prioritizing energy system reliability. The Draft Scoping Plan affirms that it is crucial to maintain electric reliability and recognizes the valuable role that the New York Independent System Operator (NYISO), the State's gas and electric utilities, and the New York State Reliability Council (NYSRC) play in maintaining electric system reliability. All State agencies that either directly or indirectly make decisions with potential reliability impacts should be mindful of the need to maintain energy system reliability while helping achieve the CLCPA emissions goals. The UCG looks forward to participating and contributing to preserving high levels of reliability during the clean energy transformation.

- It is imperative that implementation of the clean energy transformation is accomplished in a thoughtful and well-timed way, providing adequate lead time for both transmission and distribution investments. Conventional generation resources should not be retired before adequate and reliable renewable replacements are available.

- Reliability can be enhanced by optimizing the decarbonization of both the electric and gas delivery systems. In the same way that the electric generation mix continues to transition to less carbon emissions, the gas delivery system can also be decarbonized with a transition to no- and low-carbon fuels that provide diversified, safe and secure sources for dispatchable generation units.

- Recent electric grid reliability disturbances in Texas and California reinforce the negative impacts on public health and safety if energy system reliability is not maintained and prioritized. In addition, reliability issues would be detrimental to achieving clean energy goals as the CLCPA statute itself provides for temporary suspension of those goals if implementation impedes provision of safe and adequate service.

- New York's energy systems have complex interactions and operations, and their reliability is a result of methodical planning that considers the long lead times needed for construction of new generation resources, dependent fuel sources, transmission and distribution facilities, as well as the critical nature of continuous access to energy. Traditional forecasting, planning, and investments continue to be critical to meeting infrastructure needs in advance of the demands resulting from clean energy transformation. However, in addition to the way utilities historically forecasted, planned and made investments, the State should consider

[1] The Utility Consultation Group (UCG) was formed in December of 2020 in connection with the Climate Action Council (CAC or Council) to provide expertise to the Council and act as a resource for its Advisory Panels as they develop recommendations for the Council. The participating utilities include: Consolidated Edison Company of New York, Inc.; Central Hudson Gas and Electric, Inc., The Municipal Electric Utilities Association of New York State; National Fuel Gas Distribution Corporation; National Grid; New York State Electric and Gas, Inc.; Orange and Rockland Utilities, Inc.; and Rochester Gas and Electric, Inc.

authorizing a 'build in advance' approach for infrastructure needed for electrification of transportation and certain buildings to allow for timely, cost-effective provision of electric service for electrifying customers. Building in advance is especially important for transportation electrification given the unique characteristics of requests for electric vehicle charging infrastructure, where the lead time typically afforded to utilities for standard new business requests is dramatically reduced, leaving little time to evaluate, plan, and construct infrastructure to meet an applicant's demand. This should include infrastructure for charging stations for public access and private access (e.g., behind-the-fence charging at commercial, industrial and government facilities), as well as procedures for upgrading service for private residential charging. Building in advance is also important for the decarbonization of heat, particularly in light of changing housing codes. Utilities stand ready to make the needed investments.

- Customers and other stakeholders have increasing expectations of reliability which are likely to grow with the 'work-from-home' transformation of the economy, and as more customers heat their homes or buildings with electricity or rely on electricity for transportation. Maintaining and increasing reliability will also become more challenging with the expected increasing frequency and severity of weather events.

- The transition from conventionally-fueled dispatchable resources to inherently intermittent renewables must be accomplished in a way that preserves reliability without compromising safety or fuel security. The State should continue to rely on NYISO's established expertise and well-functioning stakeholder process for planning and managing the State's bulk power system and on the NYSRC's guidance on electric reliability standards. Additionally, we must plan for and invest in local electric transmission and distribution system upgrades to maintain reliability at the local level and meet changing customer demands. The State has successfully gone through major transformations of its energy systems previously, for example moving away from using coal to generate electricity and can do so again by leveraging existing infrastructure, processes and expertise. The State's existing gas infrastructure can be optimized with its electric infrastructure to further the Climate Act's emissions reduction goals while helping to preserve energy reliability for residents, businesses and industries. See the UCG's May 23, 2022 report – *The Gas System Transformation: Achieving GHG Reductions While Keeping All Options in Play for the Benefit of New Yorkers* – for additional information.[2]

The Electric Utilities Are Actively Engaged with the NYISO and NYSRC to Ensure a Reliable Transition to Clean Energy

UCG members have a long track-record of working closely with regulators and other stakeholders to safeguard reliability for our customers, in partnership with the NYISO and the NYSRC. This coordinated, methodical planning approach has contributed to the generally high level of reliability experienced by New York customers. Under the NYISO's Comprehensive System Planning Process (CSPP), NYISO conducts quarterly Short-term Assessment of Reliability (STAR) studies, the biennial Resource Needs Assessment (RNA), and (in subsequent years) the biennial Comprehensive Reliability Plan (CRP). Together, these studies assess the reliability of the bulk-power system over the short- (0-5 years) and medium- (10 years) term planning horizons. To the extent reliability needs are identified, the NYISO procures

[2] https://jointutilitiesofny.org/ucg_clcpa

the necessary solutions, giving the market time to provide competitive solutions where feasible. The various NYISO planning reports also highlight future potential risks to the system. For example, the most recent CRP, issued in 2021, noted that tightening reliability margins, due in part to retirements of peaker plants to meet stricter air quality requirements, were a risk factor that merited close monitoring.

The State's utilities have worked with the NYISO over the past several years to develop an overarching plan titled the "Grid in Transition" to address the impact of the clean energy transformation on the electric system. The work continues this year, as NYISO embarks on a study that will identify the future grid's needs for flexibility, which will then inform potential market changes to procure the needed resources.

The New York utilities have continued to work with our regulators, the NYISO, and other reliability-focused organizations like the NYSRC to advance climate goals while maintaining system reliability and are making investments today to implement those goals. An example of such an effort resulted in the Public Service Commission's approval of three transmission feeders known as the Reliable Clean City projects that were needed to help facilitate the retirement of certain aging peaker plants in New York City, providing local air quality benefits as well as enabling the delivery of future clean energy to electric customers in the affected areas. Additionally, the NYSRC has an approved set of goals for 2022 to increase its engagement with NYISO and NYSDEC in maintaining reliability during this transition period. The UCG will continue to actively engage with these organizations to lend expertise to provide for a reliable transition.

The Transition to Clean Energy at the Bulk-Power Level Must Be Comprehensive and Well-Planned

The energy grid is complex and interdependent with multiple systems and requires sufficient lead time for construction activities and other actions to meet customers' future energy needs and CLCPA goals. To meet CLCPA requirements, new dispatchable resources with secure fuel sources will need to be developed and energy storage resources supplied with renewable energy and evolving emissions free resources will need to be incorporated, while serving what is likely to be increasing demand for electricity.

Reduction of emissions on the gas system must be coordinated with the build-out of our grid. While electricity is being decarbonized with more renewable power, the State should support a similar transformation of the gas system: gas transmission and distribution fuel sources can undergo a similar decarbonization, and existing gas infrastructure can deliver no- and low-carbon fuels reliably and safely.

Optimization of the inter-relationship of the electric and gas energy systems allows for a holistic system view that can maintain reliability for end-users while achieving CLCPA GHG emissions reduction targets. In this regard, it is critical not to underestimate the range of potential planning, operational, and market challenges that must be addressed during the clean energy transformation. The NYISO, NYSRC and appropriate transmission owners must be included on the front-end of planning to ensure the reliability impacts are properly analyzed and understood.

The Supply Side Transformation Can Leverage Existing Processes to Ensure Reliability

Generation retirement planning must support reliable service to our customers. Although generation retirement planning is already part of the NYISO process, it should be augmented to consider the impacts of rapid and high volumes of retirements in a short period of time. Additionally, reliability planners should examine whether the current process allows for enough time to plan, or if more lead time notification of retirements is required. While renewables and storage may be able to replace some of the existing generation portfolio's reliability role, we will need to gain experience with the operating characteristics of new resources like offshore wind as we maintain high levels of system reliability.

While integrating these clean resources, State policy makers and reliability planners should take into consideration the inherent characteristics of many renewable resources. Higher proportions of intermittent renewable resources will result in new challenges to address, including in-day load and supply gaps, multi-day lulls in production, seasonal variations, and the impact of severe weather. It is important that these factors are well understood and mitigated by sufficient backup resources, such as the emerging classes of longer-duration energy storage, low- and no-carbon fuels and clean dispatchable resources like pumped hydro.

Plant permitting policy should include an evaluation conducted by NYISO and the local Transmission Owner(s) to consider and address reliability impacts to the grid. Incorporating such an evaluation of reliability into the permitting process will allow the State to meet its clean energy goals while preserving the level of reliable service our customers rely on.

Similarly, the integration of emerging resources such as offshore wind should be proactively planned to optimize system reliability. The Offshore Wind Study[3] notes the current radial interconnection approach of offshore wind projects does not provide redundancy or reliability benefits offered by a meshed or backbone offshore transmission system. A proactive and comprehensive evaluation of different offshore wind transmission approaches, including prebuilding offshore wind transmission, should be considered to determine the most cost-effective and reliable solution.

Continuing the State's proactive transmission planning more broadly is imperative. Goals of transmission planning and transmission projects are evolving as the State moves to integrate renewable resources to meet CLCPA targets. To provide reliability while replacing aging transmission infrastructure, the utilities are working to ensure that new transmission is sufficiently resilient to withstand the impacts of climate change. Traditionally, many transmission projects were built near population centers to transport energy from in-land fossil-fueled resources to the load. However, this new generation of transmission projects need to be built to reliably transfer energy from renewable and clean dispatchable resources often sited far from population centers. For example, to integrate offshore wind resources to the onshore system, critical transmission assets need to be built in coastal areas and often in or near flood plains. The utilities are adhering to higher standards so that these new assets are designed with increased capability to endure extreme weather events, and availability of a decarbonized underground gas transportation system can assist in this regard as well. The utilities are also exploring innovative ways to address transmission needs such as understanding the role of

[3] https://www.nyserda.ny.gov/-/media/Files/Publications/NY-Power-Grid/Appendix-D.pdf pp. 58-59

storage as transmission assets in areas where building new transmission lines may be challenging.

The NYISO – working with the State's utilities and the NYSRC and other stakeholders - is well placed to develop a holistic view of the energy system of the future. The NYISO's current process includes coordination with TOs on each TOs' Local Transmission Planning Process, and collaboration with all stakeholders on Economic, Reliability, and Public Policy Planning Process. State and local governments should leverage the NYISO's robust and transparent stakeholder process and expertise. For example, at the direction of the Public Service Commission, the electric distribution companies are currently working with the NYISO to develop a statewide Coordinated Grid Planning Process to identify and approve local transmission projects needed to achieve CLCPA goals in alignment with NYISO statewide planning processes. Such coordination between the local and statewide planning activities, including consistency of assumptions and information related to study results, will be invaluable to planners, regulators, market participants and policy makers. In addition, the NYSRC is the authoritative voice on current electric reliability requirements, and is regularly evaluating new requirements as electric system and resource needs change. This evaluation must not only include New York State but also potential impacts from neighboring states implementing similar policies that will impact their respective electric grids in a similar manner.

It is imperative that emerging technologies and resources be technically proven before being relied on for desired outcomes. For example, wind, solar and battery storage technologies are inverter-based resources (IBR) that require comprehensive study to address potential system stability challenges. The consequences of the lack of proper planning regarding IBRs were experienced in Texas in May 2021 where a simple electrical fault resulted in the disconnection of many solar resources as far as 200 miles from the originating event.[4] To address these issues, reliability rules should incorporate electromagnetic transient modeling and analysis. IBRs are but one of many examples of emerging technologies that must be properly understood, analyzed and addressed.

Additional research and development is needed. Energy storage is a cornerstone resource of a clean and resilient energy future. New storage systems in the industry today are typically 4-hour duration or less, corresponding to bulk-power system peaking capacity and ancillary service needs. However, there is a potential need for longer duration energy storage (LDES) in the coming years as storage will be needed to replace higher capacity factor conventional generation, absorb longer periods of renewable overgeneration, and support resilience during severe weather events. LDES could potentially shift very large amounts of solar and wind energy, which would otherwise be curtailed, to other times, thereby reducing the need for peaker plant operation. Additionally, as winter heating requirements will increasingly be met with electric when solar output is seasonally low, LDES will be needed to shift renewable energy supply from seasonally high periods to seasonally low periods. LDES could also potentially support natural disaster resilience strategies, mitigate multi-day outages, and provide backup power in events like storm restoration in certain circumstances.

[4] See the North American Reliability Council report "Odessa Disturbance: Texas Events: May 9, 2021 and June 26, 2021, Joint NERC and Texas RE Staff Report," published September 2021. https://www.nerc.com/pa/rrm/ea/Documents/Odessa_Disturbance_Report.pdf, accessed on June 5, 2022.

Currently, LDES is still nascent, requiring R&D efforts to advance it to commercialization. Some UCG members are actively engaging the Electric Power Research Institute, Brookhaven National Laboratory, New York Battery and Energy Storage Technology, and others to understand the potential of the different LDES technologies (mechanical, thermal, electrochemical, and chemical) and develop use cases for R&D studies and demonstrations. In selecting which of the LDES technologies to pursue, it is important to consider the technology's attributes: safety, cost effectiveness, footprint density, charging/discharging cycle efficiency, scalability potential and technical maturity. Based on our current assessment, many UCG members plan to pursue further R&D in promising LDES technologies suitable for the environment in which they will be installed. For example, in an urban context these include metal-air batteries (such as iron air) to support a reliable, resilient and carbon-free grid, and thermal storage and/or power-to-gas storage to help decarbonize the fuel supply for district heating systems. UCG members plan to take advantage of funding opportunities from the U.S. Department of Energy (DOE) and NYSERDA to help fund R&D efforts to advance and develop the LDES technologies we need tomorrow to help decarbonize our electric, gas and steam systems in the most cost-effective manner while also ensuring their continued reliable and resilient operations.

Research and development is important to facilitate the use of alternative fuels and methods to utilize the gas system to facilitate the State's decarbonization efforts in a reliable manner. In particular, hydrogen, including its potential storage properties, and carbon capture and storage should be closely evaluated as efforts to optimize the State's electric and gas energy systems proceed.

The Demand Side Transformation is Occurring Already, but May Need New Approaches

UCG members are taking steps so that more clean energy resources can reliably interconnect to our distribution systems. Renewable Natural Gas (RNG) is already flowing on some utility systems and pilot projects are in-place to explore incorporating hydrogen in the future as well. Planning, coordination, and operations continue to evolve as small-scale distributed energy resources (DER) integration increases. The State's electric distribution companies are already incorporating distributed generation into their forecasting and system planning processes, utilizing resources as part of Demand Response programs or in Non-Wires Alternative programs to alleviate electric system constraints during peak load conditions. The utilities have also worked closely with the NYISO to create operating and coordination guidelines to integrate DERs into the future of the wholesale market.

In addition to proactively addressing changes on the supply side, the electric grid is also experiencing rapid changes on the demand side including increased loads and volatility due to heating electrification, the rapid adoption of electric vehicles, and other new demands.[5] The changing supply and resource mix will require State and Federal regulators to stay vigilant and engaged with electric utilities and stakeholders in developing standards to accommodate the changing needs of the New York distribution and bulk power systems.

While utilities have always relied on sophisticated forecasting techniques to provide for sufficient infrastructure to be ready 'just in time', the clean energy transformation may require a new approach to planning. The speed of the transformation being considered on the demand side

[5] https://www.nytimes.com/2021/12/05/nyregion/bitcoin-mining-upstate-new-york.html

for electric distribution companies is greater than that experienced in previous demand-side technological shifts. For example, the installation of residential air conditioning occurred over multiple decades, significantly increasing the electric system peak, but doing so at a pace that allowed electric utilities and system planners to install the needed generation, transmission and distribution assets such that reliability was maintained at a high level. In some cases, this includes techniques to mitigate the growth in electric peak, such as encouraging the selective adoption of steam- or gas-powered central air conditioning in dense urban environments. The air conditioning revolution, however, did not have a State policy push behind it, and so the adoption of summer cooling was limited by the cost of air conditioner units and the cost and time needed for premises upgrades required to accommodate cooling. With the State's current focus on converting almost the entirety of the transportation sector to electricity within the next 30 years, and a similarly robust effort to convert a portion of the State's building sector to electric heating, we may experience growth in electric peak at a pace that is greater than any previous technologically-driven shift.

Unlike with air conditioning, both the heating and transportation transformations are significantly aided by State financial support – for the purchase of electric vehicles, the installation of EV chargers, and the purchase and installation of electric-powered heating technologies. Electric utilities are already adapting their forecasting practices to incorporate this accelerated approach to electrifying these sectors that previously relied on fossil fuels. Electric vehicles in particular present a new paradigm to electric system planners, because planning and implementation of system changes and upgrades will be at a much faster pace. For example, EV charging stations could add as much new load as a modern skyscraper but this load can be installed in a fraction of the time required to plan for and build a skyscraper. Initiatives related to decarbonization of the gas system – such as RNG, hydrogen and geothermal projects – can also contribute significantly to the clean energy transformation. The State should consider authorizing utilities to proactively build out their infrastructure based on the policy requirements of CLCPA, as opposed to the previous practice of waiting for customer applications before investing in significant energy infrastructure projects. This 'build in advance' approach to energy infrastructure will facilitate achieving CLCPA goals but requires that regulators authorize infrastructure using cost recovery mechanisms and different planning criteria than the State has relied upon in the past.

The State Has Transformed Its Energy Systems in Fundamental Ways Before, and Can Do So Again

The rapid energy transformation envisioned by the CLCPA and described in the draft Scoping Plan is ambitious and presents new challenges and opportunities. The State's utilities are confident that the technological and operational changes needed to achieve the clean energy transformation envisioned by the CLCPA can be implemented. UCG members are committed to making the necessary investments in energy infrastructure and alternative technologies. UCG members have successfully made similarly complex transitions in the past, including building a statewide high voltage transmission grid, establishing the NYISO to oversee the dispatch of generation and the operation of the markets, and incorporating increasing volumes of customer-sited clean generation and others. Going further back, the State has successfully transitioned from dirtier fuels to cleaner fuels, setting aside coal, manufactured gas, and heavy fuel oils. These successful transitions have always been accomplished with firm support from

our partners in government and our customers; if we have that support for this transition, there is no doubt that we will be successful again.

Conclusion

State agencies should proactively consider and address energy reliability and coordinate with the utilities so we can transition to clean energy while maintaining reliable service at a reasonable cost. The utilities recognize that the speed of the transition and the composition of the State's energy systems at given target dates cannot be precisely forecasted. While the mix of solutions that will comprise the 2030, 2040 and 2050 energy system is not clear today, these challenges can be overcome with close collaboration between the State, utilities, and other stakeholders. We should explore, test, and scrutinize potential technologies like energy storage, hydrogen, RNG generation and grid enhancing technologies, so we can deploy them in decarbonization efforts while preserving high levels of reliability. The utilities stand ready to work with the NYISO, NYSRC, State and local regulators on long-term reliability planning, as well as with technology innovators on the R&D needed to decarbonize our systems.

Cold January Highlights NY's Need for Dispatchable Clean Generation

Cold January Highlights NY's Need for Dispatchable Clean Generation

January 2022 was a period of sustained cold temperatures throughout New York and the Eastern United States.

During the month, electricity was supplied predominantly by hydroelectric, nuclear and natural gas/dual fuel resources. This shift is notable since the 2022 winter was the first in decades without the Indian Point nuclear facility in operation as the two generating units were retired in Spring of 2020 and 2021, respectively.

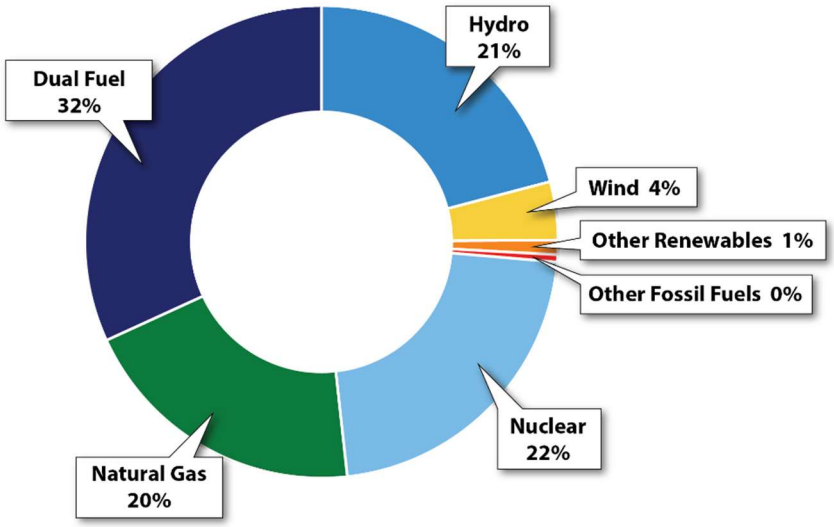
Wind and other renewable resources only accounted for approximately 5% of total generation during this time of high energy demand and cold weather. More concerning, low and inadequate wind generation was experienced on 25% of the days for the month due to a lack of wind, and low solar generation on 22% of the days due to shorter daylight hours and heavy cloud cover.

Today's renewable resources are emissions-free, but their output is weather-dependent. This intermittency and the need for electric supply to meet customer energy demand every hour of the day may result in reliability issues if not proactively addressed. The need for dispatchable generation will become increasingly important as peak energy use in New York shifts from summer to winter, which is expected to occur in the mid- 2030s with adoption of electric-based heating systems for homes and buildings.

The Utility Consultation Group supports the accelerated development of renewable generation. To ensure the state both achieves its renewable electricity goals while maintaining electric reliability, the state will need to use a wide variety of tools including: considering changes to the rules that govern the state's competitive wholesale energy markets, addition of new electric infrastructure to serve customers, and mitigating the impacts of increasing winter electric peak demand from heating electrification by leveraging existing pipe networks to deliver low-carbon fuels and continue meeting a portion of NY building heating load as a practical, reliable and cost-effective alternative to full electrification. In addition, the state will need to amplify its research and

"Current studies identify that even after full deployment of available clean energy technologies, there is a remaining need for 15 to 25 gigawatt of electricity generation (i.e. 15 to 25 large power plants) in 2040 to meet demand and maintain reliability."

Climate Action Council Draft Scoping Plan



Electric Generation in NYS January 2022

development efforts to increase access to net-zero dispatchable electric supply; this can be accomplished using a number of methods, including: increasing the amount of energy storage on the electric system; increasing the amount of dispatchable resources available such as traditional hydro generation; increasing access to dispatchable supply by expanding the electric transmission system; and using existing gas transmission and distribution systems to transport zero- or low-carbon fuels to conventional generation; or some combination of all these methods.

The New York Independent System Operator (NYISO), which oversees the state's electric grid, recently recognized in its Comprehensive Reliability Plan that "[a]s we move to a zero-emissions grid, it's critical we understand how the growth of intermittent resources and extreme weather could impact the ability to maintain reliability of the New York bulk electric system."

The Climate Leadership and Community Protection Act draft Scoping Plan also states: "Current studies identify that even after full deployment of available clean energy technologies, there is a remaining need for 15 to 25 gigawatt of electricity generation (i.e. 15 to 25 large power plants) in 2040 to meet demand and maintain reliability." The best path to decarbonization includes a diverse and complimentary mix of energy resources that achieves emissions reductions while maintaining a flexible and reliable electric grid.

Renewable Intermittency and The Importance of Dispatchable Generation in The Winter

New York Electric Market Case Review - JANUARY 2022

Report Date – April 20, 2022
By The Utility Consultation Group[1]

Key Insights

The natural intermittency of renewable generation and the need for electric supply to meet customer energy demand every hour of the day can result in reliability issues if not proactively addressed. This will become increasingly important as the New York electric customer demand profile becomes winter peaking, as is expected to occur in the mid- 2030s. The state will need to use a wide variety of tools to address these issues, considering changes to the rules that govern the state's competitive wholesale energy markets, addition of new electric infrastructure to serve customers, and can mitigate the impacts of increasing winter electric peak demand from heating electrification by leveraging existing pipe networks to deliver low-carbon fuels and continue meeting a portion of New York's building heating load as a practical, reliable and cost-effective alternative to full electrification. In addition the state will need to increase access to zero-carbon dispatchable electric supply; this can be accomplished using a number of methods, including: increasing the amount of energy storage on the electric system; increasing the amount of dispatchable resources available such as traditional hydro generation; increasing access to zero-carbon dispatchable supply by expanding the electric transmission system; and using existing gas transmission and distribution systems to transport zero- or low-carbon fuels to conventional generation; or some combination of all these methods.

Maintaining Reliability Today

The responsibility for meeting the need for reliable electric supply in New York State belongs to the New York Independent System Operator (NYISO), a state-chartered non-profit entity that has operational control over the electric transmission in the state and dispatches generation resources at 5-minute intervals every hour of every day to match customer demand to electric supply. The existing portfolio of supply resources, which was built up over decades, includes a variety of resource types, including: natural gas-fired plants (many with liquid fuel backup), nuclear plants, large dispatchable hydro plants, smaller 'run of river' hydro plants, on-shore wind turbines, solar photovoltaic plants, energy storage (pumped hydro and, increasingly, chemical batteries like lithium ion), and transmission ties to neighboring regions that allow the NYISO to import out-of-state power when it is available and/or economic to do so. With these resources and the transmission system, the NYISO has an excellent history of meeting the supply needs

[1] The Utility Consultation Group (UCG) is a voluntary association of electric and gas utilities in New York State seeking to reliably and cost-effectively achieve the goals of the Climate Leadership and Community Protection Act. The participating utilities include: Consolidated Edison Company of New York, Inc.; Central Hudson Gas and Electric, Inc., The Municipal Electric Utilities Association of New York State; National Fuel Gas Distribution Corporation.; National Grid; New York State Electric and Gas, Inc.; Orange and Rockland Utilities, Inc.; and Rochester Gas and Electric, Inc.

of customers across the state. Critically, many of the resources available to the NYISO today are dispatchable: they can be called on as needed and dispatch per instructions from the NYISO. Some resources, however, due to the natural intermittency of their energy source, are not dispatchable, including wind turbines and solar photovoltaics. These non-dispatchable resources are expected to make up an increasing portion of the overall energy supply portfolio to meet the goals of the Climate Leadership and Community Protection Act (CLCPA). Reliable supply of electricity will grow increasingly important in the future as the state moves to expand electrification in transportation and heating sectors. And increasingly severe weather events, including stronger storms, longer, hotter heat waves, and cold snaps, will put increased pressure on both generation and transmission assets. Due to this confluence of changes, it will be critical to ensure that reliable electric supply in the future is ready to meet the increasing demand for it. This whitepaper is a case study that examines recent supply availability and its real-world impacts in New York during what is traditionally one of the coldest months of the year.

Electric Market Operations – January 2022– New York

January 2022 was a period of sustained cold temperature conditions throughout New York State, the Northeast United States and Canada. Reinforcing the severity of the monthly weather pattern, during January 2022, New York State issued ten (10) weather-related statewide press releases. The press releases revealed that no region of the state was spared from the extreme weather events and conditions. In addition, the National Weather Service website, under ***Observed Weather,*** provides additional granular information about the monthly weather conditions.

System Condition – Load / Supply Overview

The NYISO peak hourly load demand during January 2022 was 23,237 MW, which occurred on Tuesday, January 11th at 5:00 pm. This compares with the all-time winter peak load demand of 25,738 MW, which occurred on Tuesday, January 7, 2014, at 6:00 pm. Energy prices were high throughout New York and neighboring RTOs/ISOs (New England, PJM, Hydro/Quebec/Ontario) due to higher electric demand driven by the sustained winter weather and higher commodity (fuel) prices. Importantly, this was the first winter since the mid-1970's where the Indian Point nuclear facility Units 2 & 3 were not in operation as they were retired in Spring of 2020 and 2021, respectively. The Indian Point supply reduction of 2000MW of baseload generation supply was replaced by other generation resources in the system, such as wind, solar, natural gas, and oil. Hydro and nuclear resources are normally considered baseload generation that are dispatched daily throughout the year.

As **Figure 1** illustrates, the State's generation supply in January 2022 was dominated by dual fuel (oil/natural gas), nuclear, hydro, and natural gas facilities. Wind and other renewable resources accounted for only approximately 5% of total generation within New York State during the month.

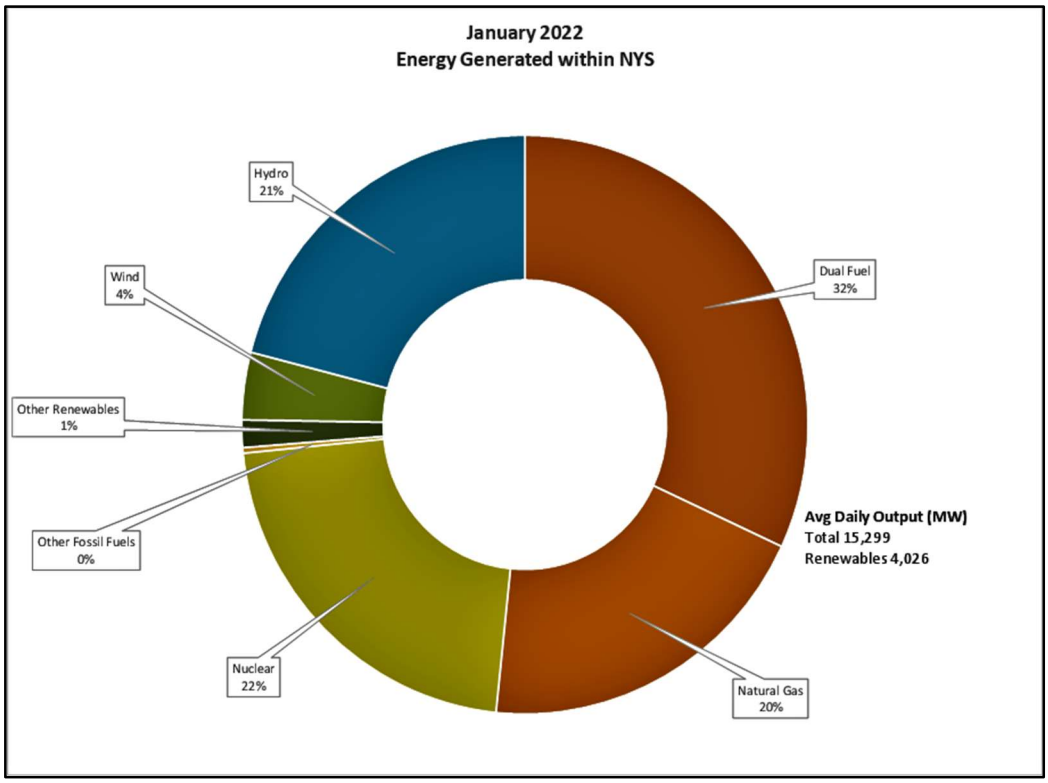


Figure 1: Graph showing generation mix by resource type and percentage within New York State.

The daily real-time fuel mix cart and supporting historical files are available here - https://www.nyiso.com/real-time-dashboard

Daily Intermittent Resource Wind Performance – January 2022

The chart below, **Figure 2**, illustrates the daily wind generation levels by NYISO zone. The NYISO reported low wind generation levels, below 5 GWhs per day, on eight (8) of the thirty-one (31) days in January 2022, including multi-day periods on January 2 & 3 and January 13, 14 and 15. This equates to 25% of the days for the January 2022 period experiencing low wind generation. The NYISO average daily demand sendout was 451 GWh/day in January 2022 per the January 2022 Market Operations Report, therefore, on days where wind generation was 5 GWhs or less; the wind contribution was only approximately 1.1% based of the average daily demand sendout.

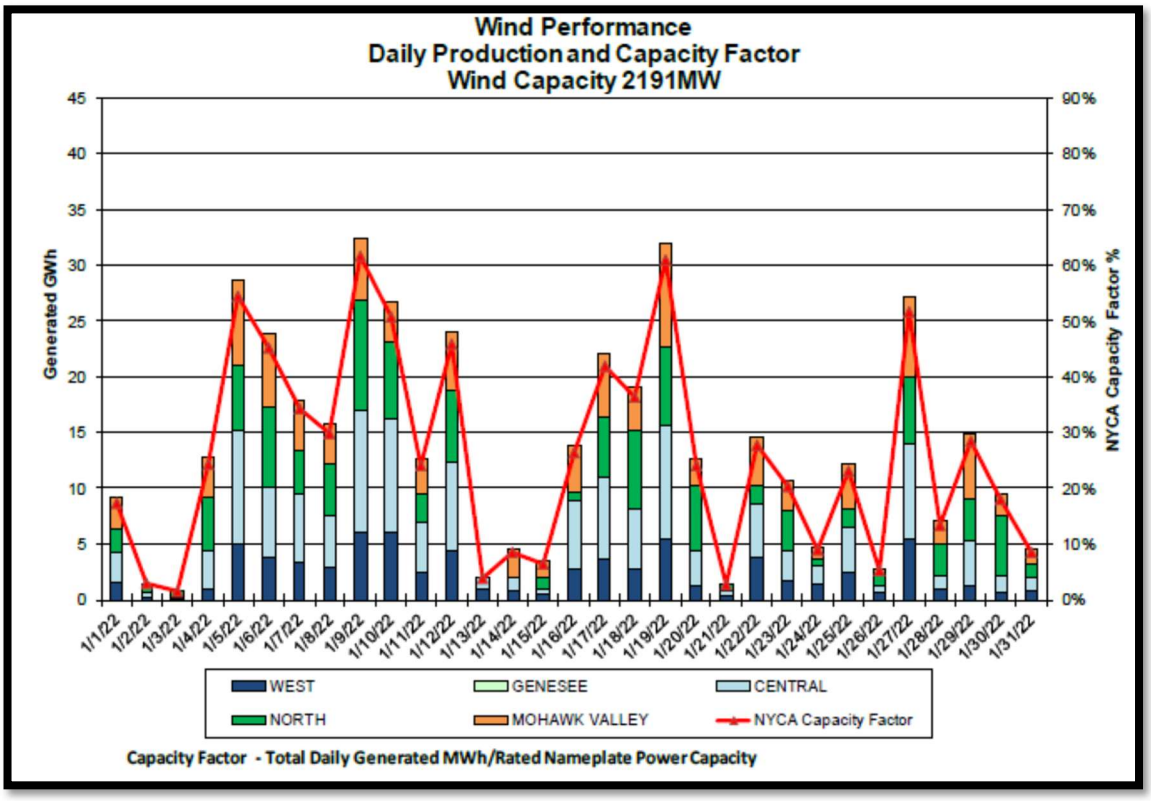


Figure 2: Wind performance by region in NYS for January 2022.

Source – NYISO January Operations Report presented at the February 16, 2022, Business Issues Committee Working Group

Daily Intermittent Resource Solar Performance – January 2022

Figure 3 below illustrates similar information about daily production of Behind the Meter (BTM) solar generation during the January 2022 period. Solar generation experienced low production during the month including a consecutive three-day period, January 1-3, where total daily production was equal to or less than 2 GWh. In total, solar production was 2 GWh or less during eight (8) days during January or approximately 25% of the month. NYISO average daily demand sendout was 451 GWh/day in January 2022 per the January 2022 Market Operations Report, therefore, on days where solar generation was 2 GWhs or less; the solar contribution was only approximately .04% based on the average daily demand sendout.

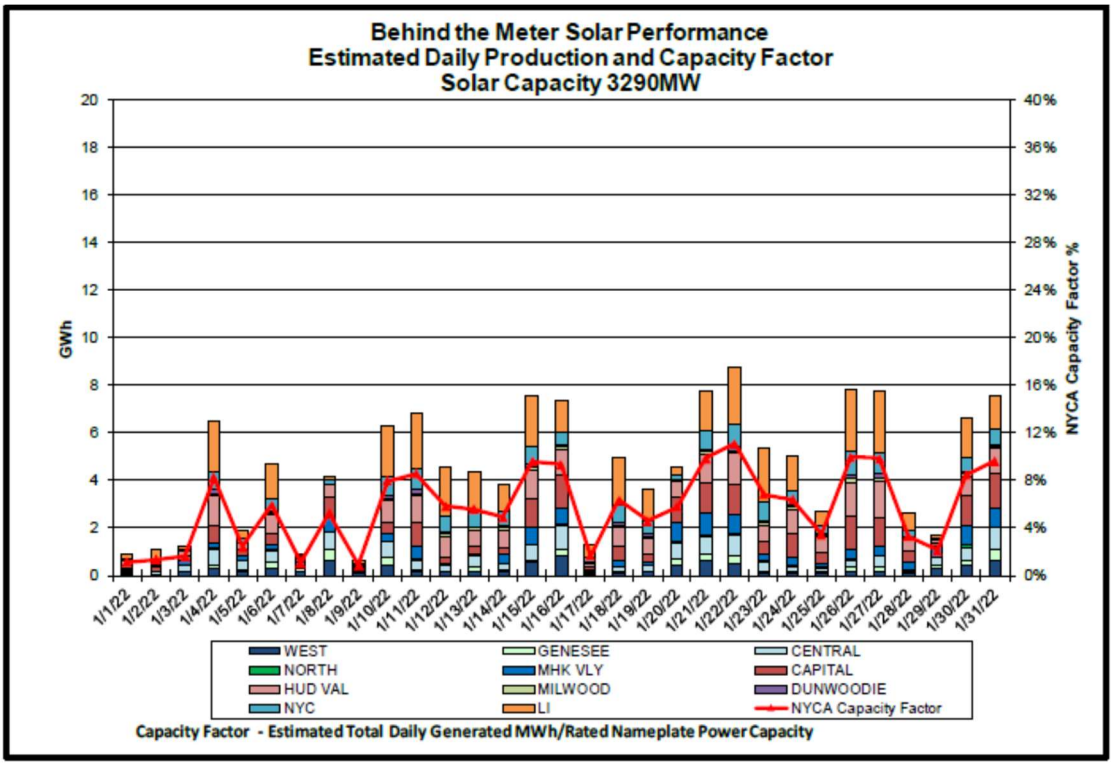


Figure 3: Behind the Meter solar performance for various NYS regions in January 2022.

Source – NYISO January Operations Report presented at the February 16, 2022, Business Issues Committee Working Group

Combined Wind & Solar Intermittent Generation - January 2022

Figure 4 illustrates the combined wind and solar generation of 10 GWh or less occurred on seven (7) of the thirty-one (31) days; approximately 22% of the days in the January 2022 period. In addition, consecutive day low combined generation was experienced on January 2 & 3, and January 13-14, respectively. NYISO average daily demand sendout was 451 GWh/day in January 2022 per the January 2022 Market Operations Report, therefore, on days where combined wind & solar generation was 10 GWhs or less; the combined wind & solar contribution was only approximately 2.2% based on the average daily demand sendout.

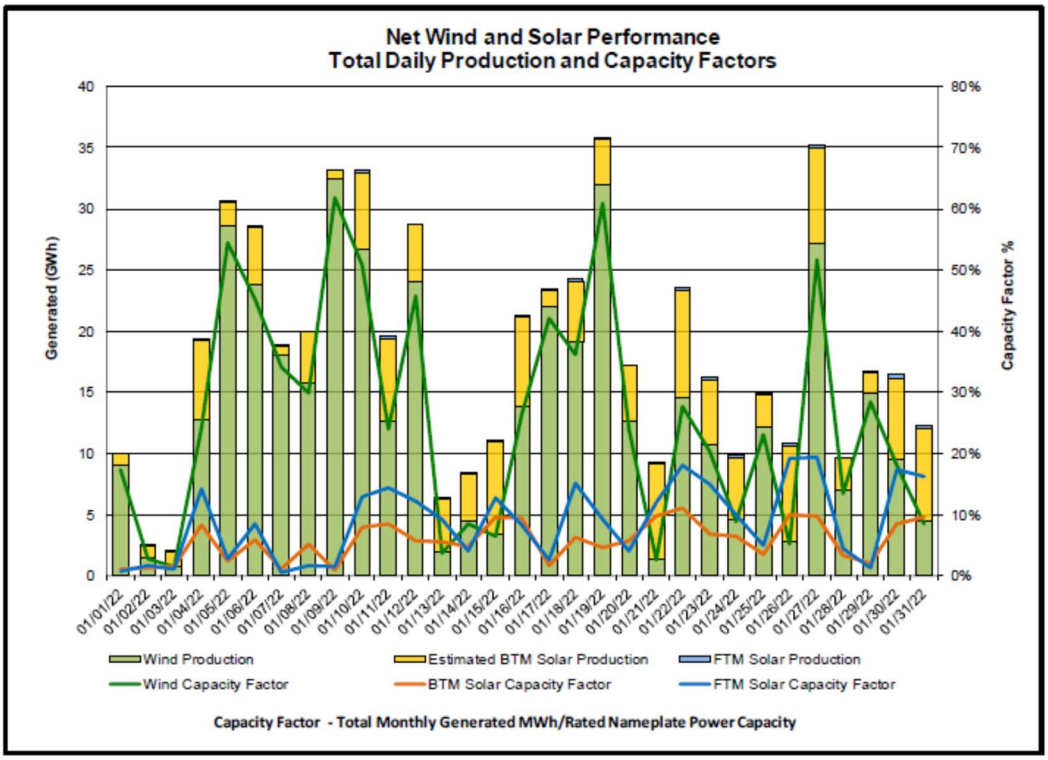


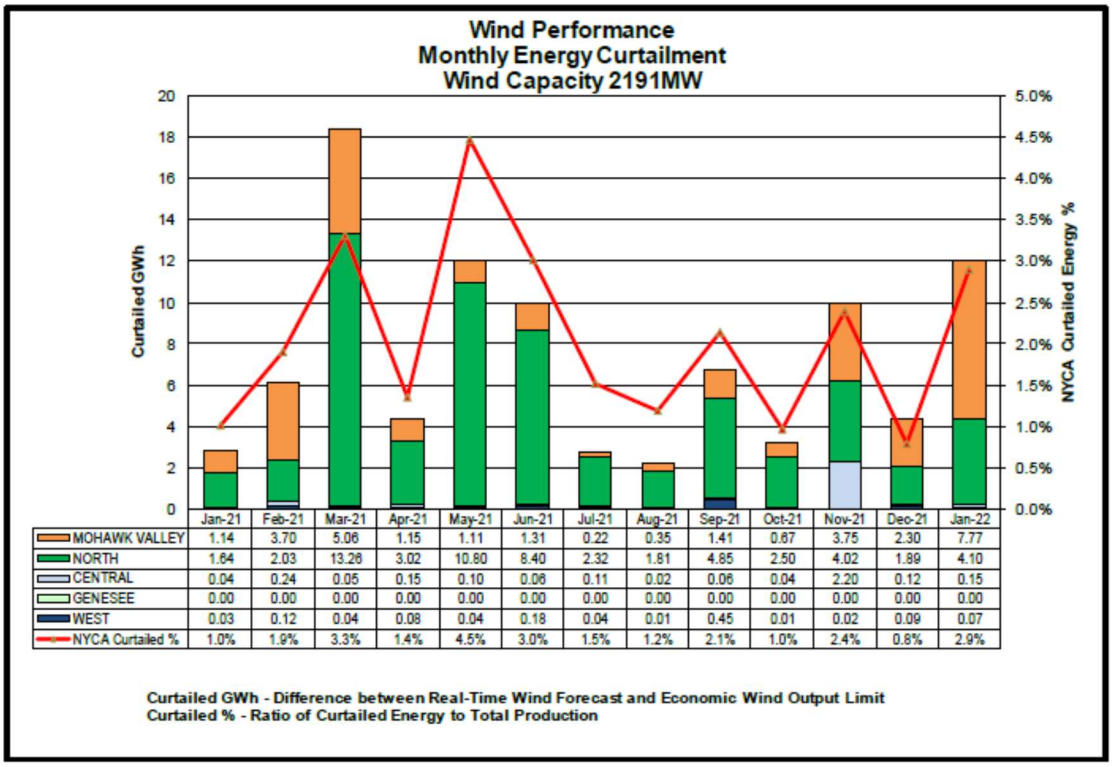
Figure 4: Graph showing net wind and solar performance for January 2022 in NYS.

Source – NYISO January Operations Report presented at the February 16, 2022, Business Issues Committee Working Group

The combined performance statistics provide a real-time indicator of the variability of intermittent resources. A core reliability and public safety question is: in the future, what resources will be available and utilized during low periods of wind and solar generation? During January 2022, the production gap in New York was filled by increased output from natural gas and fuel oil generation, and/or energy imports from neighboring control areas. Due to this intermittency variability, there is a long-term need for MW – to - MW backup requirement of a dispatchable generation resource.

Need for Enhanced Distribution and Transmission Expansion - Renewable Energy Curtailment – January 2022

Substantial infrastructure investment on both the distribution and transmission (bulk power) systems will be necessary. This need will be created by the proposed increased electrification of the building heat and transportation sectors, and the need to interconnect new renewable energy resources throughout the New York State electric grid. During January 2022 about 12 GWhs or 3% of renewable generation was curtailed due to system constraints. More importantly, **Figure 5** also provides an annual snapshot demonstrating that each month in the past year experienced some level of renewable energy curtailment. The renewable requirements in the CLCPA are far more aggressive than the current renewable energy supply portfolio. Curtailments of these resources will only become more pronounced unless the distribution and transmission buildout is carefully coordinated and sequenced with increased access to zero carbon dispatchable resources and other important CLCPA initiatives.



	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22
MOHAWK VALLEY	1.14	3.70	5.06	1.15	1.11	1.31	0.22	0.35	1.41	0.67	3.75	2.30	7.77
NORTH	1.64	2.03	13.26	3.02	10.80	8.40	2.32	1.81	4.85	2.50	4.02	1.89	4.10
CENTRAL	0.04	0.24	0.05	0.15	0.10	0.06	0.11	0.02	0.06	0.04	2.20	0.12	0.15
GENESEE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WEST	0.03	0.12	0.04	0.08	0.04	0.18	0.04	0.01	0.45	0.01	0.02	0.09	0.07
NYCA Curtailed %	1.0%	1.9%	3.3%	1.4%	4.5%	3.0%	1.5%	1.2%	2.1%	1.0%	2.4%	0.8%	2.9%

Figure 5: Graph showing monthly energy curtailment over the 2022 calendar year for NYS.

Source – NYISO January Operations Report presented at the February 16, 2022, Business Issues Committee Working Group

Considerations – Going Forward

- The real-life observed availability of intermittent generation in January 2022 underscores the importance of implementing the CLCPA transition in a measured manner to ensure system reliability and public safety are maintained. Coordinated optimization of the electric and gas energy systems and maintaining flexibility in technology development will facilitate meeting CLCPA requirements while supporting continued high levels of energy reliability.
- As demonstrated in January 2022, intermittent generation can sometimes be only minimally available for consecutive multiple day periods. Dispatchable backup resources will be necessary on a MW-to-MW basis to cover both in-day and extended day supply shortfalls.
- Resource diversity mitigates the risk that the unavailability of a particular resource type impacts reliability. The existing portfolio of electric supply has significant resource diversity, supporting existing high levels of reliability. Supporting resource diversity, increasing investment in adequate transmission and distribution, and providing access to ample dispatchable backup generation are all critical actions that will ensure system reliability and public safety are maintained.
- While many forms of zero-carbon dispatchable electric supply exist, all come with limitations, including cost, physical space requirements, technology maturity, or policy preferences that would limit use (e.g., new nuclear facilities). Addressing these limitations

and achieving the benefits of fuel diversity in the future will require technology research and development. A zero-carbon future can most reliably be achieved by allowing all technology options to be considered, including use of the existing gas system to transport low- and no-carbon energy.

- New York is expected to become a winter peaking electric grid in the mid-2030's per multiple NYISO reports performed by the Brattle Group and Analysis Group, as well as the CLCPA Draft Scoping Plan. This transition to a winter peaking system is driven heavily by the electrification of the transportation and building sectors and will result in a need for additional generation supply capable of reliably operating during future winter periods.

The Gas System Transformation: Achieving GHG Reductions While Keeping All Options in Play for the Benefit of New Yorkers

New York's Gas System Can Help Overcome Decarbonization Challenges

The Climate Action Council's Draft Scoping Plan calls for substantial downsizing and decommissioning of much of the gas system, with virtually no mention of the ability of that system to play a constructive role in the implementation of the Climate Leadership and Community Protection Act (CLCPA). Rather than recommending decommissioning substantial portions of the gas system that supplies 35 percent of the state's energy while decarbonization technologies are being deployed and evaluated, the Utility Consultation Group (UCG) makes the following recommendations:

- A pathway that leverages existing gas infrastructure investments to achieve decarbonization is likely to be a more cost-effective, lower risk way to achieve emissions reductions called for by the CLCPA, while supporting overall energy system reliability.
- The gas system is already helping the state reduce greenhouse gas (GHG) emissions and should play an integral role in overcoming the implementation challenges of decarbonization. While the Climate Leadership and Community Protection Act (CLCPA) GHG emissions targets will require a significant transformation of New York's energy systems and customer energy usage, there must be a focus on maximizing the efficiency of gas consumption while leveraging existing infrastructure to flow lower and zero carbon alternatives.
- The State's first focus in the gas transformation effort should be on increasing the efficiency of customer energy use, including gas use. Using existing gas networks to help meet CLCPA emissions targets will also require decarbonizing the energy sources that flow through the gas system, understanding geographical and regional differences – including differences between upstate, downstate, rural and urban areas, and coordinating the optimization of gas system use with the electric system to ensure service reliability and promote emissions reductions in a way that most benefits the State and its residents.
- Taking steps to eliminate emissions is one of the most impactful ways the State can mitigate climate change. Many efforts underway today by gas utilities reduce or eliminate leaks. For example, safety investments in the system have increased public safety while also dramatically reducing emissions and should be continued.

"Making use of the [US natural gas pipeline] infrastructure already in place could offer a prime route for speeding up and cost-effectively making the considerable changes needed to fully decarbonize the energy sector – while also enabling a just transition for communities that have invested in and rely upon these systems."

Columbia University's Center on Global Energy Policy

Newton Creek Wastewater Treatment Plant
Credit: NYC DEP

- The clarity around the definition of Disadvantaged Communities (DACs) that is emerging from the Climate Justice Working Group is appreciated. Many UCG members are already evaluating the DAC census tracts and how existing and new programs can target these areas and customers.
- The biogenic origins of sustainably sourced renewable natural gas (RNG) should be recognized for their benefits to the environment as they do not increase global warming. They provide a market for a bioeconomy and enable large emissions reductions of GHGs from current agricultural waste sources. The use of sustainable RNG in the transportation, industrial and building sectors does not increase the State's GHG emissions and the CO2 portions of these emissions should hold no value.

The Gas System Transformation:

Achieving GHG Reductions while Keeping All Options in Play for the Benefit of New Yorkers

Report Date – May 23, 2022

By The Utility Consultation Group[1]

Key Insights

The December 30, 2021 draft Scoping Plan chapter devoted to the Gas System Transition envisions a diminishing role for the gas distribution assets in the State and calls for a substantial downsizing and decommissioning of much of the gas system, with virtually no mention of the ability of that system to play a constructive role in the implementation of the Climate Leadership and Community Protection Act (CLCPA). Rather than recommending to decommission substantial portions of the gas system while decarbonization technologies are being deployed and evaluated, the Utility Consultation Group (UCG) recommends as follows:

- The gas system is already helping the state reduce greenhouse gas (GHG) emissions and should play an integral role in overcoming the implementation challenges of decarbonization. While the Climate Leadership and Community Protection Act (CLCPA) GHG emissions targets will require a significant transformation of New York's energy systems and customer energy usage, there must be a focus on maximizing the efficiency of gas consumption while leveraging existing infrastructure to flow lower and zero carbon alternatives.

- Therefore, the State's first focus in the gas transformation effort should be on increasing the efficiency of customer energy use, including gas use. Using existing gas networks to help meet CLCPA emissions targets will also require decarbonizing the energy sources that flow through the gas system, understanding geographical and regional differences – including differences between upstate, downstate, rural and urban areas, and coordinating the optimization of gas system use with the electric system to promote emissions reductions in a way that most benefits the State and its residents.

- Taking steps to eliminate emissions is one of the most impactful ways the State can mitigate climate change. Many efforts underway today by gas utilities reduce or eliminate leaks. For example, safety investments in the system have increased public safety while also dramatically reducing emissions, and should be continued.

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[1] The Utility Consultation Group (UCG) was formed in December of 2020 in connection with the Climate Action Council (CAC or Council) to provide expertise to the Council and act as a resource for its Advisory Panels as they develop recommendations for the Council. The participating utilities include: Consolidated Edison Company of New York, Inc.; Central Hudson Gas and Electric, Inc., The Municipal Electric Utilities Association of New York State; National Fuel Gas Distribution Corporation; National Grid; New York State Electric and Gas, Inc.; Orange and Rockland Utilities, Inc.; and Rochester Gas and Electric, Inc.

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Focus on Efficiency First

Regardless of the energy use case being considered (transportation, heating buildings, existing uses, etc.), plans to achieve CLCPA goals should always focus first on increasing the efficiency of energy use by customers. Energy efficiency is most often the least-cost method of achieving carbon reduction for buildings that use electricity, gas, and, in the future, advanced fuels like RNG and hydrogen. While industrial learnings and technical breakthroughs will create savings over time, energy efficiency can create savings more quickly by enabling customers to do more with less. Energy efficiency is also typically a "no-regrets" solution because by making all energy consumption more efficient, the State will lower the cost of any of the pathways it is considering for decarbonization. Improved lighting and modern appliances can lessen the bill impacts to customers of volatile electric generation fuel costs. Likewise, an air-sealed, well-insulated building has a reduced carbon footprint regardless of its heating fuel type, with a lower cost for replacement equipment. In the case of electrification, energy efficiency measures can potentially lower the costs of the needed generation, transmission, and distribution required to meet higher electric loads as well. Energy efficiency investments provide GHG reduction immediately and are also a means of giving customers greater control over the amount of energy used and its impact on their energy bill.

The UCG does not support the draft Scoping Plan's recommendation to eliminate incentives for customers who are considering the option of installing high-efficiency gas heating equipment. Removing these incentives now while lower cost, lower efficiency options are still widely available in the market would be counterproductive and undermine programs that consistently deliver substantial reductions to carbon emissions each year. Instead, the UCG recommends that ***all*** energy efficiency programs be expanded, increasing funding for programs that address building envelope sealing and insulation – which reduces energy use regardless of fuel type – and exploring the use of dual-heating options (high-efficiency furnaces used in combination with electric heat pumps). The state should also support robust utility R&D programs focusing on GHG reduction for both gas and electric sectors, including low-carbon fuels research and carbon-reducing gas heat pumps and other emerging technologies, to maximize the number of pathways open to customers to reduce emissions.

In addition to taking steps to reduce energy use through efficiency, the State should also consider eliminating incentives that inadvertently encourage additional energy use. One example is elimination of tariff features that offer lower rates at higher levels of volumetric consumption, such as declining block rates.

Acknowledging Customer Preferences

The electric utilities in partnership with NYSERDA continue to support substantial expansion of electric heat pumps through the NYS Clean Heat Program. Con Edison, O&R and Central Hudson are experiencing demand for heat pump program incentives that is far greater than anticipated when budgets for these programs were first established. This success is possible, in part, due to a large number of potential "low-hanging fruit" project opportunities. Customers who are converting from high-cost delivered fuels, those who already have adequate distribution ducts, or those with otherwise easy-to-electrify buildings are more likely to participate during the early phase of the program. As a result, heat pump adoption experience to date may not adequately reflect the barriers to achieving majority adoption of the technology. Central Hudson's "transportation mode alternative" non-pipeline alternatives, which requires 100% of customers in a targeted neighborhood to convert to heat pumps and decommission all gas equipment in the home, exemplifies the challenges. Due to the nature of the TMA's, these customers are selected by the utility based on their location and are not necessarily customers who would have chosen to participate in a heat pump program or respond to recruitment efforts. Even when the utility offered to cover the full conversion cost, new appliances, and provide cash bonuses, less than half of customers were willing to forego their gas service. This experience suggests that persuading all, or even most, customers to electrify their homes may present significant challenges.

The motivations of customers must be better understood than they are today and should be further studied to prepare for deeper electrification. Successful decarbonization will require a measured approach that creates customer demand for new heating technologies while offering flexibility and options for customers, avoiding mandates in favor of market transformation. Goals that reflect the needs of different regions should also be considered as current iterations of traditional electric heat pumps have been shown to be less effective in colder climate regions of the State.

Disadvantaged Communities and the Gas Transformation

The UCG appreciates the additional clarity around the definition of DACs that is emerging from the Climate Justice Working Group. The UCG is already evaluating the DAC census tracts and how existing and new programs can target these areas and customers. Utilities are already using the interim DAC criteria to help 'baseline' the amount of clean energy program investment happening in these areas. After the interim criteria are finalized, additional analyses will occur as the state seeks to ensure it complies with the requirement to deliver 40% of clean energy benefits to DACs.

Leveraging the Gas System Is Cost-Effective and Supports Reliability and Resiliency

New York has a vast gas transmission and distribution network that efficiently brings large quantities of energy directly to end users. This network is comprised of approximately 50,000 miles of pipeline that supplies 35% of the energy consumed by the state.[2] Decommissioning of the gas system and a singular focus on near-complete electrification of energy consumption in the State eliminates the opportunity to leverage this high-value asset as part of a cost-effective approach to achieving GHG reduction targets. Fully decommissioning the gas system while shifting electricity production to intermittent renewable resources would also require significant additional investments in the electric

[2] Patterns and Trends – New York State Energy Profile – "Primary Consumption" data tables.

system to continue providing access to energy with high reliability and resiliency, and those additional investments will likely have an impact on electric utility costs. Any changes or alternatives to the gas system must be considered carefully and holistically with regard to impacts on cost and reliability and should be coordinated by the Public Service Commission. Columbia University's Center on Global Energy Policy, in its study I*nvesting in the US Natural Gas Pipeline System to Support Net-Zero Targets* (April 2021), concluded that "making use of the [US natural gas pipeline] infrastructure already in place could offer a prime route for speeding up and cost-effectively making the considerable changes needed to fully decarbonize the energy sector – while also enabling a just transition for communities that have invested in and rely upon these systems." Acknowledging concerns voiced by some that continued use of gas infrastructure may work against the energy transition, the study notes that:

> "…retrofitting and otherwise improving the existing pipeline system are not a choice between natural gas and electrification or between fossil fuels and zero-carbon fuels. Rather, these investments in existing infrastructure can support a pathway toward wider storage and delivery of cleaner and increasingly low-carbon gases while lowering the overall cost of the transition and ensuring reliability across the energy system. In the same way that the electric grid allows for increasingly low-carbon electrons to be transported, the natural gas grid should be viewed as a way to enable increasingly low-carbon molecules to be transported."

The NYISO recently recognized in its Comprehensive Reliability Plan that "[a]s we move to a zero-emissions grid, it's critical that we understand how the growth of intermittent resources and extreme weather could impact the ability to maintain reliability of the New York bulk electric system." According to the draft plan's Integration Analysis, greater reliance on renewable electric generation resources will require clean dispatchable sources of energy to fill the gap and ensure reliability.[3] Utilization of existing energy delivery or storage systems, such as a decarbonized gas delivery system to provide fuel to dispatchable electric generation, can support overall energy system reliability while progress is made to advance dispatchable, clean energy resources such as long-duration electric storage and green hydrogen. The increased frequency of severe weather events and the vulnerabilities of above-ground energy infrastructure can be addressed through various resiliency measures, including use of existing underground gas distribution systems to deliver low-carbon fuels.

The Gas System Can Transport Advanced Fuels to Reduce Emissions

While efforts to substantially reduce GHG emissions associated with the gas system are pursued, it is prudent to keep options available to ensure a smooth clean energy transformation and to gradually phase in use of lower-carbon fuels to facilitate advancement of zero carbon technologies such as green hydrogen and geothermal. The gas distribution system can and should be utilized as one of a number of decarbonization tools available to the State, particularly (but not solely) for certain industries and certain building types that cannot electrify operations or cannot do so in a cost-effective manner. Keeping the gas system available for those customers while decarbonizing the fuel it

[3] Draft Scoping Plan, Section 1, p. 48.

transports in order to meet the CLCPA GHG emissions limits will be good for New York's economy and the environment.

One way the gas system can contribute to emissions reductions while mitigating costs and strain on the electric grid is the pursuit of a hybrid dual-energy pathway that utilizes the existing storm-resistant underground natural gas network to deliver net-zero and no-carbon fuels like RNG and hydrogen. Importantly, hybrid heating systems, for example, are more effective in colder climate areas of the State and can reduce emissions by more than 90% when combined with energy efficiency measures and decarbonization of upstream emissions.[4]

Ongoing technological advances and studies will provide additional insight into the ability to use low- or zero-carbon resources in sufficient quantities. RNG is a proven technology that can be used to provide carbon-neutral, and in some cases carbon-negative, energy to New Yorkers. RNG can play an important role as part of the clean energy transformation because it can be deployed quickly to reduce emissions in the waste, agriculture and related sectors and is available in increasing quantities in and around the State. In January of this year, the SUNY College of Environmental Science and Forestry issued a report that concludes that both biomass-based diesel and RNG "have the potential to make meaningful contributions to New York State's climate and human health targets."[5]

Hydrogen is also widely considered a potentially significant contributor to decarbonization efforts. The State is already developing its hydrogen strategy in concert with the National Renewable Energy Laboratory and the Center for Hydrogen Safety, among other groups, and the Governor recently announced the State's intention to collaborate with New Jersey, Connecticut and Massachusetts to secure a portion of the $8 billion the federal government has earmarked for regional hydrogen hubs. Utilities in New York (as well as several other states and countries) are currently engaged in a thorough review of the use of their systems to transport and store hydrogen. In December 2021, National Grid announced a new joint project with the Long Island Town of Hempstead to build one of the largest clean hydrogen facilities in the U.S; this HyGrid Project will demonstrate hydrogen's potential to decarbonize the fuel transported by the gas system by blending green hydrogen into the gas stream serving customers on Long Island.

There are also other cost-effective opportunities to reduce the GHG footprint of the gas provided to customers. UCG members are piloting their ability to buy certified natural gas, which is gas demonstrated to have been produced at wellfields using techniques that substantially reduce methane emissions to emission intensities typically less than 0.1%. This low-emission certified gas could reduce upstream emissions by more than 85%.[6] The Public Service Commission recently approved a certified natural gas pilot for Orange & Rockland, and other utilities have proposed pilot projects. The leading certified natural gas programs continuously monitor the wellheads – and increasingly more portions of the upstream supply chain - to identify and eliminate methane leaks quickly. These process changes are easier to implement rapidly than many other decarbonization actions and reduce the GHG footprint of all gas customers, and are even more effective at reducing GHG impacts under

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[4] Guidehouse, Inc., *Meeting the Challenge: Scenarios for Decarbonizing New York's Economy* (February 19, 2020), available at *https://guidehouse.com/-/media/www/site/insights/energy/2021/meeting-the-challengescenarios-for-decarbonizing-n.pdf.*

[5] *A review of the scientific literature on greenhouse gas and co-pollutant emissions from waste- and coproduct-derived biomass-based diesel and renewable natural gas,* State University of New York College of Environmental Science and Forestry, Bioeconomy Development Institute, January 2022.

[6] According to the scientific journal *Nature*, if all oil and gas operators focused on eliminating methane emissions, temperatures could be reduced by 0.25 degrees by 2050, making a significant dent in our climate goals. *Nature*, "Control methane to slow global warming – fast," published on August 25, 2021, accessed at https://www.nature.com/articles/d41586-021-02287-y.

the 20-year GHG impact analysis required by the CLCPA. Certified gas may be one of the most cost-effective ways to reduce the State's GHG emissions in the near-term and would be valuable in a portfolio of decarbonization actions.

Sensible Emissions Accounting for RNG Will Facilitate GHG Reduction

The State should modify its emissions accounting to accurately capture the lifecycle of the carbon content in RNG, as opposed to the current method of simply equated RNG to fossil natural gas. In current Gross emission accounting plans[7], New York is stating that RNG's combustion emissions will be accounted for as if it were the same as fossil natural gas. This is a change from the prior June 2020 proposed accounting framework that listed RNG emissions at about zero. This change in RNG accounting is inaccurate and flawed. New York is using the EPA emission factor of 116.6 pounds of CO_2 equivalent per every MMBtu of RNG burned (116.6 lbs/MMBtu), but this is the EPA emission factor for fossil natural gas use, not for RNG.

Table 1: NY Evolution of Net and Gross Accounting of RNG Combustion Emissions (lbs/MMBtu CO_2e)

	June 2020 Accounting	Draft CLCPA Accounting
Net Emissions	~0	~0
Gross Emissions	~0	117

RNG is produced from biogenic carbon, which is carbon from natural carbon cycles. This differs from fossil gas that is derived from fossil carbon. Most RNG is derived from sources that are currently emitting biogenic methane (CH_4) and carbon dioxide (CO_2) into the atmosphere, sources like landfills, wastewater treatment plants, agricultural waste, and other organic decomposition sites. By offering a beneficial means to capture and use these current emissions, RNG is a valuable renewable carbon source. Since RNG is a similar fuel to fossil natural gas in that RNG is fully compatible with existing distribution systems and energy consumption appliances, it can displace the need for fossil fuels. RNG reduces emissions and reduces the use of fossil fuels, and these attributes must be accounted for in New York's clean energy plans.

The CLCPA Gross accounting method of claiming RNG is the same as fossil gas is not consistent with the United Nation's International Panel on Climate Change (IPCC) and other globally accepted emission reporting standards like the CDP (formally known as the Climate Disclosure Project). In both the IPCC and CDP, RNG combustion accounts for no additional carbon dioxide emissions in their reporting guidelines.[8, 9] Biomass use also reduces emissions in the Regional Greenhouse Gas Initiative (RGGI), of which New York is a member.[10] There is broad agreement that RNG use does

[7] Department of Environmental Conservation, 2021 Statewide GHG emissions report. Also, https://climate.ny.gov/-/media/Migrated/CLCPA/Files/2021-07-22-CAC-Meeting-Presentation.pdf
[8] https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/2_Volume2/19R_V2_2_Ch02_Stationary_Combustion.pdf
[9] https://guidance.cdp.net/
[10] https://www.rggi.org/allowance-tracking/emissions

not add emissions across states, cities, and federal agencies because RNG is a beneficial biofuel and is recognized for its biogenic origins.[11, 12, 13, 14, 15, 16, 17]

We understand that RNG combustion emissions will be accounted for as zero emissions in the Net accounting, and we agree with the Net accounting methodology. It is unclear why the State would have two different emission factors for RNG in their Gross and Net greenhouse gas accounting. RNG is a sustainable biofuel and should be equally recognized as a renewable alternative in both Gross and Net accounting guidelines: ~0 lbs/MMBtu.

Safety Investments in the Gas System and Other Steps Are Continuing to Drive Down GHG Emissions

As a result of efforts by gas utilities to enhance public safety, GHG emissions from the gas distribution system itself have fallen dramatically, with further declines expected. UCG members understand that achieving CLCPA goals will eventually dramatically reduce the GHG impact of the gas system, but this transition will take a significant amount of time. During that time, we should continue our aggressive programs to minimize methane emissions. As responsible operators we are implementing aggressive leak detection and repair programs, damage prevention initiatives, using innovative methane capture technology within our operations to prevent venting, replacing remaining inventories of cast iron and unprotected steel pipe, and promoting the use of certified gas and RNG, all in an effort to prioritize elimination of methane emissions. The U.S. Government has recognized the leverage that reducing methane emissions can provide and has signed on to the Global Methane Pledge, and Congress has passed the PIPES Act enabling PHMSA to enact regulations that limit emissions. Utilities have also demonstrated their commitment to this by joining the EPA Methane Challenge, and consortiums to mitigate methane emissions in the gas value chain like One Future.

The U.S. Environmental Protection Agency released its inventory of U.S. GHG Emissions and Sinks in 2021, which shows that, at a national level, annual emissions from the gas distribution system declined 69% from 1990 to 2019. All of the major New York utilities have programs that contributed to these emissions reductions in New York. Since 2011 alone, the UCG members have reduced their GHG emissions by 38%, saving more than 400,000 metric tons of CO2e emissions over that time – equivalent to permanently eliminating the emissions from 8,000 automobiles. The utilities plan to continue these programs, resulting in ongoing significant GHG emissions reductions over time, as well as increasing safety and system reliability for customers.

The UCG agrees with language in the draft Scoping Plan that supports continued pipe safety investments and research and development for new leakage detection technologies. New York's utilities replace more than 500 miles of pipe annually, consistently survey their systems to detect leaks, and have effective programs in place to evaluate, prioritize and repair those leaks in an appropriate and expeditious fashion. From a methane emissions perspective, replacement, polyethylene plastic distribution pipes not only reduce methane leaks, they can also carry 100%

[11] https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98/subpart-A/section-98.3
[12] https://www.epa.gov/sites/default/files/2020-07/documents/lmop_rng_document.pdf
[13] https://www.ieabioenergy.com/iea-publications/faq/woodybiomass/biogenic-co2/
[14] https://www.arb.ca.gov/cc/reporting/ghg-rep/guidance/biomass.pdf?_ga=2.239461831.516273831.1650998953-356232427.1619707636
[15] https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65
[16] https://doee.dc.gov/service/greenhouse-gas-inventories
[17] https://www.oregon.gov/deq/FilterDocs/OregonGHGreport.pdf

hydrogen with limited upgrades. A majority of the utilities anticipate replacing all of their systems' leak-prone pipes before 2030. A number of gas utilities are starting to use methane capture equipment when doing gas system construction, further reducing methane emissions.

Other actions by UCG members have also enhanced public safety while reducing GHG emissions as a co-benefit. For example, Con Edison has started mass deployment of remote methane detectors to monitor methane enabled by the AMI communication infrastructure. Con Edison is the first utility in the world to monitor gas leaks with this device, has installed approximately 117,000, AMI-enabled Natural Gas Detectors, and plans to install these detectors in virtually every customer premise by 2025. As of May 2022, Con Ed has received and responded to over 1,000 potential leaks at homes or businesses from a detector alarm. This technology is proven to identify these leaks much earlier than relying on odor calls, drastically reducing response time from the company's Gas Emergency Response Control Center.

Finally, all utilities and the Public Service Commission continue to strongly promote contractor damage prevention via the infrastructure mark-out program which requires contractors to make notification before they do underground construction, and for areas to be marked out with their underground infrastructure. In addition to increasing public safety, contractor damage prevention programs on the gas system have a co-benefit of reducing accidental methane emissions.

Impact on Real Estate Values

A final area that requires additional analysis is what impact the draft Scoping Plan's focus on full electrification as the preferred decarbonization pathway will have on new and existing real estate property values. The policy has the potential to impact the costs of new construction and perceived values of existing homes that are in need of conversion. The draft Scoping Plan does not consider any of these direct impacts.

Conclusion

The UCG supports New York's decarbonization goals while recognizing significant uncertainty arising from the need to achieve a delicate balance of reliability, affordability, resiliency, efficiency, customer choice and a just transition. The best pathway for decarbonizing New York's economy is not known today. Given this uncertainty, the State should keep all options open, including aggressive pursuit of energy efficiency initiatives that improve the viability of all CLCPA pathways by reducing future upstream costs and capital expenditures and leveraging existing investments in the gas system to achieve CLCPA goals through methane emissions reductions and decarbonization of the gas transported to customers. Continuing safety investments that advance the already significant emissions reductions in the gas system and pursuing upstream supply options and advanced fuels like RNG, hydrogen and certified natural gas will facilitate these efforts. Decarbonized gas infrastructure can also meet the needs of multiple sectors, in addition to the hard-to-electrify customers recognized in the draft Scoping Plan and the long-duration zero-carbon dispatchable energy for electric generation and storage shown to be necessary by State modeling. The UCG members welcome a collaborative approach to adapting the gas system to carry low- and no-carbon fuels, working in concert with the electric system to help the State meet CLCPA goals.

Utilities are Willing and Capable Partners to Help Achieve CLCPA Goals

Utilities are Willing and Capable Partners to Help Achieve CLCPA Goals

Report Date – June 30, 2022

By The Utility Consultation Group[1]

Key Insights

- Utilities provide energy delivery services to virtually every resident and business in New York State, and have been doing so reliably and cost-effectively for more than a century.

- The vast majority of the energy infrastructure in the State was built by independent utilities, and those same utilities operate and maintain that complex energy infrastructure today.

- Beyond energy delivery, utilities also offer programs to help customers access clean energy, and provide assistance to the most economically-vulnerable customers. These programs are advancing critical clean energy resources, like energy efficiency, electric vehicles, and heat pumps (electric and dual-fuel systems). Utilities' knowledge of their infrastructure and relationships to their customers make them essential partners in the clean energy transition the Climate Leadership and Community Protection Act (CLCPA) requires.

- Utilities stand ready to do more, including: electric utilities building renewable generation and storage resources and making additional investments in the electric grid, utilities helping more customers adopt new clean energy technologies, transforming the gas system to deliver low- and no-carbon fuels, and developing thermal energy systems.

- Utility service is subject to State regulation, providing independent oversight of the costs, performance and future direction of the State's critical energy delivery systems. The New York State Public Service Commission (PSC) is well-positioned to continue coordinating and leveraging the State's utilities' capabilities for this important and challenging transformation.

- The new proceeding established by the PSC to track the implementation of the CLCPA, including an annual report by Department of Public Service Staff on progress, costs, and benefits of implementation, demonstrates the PSC's central role in achieving energy transformation in the State's regulated utility industry. In addition to the decarbonization pathway study required by the new CLCPA proceeding, a study of the interrelationships between the electric system and the gas system in serving customers' needs as both systems are being decarbonized should be considered.

[1] The Utility Consultation Group (UCG) was formed in December of 2020 in connection with the Climate Action Council (CAC or Council) to provide expertise to the Council and act as a resource for its Advisory Panels as they develop recommendations for the Council. The participating utilities include: Consolidated Edison Company of New York, Inc.; Central Hudson Gas and Electric, Inc., The Municipal Electric Utilities Association of New York State; National Fuel Gas Distribution Corporation; National Grid; New York State Electric and Gas, Inc.; Orange and Rockland Utilities, Inc.; and Rochester Gas and Electric, Inc.

The Role of Utilities Today

New York State's utilities serve over 20 million residents – almost every person in the State – providing safe and reliable energy delivery service for more than a century. Utilities provide access to essential services, and their prices, terms of service, and investment returns are all regulated. Utilities operate complex and technical energy systems – electric, gas and steam – around the clock, maintaining those systems to operate reliably. Utilities constantly monitor weather events and other conditions that would impact those systems, proactively planning for responses, and working to restore service rapidly when outages occur. Most utilities also offer a variety of programs related to their energy delivery service that add value to the commodity being delivered. These programs help their customers be more efficient in their usage, adopt beneficial new technologies, and provide additional economic assistance for the most vulnerable customers.

Utilities are woven into the fabric of the communities they serve. They employ more than 30,000 people in New York State, using highly skilled workers and providing good union jobs with technical training, health and retirement benefits, and the potential for career advancement. Utilities' call centers, customer offices and many support functions are also local, providing more union jobs and community benefits.

Utilities are also uniquely accountable and regulated in the people's interest by the PSC. The PSC's mandate is to "ensure access to safe, reliable utility service at just and reasonable rates," and its administrative processes, including public and open hearings and meetings to promote participation and weigh the needs of all stakeholders, provide transparency into changes that may impact these essential services. The PSC's oversight enables New York to implement nation-leading energy policy that considers many factors such as customer impacts, the continued reliability of energy systems, overarching goals such as the clean energy transition, and operational feasibility.

The State's Energy Infrastructure

New York's utilities have served its residents for over 100 years, constructing and modernizing most of today's energy transmission and distribution system, building the State's fleet of zero-carbon nuclear facilities as well as many of the conventional power plants that are currently relied on to provide reliable, uninterrupted power, and constructing 50,000 miles of gas pipeline infrastructure. More recently, from developing Advanced Metering Infrastructure to interconnecting renewable generation, utilities continue to invest on behalf of our customers to bring them new and innovative energy services.

Utilities Are Addressing Climate Change and Bringing Clean Energy to Customers Now

Because of their history, capability, and commitment to their customers and the State, utilities are critically important in CLCPA implementation to meet the law's targets while maintaining grid reliability and meeting the dynamic needs of our customers. As climate change increasingly impacts the State with more extreme weather, utilities have maintained and continue to modernize their storm-resistant underground gas delivery systems and have already been planning and building more resilient infrastructure. Utilities' new investments consider climate risks and enhance the resilience of our energy infrastructure for customers and stakeholders. The electric utilities are also capable of directly developing renewable power, storage, and the

transmission resources needed to meet CLCPA's targets, alongside other developers in the State.

Utilities inherently play a crucial role in CLCPA planning and implementation. They are responsible for some of the State's largest clean energy efforts. In just the past year, low and moderate income New York residents have benefitted from utility-led energy efficiency programs, with electric savings of 47,300 megawatt hours and gas savings of 633,600 million British Thermal Units, and annual greenhouse gas emissions reductions of approximately 55,500 metric tons of carbon dioxide equivalent. Gas distribution systems' leak-prone pipe replacement programs have prevented the release of over 400,000 metric tons of CO2e emissions since 2011, making gas systems safer and cleaner today and capable of transporting advanced fuels like renewable natural gas and hydrogen in the future. Utilities not only work at scale, but they also innovate: deploying nation-leading programs to install electric vehicle charging stations, helping animate the market for electric heat pumps, designing new consumer energy solutions that leverage AMI, planning and developing the future energy delivery networks needed for a decarbonized energy sector.

Utilities' deep knowledge of their systems and their unique ability to implement policy goals make them important partners in the clean energy transition. Utilities have installed over 7000 electric vehicle charging stations in their service territories, working to solve the "chicken or egg" electric vehicle infrastructure problem. Utility Clean Heat incentives are also reducing emissions while expanding the heat pump market across the state.

The State Should Leverage the Utilities to Do More to Help Meet CLCPA Goals

Electric utilities should be allowed to play a central role in building the transmission and renewable generation resources necessary to achieve the CLCPA's ambitious renewable generation and clean energy targets. Siting utility-owned energy storage systems at specific points in their service territory can relieve transmission congestion, provide peak load support, enhance system stability, accommodate higher renewables penetrations, and promote electrification. Moreover, allowing electric utilities to build and own renewables, which could provide benefits directly to low-income customers or customers in disadvantaged communities, can cost-effectively increase renewable penetration while also providing bill assistance to our most vulnerable customers. Electric utilities can add diversity and stability to the renewable generation supplier mix, and their strong credit ratings provide the potential to use lower-cost debt than private developers may be able to in order to create long-lived assets utility customers can benefit from for decades – at very attractive costs for customers after the assets are depreciated. Under pending legislation, utilities can also help decarbonize the State through direct ownership of thermal energy systems. The CLCPA's goals are ambitious enough that we need everyone to contribute.

Utilities are also proposing to do more today to decarbonize gas distribution systems. A number of different paths to decarbonization have already been proposed, including integrating renewable natural gas into the fuel mix, developing pilots and programs to purchase gas that is certified to be produced, processed and delivered with dramatically reduced methane emissions, incorporating hydrogen into the State's portfolio of clean energy fuels and developing carbon capture technologies. These actions should be supported by the State to continue driving down emissions associated with the gas network and the overall energy system.

Utilities are committed to giving customers access to the clean energy future the CLCPA envisions and can better help it succeed if they are provided greater opportunity for input into ongoing CLCPA implementation processes than have been provided to date. We continue to support the achievement of the CLCPA goals and can provide vital expertise and experience in helping the CAC and its subgroups understand the complexities of the existing systems and how to decarbonize the gas system with alternative fuels.

The energy system transition will be complex and must be done carefully to support safety (including public safety and safety of utility workers) and reliability in meeting customers' needs. New electric loads such as heat pumps and electric vehicle fast-charging stations require large amounts of energy quickly and may necessitate new ways of planning electric service. Electric reliability, always important, may become even more critical as the State begins to rely more on intermittent resources and pursues additional dispatchable resources. Utilities are ever focused on the reliability of their systems and plan and invest proactively to maintain continuous service for customers. The utilities' unique knowledge of their distribution systems makes them indispensable partners in meeting CLCPA targets.

The PSC recently initiated a proceeding in which it will track the implementation of the CLCPA. In addition to monitoring progress on bulk-power renewable energy, emissions from electric and gas systems, and costs and benefits achieved, the order initiating the proceeding highlights activities already being undertaken by the utilities that will be instrumental in achieving CLCPA goals, including: comprehensive energy efficiency programs for both gas and electric customers; building electrification programs; demand response programs for both gas and electric customers; transportation electrification offerings; clean energy alternatives to traditional infrastructure investments; alternative fuels; and bulk power renewable energy programs and transmission programs to facilitate renewable energy delivery in the State. The UCG appreciates and supports the aspect of the order requiring proposals of decarbonization pathways for the gas system. The UCG members believe that a fully integrated technical study that evaluates electrical system future needs coupled with the decarbonization and utilization of gas resources should be conducted to inform this important transition.

Carbon Pricing and Other Economy-wide Strategies

Carbon Pricing and Other Economy-wide Strategies

Report Date – July 1, 2022

By The Utility Consultation Group[1]

Key Insights

- Chapter 17 of the Climate Action Council's draft Scoping Plan identifies options for public input related to economy-wide strategies generally aimed at introducing a price for carbon emissions (i.e., "carbon pricing") or a clean energy supply standard to help achieve emissions reductions to meet CLCPA targets. The plan states that "a well-designed program could support economic development and innovation in New York and reduce existing disproportionate burdens of GHG and other emissions in Disadvantaged Communities," and also recognizes that "a poorly designed program could increase economic burdens on New Yorkers and New York businesses, reducing New York's competitiveness."[2]

- The success of carbon pricing programs depends on many factors. An appropriately designed carbon pricing mechanism could leverage market signals to drive needed carbon emissions reductions, and do so in a way that is cost-effective and efficient. Revenues from carbon pricing could be used to fund the investments needed to achieve the clean energy transition, improve infrastructure resiliency, and address environmental justice needs. Implementing carbon pricing at the economy level could also ease pressure on utility customer bills by appropriately spreading the costs across all sectors of the economy. The impacts of carbon pricing to low- and moderate-income (LMI) customers must be considered and addressed.

- Similarly, an appropriately designed clean energy supply or related standard could result in reduced emissions and/or emissions intensity while stimulating the advancement of technologies that promote energy reliability and enable customer choice.

- Given the complexity of the State's energy transformation, involving multiple existing and new energy systems and technologies, and directly impacting residents, businesses and industries, the design and implementation of any of the strategies identified in Chapter 17 should be preceded by significant analysis and consideration. If adopted in New York, such strategies must be complementary to other policies or programs so the *overall* suite of initiatives is cost-effective and efficient.

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[1] The Utility Consultation Group (UCG) was formed in December of 2020 in connection with the Climate Action Council (CAC or Council) to provide expertise to the Council and act as a resource for its Advisory Panels as they develop recommendations for the Council. The participating utilities include: Consolidated Edison Company of New York, Inc.; Central Hudson Gas and Electric, Inc., The Municipal Electric Utilities Association of New York State; National Fuel Gas Distribution Corporation; National Grid; New York State Electric and Gas, Inc.; Orange and Rockland Utilities, Inc.; and Rochester Gas and Electric, Inc.

[2] DSP at 252.

Guiding Principles for Carbon Pricing

If adopted, any carbon pricing program should be designed to:

Maximize geographic scope

Generally, the broader the geographic scope, the more effective the program - national is better than regional, and regional is better than state-specific. Mandatory carbon prices that are not uniform across regions or economic sectors may cause economic dislocation and may increase overall emissions relative to their efficient level. A New York-only program could increase burdens on state residents and businesses who already will be bearing costs of other elements of the energy transition, and could increase economic and emissions leakage. As noted in the Draft Scoping Plan, any mechanism adopted should be designed "in a way that does not unduly burden New Yorkers and create disadvantages to New York's competitive position – with other states, with the nation as a whole, or with the global economy."[3]

Maximize economic reach

A well-designed carbon pricing program should encourage cost-effective decarbonization across the *entire economy* by embedding an appropriate cost of carbon in business and customer decisions. The burden to reduce emissions should be fairly distributed across all sectors. Sector-specific programs that impose carbon pricing on one or a small handful of sectors generally do not fairly represent the value of carbon in society. A narrow application of carbon pricing could raise significant concerns with inter-sector leakage and equity, distort consumer decision-making, and/or lead to inefficient and undesirable outcomes especially where sector substitution is possible (e.g., imposing carbon pricing on gas but not delivered fuels (like oil or propane)). Similarly, if carbon pricing is focused only on the power sector, commuters or commercial enterprises who use electricity as fuel for electric vehicles would be penalized, while those who use gasoline or diesel for conventional internal combustion vehicles would not see a price signal to shift to cleaner alternatives.

Set an Appropriate Price

Setting the "right" level of carbon price is very important and not obvious. In theory, a carbon tax or price that is economically efficient should be set equal to the marginal cost of the environmental harm – if the tax is too high, economic actors (regulators, producers and consumers) will divert more money and resources to abatement than is necessary, and if the tax is too low the same actors will divert too little. In other words, a fee that is set so high as to attempt to eliminate all or most emissions will be very expensive and inefficient and a fee that is set very low will be ineffective. A properly designed program should set the price at an economically

[3] Draft Scoping Plan, at p. 252.

efficient level that achieves material emissions reductions but does not result in unintended financial, reliability or other consequences.

Properly Time Implementation

Generally, all sectors participating in carbon pricing should commence as closely in time as possible to avoid inter-sector leakage based on timing rather than emissions impacts. The right time to implement these types of strategies, whether economy-wide or sector-specific, must be weighed carefully with regards to 1) customer outcomes 2) cross-sectoral or regional interactions that may result from a staggered or targeted implementation, 3) significant economic and emissions leakage concerns, and 4) continuing reliability and resiliency of the State's energy systems. The timing of usage of funds to mitigate customer impacts also should be carefully weighed before any recommendations are adopted.

Protect Vulnerable Sectors

A well-designed program should send clear economic signals, but create protections for vulnerable parties and sectors. Carbon pricing generally should provide market signals that drive efficient behavior and discourage carbon-intensive activities or products. Funds from carbon pricing should be utilized to further support equitable and affordable decarbonization through investment in infrastructure needed to advance CLCPA requirements, alternative fuel/energy technologies, mitigation of equity concerns, and additional funding for customer end-use investments that promote decarbonization. Revenues from the program could also be directed to those entities least capable of avoiding or absorbing the costs (e.g., disadvantaged communities, energy-intensive, trade-exposed industries) without muting the market signal created by the carbon price. If carbon pricing is adopted for the energy sector, customer protections can be provided either through adjustments to the existing energy affordability programs or similar programs administered by the Public Service Commission (PSC). If carbon pricing is implemented in other sectors, care should be taken to mute the economic impacts on disadvantaged communities.

Complement Other Programs

Any carbon pricing program should complement non-market policies and programs. A well-designed carbon pricing program must coexist alongside non-market based policies aimed at reducing carbon emissions. For example, carbon pricing schemes should consider existing emissions-related taxes, surcharges, or subsidy collections already built into energy rates. Price signals resulting from the sum total of emissions reduction programs should be consistent with each fuel's lifecycle emissions and not distorted by additive or compounding programs. It also is possible that a carbon pricing program might more efficiently reduce carbon emissions than traditional command and control program structures; in which case, the State should be prepared to move promptly to eliminate or simplify redundant or ineffective programs that absorb

administrative resources and potentially increase the burden on the State's businesses and residents.

Policy makers should consider strategies that focus on reducing emissions intensity or emissions themselves. These differ from carbon taxes or carbon pricing because such programs establish an emissions limit or low carbon fuel standard to be met, and the market determines the price of measures of achieve emissions allowances or the low-carbon product in response to the limits or standard. Such initiatives could catalyze clean energy supply markets, leverage competition to deliver efficient emissions reduction opportunities and facilitate consumer choice while lowering emissions. As with carbon taxes or carbon pricing, setting appropriate emissions limits or product standards is key to avoiding inefficiencies or distortions, and minimizing leakage between regions and sectors.

In conclusion, as a precursor to development and implementation of a carbon price or other pricing or emissions reduction strategy, the State should quantitatively study these initiatives in a holistic manner to fully understand the environmental benefits, economic impacts and energy industry outcomes (e.g., resource mix, reliability, resiliency, etc.). The UCG stands ready to work with State leaders and stakeholders to consider the economy-wide programs identified in the draft Scoping Plan that could help New York reach the CLCPA's goals more quickly, efficiently, and equitably.