



VIA ELECTRONIC MAIL

Hon. Michelle L. Phillips, Secretary  
New York State Public Service Commission  
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**Re: CASE 15-E-0302 – Proceeding on Motion of the Commission to Implement a Large-Scale Renewable Program and a Clean Energy Standard.**

Dear Secretary Phillips:

Advanced Energy United (United) and the Alliance for Clean Energy New York (ACE NY) submit for filing the attached comments in response to the *Order Initiating Process Regarding Zero Emissions Target*, issued and effective May 18, 2023, in the above referenced proceeding.

Respectfully submitted,

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State of New York  
Public Service Commission

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In the Proceeding on Motion of the Commission to Implement  
A Large-Scale Renewable Program and a Clean Energy Standard Case 15-E-0302

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Comments on the Order Initiating Process  
Regarding Zero Emissions Target

I. Executive Summary

Advanced Energy United and the Alliance for Clean Energy New York submit these joint comments in response to the *Order Initiating Process Regarding Zero Emissions Target*. As a general matter, our organizations highlight the critical need to primarily focus in the near-term on development of renewable energy projects – wind, solar, offshore wind, hydroelectric – plus energy storage, transmission upgrades, and behind-the-meter clean resources, to first achieve the 70% renewable electricity by 2030 mandate in New York’s climate law. Successful achievement of this milestone needs to be the foundation for subsequent achievement of a 100% emissions-free grid by 2040.

Our comments then suggest that certain technologies that can clearly and demonstrably have no emissions during electricity generation be designated as emissions-free by the Commission in a first phase. This would include, for example, grid-scale and behind-the-meter renewable technologies, existing nuclear plants, and demand response programs. It should also include controllable transmission lines paired with portfolios of renewable energy systems and energy storage.

Then, we suggest a second phase in which the Commission establishes criteria that would be used to designate other technologies as emissions-free and establishes an ongoing process for the Commission to evaluate technologies that come forward and request this designation over time. In this way, emerging innovative technologies can seek this designation as they become commercialized.

In our responses to questions 1 through 14, our organizations highlight the role of a great variety of positive approaches in achieving a 100% emissions-free grid, from increasing transfer capability with neighboring grids, to the range of clean distributed energy resources, to long-duration

storage and grid enhancing technologies. Our aim is to highlight that New York can scale up the range of existing programs that support these technologies and approaches, separate and apart from an entirely new program to support non-renewable generating facilities that are zero-emission. Also, we point out that the deployment of new zero-emissions, flexible resources should be supported by market participation rules and new market products at the NYISO.

## II. Introduction

On May 18, 2023, the New York Public Service Commission (“Commission”) issued the *Order Initiating Process Regarding Zero Emissions Target*<sup>1</sup> (“Order”), in proceeding 15-E-0302, which posed specific questions and solicited responses on the topic of defining the term “zero emissions” for the purposes of implementing New York’s 2019 landmark Climate Leadership and Community Protection Act (“CLCPA”, “Climate Act” or “Act”).<sup>2</sup> In the *Notice Extending Comment Period* issued by the Commission on June 28, 2023, in this same proceeding, this comment period was extended to August 16, 2023.

Our two organizations, Advanced Energy United and the Alliance for Clean Energy New York, are together submitting these comments in response to the Order. In these comments, we are addressing certain questions posed by the Commission in the Order and providing relevant contextual information concerning decision-making on this matter.

Advanced Energy United (“United”) is a national association of businesses that works to accelerate the move to 100% clean energy and electrified transportation in the U.S. Advanced energy encompasses a broad range of products and services that constitute the best available technologies for meeting our energy needs today and tomorrow. These include electric vehicles, energy efficiency, demand response, energy storage, solar, wind, hydro, nuclear, and smart grid technologies. United represents more than 100 companies in the \$374 billion U.S. advanced energy industry, which employs 3.2 million U.S. workers, including 157,000 individuals in the Empire State.

The Alliance for Clean Energy New York (“ACE NY”) is a member-based organization with a mission of promoting the use of clean, renewable electricity technologies and energy efficiency in New York State to increase energy diversity and security, boost economic development, improve public

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<sup>1</sup> New York Public Service Commission, May 18, 2023. Order Initiating Process Regarding Zero Emissions Target, Case 15-E-0302.

<sup>2</sup> Chapter 106 of the Laws of 2019 (codified, in part, in Public Service Law (PSL) §66-p.) The CLCPA became effective on January 1, 2020.

health, and reduce air pollution. ACE NY's diverse membership includes companies engaged in the full range of clean energy technologies as well as consultants, academic and financial institutions, and not-for-profit organizations interested in this mission.

In these comments, United and ACE NY are referred to as “we”, “our organizations” and the “clean energy industry.”

### III. General Comments

New York's 2019 Climate Act includes mandates that are ambitious and challenging, and necessary to demonstrate meaningful progress in the fight against climate change. The Climate Scoping Plan,<sup>3</sup> completed in December 2022 by the state's Climate Action Council, is a comprehensive document that lays out the wide range of actions necessary to allow New York to achieve the economy-wide emissions reductions required by the Climate Act. New York now has a blueprint for actions over the next twenty-seven years. In many specific instances, actions must begin now to achieve the significant transition over time that the Scoping Plan requires.

The term ‘zero-emissions’ is relevant to a 2040 milestone included in the Climate Act, which directs the Commission to “establish a program to require that ...(b) that by the year two thousand and forty (collectively, the “targets”) the statewide electrical demand system will be zero emissions.”<sup>4</sup> The zero-emissions electricity system is required by 2040, seventeen years from now. In contrast, the 70% renewable electricity requirement included in the Climate Act applies in 2030, less than seven years from today. Building renewable electricity generating projects is currently the highest priority for achieving the mandates of the Climate Act.

We also point out that the 70% target is a floor for renewable electricity deployment and use, not a ceiling. New York can and should achieve renewable electricity use above the 70% by 2030 requirement. In fact, the Act requires the deployment of 9,000 MW of offshore wind power generating capacity by 2035, five years after the 70% mandate. As the offshore wind power sector grows in New York to meet that requirement of the Climate Act, the share of New York's electricity provided by renewables will grow above 70%.

Based on analysis developed for the Climate Scoping Plan as well as modelling conducted by the New York Independent System Operating (“NYISO”), there is consensus that some amount of dispatchable emissions-free generation resources (“DEFRs”) will be required in New York by 2050, although there is not consensus on the amount of DEFRs that will be needed among a variety of modelling outcomes. Ultimately, the amount of DEFRs required in New York will depend on the

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<sup>3</sup> New York State Climate Action Council, 2022. Climate Scoping Plan.

<sup>4</sup> Climate Leadership and Community Protection Act, 2019, Part 4. New York State Public Service Law, Part 66-p.

real world outcomes over the next twenty-seven years in terms of the diversity, amount, and location of the renewable energy technologies that are deployed; the growth in electricity demand; the amount of load management implemented; the amount of transmission system upgrades that are constructed; the amount and type of energy storage that is installed in the New York system; and the level of interconnectedness of New York's grid to our neighboring systems.

Our organizations raise this context to point out that the highest priority in the near-term is deploying the renewable energy resources we need to achieve 70% by 2030 and beyond. We have a great deal of progress to make in this area. The second priority is to strengthen and modernize New York's grid to prepare it to meet both the requirements of the Climate Act and the realities of a changed climate, by deploying transmission system upgrades and additions; deploying grid enhancing technologies ("GETS")<sup>5</sup>; continuing the iterative process of studying and meeting the needs of the grid in 2030, 2040, and 2050; installing energy storage; and planning and implementing programs to greatly increase load management capabilities and demand flexibility. All these measures are necessary to provide a resilient grid, to achieve 70% renewables and beyond (and to achieve the offshore wind mandates in the Act); and lastly, to minimize the need for DEFs. It is in this context that we offer our responses to the questions posed in the Order.

If the Commission ultimately determines that some sort of program, beyond the current Clean Energy Standard ("CES"), is needed, we believe that this program should focus on supporting the attributes needed to create a reliable 100% clean grid. The CES is already driving towards producing sufficient clean energy overall. Thus, any new program should not be prescriptive in terms of the eligible technologies (other than meeting the definition of zero emissions), but instead should seek to support resources with the desired performance attributes. For example, controllable transmission lines paired with portfolios of renewable energy systems and energy storage could mimic the capacity and performance of traditional fossil fuel combustion facilities and thereby facilitate the reliable achievement of a zero emissions grid, especially in strategic locations.

That said, before making a determination that such a program is needed, the Commission should consider all possible ways for meeting grid reliability needs, including changes to wholesale markets and existing Commission-jurisdictional programs (including, for example, New Energy New York ("NENY") and utility Demand Response ("DR") programs) or new/modified tariffs (such as Value of Distributed Energy Resources ("VDER") or other tariffs that promote flexible Distributed Energy Resources ("DERs"), or Tier 4 of the Clean Energy Standard. There are also options related to transmission buildout that can contribute to more flexible, reliable grid

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<sup>5</sup> See <https://rmi.org/cheaper-cleaner-faster/> (explaining GETS).

operation. It may very well be that these options, taken together, present viable pathways without the need to create an entirely new program.

## IV. Responses to Questions Posed by the Commission

1. How should the term “zero emissions,” as used under PSL §66-p(2)(b), be defined?
2. Should the term “zero emissions” be construed to include some or all of the following types of resources, such as advanced nuclear (Gen III+ or Gen IV), long-duration storage, green hydrogen, renewable natural gas, carbon capture and sequestration, virtual power plants, distributed energy resources, or demand response resources? What other resource types should be included?

New York’s Climate Act requires that the Commission establish a program to require, “(b) that by the year two thousand and forty (collectively, the “targets”) the statewide electrical demand system will be zero emissions.”<sup>6</sup> It does not further define the term zero emissions. It is, therefore, the role of the Public Service Commission to further define this term in a way that maintains the intent of the Climate Act and allows for the smooth and successful implementation of the Act. It is also imperative to maintain the reliability of the electricity system.

As a general matter, the term zero emissions typically refers to a state in which no harmful greenhouse gases or other pollutants are released into the atmosphere or environment during a particular activity or process. This concept is typically associated with efforts to mitigate climate change and reduce environmental impacts. For instance, under the California Air Resources Board zero emission vehicles (ZEVs) program, this term refers to new 2026 vehicles and subsequent model years, that produce zero exhaust emissions of any criteria pollutant (or precursor pollutant) or greenhouse gas under any possible operational modes or conditions.<sup>7</sup> Additionally, the US Department of Energy and other federal agencies use zero emissions in the context of promoting and supporting renewable energy resources that do not emit greenhouse gases or other harmful pollutants during electricity generation and these sources include solar, wind, hydroelectric, and geothermal.<sup>8</sup>

Our organizations suggest that the Commission approach this question in phases. In a first phase, certain technologies that are currently commercialized and unquestionably demonstrate that they

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<sup>6</sup> The Climate Leadership and Community Protection Act, 2019, Part 4. New York State Public Service Law, Part 66-p.

<sup>7</sup> 13 CCR § 1962.4.(b) (Zero-Emission Vehicle Requirements for 2026 and Subsequent Model Year Passenger Cars and Light-Duty Trucks).

<sup>8</sup> See <https://www.sustainability.gov/federalsustainabilityplan/index.html>.

have no air emissions when providing electricity, such as all renewables, energy storage, nuclear, and demand response, or transmission paired with renewables can be defined as zero-emissions in the near-term. Second, the Commission could develop criteria for evaluating whether other technologies are zero-emissions and create a certification process for applicants to request a zero-emissions designation in a future Commission proceeding. Thus, the process would consider eligibility over time and not prescribe all zero-emissions technologies now. This will allow for technological development and innovation over time, while the criteria would provide guidance to parties interested in a future certification request. One possibility, for example, could be linear generators, an emerging technology that has an emissions profile similar to fuel cells, which the Commission has previously ruled qualify as renewable under the Clean Energy Standard if powered by renewable fuels.

Relevant to the first phase, there are some technologies that should be defined as zero-emissions based on present regulations and past Commission orders. This includes existing nuclear, solar power, wind power, hydroelectric, geothermal, fuel cells that use renewable fuels, energy storage, and any distributed energy resources that involve energy efficiency or demand management without the use of fossil fuels. By the same token, some technologies, namely those that use fossil fuels in a combustion process, clearly result in emissions, and should be excluded. This would also encompass fossil fuels coupled with carbon capture and sequestration (CCS), which has not been demonstrated to produce zero emissions.

On the topic of alternative fuels, the Climate Scoping Plan stated, “Green hydrogen and RNG should be targeted to strategic uses or when needed for safety, reliability, resilience or affordability and should demonstrate air quality, health and life cycle GHG benefits including avoiding localized pollution in Disadvantaged Communities before implementation.”<sup>9</sup> Our organizations agree with this sentiment. There are some renewable energy fuels that produce emissions when used for generating electricity through a combustion process, for example, landfill gas and biogas. The Commission has previously defined their use in fuel cells as renewable, and we would support the continued eligibility of this application, since they are included in the CLPCA definition of renewable energy. Similarly, if a fuel-flexible linear generators does not utilize a fossil fuel resource in the process of generating electricity, it should be considered a zero-emissions technology. With its determination regarding fuel cells using renewable fuels, the Commission seems to acknowledge that the carbon dioxide emissions (CO<sub>2</sub>) associated with the use of biogas in fuel cells results in no net emissions of CO<sub>2</sub>, since the carbon was previously taken up by the growing of the feedstock that was subsequently used to produce the biogas. Moreover, the recovery and use of methane-rich gas from waste facilities like landfills and sewage treatment plants produces significant net reductions of GHG emissions if the alternative is to emit the methane into the atmosphere. If the alternative is to flare the gas, this reduces the greenhouse gas impact as compared to direct emission of methane, but beneficial use of the gas for energy

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<sup>9</sup> New York State Climate Action Council, 2022. Climate Scoping Plan, Page 255.

generation displaces other energy sources, namely fossil fuels, and thus would be a better solution. This should be considered by the Commission under limited circumstances.

As it relates to emissions aside from CO<sub>2</sub>, the situation with renewable fuels is more complicated if the fuels are combusted. The plain language of the CLCPA seems to preclude the eligibility of this at the present time. That said, there may be certain applications where there will be compelling net emissions benefits, even if there are some emissions of criteria pollutants. To limit the potential impacts on the health of New Yorkers, the Commission could limit eligibility in these circumstances to cases where the benefits clearly outweigh the impacts. One potential example would be the onsite use of biogas, at, for example, a farm, landfill, or sewage treatment plant. Limiting biogas to onsite use, especially combined heat and power, is likely to provide net benefits.

Another example of an evolving technology that could be subject to its own proceeding, after the criteria for a zero-emissions certification are defined by the Commission, is hydrogen. Hydrogen is often discussed as a promising technology for climate action, but hydrogen can be produced through many varying technologies and can be used in various ways. For example, clean hydrogen produced with resources that themselves would qualify under the definition of zero emissions would seem to meet the definition of zero emissions from a carbon standpoint, but some of the same issues about criteria pollutant emissions would seem to apply.<sup>10</sup> Various applications involving the combustion of hydrogen created using renewable electricity should be further researched prior to their designation as zero-emissions technologies.

**3. How should a program to achieve the Zero-Emission by 2040 Target address existing and newly constructed nuclear energy resources. Should the program be limited to specific types of nuclear energy technologies and exclude others?**

Existing nuclear should continue to be defined as zero-emission in New York. New nuclear facilities, if and when they are considered or proposed in New York, should apply to the Commission for a certification that they are ‘zero-emissions.’ Our expectation is that these new nuclear facilities or technologies would be zero-emissions, but since the specific technologies are not precisely known today, this certification process would be appropriate.

By Commission order, existing nuclear plants currently are eligible to receive payments for Zero Emissions Certificates (ZECs) under the Clean Energy Standard. In anticipation of new nuclear technologies becoming commercially available, the Commission could also consider proactively evaluating such technologies to determine if they meet the criteria for zero-emissions that is ultimately adopted. This will help to not only create the business certainty needed to achieve the CLCPA mandates, but also set a roadmap for the nuclear industry to follow knowing that, for

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<sup>10</sup> Advanced Energy United has developed principles around the development and use of “clean hydrogen” which can be found at: <https://blog.advancedenergyunited.org/reports/clean-hydrogens-role-in-an-advanced-energy-economy>.



example, the Commission does consider Advanced Small Modular Reactors to meet the definition of zero emissions. Conversely, if upon evaluation in this or any other proceeding the Commission determines that a specific nuclear technology, either now or in the future, does not meet the definition to qualify as zero emissions, the Commission could give that clear indication so that the industry can continue to evolve toward meeting the zero-emissions requirements.

Assuming new nuclear plants would meet the zero emissions definition, we note that they are also eligible for financial support from the Federal government as part of the U.S. Inflation Reduction Act (IRA). Plant owners will be able to choose from a technology-neutral production tax credit of \$25 per megawatt-hour for the first ten years of plant operation or a 30% investment tax credit on new zero-carbon power plants placed into operation in 2025 or after. Only one of these credits can be applied to a single facility but both do include a 10% bonus if the power plant is built at a brown field site or a fossil energy community.

Above and beyond these credits, new and existing reactors can also leverage new production tax credits for up to ten years to generate clean hydrogen, which could expand market opportunities for current and future reactor technologies.

Given these financial incentives, it would be premature for the Commission to consider a distinct program specifically for new nuclear plants or to expand the ZEC program to new nuclear plants. Additionally, if the state's future New York Cap & Invest (NYCI) program includes the power sector, this would provide market uplift and revenue for nuclear power plants, effectively providing an incentive for new nuclear generation.

Lastly, given the age of the existing nuclear reactors in New York State, the Commission could look at pending license expiration dates and examine if anything needs to be done as those dates approach.<sup>11</sup> These plants play an important role in NYS by providing large amounts of emission-free electricity and firm capacity.

**4. Should new measures adopted to pursue compliance with the Zero-Emission by 2040 Target focus exclusively on generation and resource adequacy, or should they also encompass a broader set of technologies that could be integrated into the transmission or distribution system segments, or installed and operated behind-the meter?**

As we stated in our answer to Question 2 above, United and ACE NY support the use of a broad range of supply side and demand side resources, both large-scale and distributed, to provide the flexibility needed to reliably operate a zero-emissions grid. This includes generation, the full range of DERs (both in front of and behind the meter), as well as other technologies and approaches to enhance grid flexibility, such as GETs and greater inter-regional cooperation around transmission development and inter-regional electricity trade.

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<sup>11</sup> See <https://www.nrc.gov/info-finder/region-state/new-york.html> for expiration dates.

Regarding the term “new measures”, we ask that Staff clarify what they may be contemplating and how this would differ from what is referred to in Question 3 above, where Staff introduces the concept of “a *program* (emphasis added) to achieve the Zero-Emission by 2040 Target.” That said, to the extent that additional actions are needed, we would be in favor of taking advantage of the full range of zero-emissions resources, and not just large-scale generation or DEFRs. We are mindful of, and have actively participated in, all the work the Commission has done over the last decade to move New York State towards a modern regulatory framework that is more focused on outcomes and creating a vibrant competitive market for DER products and services. New York will be best served by the Commission continuing to find ways to leverage private capital and drive to performance-based outcomes for utilities that avoids direct competition between utilities and non-utility companies, and that instead rewards utilities for developing the means by which the state can maximize the benefits of DERs and competitive market solutions. This has implications for the types of investments utilities will be making in their distribution networks to maximize the value and flexibility services that DERs can provide, and the types of programs, tariffs, and other efforts they will be developing and undertaking that go beyond the concept of a zero-emissions “program” and speaks to the very nature and structure of the electricity system as it moves to be 100% emissions free.

With this in mind, we respectfully request that the Commission consider the following as it maps out a strategy to get to a zero-emissions grid by 2040:

- A flexible, emissions-free grid will encompass a broad set of technologies that will be integrated into the transmission or distribution system including technologies that are installed and operate behind-the meter.
- The Commission already oversees a range of utility programs and tariffs designed to support the deployment of clean resources, and increasingly, to support flexible operation of DERs. This includes non-wires solutions, DR programs, NENY, the Value of DER compensation framework, other rate design options (such as the revised standby/buyback rates), and Earnings Adjustment Mechanisms (EAMs) that target demand flexibility. These can all be scaled to deliver additional flexibility and using them to meet future needs should be fully explored before creating a new program.
- GETs may provide good value for the investment in increasing grid capacity and flexibility.
- Flexible interconnection for DERs will become increasingly important as the state approaches high levels of variable renewable energy penetration. As this occurs, the total amount of capacity compared to the peak load will increase dramatically over where it is today. Flexible interconnection will allow for less need to overbuild the interconnections and the system overall. It will also allow sites to maximize their renewable energy potential, lowering costs. As the Climate Action Council’s Scoping Plan noted:

“The PSC should also accelerate adoption of innovative technologies and programs that increase hosting capacity, such as flexible interconnection, hybrid systems, and coupling with energy storage or controlled load, smart inverters, and solutions that enable maximum back-feeding at the

substation level from distribution to transmission as part of the local transmission and distribution planning process.”<sup>12</sup>

- New York has a long history of inter-regional cooperation and has interties with neighboring states and Canadian provinces. Developing additional transfer capability between NYISO and neighboring balancing authorities (BAs) will provide added resilience and flexibility, whether to export surplus renewable energy or to draw upon additional clean resources and balancing capability when needed. A recent NYISO report <sup>13</sup> and a recent draft DOE Transmission Needs Study<sup>14</sup> identifies the potential need for more inter-regional transfer capacity. The Commission could consider establishing a new proceeding, or using a suitable existing proceeding, to fully evaluate the state’s interties with other BAs and how this can support the zero emissions goal. This could provide significant value during normal operations as well as during emergencies or other abnormal conditions, such as periods of low renewable energy production.

Question 4 also cites resource adequacy. Our organizations suggest that the traditional approach to assessing resource adequacy may be inadequate for planning the 100% emissions-free grid. Resource adequacy has been built around the need to have sufficient capacity resources in a system that is typically defined by the annual/seasonal peak load. In the future, the characteristics of the generating fleet (large-scale and distributed) will mean that other planning metrics will also be important, such as daily ramping capability, the ability to meet load for extended periods of low wind and solar generation, and the ability to effectively utilize/store electricity during periods of very high wind and solar generation. Said another way, the concept of resource adequacy may need to be significantly modified to consider supply and demand in a more dynamic way. From a demand flexibility standpoint, this suggests that demand response programs, which are typically focused on a limited number of peak events, may expand to be more about load shaping throughout the year. As the Climate Action Council’s Scoping Plan noted:

“**Resource adequacy:** The State and the NYISO should examine all resource adequacy options and continue to improve resource adequacy contribution compensation, including the consideration of alternative market structures of procuring resource adequacy. In May 2022, the State and the NYISO were successful in advocating to FERC to ensure that buyer-side mitigation will not be applied to Climate Act resources and for alternatives that maximize access to the capacity market for public policy resources. The State and the NYISO should investigate how best to include all resources in the capacity markets, with the goal of reflecting dynamic smart loads in resource adequacy. The State and the NYISO should continue to evaluate the capacity market value of all resource types so that resources are paid for capacity consistent with the value they provide to the grid as well as

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<sup>12</sup> New York State Climate Action Council, 2022. New York State Climate Action Council Scoping Plan, p.234.

<sup>13</sup> New York Independent System Operator, August 14, 2023. *Annual Grid & Market Report*, page. 6.

<sup>14</sup> U.S. Department of Energy, February 23, 2023. *Draft National Needs Transmission Study: Draft for Public Comment*.

allow fair access to the capacity market for energy limited resources and accurately reflect the value of such resources especially as the need for grid flexibility grows over time.”<sup>15</sup>

5. **Should any program to achieve the Zero-Emission by 2040 Target specify subcategories of energy resources based on particular characteristics, such as ramp rates, the duration of their operational availability, or their emissions profile with respect to local pollutants?**

Ramp rates, duration of operational availability, and emissions profiles are important considerations; our position is that, in the first instance, these characteristics should be integrated and pursued via NYISO policy, complemented by future Commission policy if necessary.

The NYISO is an important market where new products can be developed, built around the provision of flexibility services. As mentioned above, current NYISO ancillary services markets and products will likely be inadequate for the grid of the future, and the characteristics listed in this question should be integrated into new NYISO market products.

Our organizations support the creation of the desired markets/products within wholesale markets based on the services needed and then allow all technologies to compete based on their ability to provide those services (subject, of course, to the zero-emissions requirements). The goal should not be to put specific energy resources into silos based on technical characteristics, but rather to define what is needed and then remove barriers to enable the widest possible participation. This is the same philosophy behind FERC Order 2222.

As the New York Climate Action Council’s Scoping Plan noted:

**“Support flexible resources:** The State should work with the NYISO to adapt current ancillary service market designs and look to add products that are needed to incent flexibility as needed to efficiently integrate renewables. The NYISO supports markets for energy, ancillary services, and capacity. The fundamental relationship among these markets will likely need to evolve. For example, more revenue will likely shift to ancillary service markets over time as system needs are reevaluated in the context of integrating increasing quantities of renewable resources. This should include proactive development of new products needed; however, these new products should be structured properly to reflect only current system needs so as to not cause unnecessary costs. A balancing act is needed between developing the products and services of the future”.<sup>16</sup>

One prime example is the implementation of the NYISO’s DER participation model, a new option for enhancing grid flexibility and bringing clean DERs to bear in meeting the zero-emissions goal. We recommend the Commission carefully monitor rollout of the DER participation model and consider what types of enhancements or support can be offered to ensure it is successful; that unnecessary barriers are removed; and that it brings flexible DERs to bear at scale. For example, metering and telemetry requirements may prove to be a barrier, and the Commission could

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<sup>15</sup> New York State Climate Action Council, 2022. *Climate Scoping Plan*, page 248.

<sup>16</sup> New York State Climate Action Council, 2022. *Climate Scoping Plan*, Page 247-248.

consider an incentive program to help offset those costs, akin to what is done for other clean technologies with system benefits. Given all the mandates that need to be achieved, New York will need to consider many sources such as flexible DERs, and we ask the Commission to help ensure productive ways of implementing flexible DERs, as well as the submitted comments of DER Aggregators, all to identify and resolve any barrier issues.

As the Climate Action Council's Scoping Plan noted:

"The State should work with the NYISO to update the market products, requirements, and technology standards needed to maintain reliability over time so that all resources can participate in the market, based on their attributes, to provide the products and services needed for reliability. Undue costs, including creating barriers to renewables, should not be imposed that would impair meeting the Climate Act requirements. Reliability needs and risks will change over time, and the markets should reflect these changes as well."<sup>17</sup>

It is also possible to support flexible DERs outside of wholesale markets, building on existing DR programs and DER tariffs to ensure that investments in flexible DERs are growing and that there is then incentive to take advantage of those capabilities. If existing DR programs can be thought of "demand flexibility 1.0," the Commission should continue its development of "demand flexibility 2.0.". For example, today, DR programs are focused on reducing peaks, whether these are system peaks or local network peaks. In the future, a more dynamic market is likely to be needed, for example, being able to charge stationary batteries or electric vehicles on extra windy days to be able to use that stored energy on low/no wind days. We envision demand response evolving into broader demand flexibility.

The Commission has also recognized that data access (customer and system data) is a foundational element of a modern grid. The Integrated Energy Data Resource (IEDR) can also support more DER use cases that focus on grid flexibility. In anticipation of this, the Commission could consider how to support deployment of DERs with the capability to operate flexibly, even if the grid and related programs or transaction frameworks currently cannot fully take advantage of those capabilities.

## **6. What role does technology innovation need to play to meet the CLCPA's Zero-Emission by 2040 Target?**

As discussed in the answer to questions 1 and 2, the definition of zero-emissions technologies should involve an ongoing certification process, so that new innovative technologies would have a path to seek Commission designation as zero-emissions as they evolve and become commercial.

Technology innovation can help with achieving the 2040 zero-emissions mandate. Likely examples include:

- Integration of high levels of variable renewable energy. This will be aided by developments in storage technology, including long-duration storage, as well as the suite of options for

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<sup>17</sup> Id., p. 247.

increasing demand flexibility, particularly as the amount of DERs connected to the system grows and electrification drives load growth and leads to changing usage patterns.

- These same technologies can help manage/reduce peak loads, which in turn will lower total costs. As a specific example, automated load management applied to EV charging can reduce infrastructure needs and costs, as can the integration of onsite storage and distributed generation.
- Better access to customer and system data will provide value, as previously recognized by the Commission. Additional innovations in utilizing data for customers and system benefits should be pursued.
- As previously mentioned, flexible interconnection is another area of innovation with the potential to reduce costs and aid in achieving CES targets.
- Technologies for lowering the cost of producing, storing and utilizing clean hydrogen.
- Continued improvements to the cost and performance of zero-emissions generation technologies, and development of new zero-emissions technologies.

Among states, New York has unique capabilities when it comes to identifying and supporting technology innovation. A useful exercise would be to further identify ways to “future proof” the energy transition by ensuring that technologies deployed now have the capabilities to provide valuable services in the future, even if the need is only emerging now, or the capability does not yet exist to fully take advantage of those features. Some examples include requiring solar to be equipped with smart inverters, or certain electric vehicle charging to be ready to implement Vehicle-to-grid (“V2G”). Advanced metering infrastructure (“AMI”) is another example, where additional functionality built into the meters can be enabled over-the-air as it is needed. While care needs to be taken to not over-invest, or invest in functionality that may not prove useful, there are opportunities to support deployment of technology today that will lead to benefits as we get closer to the 2040 goal.

## **7. Should life cycle emissions impacts be considered when characterizing energy resources? If so, how?**

The CLCPA specifies the greenhouse gas emissions accounting methodology that should be used to quantify economy-wide emissions and to measure progress towards the economy-wide emissions reductions requirements. This includes assessment of upstream emissions and that should continue to be the case.

Separately, for the purposes of defining zero-emissions, our general view is that a full lifecycle emissions assessment will add a level of complexity not contemplated in the CLCPA and may not provide sufficient added benefit to the effort to assess and certify eligible zero-emissions technologies and solutions.

To the particular case of hydrogen, which emits no CO<sub>2</sub> when combusted, the method of hydrogen production is critical for assessing the GHG emissions impacts. Similarly, biogas utilization does produce CO<sub>2</sub>, but that CO<sub>2</sub> is biogenic in origin, and the alternatives to using the biogas to produce electricity can have much more dire climate consequences than the alternative if, for example, the methane gas is instead released into the atmosphere.

While we are not proposing a specific approach herein, we view emissions as falling into three main categories:

- Ongoing emissions associated with energy use along the fuel chain (e.g., stack emissions from power plants, energy used in refineries to make finished fuels);
- Fugitive emissions, principally methane from natural gas infrastructure, but also biogenic sources; and
- Embodied carbon – GHG (and potentially other) emissions associated with the manufacture of the equipment being used and the infrastructure installed.

Of these, the first two are the most critical and the most readily quantified. Because the primary goal of the zero-emissions definition is the elimination of emissions from the ongoing production of electricity, the zero-emissions definition should focus on the first two sources of emissions.

Lastly, co-pollutants should be included in the assessment.

**8. Given that the feedstocks and other resources required to produce renewable natural gas are limited and will be in demand in other sectors of New York's economy, how should this fuel be considered in the context of this proceeding?**

The eligibility of RNG to contribute to the zero-emissions goal should be based on applying the criteria developed more generally for the definition of zero emissions. Separate from the endeavor to define zero-emissions, New York should continue to study and assess the best and highest use of the limited supply of RNG.

Lastly, our organizations prefer the use of biogas at or near the point of production, as this application can reduce existing methane emissions, displace fossil fuel use, and avoid the potential for methane leaks during transport of biogas or RNG transport. This same sentiment is in the Climate Scoping Plan, which states:

The use of biogas onsite, where feasible and practical, is preferred before refinement of biogas into RNG for on-site use with emphasis placed on non-combustion applications such as use in fuel cells. Some facilities may be well situated to provide local communities and co-located facilities with their excess biogas resource. The limited supply of the biogas resource should be targeted to strategic uses, such as locations where it can

provide electric system capacity for buildings and transportation electrification by alleviating system constraints.<sup>18</sup>

9. **In what ways might a program to meet the Zero-Emission by 2040 Target require reexamination and possibly revision of different tiers of the Clean Energy Standard? Should one or more of the policy approaches that have been used to implement the CES be considered to meet the Zero-Emission by 2040 Target?**

First, as described in our introductory comments above, the priority is to construct renewable electricity generating facilities to achieve the 70% by 2030 requirement and beyond. The tiers in the CES were developed for that purpose and that program should continue in accordance with existing Commission orders, and further Commission orders to authorize NYSERDA to procure additional renewable energy.

Second, in principle, we are not opposed to reexamination of and possible revisions to the CES tiers. Currently, the fundamental structure of the CES is focused on annual generation, and this alone will not be sufficient to support development of the types of flexible resources needed to reliably operate a 100% emissions-free grid. In other words, a modification of the current tiers to promote renewable electricity generation at certain strategic times and locations, which would likely require a change to the evaluation criteria and weighting, could help achieve a zero-emissions grid and reduce the need for non-renewable zero-emissions resources.

10. **What is necessary to align a program to meet the Zero-Emission by 2040 Target with the priority of just transition embedded within the CLCPA?**

We firmly support New York's commitment to a just transition as described at length in Chapter 7 of the Climate Scoping Plan, which included numerous and specific recommendations for achieving a just transition related to the electricity sector. We do not have additional suggestions on how to align achievement of the zero-emissions target with issues related to just transition beyond those already included in the Climate Scoping Plan, although we look forward to commenting on any proposals in the future.

11. **How might the benefits of a program to meet the Zero-Emission by 2040 Target be measured for the purpose of ensuring that, consistent with PSL §66-p(7), it delivers "substantial benefits" to Disadvantaged Communities?**

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<sup>18</sup> Id., p. 329.



The clean energy industry supports efforts to ensure that substantial benefits accrue to disadvantaged communities (DACs). For example, Zone J has a high density of DACs and is also where much of the state's fossil fuel generation is still located. Thus, achievement of the zero emissions target should naturally provide significant environmental benefits to DACs. The growth of the offshore wind power generating capacity, and the success of the New York City Renewable Electricity Program (Tier 4 of the CES), as well as the deployment of energy storage and in-City DER, should, in combination, mean that fossil fuel baseload and peaker power plants in Zone J operate less and/or are decommissioned. But to ensure that this is the case, benefits of the transition to a zero-emissions grid by 2040 should be measured by tracking whether the reductions in use of fossil fuel generating capacity occur at more or less the same pace in DACs as outside of DACs, and if the oldest and most polluting fossil fuel power plants are indeed phased out in a timely manner.

Measurement of the environmental benefits should be focused on lower use of the fossil fueled facilities in DACs, not on the location of renewable energy facilities (or storage, or transmission) in DACs, per se. Relying solely on projects sited in Zone J to meet all goals for benefits in DACs ignores opportunities outside of DACs that could accelerate and augment those efforts. Moreover, it is important that progress on the zero-emissions goal support DACs both upstate and downstate.

For example, in our comments on the Energy Storage Roadmap, we recommended that NYSDERA include a DACs incentive adder for retail standalone and solar-plus-storage projects upstate that are beneficial to DACs, similar to the inclusive community solar adder. For bulk storage, projects that provide incremental benefits to DACs should be given additional non-price points, similar to the Tier 1 procurement. We recognize that defining "beneficial to disadvantaged communities" is complicated. We recommend that the criteria be tied to mitigating the operation of polluting peaker plants that are harmful to the air quality in DACs. Not only will this adder compel developers to site storage upstate in areas that would benefit DACs (not to be confused with siting in DACs), but also to better align the program with the equity elements of the CLCPA. As overall strategies for achieving the zero-emissions target come into sharper focus, the Commission could consider a similar incentive approach more generally.

Also, we note that benefits to DACs are already being addressed in existing PSC-jurisdictional programs, including the EV make ready program and NENY, and also via rate cases. Those efforts should be considered and perhaps included in a gap analysis, looking across all relevant current activities and seeing where more effort is needed to meet the overall objectives of the CLCPA.

12. **NYISO has adopted an effective load carrying capacity (ELCC) rubric and treatment of Zones J and K as load pockets with special resource adequacy requirements. How should these constructs and other NYISO market rules inform design of a program meant to support the development and deployment of resources capable of achieving a zero emissions grid?**

The NYISO rules for capacity and special resource adequacy requirements, while important, should not necessarily affect how the Commission defines zero emissions. But, if the Commission ultimately decides that there is a need for a program to bring dispatchable emissions-free resources (DEFERs) to market, it should focus that program on the geographical locations in New York where the DEFERs are needed and will have the most benefit.

**13. What additional studies, if any, should the Commission undertake with respect to the development and deployment of resources capable of achieving a zero emissions grid?**

When it comes to meeting the 2040 zero emissions goal, time is of the essence, and we believe that the Commission understands this well. The state can and should move expeditiously to develop the renewable generation necessary to meet the 70% by 2030 statutory deadline and develop the policies necessary to achieve the 100% by 2040 deadline. Moreover, as we have shared within these comments, there is much the Commission can do to scale existing programs and tariffs in furtherance of the deadlines and to increase the deployment of flexible resources. We suggest the Commission consider the following five concepts for study:

- **Future Modelling.** While there is consensus that some DEFERs will be necessary, there is not consensus on the scale of DEFERs needed, because it depends on many factors. We suggest a repeated and iterative study of how much DEFERs will be required in 2040 and in 2050. This analysis should include several scenarios. One scenario should use the strict inclusion rules that the NYISO traditionally uses. One scenario should include all the policy decisions that New York State has made (*i.e.*, includes contracted generation projects and transmission projects even if they are not mature enough to be included under the NYISO's traditional approach). This assessment should have sensitivity analyses for differing loads, various transmission buildouts, and differing levels of load management to assess the impacts of these sectors on the reliability of New York's grid and the resulting level of required DEFERs. This work could be done in the framework of the NYISO's Project Outlook, or through another venue.
- **Long-Duration Storage.** Second, a key area will be the development and commercialization of long-duration storage technologies. New York State should develop feasibility studies and pilot projects regarding long-duration storage, given its relevance to the topic of DEFERs and the achievement of a zero-emissions grid.
- **DER Potential Study.** A comprehensive study of the potential for DERs and demand flexibility to contribute to a zero-emissions grid. This would include an assessment of barriers and how to address them.
- **Inter-regional Transmission.** An assessment of the potential for regional planning /cooperation on transmission, including developing more transmission capacity between balancing authorities.
- **NYISO support for Flexible Resources.** Examination of NYISO market reforms/evolution to support a wide range of flexible resources.

14. **Given that New York is not the only jurisdiction investigating options and opportunities for the research, development, and deployment of new technologies capable of achieving a zero emissions grid, how should the State seek to coordinate with and otherwise draw upon efforts that are underway elsewhere?**

We appreciate that Staff is considering the CLCPA goals in this context. While New York is not the only state pursuing ambitious clean energy and decarbonization goals, NYSERDA offers a unique opportunity to fund research and development (R&D) projects that many states lack. It is important for NY to take full advantage of NYSERDA's unique ability to fund R&D, a single agency such as NYSERDA will also need to branch out and closely work with other agencies such as the NYS Department of Environmental Conservation, transportation agencies, and New York City agencies, to name a few. It is also worth noting that the California Energy Commission ("CEC") has made significant strides towards attaining a clean energy grid and also has significant resources which it can draw upon in supporting the needed funding. Given the overlapping interests and capabilities between NYSERDA and CEC, there appears to be value in strengthening coordination between the two agencies.

New York should leverage but not repeat R&D at the federal level. As one example, the level of investment in nuclear research at the federal level is so significant that additional investment by the State of New York would not be impactful or needed. A possible first step would be a gap analysis to identify research areas where NY could best contribute, while determining and eliminating any gaps toward achieving the CLCPA mandates. Additionally, direct collaboration with CEC, the U.S. DOE and some of the national labs would also be useful to share information to identify and fill gaps.

Lastly, our organizations suggest three possible areas of R,D&D focus. First, green hydrogen applications in light of the particular CLCPA restrictions would be fertile ground for a New York effort. Similarly, New York State should explore long-duration storage applications relevant to New York and our landscape. Lastly, we suggest pursuit of interstate collaboration and cooperation on offshore wind transmission planning. There is value in increasing inter-regional transmission cooperation, planning, and electricity trade. This type of improved communication and coordination could yield extremely powerful synergistic results give the large potential of offshore wind.

## V. Conclusion

Advanced Energy United and the Alliance for Clean Energy New York sincerely appreciate the opportunity to provide these comments. We recognize and appreciate all the effort and time Staff and the Commission have put into this important proceeding and into requesting feedback on how to achieve the 100% emissions free electricity system requirement of the Climate Act.