Comments of Northeast Clean Heat and Power Initiative (NECHPI) on the New York State Draft Scoping Plan

**Public Comment Period**

# Introduction

New York State is to be commended for the bold and aggressive approach taken to addressing Climate Change. In 2019, with the passage of the Climate Law and Community Protection Act (CLCPA), the State of New York established the goal of a 100% renewable electric grid by 2040, and net-zero carbon emissions economy wide by 2050. The New York State approach is further notable for having placed front and center a concern for environmental justice, equity, and delivering results to historically underserved populations. To meet the targets laid out in CLCPA, there is a need for a large amount of dispatchable emissions-free resources (DEFRs). These DEFRs. an as-yet undefined technology, are essential for the safe and reliable operation of the New York State grid. As we will discuss in more detail below, utilizing some plausible and reasonable assumptions leads to scenarios where the build out of renewables falls short of projected targets. Likewise, carbon free energy and capacity from nuclear and hydro could be less than forecast. In that case, New York’s reliance on DEFRs will increase dramatically.

The heart of our argument is that Combined Heat and Power (CHP) systems operating on low and zero-carbon fuels is an efficient and economical approach for meeting that State’s need for dispatchable, emissions free resources that are distributed and flexible in their operation. The development of a resilient, reliable and economically viable system, one that doesn’t further exacerbate existing energy burdens requires an important role for CHP. To this point in the Climate Plan Scoping process, CHP has been an overlooked opportunity, an important part of the solution set that we argue has been hiding in plain sight.

# Chapter 2 The Time is Now to Decarbonize Our Economy

CHP’s role in a decarbonized world has been ignored in the Draft Scoping Plan. The transition to a decarbonized economy is as urgent as it is important. The transition is going to be complex and, it is not going to be inexpensive. CHP, strategically and smartly used, provides benefits such as energy efficiency, productivity, resiliency, lower capital costs, lower operating costs, and facilitates resiliency for hospitals, campuses, and critical infrastructure. Affordability is going to be a really important factor as we move forward. Therefore, all effective measures should be considered.

Low and moderate income (LMI) households in New York State already suffering a high and rising energy burden, pursuing a large build-out of renewables and batteries must include a rigorous accounting of future energy costs associated with a selected “pathway” or resource plan. With LMI households in New York State already suffering a high and rising energy burden, energy affordability is a matter of increasing concern[[1]](#footnote-1). New Yorkers have fallen further behind on utility bills during the pandemic, with total energy arrears of about $1.8 billion, according to January data from the state’s Public Service Commission. That’s more than twice the total before the pandemic, observers say[[2]](#footnote-2).

Furthermore, the selected pathway must pass a high standard for resiliency in providing heating, cooling, and power for system disruptions of extended duration. We know that the societal costs of energy disruptions fall disproportionately on LMI communities with serious equity and energy justice implications. The scope of the failures in heat and/or hot water services for NYCHA residents, is a well-known and well documented matter.[[3]](#footnote-3)

For these reasons we are in complete agreement with the draft scoping plan that low-carbon fuels such as bioenergy or green hydrogen have a role. On-site consumption of biogas and hydrogen can play an invaluable role in meeting system peaks, greatly reducing the need for excessively costly investment in nearly unutilized or grossly under-utilized capacity. Supplementing heat pumps in large multifamily buildings and mixed-use campuses and commercial buildings, as well as in district heating loops can provide significant cost savings while delivering important resiliency benefits for vulnerable populations, critical infrastructure, and important economic function. Where applicable **CHP delivers a double dividend benefit** reducing winter electric peaks at a time when solar capacity factor is at its minimum and providing thermal energy security, heating, and hot water.

Because CHP has historically used natural gas as a primary fuel, it is currently being left out of discussions on decarbonization technologies. New CHP development has been mischaracterized as creating “technology lock-in,” continuing dependence on natural gas well into the future. However, rather than a lock-in, CHP is providing carbon reduction benefits now, in the near term is a valuable utilization of existing infrastructure to integrate low and no-carbon fuels and in the longer term will transition to a dispatchable emissions free resource (DEFR).

CHP developers and end-users are experiencing a particularly challenging market environment. The misconception of CHP being tied to only natural gas is stifling investment in CHP that can readily run on advanced fuels. CHP readily operates now on RNG, biogas, and hydrogen blends of up to 20%, utilizing these fuels most efficiently. Active development, testing, and deployment of retrofit kits for existing systems to run higher hydrogen blends will bring deeper decarbonization benefits soon. As clean fuels scale in production, there will be a broad choice in available CHP systems that will operate on 100% hydrogen.

CHP does not need special treatment it asks for fair treatment. CHP systems and solutions should be compensated for their resiliency, environmental, and other societal benefits provided, as with any other clean energy technology. This is not the case today. We are asking for a reset in the consideration of CHP as a tool for decarbonization. We take the position that CHP solutions delivering measured, quantified, verified benefits be treated commensurate with other clean energy technologies and systems.

The draft scoping plan correctly recognizes that markets ought to incentivize resources with the desired attributes, provide optimal reliable grid management, and create an ecosystem sufficiently flexible to allow for technology innovation. In addition, the scoping plan needs to take account of the impact of market signals and design with considerable care and forethought incentive schemes that are unbiased and technology neutral. It should also avoid overly prescriptive codes and requirements that could lead to a lack of early adoption, economic and emissions leakage, and other unintended consequences.

Large capital investments require considerable lead times for design, development, and operation. Investors in clean energy technology solutions and systems must be confident that their solutions will be treated equally with any other approach that delivers the same required set of environmental, energy, decarbonization and resiliency benefits. We cannot stress enough that the framework of the decarbonization plan be designed to reward outcomes, desired end states, rather than a priori selected solutions.

A great deal of emphasis has been placed on sending consistent long term favorable signals supporting the development of markets for distributed and utility scale renewable energy and battery storage systems. We laud this approach, fully embrace it, and support it unequivocally. Similarly, we request that consistent, favorable, and long-term commitment signals be sent to CHP systems and solutions that fully meet all of the goals and objectives that comprise the State’s Climate Plan.

For this reason, we call for incentive structures that reward present day and near-term carbon reductions. We ask that the State conduct an analysis of the relative weight that ought to be placed on carbon reductions in the present vis-à-vis those that accrue 10, 15 or 20 years out. We request implementation of pilots and demonstration projects with advanced fuels and CHP so that the performance of these projects can then be measured and verified. The state should build market confidence and address “first mover” hesitancy with these solutions in the same way that they provide this service for other clean energy technologies. The performance of CHP solutions can then be compared against and paired in complement with other renewable and electrification solutions. Our objective is to design regulatory structures and market frameworks that will lead to optimal pathways for meeting the goals of the CLCPA.

# Chapter 6 Achieving Climate Justice

LMI households and disadvantaged communities have the greatest need for infrastructure hardening to withstand the consequences of climate change. From the recent past to the present, we’ve witnessed numerous instances of heat and hot water outages affecting unacceptably large numbers of public housing residents. When disruptions in energy supply occur, these communities are affected in an acutely disproportionate manner. They are not readily able to flee to homes outside of the area or state. They do not have excess disposable income to seek shelter in hotels or other accommodations

This emphasizes the need for resilient housing and critical infrastructure, and solutions such as CHP that provide power, heating, and cooling during outages of extended duration. A premium should be placed on demonstrably resilient systems as the Draft Scoping Plan fully expects an increase in the frequency and severity of climate events. LMI areas and disadvantaged communities, both rural and urban, are most likely to have older or inadequate electric infrastructure. It is imperative that climate plans and preferred pathways comprehensively the need for resilience across various demographic groups. These analyses must take full account of the consequences of outages occurring under fully electrified heating and cooling in the summer and winter months vis-à-vis less electrification dependent scenarios.

We acknowledge and appreciate the CJWG’s concerns over the implementation of advanced fuels. We support efforts to minimize fugitive emissions and to mitigate and reverse emissions burdens, especially in already disadvantaged communities. We stress that any lifecycle analysis of advanced fuel resources should be compared against the lifecycle costs, environmental, and health impacts of alternative strategies that deliver the same desired outcome as that meet the by advanced fuels. It’s quite plausible that the alternatives in many cases would be extended use of natural gas and other fossil fuels, or a large increase in storage and renewable build-out with its own cost, equity, and environmental impacts.

Chapter 12 of the Draft Scoping Plan acknowledges the need for supplemental heat for certain applications of air-source heat pumps (ASHPs), most likely in the form of fossil fuels in the near-term. This highlights the need for continuing investment in CHP, as it is the most efficient usage of fuels, and thus the lowest emitting option for the services it provides. Where it is applicable, CHP is the most energy efficient method of providing supplemental heat and is already the leading application for on-site consumption of various forms of biogas and renewable natural gas. The pathway is available to move from current carbon reductions today, increasingly deep decarbonization in the medium term with full transition to advanced fuels once available.

CHP is unparalleled in its ability to provide both electric and thermal resiliency and can do so with advanced fuels. CHP can provide guaranteed electric and thermal relief during climate events, supporting critical infrastructure like shelters and cool rooms, heated areas in the case of winter grid outages, and support for hospitals and healthcare providers. During some climate events, as seen historically in the case of Superstorm Sandy, grid outages could last for days or weeks, not hours. On-site battery storage cannot feasibly provide power for that duration as the technology currently stands and would be compounded by a likely lack of production by wind and solar leading up to and during the climate event.

# Chapter 7 Just Transition

We strongly support the following strategies proposed in section *7.3 Measures to Minimize the Carbon Leakage Risk and Minimize Anti-Competitiveness Impacts.*

* + - * ***Recognize Early Action:*** *The State should credit emitters for early investments to reduce their GHG emissions. The absence of early action credit could discourage short-term emission reductions by firms as they await the onset of a new system and the establishment of their baseline.*
      * ***Set Industry-Specific Benchmarks:*** *If assigning emission reduction targets to individual emitters, the State should apply benchmarks for the emissions intensity of their production, taking into account current technology and types of emissions and adjusting them over time to reduce the risk of leakage caused by the imposition of infeasible reduction requirements.*
      * ***Utilize Market Forces:*** *The State should consider measures to financially incentivize emission reductions while also providing emitters with compliance methods intended to mitigate leakage, increasing the cost-effectiveness of reducing emissions, such as through a cap-and-trade program.*

These three strategies are key to assuring that policy is focused on achieving optimal outcomes for decarbonization and climate and energy justice, rather than on deploying a particular set of pre-determined zero carbon resources. They will also produce backstops and hedging mechanisms through heterogeneity of approaches, which could be valuable in case some approaches meet unexpected barriers or delays.

CHP still meets or exceeds current benchmarks for industry and building energy usage for most sectors, and in cases of critical infrastructure does so while meeting their resiliency needs as well. Providing recognition for early action, and a trading system while end users transition to advanced fuels, electrification, or other methods of decarbonization is key to realizing short-term emissions reductions while preserving current and future investment in New York business and industry.

No matter what the fuel choice is; hydrogen, biogas, natural gas, or blends thereof, CHP is more efficient and emits less than traditional heat or electric resources using the same fuel. As New York transitions away from natural gas, CHP is still the best use of that fuel as well. The last natural gas connection turned off should be to a CHP plant, and it can easily be decarbonized with advanced fuels.

# Chapter 12 Buildings

Chapter 12 states that *“Larger multifamily, mixed-use, or complex commercial buildings that are concentrated downstate also may use supplemental heat (likely gas) for peak cold conditions, with a plan to phase it out over time as technology develops.”* CHP provides the most-efficient method of providing supplemental heat to ASHPs, whether fueled by natural gas or advanced fuels. As advanced fuels become available, CHP can readily transition to them. District thermal loops, with ASHPs or geothermal loops, may also need supplemental heat on the coldest days in the winter, and CHP can provide the same benefits in that application as well.

No matter the fuel utilized, CHP offers the double dividend benefit of increased efficiency and increased winter peak reduction. A CHP system providing supplemental heat provides grid relief through both reduction in electric usage by heat pumps, and by the electricity generated by the CHP system. This approach delivers a much greater peak-shaving benefit than boilers alone. CHP running a small number of hours per year suppresses the need for oversizing of heat pumps on site and facilitates down-sizing asset investments all the way up the supply chain, requiring less grid infrastructure and renewable generation assets. Strategically utilizing CHP systems in this manner has the potential for delivering sizable cost savings.

Resiliency is also a key factor for many buildings sectors, such as college campuses, hospitals, and multi-family buildings and campuses, especially LMI and public housing. Reliance on the grid for heating and electricity reduces redundancy and limits the length of outages that can be operated through to the duration of on-site electric storage available. CHP can provide resilient power, heating and cooling for disadvantaged communities that are most vulnerable to the consequences of climate change and historically have inadequate energy infrastructure.

In recent years, CHP has been at best ignored in policy discussions and in some instances actively discouraged. A policy environment that stifles or discourages CHP investments forfeits the opportunity to capture immediate carbon reductions and lay a supporting foundation for a transition to zero emissions onsite heating/power/cooling and resiliency solutions available from CHP systems. College campuses, multifamily buildings, hospitals, and critical business and government sites need several years to plan, design, build and commission operation of their energy systems. If highly efficient, resilient, and environmentally superior CHP systems are excluded from the potential solution set today, they will not be available at critical system inflection points in 2030, 2035, or 2040. In order for these strategies to be adopted, we emphasize the need for early adoption credits, so that building, and business owners make investments in the best possible solutions currently available. This secures carbon reductions today, and that 95% electrification and carbon reduction strategies are not waited on until technology advances. An ASHP with a supplemental CHP system provides the functionality that building owners and tenants need, while providing substantial carbon reductions. This strategy also requires that “all-electric” codes developed and implemented do not exclude the identified roles of advanced fuels, and do not place infeasible requirements on current or prospective projects.

# Chapter 13 Electricity

To meet the targets laid out in CLCPA, there is a need for a large amount of dispatchable emissions-free resources (DEFRs). The NYISO has identified a potential need beyond NYSERDA’s New York Power Grid Study,[[4]](#footnote-4) stating up to 32 GW of DEFRs would be needed to stabilize the grid at winter peak in 2040.[[5]](#footnote-5) These DEFRs are an as-yet undefined technology, and we posit that CHP utilizing advanced fuels can meet those needs most efficiently and economically. Additionally, in the event the build out of renewables falls short of projected targets, reliance on DEFRs will increase dramatically.

The aggressive projections for deployment and performance of both solar and land-based wind generation are potential areas where the state may fall short of its 2040 goals. The NYISO projects a need for 3.5 GW of solar capacity to be installed each year between 2035 and 2040, which is unprecedented. It also calls for a 7% growth rate and an increase load factor from 25% to 37%, despite needing to expand to areas with less optimal wind speeds. If New York does not reach 3.5 GW of annual solar installations for each of 5 years, or even sees moderate underperformance in land-based wind, a large increase in DEFRs will be needed.

Another potential shortfall for reaching 100% renewable by 2040 is a reduced growth of hydro imports. If Hydro Quebec does not create any new impoundments, projected load growth in Quebec and Ontario is realized, and exports to New England are increased, Hydro Quebec may not be able to supply the 2 GW of new imported hydropower included in the NYISO Pathways Report.

A third scenario, as is contemplated in the Draft Scoping Plan, is the licenses of Nine Mile Point 1 and Ginna not being renewed from 60 to 80 years. This would result in the requirement for either more DEFR or an even more aggressive build-out of solar and wind. Nine Mile Point 1, built in 1969, is the oldest operating plant in the US, and Ginna is close in age. Based on Nuclear Regulatory Commission statistics, the retirement of these plants is a likely scenario. If any or a portion of these scenarios are realized, there will be an increase in the need for DEFRs.

CHP with advanced fuels is an ideal technology to fill the role of a DEFR. It represents the most efficient use of fuel due to its high operating efficiency of 70 – 80%, compared to a combined cycle power plant of ~55%. CHP also provides power production close to point of use, eliminating transmission losses and providing local resiliency.

A renewable grid with wide-scale building electrification requires load shifting on an unprecedented scale. By highlighting low and no-carbon CHP, we identify a set of technologies and applications which are hiding in plain sight, and the key role they can play in the zero emissions grid. Pilots and demonstration projects can help develop CHP with advanced fuels and demonstrate its potential in providing crucial stability and reliability for an all-renewable grid. CHP can both provide the DEFR needs of the grid while simultaneously reducing otherwise severely onerous winter peaks. The non-carbon future includes and relies on DEFRs, and CHP is ideal to provide that service. No matter the fuel of choice, hydrogen, biogas, natural gas, or blends thereof, CHP is more efficient and emits less than central generation powerplants using the same fuel.

1. Customers, advocacy groups and elected officials oppose ConEd’s proposed double-digit rate increase. Utility Dive. Dive Brief. By Robert Walton. Date April 5,2022. [↑](#footnote-ref-1)
2. Ibid [↑](#footnote-ref-2)
3. Most NYCHA developments suffered heat and hot water losses this winter. By Valeria Ricciulli Aug 12, 2019, 1:28pm EDT. Curbed New York. https://ny.curbed.com/2019/8/12/20802116/nycha-heat-outages-hot-water-winter-legal-aid-society accessed June 15, 2022 [↑](#footnote-ref-3)
4. NYSERDA. 2021. New York Power Grid Study. Albany. Accessed at https://www.nyserda.ny.gov/About/Publications/New-York-Power-Grid-Study. [↑](#footnote-ref-4)
5. NYISO Climate Change Impact and Resilience Study: Phase II [↑](#footnote-ref-5)