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Comments on the Climate Action Council's
December 30, 2021 Draft Scoping Plan

As noted in my December 20, 2021 comments in support of issuing the draft scoping plan for public review, it has been my privilege to serve as a member of the Climate Action Council (CAC or Council) and contribute to its important work. I and National Fuel Gas Distribution Corporation continue to support the emissions reduction requirements of the Climate Leadership and Community Protection Act (CLCPA or Climate Act) and many of the initiatives advanced in the draft scoping plan issued by the Council on December 30, 2021 (Draft Scoping Plan or Plan), including the adoption of accelerated energy efficiency measures, the need for frequent evaluations to assess power system reliability, robust research and development programs to facilitate deployment of innovative emissions reductions solutions, and the use of the natural gas distribution system to deliver renewable natural gas (RNG) and hydrogen for hard-to-electrify applications.

As we progressed through the public comment phase that followed issuance of the Plan, I was pleased to see and hear the individuals who attended and shared their perspectives at the hearings that occurred across the state. Those interactions are essential to the development of a scoping plant that will meet the requirements of the Climate Act in a way that addresses the needs of the state, its distinct regions, and its diverse citizens, businesses and industries. Having heard the comments shared at those hearings, and the conversations associated with my many meetings with individuals and groups regarding the Climate Act and Draft Scoping Plan over the past several months, I remain convinced that the Draft Scoping Plan is deficient as it fails to answer salient questions about the costs, financial and affordability impacts associated with its recommendations. In addition, some of the Plan's recommendations are contrary to a responsible energy transformation in the state, including mandated electrification requirements such as bans of natural gas and natural gas appliances, a premature and unsupported conviction to decommission much of the natural gas system and a failure to fully explore the decarbonization potential of that system and the alternative fuels that can flow through it to reduce emissions across multiple sectors and regions in the state. These recommendations are particularly surprising given the Plan's acknowledgment that "even after full deployment of available clean energy technologies, there is a remaining need for 15 GW to 25 GW of electricity generation in 2040 to meet demand and maintain reliability, although that gap may change over time" and that there should be "a focus on identifying and developing solutions for dispatchable technologies that can be called on as needed to balance supply and demand."[1] My comments below are offered with a constructive spirit and a determination to continue to work cooperatively with my fellow Council members to develop a final scoping plan that ensures the critical requirements of reliability, resiliency and affordability for New York's residents, businesses and industries.

[1] Draft Scoping Plan, at p. 176.

I. New York's Energy Transformation Must be Accomplished Responsibly

New York is on the cusp of a highly complex energy transformation driven by the Climate Act's ambitious emissions reduction requirements. As noted in the Draft Scoping Plan, the "Climate Act solidifies New York's status as a climate leader. It establishes the country's – and perhaps even the planet's – strongest GHG emission reduction and clean energy requirements" and "the scale of the effort to implement the Climate Act is enormous."[2] These sentiments have been echoed by the New York Public Service Commission (PSC), which in a recent order indicated that:

> The Climate Leadership and Community Protection Act (CLCPA) is the most comprehensive and ambitious climate policy legislation enacted in the country. The CLCPA set nation-leading climate and energy goals in the form of greenhouse gas (GHG) emissions reductions targets and standards to ensure that the benefits of clean energy investments directly serve disadvantaged communities in the State that have been disproportionately impacted by climate change. *The changes contemplated by the CLCPA are expected to profoundly transform the State's regulatory landscape and impact every sector of the economy*."[3] (Emphasis added)

In light of this profound transformation and its anticipated broad impacts on the state it is critical that the Council's final scoping plan ensure that the transformation is accomplished in a responsible manner that maintains reliability, resiliency and affordability. The Draft Scoping Plan fails to fully and transparently address these issues. Further, the Plan's feasibility is undermined by its endorsement of the decommissioning of critical energy infrastructure and failure to fully explore existing and new technologies that can address cost and reliability concerns. These same aspects of the Draft Scoping Plan will also result in increased costs associated with achieving the emissions reduction requirements of the Climate Act.

A. <u>The Energy Transformation Should Not Degrade Energy Reliability and Resiliency for New Yorkers</u>

On December 14, 2021, just days before the Council voted to release the Draft Scoping Plan for public comment, Emilie Nelson, Executive Vice President of the New York Independent System Operator (NYISO) and Power Generation Advisory Panel member for the CAC, sent an email to the Council attaching the NYISO's *2021-2030 Comprehensive Reliability* Plan (CRP). Noting that the CRP is "an important component of the NYISO's reliability planning process and serves to identify the impacts of a changing grid as well as risks to reliability over a ten-year time frame" Ms. Nelson alerted the Council that the CRP "finds that the margin to maintain reliability over the next ten years will narrow, or could even be eliminated, if certain efforts to advance the

[2] Draft Scoping Plan, at p. 21.

[3] *Order on Implementation of the Climate Leadership and Community Protection Act*, In the Matter of Assessing Implementation of and Compliance with the Requirements and Targets of the Climate Leadership and Community Protection Act, Case 22-M-0149, (May 12, 2022) (CLCPA Order).

grid are delayed" and that "[e]ven under forecasts for normal weather, future resource adequacy margins are tightening across the New York grid, from Buffalo to Long Island. Extreme weather events, such as heatwaves or storms could eliminate those thin margins, particularly in New York City." In the CRP itself, the NYISO, the organization responsible for evaluating the state's power system to prepare for future reliability risks, notes 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."[4] In materials issued by the NYISO highlighting the findings of the CRP, it states further that "[t]he system may cross a reliability 'tipping point' in future years such that the transmission could not fully serve the demand" and Zach Smith, Vice President of System and Resource Planning for the NYISO, cautions that:

> The latest study demonstrates that our reliability margins are thinning to concerning levels beginning in 2023. We have to move carefully with the grid in transition in order to maintain reliability and avoid the kind of problems we've seen in other parts of the U.S.[5]

The NYISO's recent *Power Trends 2022* report echoes these concerns, and notes that "[a] successful transition of the electric system requires replacing the reliability attributes of existing 'fossil'-fueled [sic] generation with similar capabilities. These attributes are critical to a dynamic and reliable future grid." Among the dispatchable emission-free resources the NYISO is developing to address the intermittency from increased renewables are green hydrogen and RNG.[6]

Relying on public data generated by the NYISO, the Utility Consultation Group[7] issued a case review for January 2022 – *Renewable Intermittency and the Importance of Dispatchable Generation in the Winter New York Electric Market* – which found that the real-life observed availability of intermittent generation this past January "underscores the importance of implementing the CLCPA transition in a measured manner to ensure system reliability and

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[4] *2021-2030 Comprehensive Reliability Plan*, New York Independent System Operator, (December 2, 2021), available at https://www.nyiso.com/documents/20142/2248481/2021-2030-Comprehensive-Reliability-Plan.pdf.

[5] *Study Findings: Power Grid Reliability Risks*, NYISO CRP, available at https://www.nyiso.com/documents/20142/26735166/CRP-Study-Examines-Power-Grid-Reliability-Risks.pdf/b34771e4-7f34-aea5-d277-52e9a5966adc?t=1638540792179.

[6] *Power Trends 2022, The Path to a Reliable, Greener Gid for New York*, The New York ISO Annual Grid & Markets Report (June 2022), at pp. 5, 29.

[7] The Utility Consultation Group (UCG) was formed in December of 2020 in connection with the CAC 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.

public safety are maintained."[8] The UCG noted that January 2022 was a period of sustained cold temperatures throughout New York and the Eastern United States, but wind and other renewable resources only accounted for approximately 5% of total electricity generation during this time of high energy demand and cold weather. The NYISO data showed that "low and inadequate wind generation was experienced on 25% of the days for the month due to lack of wind, and low solar generation on 22% of the days due to shorter daylight hours and heavy cloud cover." Noting the weather dependence of today's renewable resources, the UCG concludes in its case study that "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." Among the dispatchable energies advocated by the UCG to mitigate the intermittence of renewables are low-carbon fuels that can be utilized by leveraging existing pipe networks.

Given this data, the need for protecting the reliability and resiliency of New York's energy delivery systems cannot be overstated. The New York State Reliability Council (NYSRC), in its comments on the Draft Scoping Plan, states that "there are many unknowns in the transition to the CLCPA's goals. The risks of not reaching a goal in the time required is real" and that "delaying or changing a CLCPA goal would be preferable to the risk of a wide scale blackout and associated public safety concerns."[9] A responsible way to meet the Climate Act's aggressive emissions reduction requirements and simultaneously address the serious concerns raised by the NYISO and the NYSRC is, as the UCG suggests in its January case study, to leverage the existing natural gas delivery system. During the increasingly frequent extreme weather events that have impacted New York, the state's extensive network of underground storm-resistant facilities has and will continue to ensure the consistent delivery of energy even as other less resilient above-ground facilities are damaged and rendered inoperable by these weather events. Similarly, the state's approximately 50,000-mile pipeline system will be available to transport low- and no-carbon energy like RNG and hydrogen, providing a reliable source of dispatchable energy for New Yorkers during those inevitable times when renewable sources do not generate sufficient energy.[10] Like the UCG, NYISO and the NYSRC, the Council's consultant Energy + Environmental Economics, Inc. (E3) has recognized that "firm resources will be needed to ensure year-round reliability, especially during periods of low renewables output,"[11] and the CAC itself, in the chapter of its Draft Scoping Plan devoted to an evaluation of the state's electricity sector, notes that

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[8] *Renewable Intermittency and the Importance of Dispatchable Generation in the Winter New York Electric Market Case Review – January 2022*, UCG, (April 20, 2022), available at https://junystg.prod.acquia-sites.com/ucg_clcpa.

[9] *NYSRC Comments on CAC's Draft Scoping Plan*, New York State Reliability Council (June 22, 2022) (NYSRC Comments), at p. 12.

[10] "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." Center on Global Energy Policy at Columbia University, *Investing in the US Natural Gas Pipeline System to Support Net-Zero Targets*, (April 2021) (Columbia Infrastructure Study), available at https://www.energypolicy.columbia.edu/sites/default/files/file-uploads/GasPipelines_CGEP_Report_042221.pdf.

[11] *Pathways to Deep Decarbonization in New York State* (June 24, 2020), Energy & Environmental Economics, Inc., available at https://climate.ny.gov/CAC-Meetings-and-Materials.

> Current studies identify that even after full deployment of available clean energy technologies, there is a remaining need for 15 GW to 25 GW of electricity generation in 2040 to meet demand and maintain reliability, although that gap may change over time. This calls for a focus on identifying and developing solutions for dispatchable technologies that can be called on as needed to balance supply and demand.[12]

Despite this acknowledgment in the electricity chapter of the Draft Scoping Plan, and the pointed warnings of the NYISO regarding the fragility of the electric grid, the Draft Scoping Plan inexplicably fails to fully consider the decarbonization potential of the natural gas system and instead in its Gas System Transition chapter calls for a "strategic decommissioning of much of the fossil gas distribution system" and concludes that under *all* of the scenarios presented in the Plan "the vast majority of current fossil gas customers (residential, commercial, and industrial) will transition to electricity by 2050" as the natural gas system is "downsized substantially."[13] These conclusions fly in the face of the expert evidence presented to the Council and, as described in greater detail below, will eliminate for New Yorkers a key resource that can ensure a reliable and more cost effective energy transformation. Near complete reliance on a single energy source that is prone to disruption will pose significant reliability and resiliency concerns for the state; an unnecessary risk given the availability of the existing natural gas system to reliably deliver energy. As noted by the Center for Global Energy Policy at Columbia University, "investments in existing [pipeline] 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."[14]

B. <u>The Energy Transformation as Envisioned in the Draft Scoping Plan Will be Prohibitively Expensive for all New Yorkers</u>

Under any of the scenarios presented in the Draft Scoping Plan, the large-scale costs associated with pursuit of the emissions reduction requirements of the CLCPA total in the hundreds of billions of dollars and include an enormous electric transmission and distribution system buildout. The Plan predicts that "even with aggressively managed load, electric consumption doubles and peak load nearly doubles by 2050, and New York becomes a winter peaking system by 2035."[15] This data fails to consider regional differences across the state where some, like the western New York region, will see an approximate *quadrupling* of necessary installed electric capacity to meet the full electrification requirements of the Plan. As discussed in greater detail below, these anticipated costs can be mitigated if the state relies on the natural gas system to help facilitate emissions reductions via the pursuit of, among other

[12] Draft Scoping Plan, at p. 176.

[13] Draft Scoping Plan, at p. 264.

[14] *Investing in the US Natural Gas Pipeline System to Support Net-Zero Targets, supra.*

[15] Draft Scoping Plan, at p. 74.

initiatives, a hybrid dual-energy pathway. Reduced electric transmission and distribution buildout translates to reduced costs borne by consumers, particularly since the existing natural gas distribution system has largely already been paid for.

Chapter 10 of the Plan endeavors to explain how its approximate $300 billion dollar cost is more than outweighed by certain health and avoided GHG benefits.[16] While the cost benefit analysis suffers from a lack of specificity, the GHG benefit calculation in particular has come under fire because, among other deficiencies, its alleged offsetting benefits are global in nature and not unique to New York.[17] With respect to health benefits that may flow from the recommendations in the Draft Scoping Plan, no consideration has been given to the harmful health effects that could result from a failure of energy reliability which, as noted above, is a serious risk under the current iteration of the Plan.[18] This is no minor oversight.

Power outages can significantly affect daily life, particularly when they continue for extended periods of time. For instance, when Tropical Storm Isaias hit eastern New York in August 2020 it caused extensive damage to the electric distribution system, resulting in days-long outages for over 900,000 electric utility customers. This incident occurred at the height of the COVID-19 pandemic when thousands of New Yorkers were forced to work from home, and it prevented many from being able to work or perform their daily responsibilities because they "lacked electric, telephone, cable, and internet service for extended periods of time during which temperatures reached or exceeded 90°F."[19] More importantly, in addition to generally disrupting daily life activities, power outages can also seriously impact public health and safety. According to a study prepared for the New York State Energy Research and Development Authority (NYSERDA), large-scale outages can exacerbate chronic health conditions, particularly when losses of air conditioning or heating occur on very hot and cold days.[20] Prolonged outages can also have significant health effects on the most vulnerable residents, such as older adults who rely on others to maintain their food and medication supplies, and individuals who depend on electric medical equipment. Power outages can also cause compromised refrigeration, which leads to increased food spoilage and foodborne illness, as well as inadequate pharmaceutical and other supply storage.[21] Prolonged power grid disruptions carry the risk of causing widespread

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[16] Draft Scoping Plan, at pp. 80-81.

[17] *Fuzzy Math: The Climate Action Council's $260 Billion Mistake*, Empire Center, (May 24, 2022), available at https://www.empirecenter.org/publications/fuzzy-math-the-climate-action-councils-260-billion-mistake/.

[18] In their comments on the Plan the NYSRC acknowledge that failure to maintain reliability and resiliency can have a "direct and significant impact on New York State's public health and safety." NYSRC Comments, at p. 3.

[19] *Order to Commence Proceeding and Show Cause*, In the Matter of Department of Public Service Staff Investigation into the Utilities' Preparation for and Response to August 2020 Tropical Storm Isaias and Resulting Electric Power Outages, Case 20-E-0586, (November 19, 2020), at p. 9.

[20] *Health Impacts of Power Outages and Warm Weather on Food Safety*, New York City Department of Health and Mental Hygiene, NYSERDA Report, (August 2018), at pp. 18-25.

[21] *Healthcare Facilities and Power Outages: Guidance for State, Local, Tribal, Territorial, and Private Sector Partners*, Federal Emergency Management Agency, (August 2019).

health, safety and other impacts throughout affected areas, and these impacts must be considered as part of any cost-benefit analysis included in the Plan.

In addition to these cost concerns on the macro level, the Draft Scoping Plan makes no material attempt to address *individual* cost impacts, despite multiple requests[22] that they be included in the Plan throughout its development. This information should have been included in the Plan so that it could be part of the public discourse and consideration of the Plan and the impact it will have on residents, businesses and industries in the state. This omission is especially concerning in light of the limited consumer-based information that has been developed by the CAC's consultants that suggests material financial impacts on New Yorkers, generally estimating a cost of between $20,000 to $50,000 to convert a natural gas home in upstate New York to all-electric.[23] Based on this data, in National Fuel's western New York service territory alone the estimated cost for consumers to electrify their homes would be between $10 and $25 billion. New York simply cannot pursue a historic overhaul of its energy systems without a clear picture of all the costs consumers will bear, particularly low-income consumers and those living in disadvantaged communities.

Because individual costs associated with pursuit of the various scenarios under the Plan were not included in the Plan and have not been provided since its issuance, the public has been unable to evaluate and respond to the Plan's proposals on an informed basis. This concern was raised by multiple commenters at the recently completed public hearings on the Draft Scoping Plan, and the PSC recognized the significance of these cost concerns in its May 12, 2022 CLCPA Order, where it stated

> The Commission recognizes that utility ratepayers are currently supporting a significant portion of the clean energy investments and, therefore, *it is critical that the State pursues the most cost-effective solutions to meeting the goal of the CLCPA to maintain energy affordability* and, where possible, seek alternative funding mechanisms.[24] (Emphasis added)

Any final scoping plan and resulting regulatory framework that fails to disclose, much less address these serious cost concerns jeopardizes public confidence in the Plan's substance and the CAC's procedures.

Key Recommendations:

- **Given the significant reliability and resiliency concerns raised by the NYISO, the NYSRC and others, the state should not rely on a single form of energy or energy**

[22] *Comments of Multiple Intervenors on Draft Scoping Plan Issued by Climate Action Council*, Multiple Intervenors by Michael B. Mager (June 22, 2022) (Multiple Intervenor Comments), at p. 4.

[23] *Energy Efficiency and Housing Advisory Panel, Meeting 8* (February 10, 2021), available at https://climate.ny.gov/CAC-Meetings-and-Materials/Advisory-Panel-Meetings-and-Materials.

[24] CLCPA Order, at p. 11.

system, particularly one that is prone to disruption by extreme weather events, for its energy needs. The storm-hardened, underground natural gas system should be leveraged to achieve the state's decarbonization efforts, and New York's historic energy transformation should be carefully coordinated to ensure that critical reliability, resiliency and affordability needs are met.

- **A thorough quantitative analysis of all costs associated with the various emissions reduction initiatives identified in the Draft Scoping Plan must be performed and shared with the public. This analysis is long overdue and is critical to an understanding of cost impacts on New York's residents and businesses and to the identification of initiatives that will ensure energy affordability, particularly for low-income customers and individuals living in disadvantaged communities.**

II. The Natural Gas System Should be Leveraged to Ensure a Responsible Energy Transformation

An effective means of addressing the cost concerns raised by the PSC and other stakeholders, as well as the reliability and resiliency concerns addressed above, is to leverage the existing natural gas system to achieve the emissions reduction goals of the Climate Act. Columbia University's Center on Global Energy Policy endorsed this approach in its *Investing in the US Natural Gas Pipeline System to Support Net-Zero Targets* study and, as discussed below, multiple studies have concluded that alternative fuels such as RNG and hydrogen can decarbonize and be transported by the natural gas system. The Council's own expert, E3, in a 2022 report developed for the Massachusetts *Future of Gas* proceeding has made findings consistent with this approach. Specifically, in that report E3 concluded that

> A coordinated gas and electric decarbonization strategy, utilizing a diverse set of technologies and strategies, is likely to be better able to manage the costs and feasibility risks of decarbonization than scenarios that rely more heavily on single technologies or strategies. … The LDCs should explore mechanisms to coordinate use of the gas and electric systems to minimize the combined cost of decarbonizing building heating needs for customers.[25]

Despite these acknowledgments of the decarbonization value of the natural gas system, Chapter 18 of the Draft Scoping Plan pre-determines the demise of the natural gas system, indicating that "it will need to be *downsized substantially* as this transition proceeds" and calling for "strategic *decommissioning of much of* the fossil gas distribution system".[26] (Emphasis added) When discussing the transition away from gas the Plan states that it "should take place *as quickly as*

[25] *The Role of Gas Distribution Companies in Achieving the Commonwealth's Climate Goals – Independent Consultant Report*, E3 and ScottMadden Inc. (March 18, 2022), at p. 19. In October 2020, the Massachusetts Department of Public Utilities (DPU) opened Docket 20-80 with the intention to examine the role of Massachusetts gas utilities in helping the Commonwealth achieve its 2050 climate goals. The Massachusetts DPU directed the utilities to engage an independent consultant to support them in this investigation.

[26] Draft Scoping Plan, at p. 264.

possible and to the *maximum extent possible* and *include the production, transmission and distribution components of the system*."[27] (Emphasis added) Nothing in the Climate Act's call for emissions reductions requires this aggressive and ill-advised dismantling of the natural gas system. Rather than prematurely decommissioning that system, the state's efforts should be centered on its decarbonization and coordinated optimization with the electric system to responsibly achieve the Climate Act's emissions reduction targets. The natural gas system is an ideal vehicle in this regard given its continually reducing emissions profile and its ability to reliably transport alternative fuels to decarbonize multiple sectors including, among others, the buildings sector using a hybrid dual-energy approach and the industrial sector, which is particularly hard, and in some cases impossible, to electrify and is uniquely susceptible to economic and emissions leakage concerns.

A. Emissions from the Natural Gas System Continue to Reduce Substantially

As a result of efforts by gas utilities to enhance the safety and sustainability of their distribution systems, emissions from those systems continue their historical decline, and they will be an increasingly optimal method to distribute low- and no-carbon fuels. 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 natural gas distribution system declined 69% from 1990 to 2019. All the major New York utilities have programs that contributed to these emissions reductions in New York. Since 2011 alone, as reflected in their respective Subpart W filings with the Environmental Protection Agency (EPA), these utilities have reduced their greenhouse gas emissions by 38%, saving more than 470,000 metric tons of carbon dioxide equivalent emissions over that time. The utilities will continue these programs, resulting in ongoing emissions reductions,[28] as well as increasing safety and system reliability for customers. New York's utilities modernize 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. The PSC continually evaluates the utilities' leak management and leak prone pipe replacement programs, which are the primary driver in the reduction of leaks and fugitive methane emissions. According to the PSC's most recent *Pipeline Safety Performance Measures Report* the overall backlog of potentially hazardous leaks on utility systems has decreased more than 96% since 2003.[29] Taking into account the robust pace of their system modernization programs, and the varying size and complexities of the utilities' systems, a majority of the utilities estimate that *all* of the leak prone pipe on their systems will be replaced in the years leading up to 2030, with the remaining utilities completing that process well prior to the anticipated attainment of the emissions reduction requirements of the CLCPA.

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[27] Draft Scoping Plan, p. 266.

[28] The Draft Scoping Plan acknowledges that the emissions reductions associated with the utilities' repair and replacement programs are significant, noting that "much of the leak prone pipe replacement is necessary for safety reasons, and will continue to produce real reductions in emissions, while additional replacement may be necessary for further emission reductions." Draft Scoping Plan, p. 265.

[29] *2021 Pipeline Safety Performance Measures Report*, In the Matter of Staff's Analysis of Local Distribution Company (LDC) Performance Related to the Pipeline Safety Measures, Case 22-G-0165 (June 16, 2022), at p. 30.

A number of utilities have established aggressive system emissions reduction targets for the future. For example, more than two decades ago National Fuel undertook an ambitious program to modernize its system and, to date, the modernization of its pipeline network and other infrastructure investments have driven a significant reduction in its GHG emissions. From 1990 to 2020 National Fuel's EPA Subpart W emissions reduced 64%, and the Company's continuing modernization efforts are expected to drive additional GHG reductions in the future – 75% by 2030 and 90% by 2050. These emissions reductions associated with natural gas infrastructure pursued by National Fuel and other utilities may be augmented by eliminating emissions from natural gas itself as carbon capture and storage technologies are pursued. In its recent *Climate Change 2022 – Mitigation of Climate Change report*, the Intergovernmental Panel on Climate Change (IPCC), the United Nations body for assessing the science related to climate change, acknowledged that investments in these technologies "could allow fossil fuels to be used longer, reducing stranded assets."[30] In that regard, John Kerry, the Biden Administration's Special Presidential Envoy for Climate, recently noted the significant investments being made in carbon capture technologies and stated that "Natural gas is central to a smart and achievable policy to cut greenhouse-gas emissions today. In the near term, that means pairing with renewables to clean up electricity. In the next decade, it also means abating emissions from gas itself."[31]

B. Alternative Fuels Should be Used to Decarbonize the Gas System and Critical Energy Sectors

In addition to exploring carbon capture technologies to directly address emissions from natural gas, the final scoping plan issued by the Council should fully support further research, development and implementation of alternative energy technologies like RNG and hydrogen to reduce emissions in multiple sectors. The Draft Scoping Plan endorses these technologies in a muted way, limiting their application only to certain sectors. For example, in *Chapter 5. Overarching Purpose and Objectives of the Scoping Plan*, in its summary of key strategies that will be fundamental to achieving the emissions reduction goals of the Climate Act, the Plan lists these technologies as a final strategy relevant only to the industrial sector - "[a] diverse portfolio of solutions in industry, including efficiency, electrification, and limited and strategic use of low-carbon fuels and carbon capture technologies for certain industrial applications" – and even in that single sector the use is qualified as "limited and strategic."[32] Further, in *Chapter 9. Analysis of the Plan*, of the multiple pathways to achieving the CLCPA's GHG emissions limits included as key findings in the Plan and supported by its underlying integration analysis only one addresses alternative fuels and that finding is similarly limited to "sectors that are challenging to

[30] *Climate Change 2022 Mitigation of Climate Change, Summary for Policymakers*, Intergovernmental Panel on Climate Change (2022), at p. 32, available at https://www.ipcc.ch/report/sixth-assessment-report-working-group-3/

[31] *John Kerry Responds on the Future of Natural Gas*, Wall Street Journal (April 26, 2022), available at https://www.wsj.com/articles/john-kerry-natural-gas-climate-change-global-warming-clean-energy-net-zero-11650899266

[32] Draft Scoping Plan, p. 31.

electrify."[33] Even the scenario presented in the Plan as including the greatest use of alternative fuels is hampered by these constraints.

> The" Strategic Use of Low-Carbon Fuels" scenario modeled in the Integration Analysis projects that 20% of installed heat pumps are GSHP and 80% are cold climate ASHP, of which one in ten ASHP are modeled to use fuel back-up to meet heating demands during the coldest 5% of hours. In this scenario, nearly all RNG is used in the buildings sector, assuming a 9% RNG blend in gas pipelines by 2030 and 100% RNG to meet dramatically reduced gas demand in buildings by 2050. *The scope of RNG use is limited by available feedstocks and by the need to mitigate statewide emissions from all sectors (since under the Climate Act requirements for emissions accounting, RNG is a low-carbon fuel but it is not zero-emissions).* Green hydrogen use is limited mostly to transportation, industrial purposes, and electric reliability, though a small amount of hydrogen is used to power the Con Ed district system by 2050, with steam demand reduced by about 66% as many existing customers electrify in whole or in part.[34] (Emphasis added)

This limited utilization of alternative fuels - e.g., confining RNG use almost exclusively to the buildings sector, and in restricted amounts – is concerning since it fails to recognize the decarbonization potential of RNG in multiple applications and sectors. This potential was highlighted in a recent report prepared by ICF, a global consulting services company, for NYSERDA, which noted that "RNG is a pipeline-quality gas that is fully interchangeable with conventional natural gas. As RNG is a 'drop-in' replacement for natural gas, it can be safely employed in any end use typically fueled by natural gas, including electricity production, heating and cooling, industrial applications, and transportation."[35] Also, importantly, the Draft Scoping Plan's rationale for constraining the use of RNG, that its "use is limited by available feedstocks and the need to mitigate statewide emissions from all sectors … [and] RNG is a low-carbon fuel but it is not zero-emissions" is inaccurate, as described below.

1. <u>Significant Amounts of RNG are Projected to Exist in and Around New York</u>

Studies have demonstrated that there will be sufficient amounts of available RNG in and around New York to facilitate the state's decarbonization efforts. According to a 2019 study performed for the American Gas Foundation by ICF, New York will have an estimated in-state RNG technical potential in 2040 of 271.1 trillion Btu/year from available landfill, animal manure, wastewater treatment, food waste, agricultural residues, forest residue, municipal solid waste resources and energy crops. There are additional amounts of RNG available if one looks outside New York, as the state has when relying on out-of-state renewable generation.

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[33] Draft Scoping Plan, p. 74.

[34] Draft Scoping Plan, p. 121, ftnt. 158.

[35] *Potential of Renewable Natural Gas in New York State*, NYSERDA Report Number 21-34 prepared by ICF Resources, LLC (April 2022) (*Potential of RNG*, NYSERDA Report), available at https://www.nyserda.ny.gov/-/media/Files/EDPPP/Energy-Prices/Energy-Statistics/RNGPotentialStudyforCAC10421.ashx

According to ICF, the Middle Atlantic and New England regions of the Northeast will have an estimated RNG technical potential by 2040 of up to 952 trillion Btu/year.[36] ICF notes in a subsequent, February 2022 analysis it prepared for the American Gas Association that the RNG supplies it forecasted in its 2019 study are likely even greater than anticipated.

> A lot has changed since 2019. Climate policy discussions have increasingly focused on the need for deeper reductions and more solutions to be brought to the table to reach net-zero targets. RNG markets have also continued to grow rapidly in regions like California and British Columbia, Canada – where different market mechanisms have assigned a premium value to RNG and driven the construction of projects. Some projects that would not previously have been thought to be economic have also been developed through innovations such as clustering enabling agricultural facilities together to achieve the scale required for an RNG project. There are also several promising technologies for both anaerobic digestion and thermal gasification feedstocks that could unlock more RNG supply potential.[37]

More recently, in April 2022, in its *Potential of RNG* report for NYSERDA, ICF concluded that the state has significant potential RNG feedstock resources (from food waste, manure, agricultural residues, landfills, water resource recovery facilities as well as woody biomass and municipal solid waste), confirmed a slightly higher technical potential for RNG in New York in 2040 of 272.3 trillion Btu/year and drew enlightening comparisons with natural gas consumption in the state in 2017. Natural gas consumption for multiple combined sectors (residential, commercial, industrial, transportation and electrical generation)[38] was 1,280 trillion Btu that year, only slightly higher than the projected combined technical potential of RNG in New York and nearby regions in 2040. Even if something less than the technical potential of RNG were achieved in New York, for example 147 trillion Btu/year as modeled by ICF in one of the scenarios developed in its report for NYSERDA, that would fulfill approximately 30% of the residential consumption in that year without consideration of out-of-state sources of RNG. As residential consumption decreases over time as energy efficiency measures ramp up that percentage will increase.

A recent report issued by the State University of New York College of Environmental Science and Forestry further supports the value of RNG and confirms that RNG has "the potential to make meaningful contributions to New York's climate and human health targets

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[36] *Renewable Sources of Natural Gas: Supply and Emissions Reduction Assessment*, American Gas Foundation Study prepared by ICF Resources, LLC (December 2019), available at https://gasfoundation.org/2019/12/18/renewable-sources-of-natural-gas/

[37] *Net-Zero Emissions Opportunities for Gas Utilities*, American Gas Association study prepared by ICF Resources, LLC (February 2022), available at https://www.aga.org/globalassets/research--insights/reports/aga-net-zero-emissions-opportunities-for-gas-utilities.pdf.

[38] *Potential of RNG,* NYSERDA Report, *supra*.

under the CLCPA",[39] and an analysis conducted for the U.S. Department of Energy's Argonne National Laboratory documents rapid growth in RNG production nationwide with production capacity increasing 24% since 2020 and the number of RNG production facilities growing 33.5% since December 2021, including numerous facilities in New York and neighboring states.[40] Of course, this growth would increase exponentially in New York if the state were to adopt policies that would encourage development of biofuels in the state such as renewable gas standard and low carbon fuel standard (LCFS) programs. California and Oregon have approved renewable gas standards that allow utilities to procure and transport increasing amounts of RNG on their systems over time, displacing traditional natural gas and decarbonizing those systems. Similarly, LCFS programs have been adopted in California, Oregon, Washington and British Columbia, with several other states considering their own programs, all designed to reduce petroleum dependence and encourage the production and use of low-carbon transportation fuels. A primary driver for these renewable gas standard and LCFS programs is to encourage the development and use of low- and no-carbon fuels that reduce emissions by capturing methane from the various sources discussed above that would otherwise escape into the atmosphere.

a. New York's Novel GHG Accounting Standards Will Inhibit RNG Development

In order for New York to successfully adopt LCFS and renewable gas standard programs and avail itself of the decarbonization benefits associated with RNG it must first resolve two GHG accounting issues that are unique to the state. Specifically, its approach to methane global warming potential (GWP) and gross emissions accounting.

Many states and the federal government account for GHGs using 100-year GWPs. The Climate Act takes a different approach, accounting for pollutants on a 20-year lifetime. Using a 20-year GWP value for methane results in a roughly three times higher GWP than the 100-year accounting standard, effectively grossly inflating the negative consequence of methane leakage and putting New York notably out-of-step with other jurisdictions.

Similarly, in its Part 496 regulations (6 NYCRR 496.3(f)) New York's Department of Environmental Conservation adopts a gross accounting method when determining its Statewide GHG Emission Limit. In this method New York uses the emission factor for natural gas for RNG, which does not accurately capture the lifecycle of the carbon content in RNG. RNG is produced from biogenic carbon, which is carbon from natural carbon cycles. This differs from natural gas that is derived from fossil carbon. Most RNG is derived from sources that are currently emitting biogenic methane and carbon dioxide into the atmosphere, sources like

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[39] *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, HakSoo Ha, Ph. D and Tristan R. Brown, J.D., Ph. D (January 2022), available at https://static1.squarespace.com/static/53a09c47e4b050b5ad5bf4f5/t/61f9865afb2b77058f2f4515/1643742811198/BBD_RNGwhitepaper.pdf.

[40] *Expanding RNG Could Be a Key Strategy for Cutting Methane Emissions and Tackling Climate Change,* U.S. Department of Energy Analysis prepared by Energy Vision (March 2022), available at https://energy-vision.org/rng-project-database/.

landfills, wastewater treatment plants, agricultural waste, and other organic decomposition sites. RNG captures those emissions and uses that energy to displace natural gas use. The CLCPA gross accounting method of claiming RNG is the same as fossil gas, and failing to offset RNG combustion with emissions avoided at production, is not consistent with the IPCC standards. RNG combustion accounts for no additional carbon dioxide emissions in the IPCC reporting guidelines.[41] Biomass use also reduces emissions in the Regional Greenhouse Gas Initiative (RGGI), of which New York is a member.[42] There is broad agreement across states, cities, and federal agencies that RNG use does not add emissions because it is a beneficial biofuel recognized for its biogenic origins.[43]

Given RNG's ability to function as a "drop in" replacement for natural gas and the reliability, resiliency and affordability issues faced by the state and discussed above it would be irrational and contrary to the spirit of the Climate Act not to take all steps necessary to develop a dispatchable resource that is widely regarded as carbon neutral or even carbon negative. The final scoping plan should recommend that the CLCPA, regulations and related materials be amended such that New York's GHG accounting anomalies are resolved and a more standard approach can be adopted across state and federal jurisdictions. Once these changes are made, the state should adopt mechanisms like renewable gas standard and LCFS programs to facilitate the growth of this resource and its decarbonization potential in New York.

2. Like RNG, Hydrogen has Significant Decarbonization Potential

Hydrogen is widely believed to have remarkable[44] potential to contribute to responsible emissions reductions in the future, and there are efforts underway in New York, at the federal level and globally[45] to quantify the decarbonization potential of this technology. The state is

[41] *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories,* available at https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/2_Volume2/19R_V2_2_Ch02_Stationary_Combustion.pdf

[42] *Emissions*, Regional Greenhouse Gas Initiative, available at https://www.rggi.org/allowance-tracking/emissions

[43] *An Overview of Renewable Natural Gas from Biogas*, EPA 456-R-20-001 (July 2020), available at https://www.epa.gov/sites/default/files/2020-07/documents/lmop_rng_document.pdf; *Biomass-Derived Fuels Guidance*, California Air Resources Board (January 11, 2019), available at https://www.arb.ca.gov/cc/reporting/ghg-rep/guidance/biomass.pdf?_ga=2.239461831.516273831.1650998953-356232427.1619707636; *Greenhouse Gas Emissions – Cap and Invest Program*, Washington State Legislature, available at https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65; *Greenhouse Gas Inventories,* District of Columbia, Department of Energy & Environment, available at https://doee.dc.gov/service/greenhouse-gas-inventories; *Oregon's Greenhouse Gas Emissions through 2015*, State of Oregon Department of Environmental Quality (May 2018), available at https://www.oregon.gov/deq/FilterDocs/OregonGHGreport.pdf; *Department of Energy Hydrogen Program Plan*, US Department of Energy (November 2020), available at https://www.hydrogen.energy.gov/pdfs/hydrogen-program-plan-2020.pdf

[44] *Department of Energy Hydrogen Program Plan*, US Department of Energy (November 2020), available at https://www.hydrogen.energy.gov/pdfs/hydrogen-program-plan-2020.pdf

[45] *A hydrogen strategy for a climate-neutral Europe*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions (July 8, 2020), available at https://ec.europa.eu/energy/sites/ener/files/hydrogen_strategy.pdf; *Extending the European Hydrogen Backbone, A European Hydrogen Infrastructure Vision Covering 21 Countries*, The European Hydrogen Backbone Initiative with Guidehouse (April 2021), available at

already developing its hydrogen strategy in concert with the National Renewable Energy Laboratory and the Center for Hydrogen Safety, among other groups, NYSERDA includes as key actions in its *Strategic Outlook 2022 Through 2025* the development of a comprehensive hydrogen roadmap to advance green hydrogen as a deep decarbonization technology,[46] and the Governor 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.[47] On June 6, 2022, the US Department of Energy (DOE) released a Notice of Intent to fund the Bipartisan Infrastructure Law to develop these hydrogen hubs, indicating that the associated Funding Opportunity Announcement (FOA) will issue in September or October of 2022. National Fuel is among the entities that are working together to develop a proposal that is responsive to the DOE's forthcoming FOA and to advance a vision of clean hydrogen infrastructure in the Northeast.

DOE's regional hydrogen hub initiative is one of numerous initiatives in its extensive Hydrogen Program, which is characterized by an all-of-the-above energy strategy that recognizes hydrogen as "a versatile fuel that offers a path to sustainable long-term economic growth" and "can serve as a sustainable fuel for transportation and as input to produce electricity and heat for homes."[48] The DOE's hydrogen efforts are expansive, including a broad portfolio of *hydrogen production* pathway technologies (tapping into fossil resources with carbon capture utilization and storage, extracting hydrogen from biomass and waste-stream resources and new direct water-splitting technologies), *hydrogen delivery* in various forms (including as a gas in pipelines and high-pressure tube trailers, as a liquid via tanker trucks and using chemical hydrogen carriers), *hydrogen storage* (using physical and material-based processes), *hydrogen conversion* into different forms of energy such as electricity or heat and the potential for hydrogen's use in various applications across multiple sectors, where it can provide substantial environmental and economic benefits as well as improved energy security and resiliency (e.g., the transportation, power generation and industrial and manufacturing sectors).

Utilities in New York, and several other states and countries, are currently engaged in a thorough review of the use hydrogen as a low- or no-carbon energy source including an evaluation and evolution of their natural gas distribution systems to transport and store hydrogen. Hawaii Gas currently flows hydrogen and RNG on its system and has been serving its customers with these resources utilizing a pipeline network that safely accommodates a mix of synthetic

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https://gasforclimate2050.eu/sdm_downloads/extending-the-european-hydrogen-backbone/; *Hydrogen Strategy for Canada, Seizing the Opportunities for Hydrogen, a Call to Action*, Government of Canada and other Stakeholders (December 2020), available at https://www.nrcan.gc.ca/sites/nrcan/files/environment/hydrogen/NRCan_Hydrogen-Strategy-Canada-na-en-v3.pdf

[46] *Toward a Clean Energy Future: A Strategic Outlook 2022 Through 2025,* New York State Energy Research and Development Authority (2022), available at https://www.nyserda.ny.gov/-/media/Files/About/Strategic-Plan/strategic-outlook.pdf.

[47] See, https://www.governor.ny.gov/news/governor-hochul-announces-multi-state-agreement-signed-major-hydrogen-ecosystem-partners

[48] *Department of Energy Hydrogen Program Plan*, *supra*.

natural gas, liquid natural gas, RNG and hydrogen.[49] National Fuel is currently developing demonstration projects to facilitate the integration of hydrogen in its gas system. In North Tonawanda, the company will be working with industry leaders to blend green hydrogen into the existing natural gas piping that feeds a commercial customer. The current equipment will be monitored for emissions reductions, efficiency and overall operation at various blend percentages. At National Fuel's training facilities, hydrogen will be blended with natural gas to feed the existing building heating equipment in addition to equipment used for training such as stoves, hot water tanks and furnaces.[50]

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In light of the decarbonization potential of hydrogen and RNG, the Draft Scoping Plan's limited application of these technologies to narrow sectors and circumstances should be expanded, particularly at this early stage of the state's complex energy transformation. The opportunity to fully research and develop these technologies must be maximized, and the state's extensive natural gas pipeline system should be preserved during this process and viewed as a potentially significant contributor in combination with the electric system to the responsible attainment of the Climate Act's ambitions emissions reduction targets.

C. Alternative Fuels are a Solution for Multiple Sectors, Including Buildings and Industry

1. The Scoping Plan Should Adopt a Rational Approach to Building Decarbonization

Chapter 12 of the Draft Scoping Plan relates to New York's residential and commercial buildings sector and notes that the sector was the largest source of emissions in the state in 2019.[51] The Plan's approach to decarbonizing this sector, calling for mandated electrification of heat, bans on appliances, prohibitions on natural gas service, etc., is extreme and is likely to result in impairment of energy reliability and resiliency and increased costs for consumers. Not only are these measures dramatically premature given the early stage of the state's energy transformation, as discussed above they are unnecessary to fulfilling the goals of the Climate Act and may limit New York's ability to achieve a responsible energy transformation. A better approach to the challenge presented by the buildings sector – and an approach that will assure greater public acceptance - is to focus first on energy efficiency and then on ways the natural gas

[49] Information on Hawaii Gas' hydrogen and RNG programs is available at the following link: https://www.hawaiigas.com/clean-energy/decarbonization

[50] In addition to alternative fuels, National Fuel is also studying the technical and economic feasibility of community heat pump systems as a potential non-pipes alternative in a low-income community in the City of Buffalo. The study will explore the concept of installing community heat pump systems as a potential alternative to replacing the existing natural gas infrastructure. This would allow for the potential retirement of aging gas facilities, while still serving customers' heating needs. The company's experience with sub-grade construction and owning and operating a connected pipe network make it a logical choice to develop thermal energy networks.

[51] Draft Scoping Plan, at p. 119.

and electric systems can be integrated and optimized to ensure reliable, clean energy for homes and businesses.

a. Energy Efficiency is a Necessary First Step

Energy efficiency programs are generally the least-cost approach to achieving carbon reductions, and any plan to achieve the state's decarbonization goals must focus first on the efficiency of energy use in all sectors. NYSERDA recognizes energy efficiency as a cornerstone of the state's national leadership on clean energy and combating climate change, and the PSC has likewise concluded that energy efficiency plays a key role in the achievement of the state's clean energy goals, recognizing that it can reduce or avoid the need for additional infrastructure and result in noteworthy cost reductions for customers, particularly low- and moderate- income customers.[52] Energy efficiency can be viewed as a "no-regrets" solution because by making consumption more efficient the state lowers the cost of *any* of the pathways it is considering for decarbonization. Energy efficiency investments result in immediate emissions reductions, producing well-insulated, air-sealed buildings with minimized carbon footprints and giving customers increased control over the amount of energy they use. According to a 2020 American Gas Association report, natural gas utilities have helped their customers save 259 trillion Btu of energy and offset 13.7 million metric tons of carbon dioxide emissions from 2012 through 2018 in the US.[53] National Fuel's own energy efficiency programs have resulted in more than 1.7 million metric tons of CO2 emissions reductions since inception, and the company is currently modeling a shift of the program to enhanced building envelope measures.

b. A Hybrid Dual-Energy Pathway Should be Adopted

After aggressive energy efficiency and building envelope measures have been achieved, a critical path for responsible decarbonization of the buildings sector is adoption of a hybrid dual-energy pathway that utilizes the existing storm-resistant underground natural gas network to deliver low- and no-carbon fuels like RNG and hydrogen. This hybrid pathway can contribute to emissions reductions while minimizing costs and strain on the electric grid. Specifically, this approach would avoid approximately 60 GW of new capacity statewide and approximately $70 billion of capital expenditures in New York by 2050. In National Fuel's service area, where a quadrupling of electric capacity would be necessary to achieve the Plan's full electrification scenario, the benefits of a hybrid approach are even more pronounced. At the individual homeowner level, equipment costs for a hybrid dual energy heating system, comprised of a high-efficiency natural gas furnace and an air source heat pump, are comparable to an all-electric cold climate air source heat pump system, but differences in energy costs would result in significant savings if the hybrid approach is used. National Grid recently launched its own clean energy vision for New York that fully embraces a hybrid approach.

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[52] *Order Authorizing Utility Energy Efficiency and Building Electrification Portfolios Through 2025*, In the Matter of a Comprehensive Energy Efficiency Initiative, Case 18-M-0084, (January 16, 2020).

[53] *Natural Gas Efficiency Programs Report 2018 Program Year*, (2020), American Gas Association, available at https://www.aga.org/globalassets/aga-ngefficiency-report-py2018-5-2021.pdf.

> National Grid's vision for fossil-free heat targets a hybrid approach. Just as we have decarbonized electricity with wind and solar, we can decarbonize the gas system with renewable natural gas and green hydrogen. This will enable customers to have choices in how to become fossil-free. And, by utilizing our existing gas and electric networks, our vision will more quickly deliver a reliable and cost-effective transition to a net zero future for the entire energy system.[54]

Importantly, utilizing a dual energy pathway can account for regional differences across the state. In National Fuel's service territory, for example, approximately 65% of homes are single family (compared to 45% in the rest of the state), more than 83% of homes utilize natural gas for heating (compared to 57% in the rest of the state), residents in western New York counties have a lower median income than downstate and temperatures are 56% colder than downstate. The latter distinction is an especially crucial one since hybrid heating systems are more effective in colder climate areas of the state than traditional electric heat pumps[55] and can reduce emissions by more than 92% when combined with energy efficiency measures and decarbonization of upstream emissions.[56] In this way, a deeply decarbonized, integrated gas and electric system is more reliable, practical, and more likely to achieve New York's emissions reduction goals in a responsible way than the extreme approach currently proposed in the Draft Scoping Plan's *Buildings* chapter.[57]

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[54] Our clean energy vision for New York, National Grid (April 2022), at p. 7, available at https://www.nationalgrid.com/document/146251/download?utm_source=US+Newsroom+&utm_medium=Press+Release+&utm_campaign=Fossil+Free

[55] The Draft Scoping Plan notes with respect to air source heat pumps that "in very cold outdoor conditions both their heating capacity (output) and efficiency (coefficient of performance) are reduced. In the State's coldest regions, where heating systems are designed for temperatures of zero (0F) or lower, some homes that install cold climate ASHPs may therefore use supplemental heat (wood, home heating oil, propane, or gas) for peak cold conditions to avoid unnecessary oversizing of heat pumps and to mitigate electric grid impacts. 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." Draft Scoping Plan, at p. 120.

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

[57] Because emissions from the transportation sector are the second largest source of greenhouse gas emissions in the state, after the buildings sector, decarbonizing the transportation sector is critical to meeting the Climate Act's targets. Electrification and low- and zero-carbon fuels will factor significantly into this process, with light and medium duty vehicles converting to all-electric in the future. Hard or impossible to electrify heavy duty and long-haul vehicles should be converted to energy sources like RNG and hydrogen that can be transported using the existing natural gas system. Development of a LCFS program similar to those discussed above could facilitate development of these fuels for transportation decarbonization.

2. Mandated Electrification in the Industrial Sector Will Result in Economic and Emissions Leakage

The need for optimization of the state's natural gas and electric energy systems to achieve the Climate Act's emissions reduction goals in a way that is beneficial for the state on all levels is perhaps more apparent in the industrial sector than any other. Chapter 14 of the Draft Scoping Plan acknowledges the unique decarbonization challenges faced by this sector:

> The heterogenous nature of industry, and the resulting need for customized solutions on an industry-specific and even factory-specific basis, may result in higher cost per ton of emissions reduced than larger-scale measures in other economic sectors such as power generation or transportation. Additionally, energy- or emission-intensive and trade-exposed industries are likely to represent a high share of industry sector emissions. These industries are both highly sensitive to increases in the cost of energy or emissions, as well as limited in their ability to pass along higher costs to consumers due to trade competition. As a result, non-incentive-oriented approaches are likely to cause leakage, whereby businesses leave or avoid the State and locate in other jurisdictions where they can emit higher levels of GHGs than they would have had they remained in the State. This results in less economic activity in the State but may achieve no progress on reducing global emissions; in fact, it may increase emissions overall.[58]

For years, manufacturers in New York have relied on natural gas as a primary source of energy for their facilities and operations, in part because of the cost advantage that it provides. Specifically, according to a 2021 Gas Technology Institute study (GTI Study), between 2005 and 2020, natural gas in New York had a 2.4:1 price advantage compared to electricity, which has made it an especially attractive choice for manufacturers with energy-intensive operations.[59] Further, the GTI Study indicated that during the same time period New York's industrial sector spent approximately $900 million to $1 billion annually on electricity, while costs for natural gas – which is used in much higher volumes – totaled approximately $600 million to $700 million annually. For these reasons, manufacturers in New York rely on natural gas to control costs and remain competitive in their local, national and international markets.

Many manufacturers have invested heavily in natural gas equipment to carry out their operations, and certain sectors utilize industrial processes and equipment that would be particularly difficult or nearly impossible to convert to electric service. According to the GTI Study, the most difficult sectors to electrify include: iron and steel production, cement manufacturing, and chemicals and petrochemicals. These sectors are particularly challenging to

[58] Draft Scoping Plan, at p. 181.

[59] *New York State Industrial Sector Decarbonization Summary*, Gas Technology Institute (December 2021), included as Attachment A to *National Fuel Gas Distribution Corporation Informational Filing*, PSC Proceeding on Motion of the Commission in Regard to Gas Planning Procedures (20-G-0131) and In the Matter of Assessing Implementation of and Compliance with the Requirements and Targets of the Climate Leadership and Community Protection Act (22-M-0149) (June 15, 2022) (National Fuel Industrial Informational Filing).

electrify due to their tightly integrated processes, high-temperature heat demand, long equipment and plant investment lifetimes, and global competition. High-temperature industrial operations are especially difficult to fully electrify. A recent Brookings Institution publication noted the following:

> Process heating is a primary component of industrial energy demand. One of the common challenges in heavy industry is the need for processes to operate at high temperatures. Beyond around 400°C, direct use of renewable heat or electricity for heating, with such equipment as heat pumps or resistance heaters, is impractical. Such temperatures are necessary in the steel, cement, and chemicals industries. Electric arc furnaces can provide very high heat, but they work only in applications where the materials being heated conduct electricity, such as melting steel for recycling. For other applications, combustion is needed.[60]

Similarly, Columbia University's Center for Global Energy Policy has indicated that electrification is not currently a viable pathway to zero emissions for industrial processes like cement and steel production, the fertilizer industry, and heavy-duty transport.[61] Concerns articulated by National Fuel's industrial customers are emblematic of these and other issues that are unique to this sector.[62] National Fuel's large industrial customers are generally supportive of emissions reductions, and many have already begun to implement various sustainability programs. Most of these customers, however, have expressed serious concerns about the viability of a full-electrification pathway, particularly due to several anticipated barriers including: (a) availability of technology; (b) upfront capital costs of equipment conversion and capital cost financing; (c) electric utility connection costs; and (d) annual equipment operating costs.

a. Availability of Technology

A major consideration for industrial electrification is whether the requisite technology is available to practically effectuate a full transition from natural gas to electricity as a sole power source. While technology is currently available for certain industrial operations, there are still sectors that are generally more difficult to decarbonize due to technology limitations. Specifically, customers in the high temperature steel processing, chemical and asphault industries, and customers that utilize various drying operations using direct fired heating equipment expressed concern that the technogical advancements are not available at this time. For example, one of National Fuel's large steel rolling customers indicated that it utilizes both natural gas and electric for its furnaces. Natural gas furnaces are used to quickly heat large quantities of steel to temperatures in excess of 2,200°F, while electric furnaces are used to heat smaller quantities of steel up to 1,900°F. The electric furnaces take much longer and can only be

[60] *The Challenge of Decarbonizing Heavy Industry*, Brookings Institution (June 2021), available at https://www.brookings.edu/wp-content/uploads/2021/06/FP_20210623_industrial_gross_v2.pdf.

[61] *Columbia Infrastructure Study*, *supra*.

[62] National Fuel documented its industrial customers' concerns relative the Climate Act's emissions reduction requirements and submitted them to the PSC in *National Fuel Industrial Informational Filing*, *supra*.

used for much smaller quantities of steel. Accordingly, there is no economical way for the customer to utilize electric furnaces for their main rolling mill. Without natural gas furnaces, this customer indicated that it would not be able to continue operating in New York and would be forced to relocate out of state.

b. Upfront Capital Costs of Equipment Conversion and Capital Cost Financing

For those sectors where electrification technologies are available, perhaps the greatest impediment to full-electrification is the cost associated with converting existing equipment that currently operates using natural gas, or installing new equipment. Several of National Fuel's customers expressed major concerns over the cost of conversion, and some have indicated that they would be forced to go out of business if natural gas was not an option. In addition to the equipment conversion costs, customers have also emphasized concerns related to costs associated with engineering and redesiging their processes, lead times associated with procuring new equipment, downtime for the companies and their workers due to the changeover to new equipment, space constraints, and a lack of return on investment on the capital cost. For example, one customer that operates a large industrial steam boiler in National Fuel's service territory investigated electric boilers. While the prices for electric boilers were competitive with the price for natural gas-powered boilers, the customer does not have the capital to replace its current equipment with new boilers.

Further, many of National Fuel's large industrial customers are subsidiaries of national or global organizations, and they are often required to compete within their organizations for capital project funding. Customers expressed concerns about being able to secure funding for the conversion to electrification technologies, which could lead to job and environmental leakage to out of state areas. For example, one of National Fuel's chemical plant customers stated that they do not believe technology exists for their chemical processes to fully electrify, but even if the technology were to develop, the capital cost and increased operating costs would be prohibitive for their business. The customer's product is in an extremely competitive market with no room to adjust margins, so the inability to utilize natural gas as an energy source would ultimately result in site closure and the business being relocated outside of New York. Additionally, Great Lakes Cheese, a leading national manufacturer and packager of cheese, emphasized how it relies heavily on natural gas-powered equipment, such as steam boilers, water heaters, air heaters, and backup power generators. In total, Great Lakes Cheese estimated that it would cost tens of millions of dollars to convert that equipment to electric, which would be an excessive additional cost of doing business in New York. Great Lakes Cheese recently broke ground on a new $518 million facility in Franklinville and Farmersville, New York, which is the largest economic development project in the history of Cattaraugus County. If Great Lakes Cheese was forced to electrify its operations, however, the cost could have caused the company to choose a different state for the location of its new facility, taking hundreds of jobs and the opportunity for a strong regional economic boost with it, likely to a state with fewer environmental protections than New York, undermining the very intention of the CLCPA.

c. Electric Utility Connection Costs

National Fuel's customers have also expressed concern with the potential lack of electric capacity and the costs associated with upgrading their electric service. As electric usage increases, infrastruture upgrades will likely be required at various points throughout the electric system from transmission system, transformers, substations, service feeds and behind the meter electrical system upgrades to meet this growing demand. For instance, Great Lakes Cheese has found that there is a lack of electrical infrastructure in rural areas of the state, meaning that in many cases, if industrial customers located in these areas were forced to electrify their operations, there is no infrastructure currently in place that would allow them to do so. In fact, Great Lakes Cheese is paying approximately $11,000,000 out-of-pocket for a five mile electric line that was needed to bring electricity to one of its new facilities.[63] Another of National Fuel's large industrial customers esitmated it would cost at least $10,000,000 to make nececessary infrastructure upgrades in order to install and use electric boilers. Based on an estimate of replacing two large steam boilers, the peak electric requirements would double from 12.5 megawatts to 24 megawatts.[64] For this customer and others, full-electrification is cost prohibitive and uncompetitive.

d. Annual Equipment Operating Costs

In National Fuel's service territory, natural gas has historically been inexpensive, readily available and reliable. Many customers have expressed concern about the impact on their demand charges, commodity prices for electricty, and the delivery charge impact to pay for all the utility upgrades. Specifically, it is likely that it will cost industrial customers at least twice as much to operate solely on electricity as compared to natural gas, which for some of National Fuel's largest customers could equal at least an additional $5 million per year in energy costs. In additon to these concerns, many of National Fuel's industrial customers receive a New York Power Authority (NYPA) hydropower alottment,[65] which has been an extremely valuable tool

[63] Great Lakes Cheese was originally considering an alternative location for its facility but abandoned the proposal due to a lack of electric infrastructure. The estimated cost to run one electric line was approximately $40,000,000 for a plant that would have operated on both gas and electricity. Great Lakes Cheese estimated that the cost to fully electrify their operations at that location would have exceeded $100,000,000, and the amount of time required to do so would have made the project infeasible.

[64] For additional reference, Great Lakes Cheese indicated that if it were to electrify its operations it would need three electric boilers, and each would consume approximately 12 MW. As estimated by Great Lakes Cheese, high voltage service lines of at least 115 kV would be needed to operate a fully electrified facility, but the infrastructure is not currently in place in many rural areas and it would require significant land acquisition to implement.

[65] According to the NYPA website:
Western New York Hydropower, also known as Expansion Power (EP) and Replacement Power (RP), is comprised of 695 megawatts generated at NYPA's Niagara Power Project in Lewiston that may be allocated to eligible applicants upon approval from the NYPA Board of Trustees. The purpose of the program is to attract businesses and spur expansion of existing facilities in the WNY region. Western New York Hydropower is awarded on a competitive basis to qualified businesses within a 30-mile radius of the Niagara Power Project, with 20 MW of the 695 MW program available for business expansion and attraction purposes in Chautauqua County.
See WNY Hydropower: Expansion & Replacement Power, available at https://www.nypa.gov/services/incentives-and-grants/economic-development.

for the economic development community in attracting and retaining industrial customers to our region. As the industrial sector electrifies, customers are concerned that the demand for electricity will increase and the availability of relatively inexpensive hydropower will decrease. This may ultimately result in the elimination of one of the area's most effective tools for attracting economic development.

Concerns raised by National Fuel's industrial customers bear out many of the considerations addressed in Chapter 14 of the Draft Scoping Plan, as well as the emissions and economic leakage concerns raised in Chapter 17's Economy-Wide Strategies discussion, and further emphasize the need for greater focus on the development and use of low- and no-carbon fuels to help this sector achieve the emissions reduction requirements of the Climate Act.[66] However, as noted above, the need for alternative fuels extends well beyond the industrial sector if New York intends to meet these requirements in a way that ensures energy reliability, resiliency and affordability for the state's residents and businesses.

Key Recommendations:

- **Rather than prematurely decommissioning the natural gas system and mandating bans on natural gas and natural gas appliances, the state's focus should be on optimizing and decarbonizing its major energy systems – electric and natural gas - and using them to drive responsible emissions reductions in furtherance of the CLCPA. This optimization process should be led by the PSC and should include the coordination of the state's electric and gas systems to facilitate a dual heating path for buildings that will control costs and promote reliability.**

- **Further research, development and implementation of alternative energy technologies like RNG, hydrogen and carbon capture and storage should be aggressively pursued. These technologies can be instrumental in reducing emissions in multiple sectors, and will be critical for avoiding significant emissions and economic leakage in the state's industrial sector.**

[66] Concerns articulated by National Fuel's industrial customers are consistent with many of the concerns raised by Multiple Intervenors (an association of over 50 large industrial, commercial and institutional energy consumers with manufacturing and other facilities located throughout New York) in their comments on the Draft Scoping Plan. For example, Multiple Intervenors state: "[C]ertain industrial and other processes depend on natural gas, and there currently are no viable alternatives to gas for many such processes. Thus, until such time that alternatives do become viable, any failure to ensure safe, reliable, and competitively-priced gas supplies and service could lead to a massive exodus of manufacturing and other jobs from the State. Businesses dependent upon natural gas for certain processes will have little choice but to exit New York if State policies jeopardize reliable and competitively-priced gas supplies." *Multiple Intervenors Comments*, *supra*, at p. 20.

III. Economy-Wide Strategies Must be Carefully Evaluated

Chapter 17 of the Draft Scoping Plan identifies various economy-wide strategies for public input and, in doing so, acknowledges that there can be value, but also potentially significant dangers, associated with adoption of such a program.

> In addition, 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. On the other hand, a poorly designed program could increase economic burdens on New Yorkers and New York businesses, reducing New York's competitiveness. If the purpose of setting a price on carbon is the means to achieve the emissions reductions of the Climate Act, the challenge in establishing a price on carbon is that it needs to be designed to bring about change in the market and promote equity, but 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.[67]

As discussed in detail above, New York's energy transformation under the Climate Act will be complex, involving multiple existing and new energy systems and technologies – many not even developed - that will have a direct impact on residents, businesses and industries. The design and implementation of an economy-wide strategy of the sort addressed in Chapter 17 must be accomplished in a highly precise fashion after significant study and consideration. For example, no strategy should be adopted that would result in a rapid transition away from the use of natural gas and the natural gas system. Understanding that natural gas use will diminish over time, any reduction in that use must be carefully coordinated with the development of alternative energies such as RNG and hydrogen and aligned and synchronized with the timing and accomplishment of the necessary build-out of the electric system to assure it can reliably handle additional load. Included in this process must be a realistic acknowledgment that some sectors may not be able to electrify in the short term, and some may *never* be able to electrify, such as potentially significant portions of the industrial sector as well as segments of the building and transportation sectors. As noted previously, even for those sectors that are capable of electrifying, it may be cost prohibitive for them to do so, so natural gas must *remain*, and eventually alternative fuels like RNG and hydrogen must *become* options for those sectors. Any economy-wide strategy that fails to recognize these important distinctions should not be recommended by the Council.

The dangers associated with an improvidently designed strategy can be especially prevalent with respect to carbon pricing, which is perhaps why no state has adopted a carbon price currently. Economists have found that carbon pricing in the heating fuels context has been particularly challenging.

> While many analysts have suggested that putting a price on carbon could be the driver for clean heat, there is strong evidence that pricing carbon, by itself, would not drive down fossil heat emissions meaningfully unless it were set at

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

> unrealistically high rates. Looking at consumption data over many decades, economists conclude that demand for heating fuels is strongly inelastic – that is, consumption changes very little in relation to the price of fuel. In a study for the legislature in 2019, following extensive economic modeling. *Resources for the Future found that even if carbon prices were set as high as $100 per ton the achieved reduction in carbon emissions statewide would be only about 10% below the expected business as usual case.*[68]

According to research conducted in connection with an evaluation of potential economy-wide strategies in Vermont, a carbon price of $100 per ton would dramatically increase bills for energy consumers with potentially little corresponding emissions reduction benefit. At this level in western New York an average residential customer would see an approximate increase in their natural gas bill of almost $600 annually. An increase of this size would be impactful at any time, but is particularly harmful in a post-pandemic environment where many customers have accumulated material arrears balances.[69] And it is likely that these impacts would be felt more severely in Disadvantage Communities. Similarly, a carbon price of $100 per ton could mean natural gas bill increases in the millions of dollars for large industrial customers. In the course of our discussions with these customers in National Fuel's service territory several industrial customers indicated that a lofty carbon tax may render continued operation in New York infeasible and force them to relocate to another state without such a tax. The Draft Scoping Plan correctly acknowledges that "[i]ncluding industries that are energy intensive and trade-exposed in [carbon pricing and cap-and-invest] programs poses the greatest risk of emission leakage."[70] Of course, economic leakage would result as well. This risk highlights the need to carefully study the outcomes of potential economy-wide strategies with a focus on, among other things, specific sector impacts not only from a carbon price itself but also from the exclusion of some sectors from the strategy to the potential detriment of other sectors. Matters of regional equity must also be considered such that disproportionate burdens are not forced on particular geographic locations within the state. For example, in regions like western New York where a higher percentage of homes utilize natural gas for heating and where there is higher energy usage as compared to downstate due to colder temperatures. An economy-wide strategy like carbon pricing should not require Western New Yorkers to pay more for energy than residents of other parts of the state, particularly where GHG emissions are lower in this region.

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[68] *The Clean Heat Standard White Paper*, by Richard Cowart, Regulatory Assistance Project and Chris Neme, Energy Futures Group (December 2020), at p. 40, available at https://www.eanvt.org/wp-content/uploads/2021/12/CHS-Final-December-16-2021-copy.pdf

[69] In a recently issued order the PSC stated: "As noted, during the pandemic, customer arrears have grown to unprecedented levels. The JU publicly reports arrears greater than 60 days via monthly Collection Activity Reports in Case 91-M-0744. The EAP Whitepaper stated that, as of December 2020, the number of residential customers in arrears was 1,263,742 for a total $1.247 billion. Since that time, although the number of residential customers in arrears has dropped the monetary amount of the arrears has increased. As of April 2022, the number of residential customers in arrears was 1,151,442 for a total $1.695 billion." *Order Authorizing Phase 1 Arrears Reduction Program*, Proceeding on Motion of the Commission to Examine Programs to Address Energy Affordability for Low Income Utility Customers (Case 14-M-0565) & Proceeding on Motion of the Commission Regarding the Effects of COVID-19 on Utility Service (Case 20-M-0266) (June 16 2022), at p. 11.

[70] Draft Scoping Plan, at p. 259.

Strategies that may be more beneficial than those focusing on pricing emissions are those that encourage and incentivize consumers and utilities to focus on reducing emissions intensity or emissions themselves like the renewable gas standards approved in California and Oregon referenced above that allow utilities to procure and transport increasing amounts of RNG on their systems over time, displacing traditional natural gas and decarbonizing those systems. A derivation of that strategy that has been gaining attention are clean heat standards. For example, in Vermont a clean heat standard was proposed that would require natural gas utilities and other fuel suppliers to reduce their GHG emissions through the use of tradeable clean heat credits that are earned or obtained through eligible clean heat measures.[71] The Vermont clean heat standard would set a desired GHG reduction obligation and require utilities and fuel suppliers to meet that obligation by using credits they have earned or purchased. Clean heat credits are earned by taking positive actions that reduce GHG emissions such as weatherization programs, the development of thermal heating programs, the installation of heat pumps and the pursuit of low- and no-carbon energy alternatives like RNG. A clean heat standard creates commercial value for each GHG reducing activity to create market demand for such products and services, and as these measures are implemented GHG emissions are reduced. An appropriately designed clean heat standard similar to the one proposed in Vermont would be worth considering in New York in that it results in emissions reductions while simultaneously stimulating the growth of technologies that will enable customer choice and lead to greater emissions reductions in the future. As proposed, Vermont's clean heat standard would be developed and implemented by that state's public service commission which, if New York were to develop such a program, should be the case in this state as well given the PSC's expertise in these matters.

Adoption of an economy-wide strategy or strategies should not be pursued without careful analysis and consideration. Reflexive efforts to establish and enforce a carbon price in New York similar to legislative attempts in recent years in an effort to establish funding for the state's energy transformation should be rejected. Economy-wide carbon pricing strategies have the potential to generate significant funds, but the monies raised would hardly be worth it if an inartfully designed strategy resulted in emissions and economic leakage, no material decrease in emissions and disproportionate negative impacts on certain individuals, sectors and/or regions of the state.

Key Recommendation:

- **Given the complexity of New York's energy transformation, and its widespread economic and societal impacts, the design and implementation of any economy-wide strategy must be accomplished in a highly precise fashion and only after significant study and consideration. Strategies that place a price or tax on emissions can be particularly challenging, especially considering the recent negative financial impacts of the pandemic on individuals and businesses in the state. Strategies that focus on reducing emissions and/or emissions intensity, like renewable gas and clean heat standards, stimulate the growth of technologies that enable customer choice and facilitate emissions reductions and should be carefully evaluated and pursued.**

[71] *The Clean Heat Standard White Paper*, *supra*.