The Gas System Transformation:

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

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By The Utility Consultation Group¹

Key Insights

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

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

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

evaluating the DAC census tracts and how existing and new programs can target these areas and customers.

- A pathway that leverages existing gas infrastructure investments to achieve decarbonization is likely to be a more cost-effective, lower risk way to achieve emissions reductions called for by the CLCPA, while supporting overall energy system reliability.
- The biogenic origins of sustainably sourced renewable natural gas (RNG) should be recognized for their benefits to the environment as they do not increase global warming. They provide a market for a bioeconomy and enable large emissions reductions of GHGs from current agricultural waste sources. The use of sustainable RNG in the transportation, industrial and building sectors does not increase the State's GHG emissions and the CO2 portions of these emissions should hold no value.

Focus on Efficiency First

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

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

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

Acknowledging Customer Preferences

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

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

Disadvantaged Communities and the Gas Transformation

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

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

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

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

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

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

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

The Gas System Can Transport Advanced Fuels to Reduce Emissions

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

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

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

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

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

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

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

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

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

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

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

Sensible Emissions Accounting for RNG Will Facilitate GHG Reduction

The State should modify its emissions accounting to accurately capture the lifecycle of the carbon content in RNG, as opposed to the current method of simply equated RNG to fossil natural gas. In current Gross emission accounting plans⁷, New York is stating that RNG's combustion emissions will be accounted for as if it were the same as fossil natural gas. This is a change from the prior June 2020 proposed accounting framework that listed RNG emissions at about zero. This change in RNG accounting is inaccurate and flawed. New York is using the EPA emission factor of 116.6 pounds of CO_2 equivalent per every MMBtu of RNG burned (116.6 lbs/MMBtu), but this is the EPA emission factor for fossil natural gas use, not for RNG.

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

Table 1: NY Evolution of Net and Gross Accounting of RNG Combustion Emissions (Ibs/MMBtu CO2e)

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

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

⁷ Department of Environmental Conservation, 2021 Statewide GHG emissions report. Also, https://climate.ny.gov/-/media/Migrated/CLCPA/Files/2021-07-22-CAC-Meeting-Presentation.pdf

⁸ https://www.ipcc-nggip.iges.or.jp/public/2019rf/pdf/2_Volume2/19R_V2_2_Ch02_Stationary_Combustion.pdf ⁹ https://guidance.cdp.net/

¹⁰ https://www.rggi.org/allowance-tracking/emissions

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

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

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

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

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

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

¹¹ https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98/subpart-A/section-98.3

¹² https://www.epa.gov/sites/default/files/2020-07/documents/Imop_rng_document.pdf

¹³ https://www.ieabioenergy.com/iea-publications/faq/woodybiomass/biogenic-co2/

¹⁴ https://www.arb.ca.gov/cc/reporting/ghg-rep/guidance/biomass.pdf?_ga=2.239461831.516273831.1650998953-356232427.1619707636

¹⁵ https://app.leg.wa.gov/RCW/default.aspx?cite=70A.65

¹⁶ https://doee.dc.gov/service/greenhouse-gas-inventories

¹⁷ https://www.oregon.gov/deq/FilterDocs/OregonGHGreport.pdf

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

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

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

Impact on Real Estate Values

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

Conclusion

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