STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 22-G-0610 - In the Matter of a Review of the Long-Term Gas System Plan of National Fuel Gas Distribution Corporation.

# ORDER IMPLEMENTING LONG-TERM NATURAL GAS PLAN WITH MODIFICATIONS

Issued and Effective: December 14, 2023

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STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

At a session of the Public Service Commission held in the City of Albany on December 14, 2023

COMMISSIONERS PRESENT:

Rory M. Christian, Chair
Diane X. Burman, dissenting
James S. Alesi
John B. Howard
David J. Valesky
John B. Maggiore

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BY THE COMMISSION:

## INTRODUCTION

In our Order Adopting Gas System Planning Process (Planning Order), we required each gas local distribution company (LDC or utility) to file a long-term plan for its gas system for consideration through a stakeholder process.[1] National Fuel Gas Distribution Corporation (NFG or the Company) is the first LDC to file its long-term plan, which it did in this proceeding in December 2022. Over the past year, NFG has engaged with Department of Public Service staff (Staff), a consultant, and stakeholders regarding its proposed long-term plan through technical conferences and comments on NFG's initial

[1] Case 20-G-0131, Proceeding on Motion of the Commission in Regard to Gas Planning Procedures, Order Adopting Gas System Planning Process (issued May 12, 2022).

long-term plan (Initial LTP), revised long-term plan (Revised LTP), and final long-term plan (Final LTP). The consultant, Charles River Associates (CRA), assisted Staff in reviewing NFG's three iterations of its long-term plan and provided three reports regarding NFG's proposals, and stakeholders' feedback.

Ultimately, NFG's Final LTP has positive aspects and areas where it can be improved. By this Order, the Commission directs NFG to take a number of actions, including making proposals for pilot programs, and providing additional information in the coming months and years. Requiring that NFG take these actions modifies and improves upon NFG's Final LTP. These actions reflect the analysis performed by CRA and Staff, as well as the significant stakeholder feedback. With the modifications discussed below, the long-term plan begins the process of decarbonizing NFG's system and reflects steps toward achieving the targets established in the Climate Leadership and Community Protection Act (CLCPA).

## BACKGROUND

### Gas Planning Process

In the Planning Order, the Commission adopted a modernized long-term natural gas planning procedure to ensure that the State, customers, stakeholders, and all other interested entities have the opportunity to understand and engage in the discussion regarding the future of natural gas infrastructure in the State. In accordance with the Planning Order, NFG filed a series of three long-term plans incorporating input from stakeholders and a consultant. On July 17, 2023, NFG filed its Final LTP.

The Commission adopted a gas system planning process to "ensure that the Commission has the necessary information to consider the local distribution companies' (LDCs) long-term

plans and alternative solutions to ensure that New York's residents can continue to have safe, adequate, and reliable gas service as we transition to alternative energy sources to reduce GHG [greenhouse gas] emissions" and that the process would be transparent with significant stakeholder participation.[2] This proceeding began with NFG conducting an informational session on November 16, 2022, and continued with several rounds of comments and multiple technical conferences to ensure ample opportunity for stakeholder participation.

The Planning Order also required major LDCs to file long-term gas system plans that include a 20-year horizon, including annual and peak day load and any peak hour considerations. Further, the Commission directed LDCs to include adjustments to demand forecast scenarios that incorporate energy efficiency, electrification, demand response, non-pipes alternatives (NPAs), and other external impacts.[3]

The Commission required that Staff engage a consultant to work at the direction of Staff to participate in stakeholder meetings, make requests of the LDCs and stakeholders participating in the long-term planning process, help evaluate the economic and environmental tradeoffs associated with different pathways, and work with the LDC to run a reasonable number of versions of the hydraulic modeling.[4] For this filing, Staff engaged CRA.

NFG filed its Initial LTP on December 22, 2022; the Planning Order identified the date of December 15, 2022, for this filing, but NFG requested and received a one-week extension of that deadline. CRA filed its Initial Report on February 17,

[2] Planning Order, pp. 17-18.

[3] Planning Order, p. 29.

[4] Planning Order, pp. 26-27.

2023, followed by stakeholder comments on the Initial LTP. NFG filed its Revised LTP on May 24, 2023, followed by CRA's Preliminary Findings Report on May 25, 2023. Written comments on the Revised LTP were received on June 15, 2023. Staff convened several technical conferences, as required by the Planning Order, at which attendees discussed and attempted to reconcile differences between NFG and the stakeholders regarding the Revised LTP and addressed other issues related to NFG's long-term plan. NFG filed its Final LTP on July 17, 2023, and CRA submitted its Final Report on July 25, 2023. Two rounds of comments addressing the Final LTP followed the filing of the two reports, which included stakeholders filing comments and NFG filing reply comments. See Appendix A for a summary and timing of the key events in this proceeding.

Climate Leadership and Community Protection Act

The CLCPA set nation-leading climate and energy goals in the form of 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. In addition to the statewide targets to reduce GHG emissions by at least 40 percent from 1990 levels by 2030, and by at least 85 percent from 1990 levels by 2050, the CLCPA established specific electric sector targets.[5] Although the CLCPA did not include specific targets directed toward gas utilities, attainment of the CLCPA's targets will require reductions in the use of fossil fuels, including natural gas. To that end, the Commission has directed the gas utilities to work with Staff to develop a proposal regarding the content of a GHG Emissions Inventory Report that includes an inventory of total gas system-wide

[5] Chapter 106 of the Laws of 2019.

emissions, following the methodology required in the CLCPA and by the New York State Department of Environmental Conservation (DEC) to calculate their system emissions.[6]

Among the CLCPA's provisions, CLCPA §7(2) requires that the Commission consider whether its decisions are inconsistent with or will interfere with the attainment of the statewide GHG emission limits established in Environmental Conservation Law (ECL) Article 75. Additionally, CLCPA §7(3) requires that the Commission ensure that its decisions do not disproportionately burden disadvantaged communities and requires that the Commission prioritize reductions of GHG emissions and co-pollutants in disadvantaged communities.

The Commission determined that the Planning Order complied with the CLCPA §§7(2) and (3).[7] The Commission further stated that the Planning Order established a foundational process through which it can ensure that the LDCs reduce GHG emissions and that the new planning process would ensure that the Commission, Staff, and stakeholders have the necessary information to evaluate the potential emissions of alternatives. The Commission also found that the new planning process would allow it to assess the potential impacts of LDCs' long-term plans on disadvantaged communities.

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[6] Case 22-M-0149, In the Matter of Assessing Implementation of and Compliance with the Requirements and Targets of the Climate Leadership and Community Protection Act, Order on Implementation of the Climate Leadership and Community Protection Act (issued May 12, 2022), p. 15.

[7] Planning Order, p. 57.

Description of Long-Term Plan

NFG's Initial LTP referenced a study that NFG published in 2021 and referred to as the Pathways Study.[8] NFG states that the Pathways Study revealed that an "all-of-the-above" approach to decarbonization of the State's natural gas system could achieve the statewide emissions reduction goals mandated in the CLCPA while being less costly than an approach requiring full electrification. In the Initial LTP, NFG compared its chosen long-term plan to three scenarios also presented in the Initial LTP: a Reference Case; a Supply Constrained Economy Scenario; and an Aggressive Scenario. Each scenario comprises specific types of six decarbonization actions: energy efficiency; hybrid heating systems and other heating electrification; industrial customer electrification and efficiency programs; thermal energy networks; renewable natural gas (RNG); and hydrogen.

NFG describes the reference case as a representation of its market and business profiles along with a forecast of supply and demand that reflects existing customer programs and a forecast of key factors that are external to NFG. The reference case does not include the impact of CLCPA-responsive actions that have not yet been planned or implemented, and it assumes that none of NFG's decarbonization actions have been implemented.[9] The Aggressive Scenario reflects implementing the six decarbonization actions under an optimistic view with respect to the ability of the national, regional, and local economy to deliver labor, technologies, customer equipment, and infrastructure to enable decarbonization of New York's economy.

[8] Initial LTP, Appendix E ("Meeting the Challenge: Scenarios for Decarbonizing New York's Economy," Guidehouse, February 19, 2021).

[9] Initial LTP, p. 29.

The Supply Constrained Economy Scenario reflects labor and resource constraints, experienced under normal economic conditions, which limit energy equipment manufacturing, building construction, and utility infrastructure development.[10]

NFG cites guiding principles that it used to develop the long-term plan, namely compliance with safety regulations, maintaining reliable service, contributing to energy system resilience, maintaining affordability for customers, and reducing GHG emissions. NFG's Initial LTP, which differs from the three scenarios described above, features three key building blocks: energy efficiency, hybrid heating systems, and existing infrastructure. NFG states that its Initial LTP will reduce GHG emissions by 3.358 million tons of carbon dioxide equivalent (CO2e) and will cost just over $3 billion on a net present value basis over the next 20 years, compared to savings of 4.7 million tons of CO2e with the Aggressive Plan at a cost of over $6.2 billion. NFG states that this is due to the relatively lower upfront and operating costs of converting residential customers to a hybrid gas/electric heating solution in the long-term plan compared to conversion to an all-electric/cold climate heat pump solution in the Aggressive Scenario. In addition, NFG claims the residential natural gas bills for customers that have yet to convert to electricity (non-participants) in 2042 would be substantially lower in the Initial LTP than in the Aggressive Scenario ($206 per month compared to $295 per month).[11] NFG states that both the Supply Constrained Economy scenario and the Aggressive Scenario qualify as "No Infrastructure" scenarios for the purpose of compliance with the Planning Order because NFG's circumstances do not call for any new capacity related capital

[10] Initial LTP, p. 25.

[11] Initial LTP, p. 53.

investments to meet demand growth or address moratoria concerns.[12]

The Initial LTP highlights two energy efficiency programs: specific weatherization measures for low- and moderate-income customers and fewer measures for standard income customers and an "aggressive behavioral energy efficiency program." The latter would feature home energy reports sent to all residential customers. The Initial LTP would also promote hybrid gas/electric heating systems that rely on a gas furnace for colder days and a standard electric air-source heat pump on less cold days. The third key strategy of the Initial LTP is leveraging existing infrastructure to deliver low carbon fuels including RNG and hydrogen.

In its Revised LTP, NFG made a few revisions to its Initial LTP. In addition to modifying and updating some of the assumptions used in its Initial LTP, NFG also included three new scenarios that it had developed in response to stakeholder input. NFG stated that it incorporated many issues raised during the stakeholder engagement process, including changes to several assumptions, the addition of commercial weatherization, reporting of Benefit Cost Analysis (BCA) results and design day gas demand impacts for all scenarios, clarification of several issues, and the creation and modeling of the three new "Informational Scenarios."[13] NFG also noted that the criteria to identify disadvantaged communities were finalized after it filed the Initial LTP and modified the Revised LTP accordingly. Overall, NFG's Revised LTP left major portions of its Initial LTP unchanged.

[12] Initial LTP, p. 25.

[13] Revised LTP, p. 2.

NFG asserted in the Revised LTP that it is "premature to include demand response as a modeled decarbonization action due to limited information regarding the potential magnitude of the impact on peak day demand" but states it will propose a demand response pilot program.[14] NFG also states that targeted network retirement is not included in the Revised LTP, but it has included targeted network retirement as an option that may be analyzed under favorable circumstances and as part of a non-pipes alternative process.

As noted above, NFG's Revised LTP includes three new scenarios. CRA, Staff, and stakeholders jointly defined these three new informational scenarios, and reviewed them at a stakeholder meeting on April 26, 2023. NFG states that it provides these informational scenarios for informational purposes only and does not endorse them, the associated underlying assumptions, or results.[15] These informational scenarios were as follows:

- Informational Scenario #1: Increase residential and small commercial electrification as necessary to achieve 40% GHG emissions reductions from 1990 levels in 2030. This scenario employs hybrid heating systems as a replacement for furnaces for residential customers, includes electrifying boilers using mini-splits, and includes electrifying older homes.
- Informational Scenario #2: Same specifications as Informational Scenario #1 but assumes that residential customers install cold climate air source heat pumps (ccASHPs) as a sole heating source and convert all appliances to electricity. This scenario assumes electricity prices as specified in National Fuel's "Aggressive Scenario."
- Informational Scenario #3: Assumes that legislation is enacted that prohibits installation of fossil fuel equipment in existing residential and small commercial

[14] Revised LTP, p. 26.

[15] Revised LTP, Appendix K, p. K-2.

> buildings beginning in 2031 and in multifamily and university buildings beginning in 2036. This scenario requires full electrification for all customers as existing heating/cooling systems fail and does not allow hybrid heating systems for residential customers. This scenario assumes electricity prices as specified in National Fuel's "Aggressive Scenario." This scenario uses Strategen's proposed ramp rates until the potential new laws take effect.

NFG revised Table V-1 in the Revised LTP, which shows incremental GHG emissions and cost impacts of the Supply Constrained Economy and Aggressive Scenarios compared to the reference case. In the updated table, incentive costs are broken out from non-incentive installed costs, and total decarbonization policy costs are specified in addition to total costs. Because the revised table includes incentive costs, total costs of each of these scenarios is higher. Additionally, NFG made some modifications to its decarbonization actions, including increasing its weatherization measures for both standard income and low- and moderate-income customers, and adding a small commercial weatherization program. For building electrification, NFG added conversions at the end of life of air conditioning systems in addition to furnace end of life for both residential and small commercial. NFG also recognized the requirements of new legislation regarding prohibitions on fossil fuel use in most new construction beginning in 2026.[16]

NFG also removed a "public housing" category but added "multi-family" to its university category for building electrification. For industrial customer clean actions, NFG included a goal to reach 70% of non-boiler-based heating systems in the Revised LTP, but also reduced the energy efficiency process load target for 2042 slightly and reduced the goal for electrifying space heating in this category. For thermal energy

[16] Chapter 56 of the Laws of 2023, Part RR.

networks, whereas the Initial LTP specified that NFG would not pursue projects in existing neighborhoods, only in new sub-divisions, that provision does not appear in the Revised LTP.

In the Revised LTP, NFG updated its assumptions regarding the amount of RNG it would be able to acquire to serve customers in its New York service territory. The Revised LTP adds 50% of NFG's pro-rata share of RNG produced in Pennsylvania and Ohio, in addition to the RNG produced within NFG's New York service territory. The pro-rata share is NFG's portion of its end use consumption in New York relative to the total for the state and the total end user consumption for Pennsylvania or Ohio, and is based on an average of actual annual consumption for 2017-2020. NFG assumed that it can purchase 100% of the available RNG produced within NFG's New York service territory, plus an additional 2% of the RNG produced in Pennsylvania plus an additional 2% of the RNG produced in Ohio.

In the Revised LTP version of Table V-3, the 20-year NPV cost of the long-term plan increases from $3.025 billion to $3.623 billion. NFG revised most of the elements in the Table, and it should be noted that adding some elements as described above increased GHG reductions estimates from 37% to 40%.

NFG adds a new Table V-5, which demonstrates Comparison of ccASHPs and Hybrid Heating System Costs for Typical Residential Furnace Conversion and states that ccASHPs are more costly than hybrid heating systems in terms of upfront costs and incremental annual energy costs for the years 2024, 2032 and 2042. Additionally, NFG states "[a]ccording to National Grid, a hybrid heating approach will require an additional 6 GW of electric capacity in western New York by 2050 compared to current levels, but full electrification will require an additional 11 GW of electric capacity compared to

current levels."[17] NFG also states that the electric utility in Quebec is supporting hybrid heating as a benefit to the electric system.

NFG's calculation of the BCA ratio of NFG's preferred long-term plan in the Revised LTP shows a slight reduction from the Initial LTP, from 0.57 to 0.56. Both total benefits and total costs used in the calculation increased from the Initial LTP. While NFG provides BCA ratios for Informational Scenarios 1 through 3 of 0.61, 0.64 and 0.64 respectively, NFG states that "BCA results for the informational scenarios are overstated because the incremental ICAP costs do not account for the assumption that electricity will be 100% clean by 2040."[18]

In the Initial LTP, NFG indicated that it would only consider segments of LPP for possible NPA projects and noted that the Commission had yet to act on filings related to NPA shareholder incentives and cost recovery. However, in the Revised LTP, NFG stated that it "will evaluate gas capital projects to determine whether they qualify for NPA solutions that can reliably meet customer needs, including hybrid heat pumps, geothermal energy networks, compressed natural gas, or liquified natural gas. Examples of projects that may be suitable for NPA consideration include gas distribution projects associated with load growth and main or service replacements."[19] In the Revised LTP, NFG also proposed to use a two-prong approach to evaluating small versus large projects for

[17] Revised LTP, p. 59.

[18] Revised LTP, Appendix K, p. K-7.

[19] Revised LTP, p. 66.

applications of NPAs. Other LDCs have adopted a similar approach.[20]

In the Initial LTP, NFG did not address, in any detail, how its long-term plan would impact residents within a disadvantaged community and indicated that it did not know of any projects that would disproportionately burden disadvantaged communities in its service territory. In the Revised LTP, NFG said that as it develops "other potential projects and evaluates proposed NPAs, such as demand response, geothermal, electrification, energy efficiency, etc., it will include in that analysis how disadvantaged communities may be impacted, and with respect to clean energy and energy efficiency projects how the associated benefits will accrue to the disadvantaged communities with a focus on achieving no less than thirty-five percent of the overall benefits as directed by the CLCPA."[21]

NFG filed its Final LTP on July 17, 2023, which featured a new executive summary, revised appendices, a description of the stakeholder engagement process, a new subsection describing how stakeholder input informed the Final LTP, a list of stakeholder and Staff/CRA recommendations that NFG reflected in the Final LTP, new content related to New York Cap and Invest and disadvantaged communities, a list of implementation actions that NFG will pursue between now and the next long-term plan filing, and a list of items that will be included in the next long-term plan filing.

In its Final LTP, NFG states that it made several modifications to the modelling of decarbonization actions and

[20] See Case 19-G-0379, New York State Electric and Gas Corporation - Gas Rates, Order Approving Electric and Gas Rate Plans In Accord with Joint Proposal, With Modifications, Appendix M to Joint Proposal, pp. 4-5.

[21] Revised LTP, p. 68.

assumptions, including: reducing up-front installation costs for a ccASHP; changes to forecasts of electricity rates and wholesale prices; and incorporation of avoided costs of new meters and service lines associated with potential new customers choosing electrification rather than gas service.

Regarding low- and moderate-income customers and disadvantaged communities, NFG states that, as it develops pipeline replacement and other potential projects and evaluates proposed NPAs, it will include in that analysis how disadvantaged communities may be impacted and consider "special programs for low- and moderate-income customers or disadvantaged communities as the Commission encourages in its Gas Planning Order."[22] NFG states it would be premature to address New York Cap and Invest and accelerated depreciation prior to receiving the Commission's determination on policy related to these subjects.

NFG states it will pursue numerous activities related to its Final LTP, and identifies the following implementation actions: research into RNG, hydrogen, heat pumps, and customer decarbonization programs; design, propose, and implement programs related to thermal energy networks, ccASHPs, hybrid heating systems, hydrogen blending, low- and moderate-income and disadvantaged community energy efficiency and clean energy, demand response, weatherization and behavioral energy efficiency, and RNG procurement and cost recovery; invest in LPP programs to implement NPAs; obtain hourly information from National Fuel Gas Supply Corporation (NFG Supply) on metered gas demand at interconnections between NFG and NFG Supply; and engage with stakeholders on industrial customer

[22] Final LTP, Executive Summary, p. 14.

decarbonization.[23] NFG also states that its next long-term plan will include the following: updates related to various items that could impact planning, such as legislative mandates, Commission orders, and New York Cap and Invest; updates to demand and supply forecasts; updates to hourly data with NFG Supply; a review of decarbonization policy assumptions and adoption rates; updates to electricity market data on the role of RNG and hydrogen; and incorporation of Commission determinations on accelerated depreciation and other costs.

The main features of the long-term plan remain the same: current energy efficiency programs with the addition of some additional weatherization and provision of home energy reports to all residential customers; use of hybrid heating systems featuring a gas furnace and an air source heat pump for current residential customers; air source heat pumps for small commercial and multi-family or university customers; EE and air source heat pumps for industrial space heating; Utility Thermal Energy Networks; RNG and hydrogen. Although NFG modified some assumptions in its modeling based on stakeholder input, the BCA for the Final LTP remains largely unchanged from the Initial LTP, although the calculation of BCA ratios changed slightly in the Final LTP (from 0.56 to 0.55).

Consultant Reports

CRA filed three reports. CRA filed its Initial Report on February 17, 2023. This report summarized CRA's initial assessment of the reasonableness behind NFG's assumptions and calculations within the long-term plan, and a discussion of whether the long-term plan meets the requirements of the

[23] NFG Supply is an affiliate of the Company, the subject of this proceeding. NFG Supply is an interstate natural gas pipeline whose rates and tariffs are regulated by the Federal Energy Regulatory Commission.

Planning Order and the CLCPA at the conclusion of the process.[24] CRA noted in this report that stakeholder input was minimal at that early stage of the process and therefore the Initial Findings Report did not consider written stakeholder feedback. CRA teed up several issues in that report for further consideration.

CRA filed its Preliminary Findings Report on May 25, 2023. In its Preliminary Findings Report, CRA included stakeholder comments and other new findings. CRA filed its Final Report on July 25, 2023. CRA acknowledged that NFG filed the Final LTP prior to CRA filing its Final Report. Below we summarize CRA's Final Report.

CRA identified issues related to the Company's forecast of design day requirements and the extrapolation used to forecast firm supply capacity required to meet its customers' needs. Since design day is foundational to forecasting demand with relative accuracy, CRA recommends that the Commission direct NFG to file testimony regarding how it selected 74 heating degree days as its design day as well as its determination of design day needs in its next rate proceeding.

CRA notes that hydraulic modeling, performed to test design day requirements in NFG's Reference Case, revealed pressures below minimum design pressures in isolated pockets of the low-pressure system. CRA recommends NFG perform hydraulic modeling on the long-term plan scenarios and should consider NPAs for areas on the system that are shown to have low pressure issues.

Regarding scenario modeling, CRA points out that the NFG model does not use variables that have a relationship to market adoption of the decarbonization options that comprise the

[24] CRA Initial Report, p. 9.

scenario. CRA states that NFG should provide to stakeholders the data necessary to understand major inputs to the scenarios and how those inputs impact the BCAs, customer bills, and the long-term plan. CRA recommends that NFG model each key variable that impacts decarbonization to understand its relationship to the supply, demand, availability, or adoption of the option. The variables might include first cost, life cycle cost, or other measures of attractiveness.

Regarding NFG's informational scenarios, CRA points out that NFG has applied an assumption in Informational Scenarios 2 and 3 that all customers that electrify use ccASHPs; however, the Company did not assume any portion of the gas network would be retired as a result. Therefore, the fixed costs for maintaining the gas network remain in the plan, decreasing the gas system cost savings that might be achieved relative to the Reference Case. CRA recommends in its Final Report that NFG should use these scenarios to inform specific options to be included in future revisions to the Final LTP, recognizing that NFG has no mandate to further revise its long-term plan until directed to do so by the Commission. For example, CRA suggests NFG should use the assumption that all customers that electrify weatherize prior to sizing and installing a heat pump. The Final LTP assumes only 50% of customers weatherize prior to electrification.

Regarding BCAs, CRA recommends that NFG perform alternative cost tests including the Utility Cost Test and Rate Impact Measure to provide stakeholders with a better understanding of the long-term plan's performance from these perspectives, and that NFG include the value of federal incentive programs in an updated Societal Cost Test (SCT) BCA. For example, NFG did not include the impact of federally funded incentives and rebates when modeling heat pump adoption.

Further, CRA recommends that NFG review its approach for modeling adoption rates for electrification and consider the influence of incentives, building code changes, and other programs.

CRA recommends that NFG include emissions reductions benefits for RNG based on a net accounting convention to track progress toward meeting the CLCPA net goals and when estimating the monetized value of avoided GHGs. In addition, CRA states that NFG should use a gross accounting method to evaluate emissions relative to the statewide emissions limits, and that NFG should include both accounting methods in its future long-term plans to ensure it uses the appropriate approach in each assessment of emissions reductions.

CRA recommends NFG analyze how it would address upstream supply needs in the Reference Case via a no infrastructure solution. This analysis should detail the approaches that NFG could use to curtail gas demand growth. CRA also states that NFG's next long-term plan should more proactively consider NPAs for LPP replacement and leverage BCAs to understand possible trade-offs. CRA also points to the Partnership for Urban Revitalization in Western New York (PUR-WNY) as an opportunity for a pilot program that will target disadvantaged communities to encourage the adoption of electrification to support community revitalization.[25]

Regarding RNG, CRA acknowledges the need to further assess the relative cost and available volumes against other decarbonization options. Stakeholders and CRA recommend NFG's

[25] PUR-WNY is a program developed by NFG to "assist in the revitalization of residential households, and neighborhoods with vacant lots, or vacant homes where utility infrastructure is already in place, with an emphasis on urban locales." Case 16-G-0257, NFG - Gas Service, Gas Network Enhancement Collaborative Annual Report (filed January 10, 2023), p. 35.

next long-term plan contain a more nuanced study of potential RNG usage such as strategic or targeted usage in areas where electrification is not feasible. CRA also states that NFG's future annual reports and long-term plans should reflect the evolving knowledge gained through its participation in hydrogen pilot programs and from industry studies.

CRA recommends that NFG continue to investigate energy efficiency measures for all its customer classes and notes that each measure's cost effectiveness will change over time as a result of frequently changing gas prices and CLCPA related program costs, and NFG should phase out rebate programs for new gas-fired equipment. Further, CRA recommends that NFG continue to develop demand response pilot programs in near-term rate case filings or their Annual Update to this long-term plan. Regarding weatherization, CRA recommends that NFG should consider the impact on all customers, including commercial customers, prior to electrification of heating load to right-size heat pumps and should include ccASHPs for customers who adopt the hybrid heating system NFG modelled.

CRA states that CLCPA is law, and so recommends that NFG should assume that CLCPA targets are met when modelling electric sector emissions. Regarding the impacts of electrification, CRA recommends that NFG model the potential impacts of customer migration from the gas system over time on customer rates and bills, and that NFG perform a more detailed analysis of bill impacts by customer class over the course of the 20-year plan. CRA states that NFG's long-term plan fell short in identifying disadvantaged communities and specifying how benefits would accrue to them.

CRA points out that NFG's assumption that zero existing customers will fully electrify within its territory through 2042 is unrealistic. Further, CRA states that, if the

natural gas system is not downsized in a strategic manner, this may disproportionately impact low- and moderate-income customers if not addressed proactively.

## NOTICE OF PROPOSED RULE MAKING

Pursuant to the State Administrative Procedure Act (SAPA) §202(1), a Notice of Proposed Rulemaking was published in the State Register on January 11, 2023 [SAPA No. 22-G-0610SP1]. The time for submission of comments pursuant to the Notice expired on March 13, 2023. Moreover, the Commission issued Notices Establishing Comment Deadlines on December 22, 2022, May 12, 2023, and July 19, 2023. Comments on the Initial LTP were received on March 13, 2023, and the deadline for reply comments on that submission was extended to April 18, 2023, by a Notice Extending Reply Comment Period issued on March 24, 2023. Comments on the Revised LTP were received on June 15, 2023. Following a second Secretary's Notice Extending the Comment Deadline, issued on July 25, 2023, comments on the Final LTP were received on September 5, 2023, and reply comments were received on September 18, 2023. Comments are summarized in Appendix B, and particular comments are discussed as applicable in the discussion to this Order.

## LEGAL AUTHORITY

Public Service Law (PSL) §5(1)(b) provides the Commission with broad authority over "the manufacture, conveying, transportation, sale or distribution of gas ... for light, heat or power, to gas plants ... and to the persons or corporations owning, leasing or operating the same." Of particular importance to the Commission's action in this Order, PSL §5(2) also provides that "[t]he commission shall encourage all persons and corporations subject to its jurisdiction to

formulate and carry out long-range programs, individually or cooperatively, for the performance of their public service responsibilities with economy, efficiency, and care for the public safety, the preservation of environmental values and the conservation of natural resources." PSL §65 requires that LDCs provide "service, instrumentalities and facilities as shall be safe and adequate and in all respects just and reasonable." Further, PSL §66(1) states that the Commission has general supervision of all gas corporations. Additionally, PSL §66(1-a) provides that the Commission may order "such improvement in the manufacture, conveying, transportation, distribution or supply of gas… or in the methods employed by such corporation as in the commission's judgment is adequate, just and reasonable."

## DISCUSSION

The Commission recognizes that NFG is the first LDC to file a long-term plan pursuant to the modernized gas planning process established in the Planning Order. NFG produced a long-term plan that meets the goals NFG established for itself; namely, that it meets safety requirements, maintains reliable service, contributes to energy system resilience, maintains affordability, and achieves GHG emissions reductions. In some instances, NFG produced a long-term plan that meets the intent of our Planning Order. However, in other instances NFG's long-term plan falls short. While NFG is correct when it notes that the long-term plans are intended to be an iterative process, NFG could have made greater strides in its Final LTP to advance toward decarbonization.

For the reasons explained below, the Commission declines to adopt a specific long-term plan for NFG at this time. Instead, we require NFG to take a variety of actions, including proposing pilot projects, and providing additional

information in its Annual Updates to this long-term plan as well as in its next full long-term plan. As stated in the Planning Order, NFG shall file Annual Updates to this long-term plan by May 31 of 2024, 2025, and 2026. NFG shall file its next full long-term plan by December 15, 2026.

As envisioned in the Planning Order, NFG presented its proposed long-term plan together with a number of scenarios it evaluated, and throughout the proceeding it continued to evaluate other scenarios based on input from stakeholders. By presenting a preferred plan as intended, NFG allowed the stakeholders, Staff, and this Commission to focus on ways to improve and refine the pathway forward. The intention behind requiring alternative scenarios, including a "no infrastructure option" is to provide comparators to the utility's proposed plan, both regarding individual aspects and the plan as a whole. In contrast, presenting a number of scenarios without differentiation of the steps needed to achieve them would not enable an LDC, stakeholders, Staff or the Commission to appropriately focus resource allocation or avoid unnecessary infrastructure. We commend NFG's exploration of scenarios' feasibility and selection of its long-term plan, although in some instances we believe the inclusion of additional stakeholder input could have produced a more cost-effective long-term plan that achieves more emissions reductions, such as amending NFG's treatment of topics like federal clean energy incentives and adoption rates of electrification options.

NFG also met the requirement of the Planning Order by calculating a BCA ratio for each scenario. As we will discuss further below, the fact that all ratios had a value less than 1.0 is not significant, given the assumptions that have to be made over a 20-year planning horizon. We note that the BCA analysis could be improved. For example, the ratios NFG

calculated do not include the benefits to reliability of the long-term plan and other scenarios, as discussed in the BCA Framework Order.[26] We also pointed out in our Order approving NPAs for the Lansing area of New York State Electric and Gas Co.'s service territory that the BCA ratio calculated for that portfolio of NPAs does not include any estimate of the reliability benefits provided by any of the projects that are being compared to the traditional solution and each other.[27] As the New York Department of State, Utility Intervention Unit (UIU) points out in its comments, there must be a meaningful metric to provide comparison among different planning scenarios.

On the other hand, NFG's long-term plan did not meet the intent of the Planning Order in several important ways. Significantly, it did not include meaningful information on bill impacts. The lack of information on bill impacts handicaps our ability to assess how NFG's long-term plan would impact NFG's ability to continue to provide service at just and reasonable rates. In that vein, we note Multiple Intervenor's (MI) comments on the costs associated with NFG's LTP and their appropriate collection from customers. The appropriateness of cost recovery of programs associated with the long-term plan and allocation of costs must be handled in the currently pending

[26] Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Establishing the Benefit-Cost Analysis Framework (issued January 21, 2016) (BCA Framework Order); see Appendix C, p. 2.

[27] Case 17-G-0432, Petition of New York State Electric and Gas Corporation for Authorization to Construct a Natural Gas Compressor Pilot Project in Tompkins County New York, Order Approving Petition for Non-Pipe Alternative Projects, with Modifications (issued June 21, 2021), p. 16.

rate case for NFG,[28] and in future rate cases, and MI will have multiple opportunities to comment on cost allocation issues in those cases.

Additionally, NFG did not provide an accounting of benefits to and impacts on disadvantaged communities. NFG also did not include demand response programs or non-pipes alternatives, nor did it include a true no-infrastructure scenario that would meet all growth in demand with non-pipes alternatives. Each of these subjects is discussed below, with our direction for remedying these shortcomings.

CRA and the stakeholders have offered many suggested changes to the long-term plan throughout the process. While NFG worked with stakeholders to discuss and analyze alternative scenarios and modified its long-term plan in some ways in response to stakeholders' positions, it did not make significant changes to the Initial LTP it filed in December 2022. After NFG received stakeholder input on its Initial LTP, the Company added three additional scenarios for consideration, but ultimately NFG did not embrace any of them in its Final LTP. Ultimately, NFG and the stakeholders could not come to agreement on the content of the Final LTP.

NFG points out in its comments that this gas planning process is intended to be somewhat iterative; as technologies advance and policy and regulations are modified, those changes will be recognized in future long-term plans. The Commission recognizes that progress toward decarbonization will take time and must be done with care to ensure that customers continue to have access to safe, adequate, and reliable gas service as

[28] Case 23-G-0627, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of National Fuel Gas Distribution Corporation for Gas Service (filed October 31, 2023).

allowed under the State's laws. We are intent on ensuring that each long-term plan advances the goal of decarbonizing the State's natural gas system, and each subsequent long-term plan will achieve incremental improvements in that regard compared to this long-term plan. As noted above, this long-term plan does have some shortcomings. Accordingly, by this Order, we direct NFG to take actions to modify and improve its long-term plan as discussed below. In some cases, we direct NFG to make stand-alone filings or include information in its Annual Updates. In other cases, we require that NFG address issues in its next long-term plan.

Demand Forecast

The Demand forecast produced by an LDC is used to determine what assets are needed to meet load on the coldest day that could be experienced in the LDC's service territory, known as design day. Gas utilities do not include a reserve margin in their demand forecast, especially in New York where natural gas pipelines are constrained and there is not available capacity. In NFG's case, it plans for 74 heating degree days, meaning a day with an average temperature of nine degrees below zero Fahrenheit. In the Planning Order, the Commission stated that the LDCs must include adjustments to demand forecast scenarios that include energy efficiency, electrification, demand response, NPAs and other external impacts, and directed LDCs to provide estimates of the expected sources of growth and/or reduction in peak demand resulting from demand-side investments, clarifying that qualitative discussion is not sufficient.

CRA found in its Initial Report that NFG's use of 74 heating degree days to calculate design day load was a reasonable assumption and should be maintained to assure the current level of reliability. CRA noted that, while NFG forecasts for a Design Day with 74 heating degree days, or an

average temperature of negative nine degrees Fahrenheit, it has not experienced such a day since January 17, 1982. As NFG has added customer load since that time, NFG must estimate each year what customer load will be under design day conditions using the actual load on the coldest day in recent winters. CRA noted that NFG forecasts demand growth to continue throughout the 20-year planning horizon.

Environmental Defense Fund's (EDF) comments suggested that the Commission should require NFG to provide a public, detailed narration of its design day methodology and discussion of the source(s) of its monthly demand figures. CRA recommends that Staff or the Commission provide a separate process for a thorough review of this issue prior to the filing of NFG's next full long-term plan. NFG states in its Final LTP that the next iteration will include updates of demand and supply forecasts. In its reply comments, NFG stated that it will file testimony in its next rate proceeding, pursuant to CRA's recommendation, regarding the basis for its determination of design day and the number of heating degree days in its design day.

Based on this input, the Commission finds that NFG's demand forecast contained in its Final LTP is acceptable. NFG included information in its filing on the level of electrification and energy efficiency in the demand forecast, as well as the expected source of growth, but did not include any demand response programs or NPAs, which is discussed below. With regard to reviewing the appropriateness of NFG's design day, while NFG has filed testimony on this topic in the rate case, it may be difficult to thoroughly address amongst the many issues and limited time available in the rate case process. Accordingly, NFG is directed to make a filing within 90 days of this Order regarding how it developed 74 heating degree days as its design day, and also how it calculates load per degree day

on design day. The Company shall focus its explanation in its filing on reliability forecasting, which is distinct from testimony utilities typically file in a rate case regarding sales forecasting.

Supply Forecast/Components

At a high level, an LDC's supply forecast identifies how the LDC plans to ensure it can meet its design day demand forecast. Supply forecasts include the various assets used to meet design day load, including pipeline and storage capacity and peaking assets. In the Planning Order, the Commission emphasized that the LDCs' supply forecasts must align with the demand forecast, and that they must be explicit regarding the level of demand-side programs included and contain demand response programs. Further, the Commission encouraged LDCs to explore novel approaches to meeting demand, such as using innovative rate design to reduce or shift demand through seasonal or peak day rates rather than simply acquiring more gas to meet the initial forecast of demand. NFG produced a supply forecast that aligned with the demand forecast, contained some demand-side programs such as energy efficiency, but did not contain either demand response programs or innovative rate design.

CRA notes NFG's need for upstream supply to support peak day growth from new customers and NFG's Gas Network Enhancement Plan. CRA concludes that, to reasonably satisfy the requirements of the Planning Order, a no infrastructure case should provide the incremental supply in excess of current design day requirements of 7,030 Mcf/d solely through demand side management and energy efficiency programs. EDF is concerned that NFG itself does not track and record hourly supply received and delivered, instead entrusting this task to NFG Supply. In its Final LTP, NFG states that it will take

action to obtain hourly information from NFG Supply, although NFG did not provide a timetable or commitment to specific actions, such as a report that could be filed summarizing the activity. NFG offers that its next long-term plan will contain revised demand and supply forecasts and updates on work with NFG Supply on obtaining hourly data. NFG is directed to file a report on its activities, as described in its Final LTP, related to obtaining hourly information from NFG Supply within 90 days of this Order. This report shall contain details regarding when the meetings took place, what information NFG requested of NFG Supply, what information NFG Supply agreed to provide, and when the information will be provided. Additionally, NFG shall submit preliminary findings after it has reviewed the information.

1. Renewable Natural Gas

The Commission noted in the Planning Order that RNG remains a developing issue, and it should remain in consideration in planning. The Commission also stated that each LDC should identify the potential for use of RNG in its long-term plan and the larger questions of studies or trading programs for RNG would be deferred to a future phase of this proceeding.[29]

NFG includes RNG as a decarbonization action in all of its scenarios and as a benefit to disadvantaged communities. CRA points out that the rationale for NFG incorporating RNG at certain levels is based on a study performed by ICF Resources, LLC for the American Gas Foundation in 2019.[30] In the Initial LTP, RNG supply in NFG's portfolio approaches 9% of total gas usage, providing emissions reduction benefits. Nevertheless,

[29] Planning Order, p. 57.

[30] https://gasfoundation.org/2019/12/18/renewable-sources-of-natural-gas/

CRA states that additional RNG supplies could be available if NFG considers a broader supply region extending beyond NFG's service territory. In its Revised LTP, NFG increased its estimate of available RNG by adding 50% of its pro-rata share of RNG produced in Pennsylvania and Ohio, in addition to the RNG produced within NFG's New York service territory. Sierra Club (SC) and Earth Justice (EJ) suggested NFG carefully scrutinize its assumption to expand the source of its RNG supply. In its comments, National Resource Defense Council (NRDC) was critical of several aspects of NFG's calculation of emissions related to RNG. In response, NFG sent a data request to NRDC asking for NRDC's view of what the appropriate methodology is for converting CO2e emission intensities of RNG from 100-year global warming potential to 20-year global warming potential. CRA states that NRDC's response provided some detail, but not specific instructions or an example using values from NFG's long-term plan. CRA recommends NFG acknowledge differences in emissions related to different sources of RNG (e.g., landfill gas, wastewater treatment facilities, agriculture, food processing, etc.) and refine these assumptions in future reports. CRA points out that the impacts of emissions accounting on utility planning is not fully developed yet in New York, and that the Commission has not weighed in on all aspects of RNG accounting specifically. While CRA acknowledges that a single RNG project is quite different than a systemwide RNG blend, the Commission has generally accepted RNG as a method of reducing emissions, as demonstrated in the Bluebird Order.[31] The

[31] Case 21-G-0576, Petition of Bluebird Renewable Energy, LLC for an Original Certificate of Public Convenience and Necessity and Establishing a Lightened Regulatory Regime, Order Granting Certificate of Public Convenience and Necessity and Providing for Lightened Regulation (issued November 18, 2022) (Bluebird Order), p. 27.

Commission notes that there is another proceeding looking at GHG emissions by gas utilities and interested stakeholders are encouraged to participate in Case 22-M-0149.[32] CRA states that while it is generally agreed that substituting RNG for pipeline gas provides some emissions benefit, there is disagreement regarding the accounting associated with the various emissions sources.

EDF, NRDC, and SC/EJ recommend the use of RNG for hard-to-electrify loads as opposed to blending it in the general supply, suggesting that lower-cost options for decarbonization using electrification are available for residential and commercial customers. Stakeholders articulate that RNG is more expensive than traditional natural gas, that there is uncertainty around the emissions accounting related to RNG, and that utilizing RNG necessitates continued use of the natural gas distribution system. The New York Geothermal Energy Organization (NY-Geo) also states that inclusion of RNG as a partial supplement/replacement for fossil gas for residential customers is a distraction from the main residential and small commercial electrification effort. Further, NY-Geo highlights that NFG does not count emissions from out of state RNG production, transportation and combustion in its long-term plan. NRDC points out that this failure to properly account for the GHG emissions of RNG produced out of state causes NFG to dramatically overstate RNG availability and the emissions reductions achieved by the long-term plan. The New York State Energy Research and Development Authority (NYSERDA) recommended in its comments on the Revised LTP that NFG include revised

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

assumptions regarding the RNG available for its use in its Final LTP. SC/EJ stated in their comments on the Revised LTP that currently there is no available RNG production in NFG's service territory. SC/EJ also mentions the high costs of RNG necessary to comply with the CLCPA GHG limits.

In its Final LTP, NFG states it will monitor the evolution of the RNG market and it will design, propose, and implement a pilot program focused on RNG procurement/cost recovery. Moreover, it commits to providing an update on the role of RNG in its next long-term plan. In its Final Report, CRA recommends that stakeholders such as NRDC and others should coordinate with NFG to further attempt to come to a consensus on the details of accounting for RNG emissions. In addition, CRA suggests that systemwide blending is appropriate for NFG to assume at the current time, but that NFG should consider a strategic RNG approach, and NFG should adjust its strategy accordingly as further data and research is available. In its reply comments, NFG refers to the leakage issue associated with RNG and states that, like every emerging industry, best practices will need to be identified and effectuated and enforcement should be effective.

The Commission notes that the RNG markets in this country have experienced significant growth due to the federal and California renewable and low carbon fuel programs, among others.[33] RNG has been a part of New York's energy supply for many years, including The Brooklyn Union Gas Company d/b/a National Grid's RNG purchases from the Fresh Kills landfill in

[33] See https://www.epa.gov/renewable-fuel-standard-program/renewable-identification-numbers-rins-under-renewable-fuel-standard for information on the federal Renewable Fuel Standard Program and https://ww2.arb.ca.gov/our-work/programs/low-carbon-fuel-standard for information on the California low carbon fuel standard regulation.

Staten Island and its Newtown Creek project in Brooklyn which produces RNG from wastewater treatment. Dairy farms across the state produce RNG, as was the subject of the Bluebird Order. RNG is typically more costly to produce than fossil natural gas, but credits paid to producers participating in federal or out of state low carbon or renewable fuel programs offset those costs and encourage continued production. While New York pursues electrification of heating load currently served by natural gas, RNG will likely have emissions reductions benefits to the State, but the future is not clear. Therefore, the Commission directs NFG to monitor the evolution of the RNG market, as NFG offers in its Final LTP. NFG shall include updated RNG purchase/ interconnection data in its Annual Updates and its next long-term plan. The Commission expects that Case 22-M-0149 will also provide further guidance regarding RNG.

2. Hydrogen

Stakeholders and NFG had considerable discussion regarding the possibility of blending hydrogen into NFG's supply, which is discussed below. NFG included hydrogen as a decarbonization action in each of its three scenarios, and CRA points out in its Initial Report that NFG assumed that it will start to blend hydrogen at a level of 0.5% starting in 2030, increasing by 0.5% each year to a maximum of 5% of supply. EDF argued that NFG should provide further discussion and reasoning as to why systemwide hydrogen blending is appropriate, that a better focus for hydrogen is hard-to-electrify sectors rather than a systemwide blend. EDF noted that NFG should assess its industrial customer base for potential hydrogen use. SC/EJ stated that improvements to NFG's infrastructure would be necessary to safely incorporate hydrogen. NRDC argued that green hydrogen is not cost-competitive, and the blending level assumed by NFG could pose concerns related to safety,

feasibility, and cost. EDF also asserted that the Climate Action Council's final Scoping Plan did not support hydrogen blending. In response to EDF, CRA states that calling for further research does not necessarily equates to a lack of support. Rather, CRA agrees with the Scoping Plan that more research must be done, and as that research and industry experience evolves, NFG should adjust its next long-term plan accordingly. NY-GEO commented that inclusion of hydrogen and RNG as a partial supplement/replacement for fossil gas for residential customers is a distraction from the main residential and small commercial electrification effort.

In its Final LTP, NFG proposes as implementation activities monitoring the evolution of hydrogen markets, and designing, proposing and implementing hydrogen blending pilot programs. NFG also states that its next long-term plan will contain an update on the role of hydrogen. In its Final Report, CRA recommends that NFG consider running an additional scenario or sensitivity that removes the systemwide blend assumption in favor of a more targeted approach. Further, CRA suggests NFG continue to investigate the best application of hydrogen through pilot programs and analysis of its gas distribution system to understand the capability of the system to handle systemwide blending. CRA thus recommends that NFG should provide further analysis, sources, and transparent data to justify its claim that systemwide hydrogen blending is cost effective. In its reply comments, NFG objects to CRA's suggestion that NFG's claim that hydrogen is relatively cost effective is not justified. NFG adds that its long-term plan demonstrates that hydrogen is more cost effective on a cost per emissions reduction basis than residential electrification.

The role of hydrogen in decarbonizing the natural gas system is not clear at present. The Commission notes that NFG

proposes beginning hydrogen blending in 2030, and there will be additional long-term plans filed by NFG between now and then. NFG shall address the feasibility of hydrogen in its next long-term plan, as recommended by CRA. Specifically, NFG's next long-term plan shall include a scenario that features the use of hydrogen targeted to specific customers, and also limited blending of hydrogen into the natural gas stream, so that both applications can be evaluated.

3. Peaking Services

CRA expresses concern in its final report over NFG's indication in the Reference Case that it intends to use peaking or delivered services to meet forecasted increases in design day demand. CRA indicates that this expanded use of third-party services, such as delivered services, while perhaps more economical, creates a reliability concern. According to CRA, this is because third-party services do not convey the right of first refusal that would accompany firm primary-point capacity to support the incremental peak day delivered service and this would reduce supply reliability. To maintain reliability, CRA believes the required no infrastructure scenario would logically need to eliminate any additional upstream supplies. CRA notes that NFG's Final LTP has design day demand peaking at 985,645 Mcf/d in 2024. This represents an 8,592 Mcf/d increase over the current design day customer demand. To reasonably satisfy the requirements of the Planning Order, CRA suggests that a no infrastructure scenario would provide the incremental supply in excess of current design day requirements of 8,592 Mcf/d solely through demand side management and energy efficiency programs. CRA thus recommends NFG analyze how it would address upstream supply needs in the Reference Case via a no infrastructure solution. The Commission agrees with CRA on this subject and, therefore, directs NFG to file a no-infrastructure scenario in

its next long-term plan that meets peak day growth with NPAs, discussed in more detail below.

Demand Response Programs

The Planning Order stated that LDCs should continue to consider the use of interruptible gas service to minimize the need to build new infrastructure, but that LDCs should prioritize developing innovative clean demand response programs. As summarized in MI's comments, NFG has not relied on interruptible customers to reduce demand given its lack of system constraints. CRA notes in its Initial Report that NFG's Initial LTP lacked demand response programs of any kind. NFG notes in the Revised LTP that it is "premature to include demand response as a modeled decarbonization action due to limited information regarding the potential magnitude of the impact on peak day demand," but states it will propose a demand response pilot program.[34] In its Final LTP, NFG proposes to design and implement demand response programs but provides no detail.

In its Final Report, CRA recommends that NFG continue to further investigate the potential for developing demand response pilot programs that may be used to reduce firm load and include proposed programs in any near-term rate case filing, and in its Annual Update to its long-term plan. In its reply comments, NFG states that it does not currently have sufficient information regarding the potential magnitude of the impact of natural gas demand response on peak day demand, and that the results of other utility natural gas demand response programs appear to be inconclusive. It suggests that a pilot program could demonstrate an effective natural gas demand response program and lessons learned for its next long-term plan.

[34] Revised LTP, p. 26.

The Commission agrees with CRA's recommendation and directs NFG to file a proposal to implement demand response programs for the winter of 2024-2025 no later than May 31, 2024. The programs must be based on research into successful gas demand response programs used by other gas utilities and should be focused on reducing peak day demand. In addition, NFG shall explain how its proposed demand response programs will engage and benefit disadvantaged communities, with a quantification of the benefits. Further, NFG shall propose demand response programs targeted to different customer types (residential and commercial).

Energy Efficiency

In the Planning Order, the Commission stated that LDCs must include adjustments to demand forecast scenarios that include energy efficiency. NFG has existing energy efficiency programs as the Commission directed in Case 18-M-0084, and the Company has also included energy efficiency as a decarbonization measure in each of its scenarios.[35] Additionally, NFG included some weatherization programs and the provision of home energy reports to all residential customers as part of its Revised LTP.

CRA recommends NFG continue to investigate energy efficiency for all its customers. EDF states that gas throughput must be reduced through improved efficiency. CRA adds that NFG should produce a scenario that meets increased future demand growth solely through demand side management and energy efficiency.

The Commission notes that utilities currently have flexibility to shift their Commission-authorized portfolio

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

funding among existing energy efficiency and heating electrification measures and programs as prescribed by the January 16, 2020 Order Authorizing Utility Energy Efficiency and Building Electrification Portfolios Through 2025. In addition, on November 1, 2023, utilities and NYSERDA filed energy efficiency and building electrification portfolio proposals for the years 2026-2030 in response to the Commission's July 20, 2023 Order Directing Energy Efficiency and Building Electrification Proposals (Order Directing EE/BE Proposals) in Case 18-M-0084. To the extent that it has not already done so, NFG shall incorporate the enhanced weatherization and heating electrification measures and programs that it identified in its long-term plan as part of its supplemental filing to the Non Low- to Moderate-Income Energy Efficiency Portfolio Proposal for 2026-2030 filed on November 1, 2023, in Case 18-M-0084. This should include programs targeted toward industrial customers, while also adhering to the portfolio framework the Commission outlined in the Order Directing EE/BE Proposals. Ultimately, we will make any determination relating to the details of the Company's energy efficiency portfolio through the process established by the Order Directing EE/BE Proposals in Case 18-M-0084, not in this proceeding.

Reliability Standards and Hydraulic Modeling

In the Planning Order, the Commission adopted Staff's recommendations that long-term plans identify the methodology by which LDCs will forecast and measure reliability, and that design day standards should be considered in each long-term plan and revalidated in a frequency proposed by the LDC.[36] In its Preliminary Findings Report, CRA noted that NFG's hydraulic model indicated that there would be isolated low pressure

[36] Planning Order, p. 34.

pockets on the low-pressure system and broader pressure issues in Clarence, New York, a suburb of Buffalo. After NFG conducted a second hydraulic modeling session, NFG identified a system reinforcement project that would correct the forecasted low pressure situation in Clarence. Stakeholder comments related to hydraulic modeling are limited, and EDF states that hydraulic modeling and engineering are part of the process to support a targeted network retirement plan. CRA recommends that Clarence could be a candidate for targeted efficiency and demand side management programs, and that the system reinforcement project NFG identified should be revisited with a more granular approach to demand growth, refined, and then used as the traditional infrastructure alternative for comparison in an NPA analysis. CRA continues that, on the broader low-pressure system, the isolated pockets of pressure concerns may be more appropriately remedied with an upgrade (to medium pressure) versus retirement and NPA analysis, particularly if they are surrounded by areas without low pressure issues. Upgrading to medium pressure will have other benefits such as limiting water infiltration that causes service interruptions. In its reply comments on the Final LTP, NFG states that it agrees with CRA. Regarding the Clarence area, NFG states it expects to commence construction of the necessary infrastructure upgrades within the next 12 months, meaning it is not eligible for NPA treatment as outlined in NFG's proposed NPA suitability criteria.

The Commission finds that NFG has met the requirements of the Planning Order regarding reliability standards and hydraulic modeling. As mentioned above, NFG is experiencing growth on its system. The Commission finds that the hydraulic model identifies some areas of concern related to that growth and the impacts on NFG's low pressure system. As discussed

below, NFG should develop NPAs to address these isolated areas instead of adding additional infrastructure.

No Infrastructure Option and Non-Pipe Alternatives

In the Planning Order, the Commission required that LDCs include a no infrastructure scenario, but allowed an LDC to assert that a no infrastructure scenario may not be feasible for a particular project or portion of its long-term plan. As mentioned above, NFG claims that all its long-term plan scenarios are no Infrastructure options; however, CRA did not agree. Further, NFG fails to include NPAs in its long-term plan, although NFG indicated that it would only consider segments of LPP for possible NPA projects. In response to a CRA data request, NFG stated that it does not have a Commission-approved NPA program in its tariff and is currently working with other LDCs to develop a statewide NPA program. In its Revised LTP, NFG states that it "will evaluate gas capital projects to determine whether they qualify for NPA solutions that can reliably meet customer needs, including hybrid heat pumps, geothermal energy networks, compressed natural gas, or liquified natural gas. Examples of projects that may be suitable for NPA consideration include gas distribution projects associated with load growth and main or service replacements."[37] In the Revised LTP, NFG proposed to use a two-prong approach to evaluating small versus large projects for applications of NPAs, which other LDCs have adopted. CRA discusses targeted network retirement programs that EDF and NRDC supported.

While recognizing that NFG provided additional details regarding its proposed suitability criteria for NPAs in its Revised LTP, CRA recommends that NFG develop a more specific plan for incorporating NPAs into the Final LTP, piloting

[37] Revised LTP, p. 66.

projects to test the viability of avoiding LPP replacement and developing NPA options for disadvantaged communities.[38] In its Final Report, CRA specifically suggests that NFG consider NPAs for its Gas Network Enhancement Plan and the PUR-WNY program.[39]

The Gas Network Enhancement Plan began pursuant to a collaborative required by the rate order adopting the terms of a joint proposal in Case 13-G-0136.[40] Its goal was to overcome barriers potential customers had to connecting to the gas system in order to encourage customers to convert to natural gas from other, more polluting fossil fuels. However, it is now almost a decade later and circumstances have changed from when that program was originally adopted. The Commission finds that NFG's Gas Network Enhancement Plan program will not help the State meet its GHG emissions reduction targets. Accordingly, NFG is directed to cease, by March 31, 2024, any further activities related to gas expansion or network enhancement as defined in the Gas Network Enhancement Plan. The Commission recognizes that NFG must attach prospective new gas customers pursuant to current state regulations when applicants request service, but this action will end proactive main extensions in NFG's service territory. Further, the Commission anticipates that the parties to the currently ongoing rate proceeding will address cost recovery for the marketing of natural gas going forward.

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[38] Preliminary Findings Report, pp. 15-16.

[39] Final Report, p. 50.

[40] NFG first developed this program in compliance with Case 13-G-0136, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of the National Fuel Gas Distribution Corporation for Gas Service, Order Adopting Terms of Joint Proposal and Establishing Rate Plan (issued May 8, 2014), p. 36. The Gas Network Enhancement Plan was then known as the Gas Expansion Plan.

Turning to the PUR-WNY program, CRA identifies it as an urban revitalization program that rehabilitates vacant lots and homes with no connected gas service. CRA states that this program could present an opportunity for an NPA pilot aimed at reducing the increase in gas customers as an alternative to LPP replacement. In its comments on NFG's Revised LTP, EDF points to the timelines for past capital projects NFG provided, which reveal that NFG has historically identified and completed its gas system expansion projects rapidly, well within two years. EDF states that this is notable since the Company's proposed NPA framework deems any project scheduled to commence within two years ineligible for NPA consideration, and that NFG typically completes expansion projects more quickly than other projects. NRDC adds that, instead of incorporating NPAs into its Revised LTP, the Company attempts to address stakeholder concern by merely providing additional information regarding an NPA framework (i.e., details regarding its proposed suitability criteria for NPAs) in its Revised LTP.

In its Final Report, CRA suggests that system reinforcement projects NFG identified should be revisited with a more granular approach to demand growth, refined, and then used as the traditional infrastructure alternative for comparison in an NPA analysis. CRA also recommends that NFG describe how they would apply their proposed NPA Screening and Suitability Criteria to their current project pipeline, including data showing how many projects would qualify for the NPA evaluation process.

NFG states in its reply comments that it disagrees that ceasing the buildout of new infrastructure and finding alternatives for the replacement of LPP is fait accompli in order to meet the state's climate goals. NFG adds that the fact that its long-term plan relies on hybrid heating for residential

customers means the distribution system will remain necessary to serve customers.

We find that NFG did not provide a no infrastructure solution, nor did it specify particular projects or parts of its long-term plan for which a no infrastructure scenario was not feasible. Given that the PUR-WNY program is aimed at urban revitalization in the greater Buffalo metropolitan area, which has also been a focus of the State in recent years, we will not require that it conclude like the Gas Network Enhancement Plan. However, it must be updated to reflect the State's focus on GHG emissions reductions. NFG is directed to make a filing, within 90 days of this Order, explaining how it will revise PUR-WNY to encourage electrification and remove any incentives for additional natural gas usage.

In general, we find that NFG did not incorporate NPAs into its long-term plan in any meaningful way. We agree with CRA that NFG must begin to consider NPAs for planned projects that involve installing new natural gas infrastructure. NFG shall file a report with the Secretary to the Commission no later than July 31, 2024, that lists infrastructure upgrade or main extension projects planned for calendar year 2025 with project costs greater than $1 million. For each project, NFG must provide a discussion of how NPAs were considered instead. The types of NPAs considered, their costs and a BCA calculation using the traditional infrastructure project as the alternative must be included. NFG shall then meet with stakeholders to discuss the list of projects and NPA alternatives considered. NFG must employ a request for proposal process to pursue NPAs for at least two capital projects identified in the report after meeting with stakeholders. NFG shall issue the requests for proposals no later than December 31, 2024, and shall file copies

of the requests for proposals with the Secretary to the Commission.

NFG states in its Final LTP that it would "design, propose and implement pilot programs regarding … [low- and moderate-income customer and disadvantaged community] EE and clean energy, demand response, weatherization, behavioral EE." The Commission notes that energy efficiency, weatherization and behavioral energy efficiency programs will be addressed in Case 18-M-0084, and the Commission will address the sufficiency of NFG's proposals in that proceeding, including whether the appropriate amount of benefits are directed to disadvantaged communities.

Leak Prone Pipe

The Planning Order directs LDCs to identify the locations of specific segments of LPP that could be abandoned in favor of NPAs in the annual reports required by that Order and to identify where infrastructure projects may be required to maintain reliability. In its Initial LTP, NFG indicated that it would only consider segments of LPP for possible NPA projects. CRA recommended in its Preliminary Findings Report that NFG develop a more specific plan for incorporating NPAs into the long-term plan, piloting projects to test the viability of avoiding LPP replacement. CRA also suggests NFG utilize criteria in a possible screening process, including whether a pipeline segment is above a specified risk level requiring timely action, how many leaks exist on the segment, whether the replacement cost is above an established threshold, and the value of a potential BCA calculation regarding retirement of the segment. CRA recommends that NFG utilize a neighborhood approach in its LPP evaluation process, as endorsed by the Commission and requested by the stakeholders. In its Final LTP, NFG lists as an implementation item that it will invest in LPP

programs and processes to implement NPAs, with no accompanying detail. In its Final Report, CRA recommends that NFG develop a pilot program to test the Company's ability to avoid investing in LPP replacement, as mentioned above.

In its September 18, 2023 reply comments, NFG stated that in rate cases the Commission has repeatedly supported the continuation of utility LPP replacement programs and stated that the CLCPA does not preclude further investments in the gas system to ensure that residents continue to have safe, adequate and reliable gas service.[41] The Commission acknowledges that NFG has a significant amount of LPP given it serves a large metropolitan area with a mature distribution system. The safety issues surrounding LPP cannot be ignored. However, continuing to install new natural gas infrastructure has the potential to create stranded cost issues during the transition to a decarbonized energy system. Identifying segments of LPP that the Company can decommission rather than replace, by relying on NPAs, is critical. Accordingly, NFG is hereby directed to develop a process for identifying segments of LPP that can be addressed by NPAs in its Annual Update to this long-term plan. This process should include evaluating segments of LPP scheduled for replacement at least 18 months in the future, and using the criteria elaborated by CRA and listed above to determine candidates for NPA treatment. In its Annual Update to this long-term plan, NFG shall address its LPP replacement budget and propose criteria in a screening process as described by CRA that can be used to identify segments appropriate for NPA treatment.

[41] Case 22-G-0065, Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc., for Gas Service, Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans with Additional Requirements (issued July 20, 2023), p. 112.

The Commission will establish annual mileage of LPP replacement in the rate case, where it will be reviewed to ensure its appropriateness in meeting both safety and emissions reductions goals.

Impacts on Low- and Moderate-Income Customers and Disadvantaged Communities

The Commission directed in the Planning Order that LDCs must identify the disadvantaged communities in their service territories, explain the impacts to disadvantaged communities of any proposed projects, and explain how the LDC will ensure that an appropriate portion of the benefits of any proposed NPAs accrue to disadvantaged communities. NFG provided a map showing the disadvantaged communities in its territory. CRA states that NFG should identify specific plans and quantifiable benefits to disadvantaged communities to meet the minimum 35% requirement of the CLCPA and Planning Order. CRA adds that NFG should clarify how RNG benefits disadvantaged communities. Stakeholders also stated that NFG does not provide mandated benefits to disadvantaged communities.

In its Final LTP, NFG states that, as it develops pipeline replacement and other potential projects and evaluates proposed NPAs, it will include in that analysis how disadvantaged communities may be impacted and consider "special programs for low- and moderate-income customers or disadvantaged communities as the Commission encourages in its Gas Planning Order."[42] CRA notes in its Final Report that LDCs are encouraged to combine LPP replacement effort with special programs for low- and moderate-income customers or disadvantaged communities. CRA also recommends that NFG provide details about how the specific decarbonization measures modeled in the long-term plan impact disadvantaged communities, including the level of investment in

[42] Final LTP Executive Summary, p. 14.

disadvantaged communities for each specific measure. In its reply comments, NFG stated that ECL §75-0117, which requires that disadvantaged communities receive at least 35% of the overall benefits of spending on clean energy and energy efficiency programs, is not applicable to its long-term plan, and instead applies to the development of statewide programs by state agencies, authorities, and entities.

As discussed above, the Commission will address the benefits to disadvantaged communities associated with clean energy and energy efficiency program spending within Case 18-M-0084 through the process established in the Order Directing EE/BE Proposals. Thus, NFG is hereby directed to reflect the findings in that proceeding in its next long-term plan filing and provide updated information on quantifying benefits to disadvantaged communities in every Annual Update to this long-term plan.

Comparison of Alternatives

1. Benefit Cost Analysis

In the Planning Order, the Commission stated that the planning proceeding does not seek to modify previous Commission orders related to BCA. The Commission also stated that the consultant is expected to help evaluate the economic and environmental tradeoffs associated with different pathways. NFG calculated BCA ratios for each of six scenarios it evaluated. CRA pointed out in its Initial Report that NFG had yet to establish a BCA Handbook pursuant to the Commission's BCA Framework Order.[43] In response, NFG stated in its Final Comments filed on September 18, 2023, it would develop a BCA handbook

[43] Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Establishing the Benefit Cost Analysis Framework (issued January 21, 2016) (BCA Framework Order).

when it has the benefit of responses to filings it has made with the Commission regarding NPA screening and suitability criteria.[44] Regardless, NFG performed a BCA for its Initial LTP and calculated a Benefit-Cost Ratio of 0.57. BCA handbooks are desirable for stakeholders as they contain updated information on the inputs that NFG would incorporate in any BCA filings. NFG stated that the main driver of the low BCA score is that they are not avoiding specific traditional investments. CRA adds that a Benefit-Cost Ratio of 0.57 should not dissuade NFG and that "LDCs must contribute to decarbonization efforts in a major way, regardless of BCA outcomes."[45] In addition, CRA recommends that NFG ensure that the BCA Handbook is a high priority, and it should be used for future long-term plans. NFG's calculation of the BCA ratio of the long-term plan in the Revised LTP showed a slight reduction from the Initial LTP, from 0.57 to 0.56. Both total benefits and total costs used in the calculation increased from the Initial LTP. The BCA ratios for the Informational Scenarios were 0.61, 0.64 and 0.64 respectively. Nonetheless, NFG states that "BCA results for the informational scenarios are overstated because the incremental ICAP costs do not account for the assumption that electricity will be 100% clean by 2040."[46] CRA opines that the BCA calculation should include the cost of heat pumps reduced by the value of an estimate of federal incentives and that statewide incentives should be identified in the analysis as something that will have an influence on customer adoption rates and should be recognized in the assessment. UIU recommended that NFG perform the UCT and RIM test, explaining it "believes an

[44] Case 22-G-0610, supra, NFG Final Reply Comments, p. 26, fn. 74 (filed September 18, 2023).

[45] CRA Initial Report, p. 48.

[46] Revised LTP, Appendix K, pp. K-7.

evolution of the BCA Framework may be necessary and these secondary tests should be performed." CRA agrees with UIU regarding applying the UCT and RIM tests to the long-term plan. AGREE-NY highlights in its comments on NFG's Revised LTP that a homeowner in New York state can receive up to $14,000 for electrification and weatherization through the Inflation Reduction Act, which creates no additional cost for NFG customers, but the Company still counts it in the cost of its plan, leading to a misleadingly low BCA result. NYSERDA recognized in its comments on NFG's Revised LTP that NFG incorporated incentives into its Revised LTP but did so in a manner that has no impact on the resulting benefit-cost ratio. Thus, NYSERDA offered that limiting the consideration of incentives to the BCA obscures their impact and may lead to a less effective long-term plan.

CRA states in its Final Report that NFG should conduct a BCA for individual NPA opportunities when replacing LPP. Also, CRA acknowledges NFG should conduct the UCT and RIM tests for its long-term plan, as this will supplement the BCA that NFG provides for all Initial LTP scenarios and stakeholder informational scenarios. The BCA calculation should include federally funded incentives for weatherization and electrification as a benefit, and statewide incentives should be identified in the analysis as something that will have an influence on customer adoption rates and should be recognized in the assessment. CRA further recommends that NFG consider utilizing BCA to support a replace versus retire analysis as part of its LPP replacement program.

In its September 18, 2023 reply comments, NFG contends that the Commission should decline to adopt recommendations to modify the BCA analysis, and performing the UCT and RIM tests would require significant time, resources, and cost. NFG adds

that the difference in the BCA ratio between the long-term plan and Informational Scenario 3 is not meaningful, and that the BCA is not the primary measure to quantitatively evaluate the long-term plan.

The Commission directs NFG to undertake a collaborative process to develop a BCA handbook adhering to Commission guidelines established in the BCA Framework Order.[47] NFG shall schedule an initial technical conference on the subject to take place within 60 days of this Order. The subject of the technical conference shall be a draft BCA handbook that NFG assembled and filed with the Secretary to the Commission at least 14 days prior to the technical conference. Additionally, stakeholders shall have the opportunity to provide written comments, which they shall file with the Secretary to the Commission within 14 days after the technical conference. Finally, within 30 days after the technical conference, NFG shall file the BCA handbook with the Secretary to the Commission in this case, and update and file its BCA Handbook in any subsequent long-term plan filing. Together with its BCA handbook, NFG shall provide a narrative explaining how it addressed stakeholder's comments on its draft. Specifically, NFG shall explain where it incorporated any changes in response to the comments or shall explain why it concluded no changes were needed. Further, NFG shall use that BCA handbook to evaluate its LPP projects for potential abandonment as part of a NPA proposal, as discussed above. Finally, NFG shall include a BCA analysis in its consideration of NPAs, as discussed above, to pursue in lieu of infrastructure upgrades. The Commission notes that other utilities, such as Consolidated Edison Company

[47] Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Establishing the Benefit Cost Analysis Framework (January 21, 2016), p. 33.

of New York, Inc., have adopted programs using gas utility funding to assist customers with electrification of heating loads in areas where constraints exist on the natural gas distribution system. NFG should review those programs as part of its consideration of NPAs discussed above.

Regarding UIU's recommendations related to NFG's performance of the RIM and UCT tests, the Commission directs NFG to perform such calculations for its future long-term plan and include them in the initial filings of those plans, along with calculations of the SCT performed using the BCA handbook NFG will complete as directed above.

2. Estimated Bill Impacts and Net Present Value of Costs of Each Alternative

The Planning Order directed the LDCs to present an annual bill impact and net present value for both a traditional solution and any alternatives, and that the analysis address various customer groups. Additionally, the Commission required that LDCs include an alternative bill impact analysis that assumes the full value of any new gas assets is depreciated by 2050. NFG's Aggressive Scenario can be considered as meeting the latter requirement. In its Initial LTP, NFG claimed the residential natural gas bills for customers that have yet to convert to electricity (non-participants) in 2042 is substantially lower in the long-term plan than in the Aggressive Scenario ($206 per month compared to $295 per month).[48] CRA calculates that NFG's Initial LTP results in a 54% increase in a typical residential gas bill in 2042 ($207 per month for the long-term plan versus $134 per month under the Reference Case). NFG used three key outputs in its Revised LTP to enable consideration of tradeoffs related to various scenarios: reduction in GHG emissions; NFG bill impacts; and

[48] Initial LTP, Executive Summary, p. 9.

decarbonization policy costs. NFG states that "the ultimate demarcation of which costs are recovered through gas bills and which Decarbonization Policy Costs will be recovered from other sources will be determined by policy makers." UIU commented that additional bill impacts for customers should be explored further.

CRA recommends that NFG either complete a more detailed analysis of bill impact by customer class over the course of the 20-year plan, or NFG should conduct alternative tests such as the RIM or UCT tests. CRA also recommended that NFG conduct further analysis of the potential impacts of customer migration from the gas system over time on customer rates and bills, especially in the Aggressive scenario or other scenarios that involve large numbers of customers moving to hybrid or full electrification.

In its September 18, 2023 reply comments, NFG states that the impact of costs on customers with varying load profiles requires a rate design (i.e., customer charge, energy charges, demand charges, etc.) for a group of similarly situated commercial or industrial customers to assess their unique bill impacts, which is possible in a rate case but well beyond the scope of its long-term plan.

The Commission finds that NFG's bill impact analysis in this proceeding is insufficient. The Commission directs NFG to calculate bill impacts on total annual bills for an average customer based on annual usage for each of its service classifications, for each of the six scenarios contained in the Final LTP. This analysis shall reflect the modifications to the Final LTP as directed in this Order. NFG may, however, omit any service classification with less than three ratepayers. As CRA recommended, this analysis shall include the impacts of customer migration over time. NFG shall file this information in its

first Annual Update in 2024. NFG shall also include this information in the initial filings for its subsequent long-term plans.

3. Emissions Impacts

The Planning Order requires that LDCs report the GHG emissions from all solutions, both supply-side and demand-side, and a calculation of the GHG emissions from each scenario they submit in addition to including carbon emissions in the BCA analysis as prescribed in the BCA Framework Order. NFG stated in its Initial LTP that the Pathways Study it commissioned revealed that an "all-of-the-above" approach to decarbonization of the natural gas systems in New York could achieve the statewide emissions reduction goals contained in the CLCPA, while being less costly than an approach requiring full electrification. NFG further states that its long-term plan will reduce GHG emissions by 3.358 million tons of CO2e and will cost just over $3 billion dollars in net present value, compared to savings of 4.7 million tons of CO2e with the Aggressive Plan at a cost of over $6.2 billion. CRA points out that NFG stated in its Initial LTP that RNG supply approaching 9% of total gas usage would provide emissions reduction benefits. CRA also noted that NFG proposed to continue its LPP replacement program, which supports safety, reliability, and reducing fugitive emissions.

In its Revised LTP, NFG included a new scenario that increased residential and small commercial electrification as necessary to achieve 40% GHG emissions reductions from 1990 levels in 2030. NFG explained that the scenario analysis it used provides the insights necessary to develop a long-term plan that achieves a reasonable balance between GHG emissions reductions and the cost of achieving them, while preserving reliability of the energy system.

Some stakeholders noted that NFG's long-term plan did not assume that the electric system in New York would meet the CLCPA's GHG emissions reductions targets, which contributed to analysis that skewed toward continued use of natural gas. In its comments on NFG's Revised LTP, EDF stated that even if New York has not set specific emissions limits for NFG or the utility sector, the Company's plan must still be directionally consistent with CLCPA targets and policies. NYSERDA referred to a report it published on fossil and biogenic fuel GHG emission factors, and recommended that NFG use net emissions factors when calculating the costs and benefits associated with emissions for a BCA. CRA recommends that NFG assume that CLCPA targets are met when forecasting electric sector emissions.

As CRA noted, we will focus on the topic of emissions accounting in more detail in Case 22-M-0149. EDF is correct when it asserts that NFG's long-term plan cannot be inconsistent with the attainment of CLCPA goals. Nevertheless, CRA stated that it did not see anything in the long-term plan that would prohibit NFG from meeting the 2050 goal of an economywide reduction of GHGs of 85%. In its September 18, 2023 reply comments, NFG stated that its net accounting approach is consistent with the Scoping Plan, which states that, from a policy perspective, New York may evaluate adoption of alternative fuel decarbonization strategies utilizing the full life-cycle analysis adopted at the federal level.

The Commission finds that, while the CLCPA did not set a specific goal for GHG emissions reductions for natural gas utilities, the Company is part of the energy system in New York and, as such, should be a meaningful part of achieving the State's emissions goals as declared in CLCPA. NFG will include or supplement information in its November 1 filing in Case 18-M-0084 on additional energy efficiency and weatherization

programs, which will contribute to emissions reductions. We also note that NFG is working with the other LDCs on GHG emissions reduction pathways. That work will inform future long-term plans filed by NFG and the other LDCs. NFG is directed to include in its next long-term plan updated information on emissions reductions related to these efforts and any programs that are part of any pending or upcoming rate proceedings.

Heat Pump Adoption/Pace of Electrification

The Initial LTP promoted hybrid gas/electric heating systems that rely on a gas furnace for colder days and a standard electric air-source heat pump on less cold days. This approach featured a switchover temperature of 30 degrees Fahrenheit. Below that temperature all heat would be provided by the gas heating system, and above that temperature the standard heat pump would provide heating and cooling. Many stakeholders faulted NFG for assuming that heating electrification would rely on a fossil fuel for backup instead of electric resistance heating. Additionally, stakeholders were critical of the following assumptions: that customers would only employ the hybrid heating system upon the end of life of heating equipment and not the end of life of cooling equipment; that most customers would not perform any meaningful weatherization of their residences prior to installing heat pumps; and the fact that NFG did not model any meaningful electrification of heating load for commercial customers. CRA noted in its Initial Report that extensive use of heat pumps and hybrid heat pumps increases the need for accurate modeling of the electric system costs, and that NFG should begin coordinating with electric utilities as early as practicable.

In response, NFG's Revised LTP included Informational Scenario #2 which assumes that residential customers install

ccASHPs as a sole heating source and convert all appliances to electricity. NFG also added a new Table V-5, which demonstrated that ccASHPs are more costly than hybrid heating systems in terms of upfront costs and incremental annual energy costs for the years 2024, 2032, and 2042.

In its Preliminary Findings Report, CRA mentioned incentives available for air source heat pump rebates from the 2022 U.S. Inflation Reduction Act, which included funding in 2023 through 2032 for such rebates, as well as incentives also available in New York through the Clean Heat program. Stakeholders, such as the SC/EJ, NRDC, AGREE, and EDF, provided comments regarding the lack of inclusion of incentives and rebates for heat pumps, and recommended they be included in the analysis. CRA stated that incentives will reduce the cost of installation to consumers and will increase the adoption of heat pumps. CRA opines that the BCA calculation should include the cost of heat pumps reduced by the value of an estimate of federal incentives. Moreover, CRA suggests that NFG should identify statewide incentives in the analysis, and acknowledge the incentives will have an influence on customer adoption rates in its assessment.

Strategen, which filed comments on behalf of SC/EJ, recommended that NFG assume that weatherization is performed on buildings prior to the sizing and installation of a heat pump. CRA pointed out that efficiency programs in New York and Massachusetts recommend weatherization prior to any heating or cooling program for eligible customers and stated that NFG did not indicate that it considered targeted electrification in its forecast. NRDC and Strategen note that NFG's 30 degrees Fahrenheit modelled switchover temperature from electric heat pump to gas furnace hybrid appliance assumed in the NFG model may be overly conservative and indicated that ccASHPs can

operate safely at temperatures as low as five degrees Fahrenheit. Strategen added that a ccASHP could be part of the hybrid appliance. NRDC also offered that dismissing the use of ccASHPs due to cost considerations may be overly conservative.

CRA pointed out that NFG's long-term plan does not assume any improvements to cost or technology over the course of the 20-year plan. Strategen's comments compare the coefficient of performance values NFG used to the manufacturer specifications of the heat pump NFG modeled, and found that coefficient of performance values were lower than the manufacturer's specifications. Additionally, Strategen stressed that coefficient of performance assumptions by NFG do not meet Energy Star® criteria for ccASHPs. Further, Strategen stated that NFG overstated installation costs for ccASHPs. NRDC's comments cited a Navigant study performed for the Electric Program Administrators of Massachusetts that concluded there was little difference in cost between standard and ccASHPs.

NFG's reply comments indicated its disagreement with updating heat pump performance assumptions, but acknowledged that it utilized incorrect up-front costs when modeling heat pump installation in certain instances, and that it will correct them in the future. NFG claimed that some customers in its service territory with ccASHPs have had comfort and operational concerns, partially due to the unique climate in which NFG operates. NFG cites recent data from the federal Energy Information Administration that shows moderate cost increases for ccASHPs through 2050. CRA urged NFG to provide more explanation of non-cost factors, such as logistics and esthetics, related to heat pumps. Additionally, CRA noted that it would not be speculative to include cost reductions or efficiency improvements over time. CRA recommended NFG adjust coefficient of performance values such that the ccASHPs are

eligible to achieve Energy Star® status. CRA also challenged NFG to provide an explanation of the differences between NFG's assumptions and those in the New York Technical Resource Manual, and the reason for those differences.[49] In its comments on the Revised LTP, NY-Geo faults the long-term plan for its lack of inclusion of ground source heat pumps, and states that New York and federal incentives for that technology should be reflected in NFG's analysis.

In its Final LTP, NFG states that it will continue to research technology advances in the heat pump markets but provides no details on specific actions. SC/EJ recommend in their comments on the Final LTP that the Commission require NFG to develop a plan that takes advantage of increasingly high-efficiency ccASHPs to fully electrify many of its current customers and reduce the footprint of its gas distribution system.

CRA recommends in its Final Report that NFG organize, propose, and administer pilot programs to test both hybrid options (ccASHPs and standard heat pumps) and develop modeling assumptions based on the results into the long-term plan. Further, CRA urges NFG to administer a pilot program with ccASHPs and electric resistance backup to allow evaluation of the effectiveness of this as an alternative. According to CRA, another pilot program should be considered for customers who are currently utilizing gas only for cooking or water heating. CRA also makes recommendations for analysis and information related to heat pumps to be included in NFG's next long-term plan. In its comments on the Final LTP, SC/EJ stated the plan still falls short by excluding industrial heat pumps and failing to include information about industrial customer profiles that would allow

[49] https://dps.ny.gov/technical-resource-manual-trm

stakeholders and the Commission to assess potential decarbonization options. It also cites the potential for using delivered fuels as back-up to ccASHPs in a hybrid situation instead of natural gas.

Regarding thermal networks, which can include ground source heat pumps, the Commission expects NFG to submit a project for consideration in Case 22-M-0429, as the Commission directed in its Order in that proceeding.[50] NFG also states in its Final LTP that it expects to file thermal energy projects routinely as part of its long-term plans.

The Commission notes that most residential customers in NFG's service territory are eligible for incentives from the electric utilities serving them toward the purchase and installation of heat pumps. NFG shall coordinate with those electric utilities regarding the number of NFG customers participating in the Clean Heat program offered by those electric utilities, the amount of rebates offered, and projections for participation in the electric utility Clean Heat program in the future. We agree with CRA's recommendations above and, accordingly, direct NFG to revise its modelling to reflect benefits from incentives for heat pump adoption in its next long-term plan. We also direct NFG to file proposals for pilot projects for Commission consideration by June 30, 2024. The pilot projects shall evaluate the following: comparison of customer costs, including up-front installation and ongoing operations and maintenance, of NFG's preferred hybrid heating system using ccASHPs to hybrid heating using standard air source heat pumps; and comparison of customer costs of ccASHPs with

[50] Case 22-M-0429, Proceeding on Motion of the Commission to Implement the Requirements of the Utility Thermal Energy Network and Jobs Act, Order Providing Guidance on Development of Utility Thermal Energy Network Pilot Projects (September 13, 2023).

electric resistance heat back-up to NFG's preferred hybrid heating system using ccASHPs.

Climate Leadership and Community Protection Act

As previously discussed, the CLCPA is ambitious climate legislation with a commitment to reduce GHG emissions and achieve net-zero emissions, increase renewable energy usage, and ensure climate justice. To those ends, CLCPA §7(2) requires all State agencies, including the Commission, to take into consideration whether certain specified final agency actions are inconsistent with or will interfere with the attainment of the statewide GHG emission limits established by the DEC under ECL Article 75. Thus, final Commission decisions in proceedings such as the instant matter are subject to the evaluation required under CLCPA §7(2). Section 7(2) further states that, if a decision is deemed to be inconsistent with, or interferes with, the attainment of the statewide GHG emissions limits, the deciding agency, office, authority, or division must provide a detailed statement of justification as to why such limits may not be met and identify alternatives or GHG mitigation measures to be required.

The Commission finds our action here, requiring modifications and improvements to NFG's long-term plan, is not inconsistent with nor interfering with the CLCPA. The intention of the gas planning proceeding we initiated in Case 20-G-0131 is to continue providing safe and reliable service while charting a path forward to attaining the State's climate goals. The modifications and directions in the body of this Order provide a framework to take steps toward these goals while balancing the need for ratepayers to receive safe and reliable service. Accordingly, we determine that our action in this Order is not inconsistent with CLCPA §7(2).

CLCPA §7(3) also provides that, in considering and issuing permits, licenses, and other administrative approvals and decisions, the Commission shall not disproportionately burden disadvantaged communities. CLCPA §7(3) also requires that all state agencies prioritize reductions in GHG and co-pollutants in disadvantaged communities. Earlier this year, the Climate Justice Working Group adopted final criteria to identify disadvantaged communities, along with an interactive map.[51] While NFG's service territory contains disadvantaged communities, the types of projects and research to be initiated pursuant to the long-term plan and our direction herein do not disproportionately burden any specific areas. Energy efficiency and LPP replacement programs, for example, will only benefit surrounding communities and reduce GHG emissions in those areas, which has larger benefits for ratepayers and the State as a whole in attaining its climate goals. Accordingly, the Commission finds that the action taken in this Order will not disproportionately burden a disadvantaged community.

## CONCLUSION

While NFG has filed a long-term plan pursuant to our Gas Planning Order to reflect a modernized and revised approach to planning by a gas utility, there are many aspects of that plan that stakeholders found unacceptable. NFG shall include the information that we specified in the body of this Order in its next long-term plan as discussed in this Order. Additionally, NFG shall adhere to several of our requirements for more immediate actions, as detailed in the Ordering Clauses herein. The requirements we have placed on NFG to improve its long-term plan will further improve the gas planning process as

[51] See https://climate.ny.gov/Resources/Disadvantaged-Communities-Criteria

a whole, and will help to ensure that the reliability of the natural gas system is maintained, GHG emissions are reduced and affordability for customers is protected.

The Commission orders:

1. National Fuel Gas Distribution Corporation is directed to file Annual Updates to this long-term plan with the Secretary to the Commission by May 31 of 2024, 2025, and 2026. The Annual Updates shall include all information specified in the body of this Order and in the Order Adopting Gas System Planning Process issued in Case 20-G-0131 on May 12, 2022.

2. National Fuel Gas Distribution Corporation is directed to file its next long-term plan by December 15, 2026. In its next long-term plan, National Fuel Gas Distribution Corporation shall include all the information required in the body of this Order and in the Order Adopting Gas System Planning Process issued in Case 20-G-0131 on May 12, 2022.

3. National Fuel Gas Distribution Corporation is directed to file a report with the Secretary to the Commission, within 90 days of this Order, explaining how it developed 74 heating degree days as its design day and also how it calculates load per degree day on design day, and the justification for those design criteria.

4. National Fuel Gas Distribution Corporation is directed to file a report with the Secretary to the Commission on its activities, as described in its Final Long-Term Plan, related to obtaining hourly information from National Fuel Gas Supply Corporation within 90 days of this Order.

5. National Fuel Gas Distribution Corporation is directed to file a report with the Secretary to the Commission describing its preliminary findings related to the hourly

information it obtains from National Fuel Gas Supply Corporation within 180 days of this Order.

6. National Fuel Gas Distribution Corporation is directed to file with the Secretary to the Commission no later than May 31, 2024, a proposal for one or more demand response programs for implementation in the winter of 2024-2025 consistent with the discussion in the body of this Order.

7. National Fuel Gas Distribution Corporation is directed to cease, by March 31, 2024, any further activities related to gas expansion or network enhancement as defined in the Gas Network Enhancement Plan program.

8. National Fuel Gas Distribution Corporation is directed to file with the Secretary to the Commission, within 90 days of this Order, a proposal explaining how it will revise its Partnership for Urban Revitalization in Western New York to encourage electrification and remove any incentives for additional natural gas usage.

9. Consistent with the discussion in the body of this Order, National Fuel Gas Distribution Corporation shall file a report with the Secretary to the Commission no later than July 31, 2024, that lists infrastructure upgrades or main extension projects planned for calendar year 2025 with project costs greater than $1 million.

10. Consistent with the discussion in the body of this Order, National Fuel Gas Distribution Corporation must employ a request for proposal process to pursue NPAs for at least two capital projects identified in the report required by Ordering Clause No. 9 after meeting with stakeholders. National Fuel Gas Distribution Corporation shall issue the requests for proposals no later than December 31, 2024, and shall file copies of the requests for proposals with the Secretary to the Commission.

11. National Fuel Gas Distribution Corporation shall undertake a collaborative process, consistent with the timeline, required filings, and discussion in the body of this Order, to develop a Benefit-Cost Analysis handbook pursuant to the guidelines the Commission established in the Benefit Cost Analysis Framework Order in Case 14-M-0101. National Fuel Gas Distribution Corporation shall schedule an initial Technical Conference to occur within 90 days of this Order.

12. National Fuel Gas Distribution Corporation shall include in its 2024 Annual Update to this long-term plan, and in the next long-term plan, information regarding its portfolio of energy efficiency programs as authorized and updated in Case 18-M-0084. This information shall include discussion and findings relative to quantifying the benefits of such programs to disadvantaged communities, consistent with the discussion in the body of this Order.

13. National Fuel Gas Distribution Corporation is directed to formulate plans for a pilot project to test hybrid heating options that include both cold climate and standard heat pumps consistent with the discussion in the body of this Order, and to file the proposed pilot project with the Secretary to the Commission by June 30, 2024.

14. National Fuel Gas Distribution Corporation is directed to formulate plans for a pilot project to test cold climate heat pumps with only electric resistance backup compared to hybrid heating options consistent with the discussion in the body of this Order, and to file the proposed pilot project with the Secretary to the Commission by June 30, 2024.

15. In the Secretary's sole discretion, the deadlines set forth in this Order may be extended. Any request for an extension must be in writing, must include a justification for

the extension, and must be filed at least three days prior to the affected deadline.

16. This proceeding is continued.

By the Commission,

(SIGNED) MICHELLE L. PHILLIPS
Secretary

SCHEDULE AS REQUIRED IN THE PLANNING ORDER

| Event/Deadline | Approximate Number of Days from Prior Event | Approximate Number of Days from LDC's Initial Filing |
|---|---|---|
| Pre-Filing Educational Technical Conference | | -30 |
| LDC Filing of Initial Long-Term Plan | 30 | 0 |
| Technical Conference | 28 | 28 |
| Initial Comments Due | 47 | 75 |
| Reply Comments Due | 15 | 90 |
| Stakeholder meeting(s) to reconcile different proposed solutions as necessary | | |
| LDC Filing of Revised Long-Term Plan | 55 | 145 |
| Stakeholder Filing of Comments/Disagreement with Revised Plan | 30 | 175 |
| Stakeholder meeting(s) to resolve differences | 25 | 180 |
| LDC Filing of Final Revised Plan | 15 | 205 |

DETAILED PROCEDURAL SCHEDULE

| Event | Date |
|---|---|
| November 16, 2022 | NFG Stakeholder Informational Session |
| December 22, 2022 | NFG Files Initial Long-Term Plan |
| January 11, 2023 | Initial Stakeholder Engagement Meeting/Technical Conference |
| February 16, 2023 | Second Technical Conference |
| February 17, 2023 | CRA Files Initial Report |
| March 13, 2023 | Stakeholder Comments Received on NFG's Initial Long-Term Plan |
| March 14, 2023 | Technical Conference on Emissions Accounting |
| March 31, 2023 | Technical Conference on CJ Brown Study (Appendix to Initial Long-Term Plan) |
| April 4, 2023 | Technical Conference on Hydraulic Modeling |
| April 18, 2023 | Reply Comments Received on NFG's Initial Long-Term Plan |
| April 27, 2023 | Technical Conference on Additional Scenario Modeling |
| May 24, 2023 | NFG Files Revised Long-Term Plan |
| May 25, 2023 | CRA Files Preliminary Filings Report |
| June 1, 2023 | Stakeholder Meeting to Discuss Revisions in NFG's Revised Long-Term Plan |
| June 15, 2023 | Stakeholder Comments Received on NFG's Revised Long-Term Plan |
| June 22, 2023 | Stakeholder Meeting to Discuss and Reconcile Differences with NFG Revised Long-Term Plan |
| July 17, 2023 | NFG Files Final Long-Term Plan |
| July 25, 2023 | CRA Files Final Report |
| September 5, 2023 | Stakeholder Comments on NFG Final Long-Term Plan |
| September 18, 2023 | Reply Comments on NFG Final Long-Term Plan |

SUMMARY OF COMMENTS

Comments on Initial Long-Term Plan:

1. Environmental Defense Fund (EDF)

EDF stated that the Commission and Staff must ensure that NFG's final plan is consistent with the Commission's long-term planning directives and state climate goals, and adjustments are needed to strengthen NFG's approach to demand projections, including more transparency and more granular analysis. On the supply side, EDF states that NFG must center the consideration of NPAs to avoid unnecessary gas capacity and infrastructure expansion and NFG's long-term plan must center on a concerted effort to achieve deep reductions in gas reliance over the next 20 years, in a manner that reduces inequitable energy burdens and protects disadvantaged communities. According to EDF, NFG must revise its Initial LTP to ensure consistency with the CLCPA, including GHG emission reduction targets and requirements to protect disadvantaged communities.

EDF continues that more transparent assessment of demand trends could better enable third-party contractors or other entities to propose and offer NPAs to mitigate gas reliance and/or gas infrastructure buildout. EDF specifically recommends three analyses to comprehensively assess NFG's demand projections, generally relying on a five-year look back period to identify trends. The analyses are: (1) assess the characteristics of received supply over the previous five years, ideally on an hourly and daily basis, to look for trends and identify emerging needs; (2) assess the utility's methodology for calculating its Design Day; and (3) assess the utility's capacity releases over the previous five years to look for trends and identify emerging needs. EDF states that its analysis, which relies on daily data, indicates that hourly data would add significant additional value in understanding demand

trends on NFG's system, and the relationship between peak hour and energy supply requirements underscores the need for NFG to track and record hourly receipts in order to better assess both real and modeled requirements. EDF believes that the inferred methodology of Design Day estimation used by NFG is reasonable; that said, EDF states NFG should be required to provide a public, detailed narration of its methodology. EDF states that NFG should also provide a discussion of the source(s) of its Monthly Demand figures, and with individual meter reads for most customer classes spanning varying portions of two months. EDF also suggests that NFG should discuss how it determines what demand is within just the calendar months of January, July, and August respectively. In reviewing NFG's capacity releases, EDF's analysis demonstrates that NFG has been decreasing the amount of capacity released at certain points during the winter season over the last few years, and this could indicate that NFG may be estimating that energy supply is close to not satisfying projected demand. EDF states NFG should collect and record hourly data of the pressure and volume of supply received onto its system at all its system entry points from pipeline(s)and NFG should retain this data. EDF continues that, in the future, NFG will be able to, and should, conduct an assessment of received supply trends on an hourly basis, and one benefit of tracking hourly supply and delivery data is that it could enable NFG to assess key sector opportunities for demand response programs. EDF opines that a demand response program could help to reduce peak demand and obviate the need for additional gas capacity in the future.

In addition, EDF states that NPAs must be incorporated into supply planning, including as an alternative to leak-prone pipe LPP replacement. EDF states that NFG's Initial LTP does not adequately explain how the utility will incorporate NPAs

into its planning to reduce gas reliance and unnecessary gas infrastructure buildout. Further, EDF expresses disappointment that the NFG Initial LTP fails to explain how the Company is planning to incorporate NPAs into its operations, and that NFG does not present a clear approach to assessing LPP projects for possible NPAs. EDF also suggests that the Company should provide a more fulsome explanation of how it plans to implement the criteria, incentive, and cost recovery mechanisms that it has proposed in the Gas Planning Proceeding in Case 20-G-0131. EDF believes that NFG should develop and present a clear plan to identify planned LPP replacement projects that could be converted to pipe retirement projects, as well as a plan for broader network retirement. According to EDF, NFG should consider a pilot project for targeted network retirement incorporating the neighborhood approach, wherein NFG facilitates installation of cold climate air source heat pumps (ccASHPs) in a neighborhood where a LPP segment is located. EDF adds that after monitoring of ccASHP performance for a defined period, NFG could then proceed with targeted network retirement. EDF states that NFG should make its Rebate Programs' data reporting more transparent, develop more aggressive and wide-ranging programs to promote energy efficiency that will increase customer comfort and reduce monthly bills, and improve its electrification offerings in a manner consistent with the geographic and weather conditions in its upstate service territory.

EDF states that NFG's long-term plan should broaden the eligibility of its energy efficiency programs and consider additional decarbonization options. Specifically, EDF suggests that NFG should make its data it reports regarding its rebate programs more transparent, develop more aggressive and wide-ranging programs to promote energy efficiency that will increase customer comfort and reduce monthly bills, and improve its

electrification offerings in a manner consistent with the geographic and weather conditions in its upstate service territory. It also states NFG should incorporate the full suite of weatherization measures into its plan, and evaluations of cost-effectiveness should be based on overall program performance, not individual measures. EDF points out that one cost mitigation option is that NFG need not administer weatherization audits and installations. Rather, the Company should consider partnering with electric utilities in its service territory, as partnerships in program offerings can reduce administrative costs, streamline the implementation of energy efficiency measures, and provide clarity to the consumer as to whom to reach out to. Instead of expending funds on rebates, EDF also believes NFG should pursue long-lived savings that come from insulation or equipment installations. Namely, NFG could address health and safety measures, such as installing a carbon monoxide detector and including ventilation. EDF states that NFG should provide remediation services or incentivize remediation, particularly for low- and moderate-income households and those in disadvantaged communities.

EDF recommends that NFG develop and implement a ccASHP program to better understand when and how often a home or building will need to rely on back-up heating from natural gas furnaces and boilers, as well as the billing impacts. EDF adds that offering the option to lease can reduce the upfront costs for customers and encourage the use of more efficient heat pump equipment for space and water heating. EDF states that the increased urgency of climate action is not reason enough to purse hydrogen in sections where more technologically mature and cost-effective alternatives exist, and that blending hydrogen into existing natural gas distribution systems raises significant concerns. Rather than pursuing systemwide blending,

which creates increased leakage, safety, and cost-effectiveness concerns, NFG should specifically explore hydrogen deployment for hard-to-electrify sectors. EDF adds that biomethane may or may not result in climate benefits depending on the source. For example, biomethane from gasifying organic sources such as wood product wastes or purpose-grown crops will likely result in more net climate pollution due to methane leakage during production, processing, and end-use applications. EDF adds that while the Scoping Plan scenarios purport a 9% RNG blend of RNG in gas pipelines by 2030 and 100% RNG blend "to meet dramatically reduced gas demand in buildings by 2050," the Plan still cautions against the health and environmental justice downsides that accompany reliance on the fuel. EDF continues that supplies of climate-beneficial biomethane are limited and are best allocated for hard-to-electrify sectors rather than blending into the system at large.

2. National Resources Defense Council (NRDC)

NRDC states that the Initial LTP is inconsistent with New York policy and Commission guidance, and does not adhere to the CLCPA's emissions reduction targets, the Final Scoping Plan, or the Commission's Planning Order. NRDC avers that NFG's Initial LTP is wholly deficient and will require significant revisions and additional analysis before it is capable of informing prudent investment decisions. NRDC adds that NFG's LTP also relies on a host of unreasonable assumptions that mask the risks and costs of fossil gas while overestimating the cost of alternatives, to the extent NFG considered alternatives. Further, NRDC adds that NFG's LTP does not fully consider options available for downsizing its gas system, including "no infrastructure" solutions for any of the 20 percent of its gas main that it plans to replace by 2035.

According to NRDC, the LTP would put NFG on a path that falls short of achieving CLCPA targets, and that delays the adoption of available options in favor of costly fuel options that will lead to increased rates and risk of unmanageable customer defection and future stranded costs. NRDC adds that increasing costs to maintain a gas system that has declining use creates the conditions to incite a vicious cycle that spurs uncontrolled customer exit from the gas system, further escalating costs for remaining customers, and producing gross inequities among customers and between generations. NRDC articulates that NFG must include a scenario analysis that is fully aligned with the Climate Action Council's Final Scoping Plan, and that identifies the Company's options for strategic downsizing of the gas system. NRDC states that NFG's analysis under its preferred scenario is not aligned with the CLCPA's emissions reduction targets for two reasons. First, it does not reduce emissions by 40 percent by 2030, achieving only a 34 percent reduction. In 2042, NFG's plan would only reduce emissions from a 1990 baseline by 51 percent. Second, according to NRDC, assuming customer counts and gas sales continue based on 2023 to 2042 trends in NFG's service territory, NFG will only reduce emissions by 59 percent relative to a 1990 baseline in 2050.

NRDC adds that statutory barriers must be included even if they would make implementation a challenge, in order to: (1) create transparency and ensure that the utility does not foreclose its best available options for downsizing the system (for example, by replacing LPP that was not actively leaking and could have been abandoned in favor of an NPA); (2) to ensure that electric utilities, stakeholders, and the broader public have insight into locations where pipe is most likely to be abandoned in favor of electrification; and (3) to identify the

extent to which statutory barriers are making the transition of the gas system more difficult, expensive, or inequitable. NRDC states that NFG has considerable opportunity to abandon pipe, potentially without removing any customers from the system. Despite this, states NRDC, NFG's Initial LTP fails to take NPAs into account and did not include targeted network abandonment.

NRDC states that NFG used unreasonable assumptions for heat pumps. First, it used 30 degrees as switchover for heat pumps, which is not optimal. Second, according to NRDC, NFG did not include ccASHPss in its modeling, and there is a negligible or nonexistent cost premium for ccASHPs, according to a study conducted by Navigant for Massachusetts. Third, continues NRDC, NFG's Initial LTP also ignores state and federal electrification incentives, rebates and tax incentives from the 2022 Inflation Reduction Act and other recent federal legislation and state incentives for heat pumps that are available from the electric utilities. Fourth, NRDC notes that NFG failed to account for continued improvements in heat pump technologies and performance over time as the market grows. NRDC asserts that these errors lead NFG to conclude that full electrification of buildings is too expensive, and as a result, NFG did not incorporate this approach in its preferred plan, which severely limits the usefulness of NFG's analysis. NRDC states that NFG indicates that it used the 20-year global warming potential for RNG, as required by the CLCPA, but it appears that NFG converts the lifecycle emissions intensity of RNG from a 100-year global warming potential to a 20-year global warming potential incorrectly. NRDC adds that NFG is claiming all available RNG supplies from its service area for use in buildings, but buildings generally have better commercially available, low-cost alternatives than other sectors. NRDC adds that RNG is not inherently an environmental solution due to the harmful

environmental impacts associated with certain feedstock sources and leakage rates. NRDC points out that hydrogen produced with renewable energy can have zero GHG emissions, but hydrogen produced this way is not cost-competitive. NRDC states that NFG finds that thermal energy networks are a particularly expensive measure to reduce GHG emission reductions but its preferred plan analysis only considers a sub-optimal application for this technology. Future iterations of the long-term plan should consider networked geothermal in mixed-use developments to fully capture their potential benefits.

NRDC states that in NFG's modeled preferred plan scenario, NFG reduces its emissions by 59 percent of 1990 levels by 2050, falling far short of the 85 percent or more emissions reduction the CLCPA requires. According to NRDC, NFG needs to decrease its volumetric gas sales. NRDC is concerned that NFG is increasing stranded-cost risk down the road when choices will be more costly and more limited. NRDC states that because of NFG's failure to consider and analyze scenarios that take the binding implications of the CLCPA seriously, policymakers, regulators, and stakeholders are left with an incomplete picture.

NRDC states that NFG's strategy relies on expensive and problematic lower carbon fuels, and fails to put NFG on a path consistent with the CLCPA, and a foundational concern with this approach is that it delays the adoption of available options in favor of costly fuel options that will lead to increased rates and increase the risk of unmanageable customer defection later on. NRDC points out that NFG's actions to integrate and to promote RNG and hydrogen fuels risk sending customers the message that these fuels provide an environmentally preferable alternative to fossil gas, leading some customers to stay on the gas system.

3. Sierra Club and Earth Justice

SC/EJ state that NFG's long-term plan fails to sufficiently incorporate important decarbonization options that would reduce reliance on the gas pipeline system, including ccASHPs, industrial heat pumps, load-reducing measures, and geothermal networks. In developing the long-term plan and rejecting these options, SC/EJ state that NFG relied on flawed assumptions about heat pump capabilities and costs, electricity costs, and the viability of alternative fuels. Furthermore, according to SC/EJ, the long-term plan fails to comprehensively identify disadvantaged communities in NFG's service territory and consider the plan's impacts on those communities, and as a result of these deficiencies, the long-term plan is inconsistent with NFG's obligations under the Commission's Gas Planning Order and New York's climate law. Further, SC/EJ argue the plan does not create a pathway for NFG to achieve the deeper emission reductions that will be required by 2050 under the climate law. SC/EJ state that NFG's failure to consider alternatives to continued investment in its gas distribution system is deeply problematic, and NPAs have the potential to avoid the need for costly investments in the gas distribution system. SC/EJ continue that NFG's failure to consider alternatives to continued investment in its gas distribution system also conflicts with the Planning Order. SC/EJ explains that the Commission directed all utilities to identify the locations of specific segments of LPP that could be abandoned in favor of NPAs and where infrastructure projects may be needed in the near future to maintain reliability. According to SC/EJ, NFG evades the topic by failing to identify any segments of a gas distribution or service main that could be abandoned in favor of an NPA or identify segments of its system that could take a neighborhood approach. SC/EJ state that NFG must update its LPP

program in subsequent modeling and identify areas of the fossil gas system that can be decommissioned or abandoned.

In addition, SC/EJ criticizes the Company's exclusive consideration of natural gas to supplement heat pumps as short-sighted. SC/EJ add that while the near-term cost and climate proposition of natural gas may be superior to fuels like propane, this is unlikely to remain true over the next 30 years as New York decarbonizes its building sector. SC/EJ posit that renewable propane delivered by truck in New York will have a significant cost advantage over RNG delivered by pipeline by 2050. SC/EJ opine that any pathway relying on piped gas will need to decarbonize most or all of that piped fuel to achieve the emission reductions the CLCPA requires, and this will add an enormous cost that NFG must incorporate into its modeling.

According to SC/EJ, NFG's plans to blend hydrogen into its system at concentrations of up to five percent by energy, which corresponds to approximately 15 percent by volume and the safety of such an elevated percentage of hydrogen blending is not supported by current research. SC/EJ state that NFG underestimates the potential for heat pump adoption during the long-term plan planning horizon by omitting critical decision points at which customers may purchase heat pumps and by relying on an inappropriate ramp rate derived from a weatherization study. They add that NFG also understates the ramp rate for heat pump installations by relying inappropriately on an adoption curve developed for weatherization measures. SC/EJ suggest that for existing buildings prior to 2030, NFG should develop end-use-specific electrification ramp rates that take into account specific factors impacting heat pump adoption including replacement of AC units and gas furnaces/boilers. Beyond 2030 and for new buildings, SC/EJ recommend NFG assume electrification consistent with the recommendations in the

Scoping Plan. SC/EJ assert it will be important for NFG to monitor trends in heat pump alternatives for un-ducted buildings and update its assumptions regarding these systems in future iterations of its long-term plan. SC/EJ continue that NFG's modeling significantly understates the potential for emissions reductions from its system through unrealistic assumptions regarding heat pump technical capability. Moreover, SC/EJ state that NFG failed to model any improvements in heat pump cost or efficiency over time, instead holding this parameter static in its modeling. SC/EJ add that in addition to understating the performance of ccASHPs, NFG's modeling inflates the cost of ccASHP installation. NFG also presumes no improvements in heat pump cost over time, claiming that to do so would be "speculative." SC/EJ state that NFG biased its analysis against heat pump technologies by irrationally assuming that homeowners would install heat pumps prior to weatherizing a home, which could reduce heating load by approximately 38 percent and result in oversizing. Thus, according to SC/EJ, this would inflate the price of heat pumps.

SC/EJ recommend that NFG draw its electricity cost assumptions directly from National Renewable Energy Laboratory's "All options" scenario, and to better incorporate the impacts of electrification on electricity costs in future long-term plans, NFG should work directly with regional electric utilities to develop a better understanding of their more detailed forecasts and assumptions around how capital investments related to electrification will ultimately impact their rates. SC/EJ state that in NFG's modeling of hybrid heating systems, NFG assumes that these systems rely on the gas furnace for heating on days when the average temperature is below 30 degrees Fahrenheit, with the 30 degree cross-over assumption based on NFG's election to model non-ccASHPs. SC/EJ also note non-ccASHPs are

considerably less efficient than ccASHPs at lower temperatures. SC/EJ add that reducing the sizing of ccASHPs to three tons and using more realistic assumptions regarding costs highlights their viability in a hybrid arrangement, and when realistic improvements in ccASHP cost and performance are paired with more realistic assumptions regarding future gas and electricity prices, operating a hybrid system on gas at 30 degrees will quickly become far more expensive than using a ccASHP. SC/EJ add that NFG understates the climate benefits of building electrification by incorporating inappropriate assumptions regarding future electric sector emission rates and the long-term plan is also deficient in failing to consider electrification opportunities in the industrial sector.

SC/EJ opine that NFG's long-term plan is also insufficient in that it fails to consider available NPAs in addition to the electrification measures. SC/EJ add that NFG's "no infrastructure" scenarios fail to include ambitious projects, new and creative technology, and aggressive programs that are available to reduce fossil gas demand, and NFG did not meaningfully consider demand-side program NPAs such as demand response and energy efficiency, as well as commercial building management systems, alternatives to company-deployed metering infrastructure, modifications to rate design, targeted electrification/entire gas system disconnections, and network geothermal. SC/EJ recommend that NFG investigate and explore the benefits of demand response, such as hourly and daily demand response programs, which can lead to additional reductions in the Company's annual demand and supply forecasts. Further, they suggest that if the Company paired modifications to rate design such as hourly peaking pricing with deployed metering devices, the Company could gain greater relief. SC/EJ state that the Company must explore new opportunities and developing new

geothermal network pilots that will lead to aggressive gas reductions in NFG's supply and demand forecasts.

SC/EJ state that NFG's long-term plan would result in anemic GHG emissions reductions and would be incompatible with the CLCPA. SC/EJ opine that RNG will not produce real climate benefits, and because RNG is chemically identical to fossil gas, its leakage and combustion emits the same level of GHG. SC/EJ state that the long-term plan is also deficient because NFG failed to discuss the impacts on disadvantaged communities in its service territory, and the revised LT long-term plan P must include a complete discussion of the impacts, including burdens and benefits, on disadvantaged communities, and sufficient information to allow stakeholders to assess those impacts. SC/EJ concludes by stating that a plan that relies on hybrid electric heat pumps and maintains the current gas distribution system will increase cost burdens for low-income ratepayers, and NFG should model three additional scenarios described in detail in a report prepared by Strategen.

4. Alliance for a Green Economy

Alliance for a Green Economy (AGREE) filed comments in the reply round on the Initial LTP and stated that NFG's Initial LTP falls short of the requirements created by the CLCPA and the Commission Gas Planning Order. AGREE states that New York should not perpetuate a gas infrastructure system when there are climate-friendly alternatives. AGREE calls on NFG to use its position as an energy provider to strategically use those alternatives to enable our communities to transition away from fossil fuels. AGREE asserts that NFG is not doing its part to achieve the required emissions reductions, as their proposed plan only achieves a 34% GHG reduction by 2030 and puts the Company on track to achieve a 59% reduction by 2050. Regardless of NFG's position on the CLCPA, according to AGREE, the utility

is still required to align its plan with the GHG reduction targets in the law, as the Commission directed in its Planning Order in Case 20-G-0131. AGREE points out that as customers electrify their homes for affordability, reliability, safety, health, or to be consistent with future policy, the cost of maintaining NFG's large gas distribution footprint will fall on fewer and fewer gas customers, raising prices for those left on the system. AGREE opines that his is why the Climate Action Council's Scoping Plan calls for strategically downsizing the gas system and the abandonment of segments of gas infrastructure.

AGREE adds that the Planning Order is clear that utilities should identify potential sections of LPP to abandon instead of replace as part of the gas planning process, yet this is missing from NFG's plan. Thus, it asserts NFG needs to equitably assist low- and moderate-income customers to transition to heat pumps and thermal energy networks. AGREE states that as a viable pathway for NFG to keep its workforce employed while also following the Climate Act, NFG should revise its plan to account for a steady increase of thermal energy networks. NFG must also update its plan with accurate cost and performance information on ccASHPs and include both ccASHPs and ground source heat pumps in a model to substantially reduce the gas system in Western New York. AGREE continues that NFG should revise its plan to incorporate a broader perspective on reliability, resilience, and safety in a changing climate, and should include plans to work with communities in its service territory to achieve true community safety during severe weather. AGREE states that the long-term plan should acknowledge the health impacts and safety risks of fossil fuel combustion, including the safety and health risks posed by the use of gas appliances like stoves for heat during power outages.

5. Utility Intervention Unit

UIU filed comments in the reply round on the Initial LTP and is particularly sensitive to how near-term decisions can have long-term cost consequences for consumers due to the uncertainty around estimated benefits and estimated costs. UIU emphasizes the need to have a robust BCA based on sensitivity analysis of key metrics to assess the possible direction of the proposed long-term plan and alternatives. UIU points out that the BCA Framework Order, besides adopting the SCT as the primary measure in determining the cost effectiveness of a project or program, further stated that the UCT and RIM tests would also be conducted, but would serve in a subsidiary role to the SCT test and would be performed only for the purpose of arriving at a preliminary assessment of the impact on utility costs and ratepayer bills of measures that pass the SCT analysis. UIU states that NFG presented a BCA for its long-term plan, which failed the SCT BCA (0.57) indicating that GHG emission reductions will not be cost effective from a societal perspective. UIU understands the need for decarbonization, yet is concerned about such low BCAs and advises that additional steps are needed to ensure consumers are not unduly harmed by the decisions set forth in these plans. UIU recommends that additional assessments be conducted for gas long-term plan BCAs when the SCT is less than 1.0, adding that despite the BCA Framework Order suggestion mentioned above, that performing UCT and RIM tests would only serve in a secondary role when the SCT is greater than 1.0, UIU believes an evolution of the BCA Framework may be necessary and these secondary tests should be performed. UIU adds that conducting and utilizing the UCT and RIM tests in addition to the SCT may provide additional information to the Commission that can help assess the impact to customers when the PSC considers whether to approve a project,

especially when the SCT fails with a BCA of less than 1.0. UIU states that while it may be acceptable to proceed with decarbonization projects with a low BCA, particularly with foundational projects that have little risk or no regrets, ultimately the subsequent projects' benefits should exceed the costs sufficiently to offset a lower-than 1.0 BCA of preceding projects. UIU asserts that, without this approach, the ultimate impact to the economy and the expected benefits may not be realized. UIU states there has been previous instances in which a utility proposed a large-scale project but the Commission did not consider it until that utility conducted BCAs accounting for different variables and scenarios. Such was the case for Niagara Mohawk Power Corporation d/b/a National Grid's Advanced Metering Infrastructure project. UIU recommends sensitivity analyses for the long-term plan and that each of the scenarios be evaluated to better understand the options for decarbonization action. UIU adds that, as it may not be practical to conduct a sensitivity analysis for each variable, UIU recommends that NFG identify at least the top three variables that have the largest impact to the BCA. UIU also recommends a sensitivity analysis of gas and electric costs (i.e., delivery and commodity) even if they are not one of the top three variables. UIU points out that bill volatility and price spikes have been dramatic recently and the NFG long-term plan should reflect the potential impacts to customers should these higher prices are sustained. In addition to conducting the secondary cost-effective tests and sensitivity analyses on NFG's long-term plan SCT, UIU recommends that an SCT be conducted on the two scenarios, to evaluate potential options and further refine the proposed long-term plan. UIU states that NFG attempts to assess the differences between the scenarios and the long-term plan without a BCA, yet without a standard metric,

it is difficult to assess the merits of the respective options. UIU suggests in the next iteration of long-term plan analysis, and before Commission approval, that NFG provide bill impacts among a broad range of usage levels and service classifications. UIU considers it equally important to also identify how the electric rates for the NFG customers will be impacted.

6. National Fuel Gas Distribution Corporation Reply Comments

NFG filed comments in reply to the stakeholders' comments. NFG states it fully supports GHG emissions reductions in New York and in no way seeks to undermine New York's clean energy transformation. NFG adds that ensuring continued access to reliable and affordable energy, particularly for heating, is paramount as parts of the Company's service territory frequently experience frigid temperatures (e.g., almost 30 days in a year with average daily temperatures at or below 10 degrees) and extreme winter weather events (e.g., the record-breaking heavy snowfall in November 2022 and the December 2022 "once in a generation" blizzard). NFG's long-term plan, which achieves substantial reductions in GHG emissions by 2042 while properly balancing affordability and prioritizing economically efficient investments without sacrificing reliability or resiliency long-term plan prioritizes safety and reliability by diversifying energy sources and continuing the Company's LPP replacement program. NFG maintains that the long-term plan preserves customer choice and provides a significantly more affordable option while relying on the gas system to ensure effective heating during the coldest days and nights of the year, and it also addresses affordability and reduces energy cost burdens for low- and moderate-income and other customers.

NFG states that the long-term plan contributes to a resilient energy system in its service territory that involves coordination between the natural gas and electricity industries.

NFG touts that its plan is also flexible and can adapt as energy technology and policy evolve in the future. NFG claims that the stakeholder comments fundamentally mischaracterize the CLCPA and its GHG emissions reduction targets. Put simply, NFG states that the GHG emissions reduction targets in the CLCPA are statewide targets and the CLCPA does not mandate specific emissions reduction targets for natural gas utilities. NFG agrees with the Commission that "…rationally, meeting the CLCPA's emissions reductions targets for the entire economy will require emissions reductions from the gas distribution system" and NFG avers that its long-term plan thus reflects an effort to contribute as much as possible to the statewide goals and is therefore consistent with the CLCPA. NFG states that it did not develop its long-term plan with the intention of it serving as a statewide plan, and thus it should not be viewed as having statewide implications. Rather, NFG states it is specific to NFG's service territory and reflects NFG's and its customers' needs, which are unique and quite distinct from other New York natural gas utilities' and their customers' needs due in large part to extreme and prolonged winter weather conditions. NFG opines that the stakeholder Comments do not provide a complete view of customer sentiment or needs.

NFG states that unlike some of the scenarios raised in the stakeholder comments, the long-term plan is not merely aspirational, but is technically feasible and considers customer affordability and energy reliability during the 20-year planning period. In addition, NFG points out that the emissions reductions in its plan are also feasible from an infrastructure standpoint in that they reflect reasonable resource and timing constraints related to the conversion of heating and cooling to electricity and the buildout of electric infrastructure to reliably serve incremental demand.

NFG states that the stakeholder comments also fail to fully acknowledge that the process established in the Planning Order is a continuing one with NFG required to update the long-term plan every three years, and it is important to note that while consistency with the CLCPA is an important aspect of the long-term plan, it is not the only consideration NFG is required to make in developing the long-term plan. NFG states that emissions reductions should not be considered in a vacuum and its long-term plan appropriately balances emissions reductions while maintaining the Company's ability to provide safe and adequate service at just and reasonable rates.

NFG asserts that the Climate Action Council's Scoping Plan is not legally binding and does not impose any mandates, and there is no requirement in the Planning Order that National Fuel adopt the same exact assumptions in developing its long-term plan. NFG states that its long-term plan does not preclude the examination of NPAs, since an NPA is not an outcome either forecasted or relied on for planning purposes. An NPA is an implementation option to be considered at the time that an LDC plans projects. NFG adds that its unique physical attributes and the configuration of its contracted no-notice services with NFG Supply address EDF's concern around the hourly uniform takes. Specifically, the multiple storage fields geographically dispersed and connected throughout the Company's distribution system service territory provide immediate no-notice deliverability response to the Company's hourly demand changes. NFG states it is inappropriate for EDF to seek to utilize an hourly demand profile example for a region in California to describe various peak hour factors that may be applied to NFG's service territory. Further, NFG claims that EDF fails to recognize the additional capacity that marketers are responsible to bring to the system daily. NFG adds that the unique multi-

gate interconnections between NFG and NFG Supply, coupled with dispersed storage field locations, provide optimal capacity performance with immediate response to NFG's hourly demand swings, including peak hour. To the extent demand growth continues, NFG states it will consider pursuing similar existing unsubscribed no-notice NFG Supply capacity. In response to EDF's recommendation regarding hourly measurement, NFG recognizes the opportunity to actively engage in system review exercises and incorporate winter hourly data into its current annual capacity review practice with NFG Supply. NFG will continue to review and analyze the peak day extrapolations for actual cold day send-out (temperatures below 15 degrees Fahrenheit). NFG also notes that it continually seeks improvement to the extrapolation methodology and encourages stakeholders to offer practical suggestions. NFG states that declining capacity released at certain points during the winter season over the last few years provides no basis to conclude that NFG may be estimating that its energy supply is close to not satisfying projected demand.

To the extent NFG's future annual reports identify specific segments of LPP that it can avoid in favor of NPAs, the Company will reflect such NPAs in its future long-term plans. Moreover, the Company states that until such segments are identified, it is reasonable for NFG to assume continued removal of LPP from the gas system at current levels because doing so benefits customers and aligns with the Commission's initiative to replace all LPP within the State for safety and environmental purposes (e.g., gas emission reduction benefits).

NFG posits that existing gas customers will likely want to maintain their existing heating fuel as a backup, rather than incurring additional equipment and installation costs and having to learn about a new system. NFG states using natural

gas as a backup fuel has a lower GHG emissions profile than propane or oil, so switching to one of these fuels would result in a net increase in emissions, which is contrary to statewide goals. NFG opines natural gas is a more convenient backup fuel as the customer does not need to schedule deliveries or store inventory. NFG also maintains its modeling of hydrogen is reasonable based on current information.

NFG agrees it is reasonable to assume that some customers will convert to a heat pump when their central air conditioning needs replacement, and it will also monitor trends in heat pump alternatives for ductless buildings and update its assumptions regarding these systems in future long-term plans. NFG indicates a willingness to run additional analyses for informational purposes. NFG states that participation rates in its long-term plan modeling are not driven by inputs related to incentives or rebates but rather based on the anticipated ability of the market to implement the decarbonization actions (e.g., ability to provide sufficient labor, materials, and electric infrastructure).

Additionally, NFG states it is inappropriate to rely on manufacturers' coefficient of performance specifications. Hourly coefficient of performance values will be lower than manufacturer's published coefficient of performance values due to cycling (e.g., constant changes in outdoor temperatures and reducing/increasing thermostat temperature in night/morning). NFG continues that manufacturer specifications that show minimum and maximum coefficient of performance values indicate the coefficient of performance of the heat pump operating continuously at the minimum and maximum capacities listed, and technical specifications for heat pumps determined under ideal conditions do not translate into real-world personal comfort and safety during cold weather.

NFG adds that more recent information released by the U.S. Energy Information Administration (EIA) indicates very little improvement in heat pump technology between 2023 and 2050 and flat to increasing installed costs in constant dollars. If improvements in heat pump technology and efficiency come to fruition, NFG will incorporate that new information into future long-term plans. NFG notes that following completion of the long-term plan, it discovered that it inadvertently utilized incorrect up-front cost estimates in certain instances, which it will correct and incorporate into the modeling for the next version of the long-term plan (i.e., the Revised LTP). NFG will continue to study and evaluate the effectiveness of a range of heat pump technologies to better understand how heat pumps perform under real-world cold weather conditions that are experienced in its service territory. NFG opines that from a customer comfort and practicality standpoint, when replacing a heating system at time of failure, a customer is most likely looking to replace their heating system as soon as possible as failures are most likely to occur during winter when temperatures are low. Weatherization of homes requires a different group of contractors and typically far more time to implement. Further, completing weatherization upgrades and heat pump conversions at the same time is also likely cost prohibitive for a single homeowner, even with incentives.

NFG states it will revise its cost of electricity growth rate used in the next iteration of its long-term plan to reflect forecasted increases in volume of electricity sales. NFG will seek to work with nearby electric utilities in the future to refine its electricity cost estimates to incorporate into future long-term plans. Additionally, NFG states it will consider modeling a ccASHP hybrid heating system with a lower

switchover temperature in the next version of the long-term plan.

NFG avers that currently it is not reasonable to assume for planning purposes that the renewable energy targets in the CLCPA will be met. It explains that there are significant challenges associated with the siting and development of the required new generation and transmission, as well as potential issues associated with the non-dispatchability of many sources of renewable electricity. NFG will revisit the issue in its next full long-term plan to see where New York is relative to the targets, and will update its assumptions accordingly at that time as necessary. NFG states it did not consider electrification of the industrial processing load in its long-term plan because full electrification for the industrial sector is generally not possible at this time. NFG indicates that customers in the high temperature steel processing, chemical and asphalt industries, and customers that utilize various drying operations using direct fired heating equipment, have expressed concern that the technical advancements are not available at this time. NFG adds that even for those sectors where electrification technologies are available (e.g., food processers and other low temperature boilers), full electrification is often cost prohibitive. In addition to considering direct use of hydrogen and other options, NFG states it will consider electrification of boiler systems via air-to-water heat pumps in future long-term plans, although NFG will also need to reflect the economic constraints of this in its next full long-term plan.

In the next version of the long-term plan, the Company commits to including an NPA framework that, subject to Commission action, generally reflects the NPA proposal that it submitted to the Commission on August 10, 2022. NFG states that

it will consider NPAs include, among others, hybrid heat pumps, geothermal energy networks, and compressed natural gas or liquefied natural gas, and projects such as gas distribution projects associated with load growth, and main or service replacements. NFG adds that it would exclude from NPA consideration any capital projects associated with immediate system needs related to safety, reliability, and service obligations, where construction will commence in less than 12 months, in addition to any non-distribution projects where NPAs are not applicable.

NFG states the Commission intended the "no infrastructure" option under the Planning Order to "close the gap between demand and supply," and, as noted in the long-term plan, and distinct from many other New York LDCs, NFG does not require any new capacity-related capital investments to meet demand growth or address moratoria concerns. As a result, neither the Company's Supply-Constrained Economy Scenario nor Aggressive Scenario contemplated infrastructure projects to close the gap between demand and supply. Both scenarios therefore qualify as "no infrastructure" options called for in the Planning Order, according to NFG. NFG states it will look more closely at potential demand response programs to reduce firm load. NFG will continue to explore additional geothermal projects and project configurations, looking beyond its own service territory for lessons learned in other jurisdictions.

In the next version of its long-term plan, NFG will explore the impacts of expanding its modeling to include the full suite of weatherization measures, with the exception of windows for standard income houses, to all residential customers. NFG will include a marketing and outreach program that is targeted to ensure that low- and moderate-income customers are aware of weatherization opportunities. NFG looks

forward to studying the weatherization savings potential in non-residential buildings and discussing it in its next long-term plan filing. NFG notes that simply shifting costs of implementing weatherization programs from the gas utility to the electric utility does not reduce the overall cost of the program, it merely shifts the recovery of those costs from gas customers to electric customers. NFG opines that it is premature to determine as part of the long-term plan the specifics of NFG's proposed Home Energy Reports program, and including an equipment leasing program would not affect the GHG emissions reductions the long-term plan produces.

In NFG's view, achieving the emissions reduction goals of the CLCPA will require keeping viable long-term options such as hydrogen blending on the table. The hydrogen blending research and demonstration efforts, including NFG's future demonstration, will provide further guidance on the appropriate level of hydrogen blending in the Company's distribution system. NFG states the Scoping Plan leaves the door open for the use of alternative fuels, like hydrogen. To reduce energy burdens and address energy affordability concerns, the Scoping Plan's Gas System Transition Plan Framework includes "a review of the costs and benefits associated with both the transition to electrification and potential adoption of alternative fuels…for decarbonizing the gas system to evaluate the impact on overall affordability." NFG states producing and burning RNG can have net negative GHG emissions because in some cases, the amount of methane captured for the production of RNG is larger than the emissions created by processing and burning the RNG. Further, as part of the long-term plan, NFG states it will promote regional anaerobic digestion projects that produce RNG from landfills, animal manure, food waste, and wastewater facility

operations, and deliver those volumes to NFG's system as soon as possible.

NFG asserts that while the Climate Action Council indicated that further analysis may be necessary to determine the feasibility and impact of using alternative fuels, the characterization that the Scoping Plan does not support RNG blending is misleading. NFG states that the Scoping Plan reviewed the use of RNG in the gas system for space heating or process use where electrification is not yet feasible or to decarbonize the gas system as it transitions. One of the modeled scenarios that would achieve CLCPA goals included a 9% blend of RNG for use in the buildings sector by 2030.

NFG commits that it will include in its next version of the long-term plan additional information explaining how NFG will ensure that an appropriate portion of the benefits of any proposed NPAs, such as energy efficiency, demand response, and electrification accrue to disadvantaged communities. NFG states that, on a total bill basis, average residential gas bills should decrease, not increase as NRDC alleges, because the impact of lower gas usage will offset the impact of higher RNG and hydrogen usage. NFG opines that even if incentives do make the upfront conversion costs of full electrification more competitive with a hybrid system, heating with 100% electricity will result in higher total utility bills for residential customers. NFG states this is true even at today's relatively low electric rates, which are likely to increase significantly under full electrification to pay for the required electric generation, transmission, and distribution grid build-out and modernization. NFG points out that NYSERDA has acknowledged that the economics of 100% electrification for natural gas customers in upstate New York are not viable. NFG states that

technology and grid constraints in western New York do not reasonably allow for full electrification today.

Comments on Revised Long-Term Plan

On June 15, 2023, AGREE-NY, EDF, NRDC, NY-GEO, NYSERDA, Sierra Club/Earth Justice, and UIU filed comments regarding NFG's Revised LTP. The comments are largely similar and reiterative to those the stakeholders filed in response to the Initial LTP.

1. Alliance for a Green Economy

AGREE reiterates that NFG's long-term plan does not achieve the goals of CLCPA because NFG did not prioritize electrification or reduce the gas system. AGREE notes that a homeowner in New York state can receive up to $14,000 for electrification and weatherization through the Inflation Reduction Act, which creates no additional cost for NFG customers, but the Company still includes it in the cost of its plan, leading to a misleadingly low BCA result. AGREE also faults NFG's lack of mention of New York's nascent Cap and Invest program, overstating the cost of heating electrification. AGREE also notes that, as customers electrify their homes for affordability, reliability, safety, health, or to be consistent with state policy, the cost of maintaining National Fuel's large gas distribution network will fall on fewer and fewer gas customers, raising prices for those left on the system, and that NFG does not provide mandated benefits to disadvantaged communities. Finally, AGREE states that NFG misses the opportunity to provide beneficial employment through better investments in thermal energy networks.

2. Environmental Defense Fund

EDF comments that the Revised LTP does not adequately address previously raised concerns regarding hourly tracking of

supply and delivery, non-pipe alternatives, targeted network retirement, hydrogen, biomethane, and energy efficiency. EDF continues that even if the State has not set specific emissions limits for NFG or the utility sector, the Company's plan must still be directionally consistent with CLCPA targets and policies. EDF is concerned that NFG itself does not track and record hourly supply received and delivered, instead entrusting its midstream affiliate and reiterates its recommendations to improve transparency and detail around the Company's Design Day methodology. EDF points to the timelines for past capital projects provided by NFG which reveal that NFG has historically identified and completed its gas system expansion projects rapidly, well within two years. EDF notes this because the Company's proposed NPA framework deems any project it has scheduled to commence within two years ineligible for NPA consideration, and that NFG typically completes expansion projects much more quickly than other projects. EDF suggested that NFG focus its hydrogen deployment and the limited supply of climate-beneficial biomethane on customers in hard-to-electrify sectors including industrial customers. EDF reiterates its comment that NFG adopt more aggressive and wide-ranging programs to promote energy efficiency and electrification, including residential energy preparation services, a ccASHP pilot, and an equipment leasing pilot.

3. New York Geothermal Energy Organization

NY-Geo remarked in its comments that NFG did not include the negative health impacts of burning fossil gas and/or RNG in the cost tests. NY-Geo also noted that NFG did not include the impact of accelerated depreciation in the future cost estimates of gas and thus understates the estimated costs to consumers. NY-Geo pointed out that NFG did not incorporate New York Cap and Invest implications into the gas price

estimates. NY-Geo faults NFG for its lack of inclusion of ground source heat pumps in the long-term plan. NY-Geo urges that NFG should reflect State and Federal incentives for that technology in its analysis. NY-Geo opines that NFG's implication that gas heating is more reliable/safe during an electrical outage is misleading given that the vast majority of current gas fueled space/water heating and cooking systems are dependent on electrical devices for safe operation. Further, states NY-Geo, inclusion of hydrogen and RNG as a partial supplement/ replacement for fossil gas for residential customers is a distraction from the main residential and small commercial electrification effort. NY-Geo states that NFG's reliance on hybrid heating appliances will lead to increased costs and inconvenience for customers. According to NY-Geo, the long-term plan also under-utilizes utility thermal energy networks and expresses concern that NFG fails to account for emissions from out of state RNG production, transportation, and combustion in the long-term plan.

4. Natural Resources Defense Council

NRDC states that "stakeholders and CRA have painstakingly detailed the many deficiencies with NFG's [long-term plan]." NRDC continues that it is far more responsible to develop an understanding of what continuing the current cost recovery framework implies and to consider proactive steps to avoid creating costs that will prove onerous for decades to come. NRDC cautions that the alternative under the Revised LTP would exacerbate the potential stranded cost problem, under the assumption of a bail out from taxpayers and electric customers. NRDC acknowledges that the Planning Order declined to adopt NRDC's recommendation to require the LDCs to use open-source modeling as well as open data platforms so that stakeholders can easily review and test different assumptions or run their own

scenarios. NRDC reasserts, however, that it believes doing so would address the lack of transparency and information asymmetry that occurs when the LDCs unilaterally control the modeling platforms and data inputs. Instead of incorporating NPAs into its Revised LTP, NRDC asserts the Company attempts to address stakeholder concern by merely providing additional information regarding an NPA framework (i.e., details regarding its proposed suitability criteria for NPAs) in its Revised LTP. NFG's Revised LTP fails to identify "no infrastructure" alternatives to LPP replacement, according to NRDC. Additionally, NRDC claims NFG's Revised LTP fails to properly account for the GHG emissions of RNG produced out of state by assuming emissions reductions, which causes NFG to dramatically overstate RNG availability and the emissions reductions the long-term plan will achieve.

5. New York State Energy Research and Development Authority (NYSERDA)

NYSERDA states in its comments that NFG should: 1) quantify health benefits for each scenario presented; 2) include more information about its emission sources as well as results from Climate Act compliant GHG emissions accounting methodologies; 3) include revised assumptions regarding the RNG available for its use; 4) ensure that disadvantaged communities receive sufficient decarbonization-related investment; 5) properly characterize the technical feasibility of building electrification; 6) provide a more complete evaluation of potential avoided costs from decarbonization measures and reduced gas demand; 7) identify opportunities for targeted network retirement of LPP; 8) include a sensitivity analysis of cost declines for electrification and energy efficiency technologies over the course of the long-term plan; 9) incorporate the assumption that customers weatherize before electrifying in the long-term plan scenarios; and 10) more

accurately reflect the impact of incentives on adoption rates and customer costs. NYSERDA refers to a report it published on fossil and biogenic fuel GHG emission factors, and recommends that NFG use net emissions factors when calculating the costs and benefits associated with emissions for a benefit cost analysis.

NYSERDA states that omitting the potential avoided costs of targeted network retirement may lead NFG to design its long-term plan in a manner that under-utilizes full electrification as a decarbonization and cost-avoidance strategy. NYSERDA acknowledges that the Informational Scenarios NFG presented in the long-term plan assume a 1% per year cost decrease and a 1% per year efficiency increase for heat pumps, but NYSERDA maintains this is insufficient to understand the impact of these cost changes to the core plan that NFG proposes to pursue. NYSERDA also recognizes that NFG incorporated incentives into its Revised LTP, but states NFG did so in a manner that has no impact on the resulting benefit-cost ratio. NYSERDA offers that limiting the consideration of incentives to the BCA obscures the incentives' impact and may lead to a less effective long-term plan.

6. Sierra Club and Earth Justice

SC/EJ note that NFG incorporated a limited number of stakeholder recommendations into the Revised LTP, and describes the changes between the Initial and Revised LTPs as highly circumscribed. Further, they state that NFG "tucked in an appendix" the informational scenarios. They also note that CRA supported a large majority of stakeholder recommendations in its Preliminary Findings Report.

SC/EJ state that the Revised LTP should not be approved because of the following reasons: 1) it is skewed toward pipeline-based solutions and against electrification; 2)

it fails to assess NPAs and targeted retirement of infrastructure; 3) it is inconsistent with the CLCPA regarding disadvantaged communities; and 4) NFG has failed to develop a plan that is consistent with the State's CLCPA mandate of at least 85% GHG reduction and net zero GHG emissions by 2050. SC/EJ also mention that weatherization should precede heat pump installation to optimize sizing of heat pumps and states that there is currently no available RNG production in NFG's service territory. SC/EJ also states that NFG is ignoring the potential safety concerns and significant potential costs if pipes or end use appliances need to be replaced to accommodate a higher hydrogen blend. SC/EJ maintains that NFG's treatment of economy-wide cap-and-invest is arbitrary and inappropriate and discusses a recent report by Groundwork Data claiming that continued reliance on pipeline gas in New York State would lead to rapidly rising utility bills as ratepayers continue to shoulder the costs of the distribution system in addition to the high costs of RNG necessary to comply with the CLCPA GHG limits. SC/EJ goes on to state that, to the extent that full electrification is not feasible, propane rather than gas can serve as a backup, thereby obviating the need to pour investments into a system that serves increasingly few customers. SC/EJ also state that NFG's Final LTP must include electrification of boiler-based heating systems and that the Revised LTP fails to assess industrial electrification opportunities.

7. Utility Intervenors Unit

UIU states that NFG utilizes a seasonal adjustment for its supply costs but fails to recognize that electric load patterns and corresponding supply costs are expected to be significantly different over the long-term plan study horizon and recommends that NFG consider alternative estimates for the

monthly variations. UIU finds that relying on a single historical year, in this case 2020, when the statewide electric system is expected to become a winter peaking system with a vastly different resource mix over the study period may result in misleading outcomes. UIU recommends that NFG consider using planning study results to make the seasonal adjustments. UIU offers that a possible source could be the NYISO 2021-2040 System & Resource Outlook ("SRO" or "Outlook") and NFG should use the forecasted SRO model LBMP nominal output in lieu of its 2021 historical data to account for expected changes in the supply portion of customers' electric costs.

Comments on Final Long-Term Plan

1. Alliance for a Green Economy

AGREE states that it agrees with CRA that NFG's Final LTP cannot be accepted by the Commission. Moreover, it asserts that the long-term plan is inconsistent with the CLCPA and its factual and evidentiary basis is flawed. AGREE recommends that the Commission detail specific requirements for NFG's next revision and that future NFG expenses on reports and analysis for their long-term plan be recovered solely from shareholders. AGREE-NY states that the long-term plan downplays the benefits and overestimates the costs of electrification and that it only achieves 53% reductions in GHG by 2042 and relies on optimistic and unsupported assumptions regarding the availability of hydrogen and "so-called" RNG.

AGREE points out that NFG's long-term plan maintains the entirety of NFG's gas infrastructure, which has the potential to strand billions in assets. Regarding the informational scenarios, AGREE states that they align with the CLPA and have a better BCA ratio than the long-term plan, even with NFG's biased assumptions, and when they apply federal

incentives to Informational Scenario 3 its ratio improves to 0.77. They continue that factoring in New York State's Cap and Invest program and reducing the cost of maintaining gas infrastructure due to customer electrification would further reduce costs and improve the ratio.

Because NFG is the first utility in this long-term planning process, AGREE states that the Commission must not set a precedent that would allow LDCs to create plans with biased assumptions, and they call on the Commission to reject NFG's plan and require it to make specific adjustments that draw on CRA and Stakeholder feedback.

2. Consumer Energy Alliance

The Consumer Energy Alliance (CEA) opines that NFG's long-term plan shows a commitment to providing affordable and reliable energy service to customers while also being responsive to the State's climate goals, and its emissions reduction plans utilize existing and emerging technologies like energy efficiency, RNG and hydrogen. CEA states it supports preserving energy choice, and notes that it issued an analysis in 2022 that found that eliminating natural gas service could cost New York homeowners nearly $28,000 per residence.

CEA continues that the costs of incentives to encourage renewable energy siting and transmission projects already approved by the Commission are integrated into electric bills. CEA notes renewable energy developers are asking for contracted price increases ranging from 48 to 71 percent and up to $167 per Megawatt-hour. CEA discusses last winter's blizzard in the Buffalo area which left tens of thousands of homes and businesses without electricity. CEA states NFG's system continued to heat homes and businesses and power back-up generators, thus mitigating further destructive impacts of the storm. CEA expresses concern over premature retirement of

dispatchable generation that can provide power when weather-dependent resources are unavailable. In summary, CEA comments that NFG's long-term plan commits to reducing emissions on its system by 40%, which illustrates that reliability and affordability do not need to be sacrificed to meet environmental goals.

3. Environmental Defense Fund

EDF states that the Commission should not approve NFG's Final LTP, and should either reject or modify it. EDF continues that any long-term plan the Commission approves must center on a concerted effort to achieve deep reductions in gas reliance over the next 20 years, incorporate detailed measures to reduce GHG emissions and prepare for a downsizing of the natural gas distribution system in a manner consistent with state climate policy.

EDF asserts that the long-term plan must include actions such as reducing gas throughput through improved efficiency and beneficial electrification, widespread implementation of NPAs and establishing a targeted network retirement plan. EDF contends that approving the as-filed long-term plan would contradict the Planning Order, and disagreements still exist regarding the content of the long-term plan. EDF points out that CRA's final report recommended that the Commission modify the Final LTP to include more robust and effective decarbonization options.

EDF adds that the record in this case contains numerous disagreements between the stakeholders, which were not resolved in the Final LTP, and therefore it would be inappropriate for the Commission to approve the plan without modifications. Further, the EDF suggests the Commission must provide detailed direction to NFG regarding the improvements that are needed in an improved Final LTP since NFG has

repeatedly declined to incorporate the clear and specific recommendations made by stakeholders throughout the proceeding. Finally, timely action by the Commission is important to ensure that NFG's operations and investments are consistent with rapid GHG emissions reductions and to ensure clarity for NFG and other LDCs that are beginning the long-term planning process.

4. Multiple Intervenors

MI agrees with NFG that its long-term plan should be reflective of the characteristics and needs of its service territory. MI states that the proposed cost of the long-term plan is excessive and would jeopardize the affordability of gas service. Further, MI asserts the long-term plan is not cost-effective and would be contrary to the public interest. If, however, the Commission authorizes NFG to implement its long-term plan, MI states that the Commission should address cost allocation and cost recovery issues, and ensure that they will be resolved equitably.

While MI is supportive of the exploration and the potential pursuit of strategies to reduce gas consumption and associated emissions, the reliability of gas service should not be jeopardized. MI further states there is no need to take any immediate action in this proceeding because there are no existing and forecasted constraints on NFG's system. Additionally, while there still may be opportunities to explore NPAs, such opportunities will be more limited than with respect to utilities that are experiencing system constraints.

MI states that NFG's service territory is struggling economically and very susceptible to economic leakage if energy costs become too expensive, and the proposed cost of NFG's long-term plan should be rejected as excessive. MI recommends that the Commission recognize that all of NFG's customers are also electric customers and have been impacted by a series of

programs and initiatives that are funded through higher electric and gas rates and prices. MI maintains that the Commission should refrain from evaluating NFG's long-term plan in a vacuum without due regard to previously authorized expenditures and potential impacts on the State's struggling economy. MI points out that NFG conducted a BCA of its long-term plan and it failed the BCA. Accordingly, MI contends the long-term plan is not cost-effective or beneficial to society, and thus implementation of the long-term plan as proposed would be contrary to the public interest.

MI points out that there is no reliability-based need that would necessitate implementation of the long-term plan at this time, since the CLCPA does not require the Commission to authorize actions that render gas service unaffordable or less reliable, and the long-term plan would result in net societal harms of approximately $2.5 billion. Given the magnitude of the proposed expense, MI avers that the Commission should ensure that cost allocation and cost recovery are resolved in an equitable manner accounting for cost causation. MI states that merely allocating and recovering costs on a purely volumetric basis may be highly inequitable depending on the long-term plan at issue and the specific programs being implemented.

5. New Yorkers for Clean Power and The New York Climate Reality Chapters Coalition

New Yorkers for Clean Power and The New York Climate Reality Chapters Coalition (NYCP/NY-CRP) contend that NFG's long-term plan cannot be accepted, and an alternate long-term plan must be prepared that is compliant with the Planning Order and CLCPA. They also request that the Commission adopt a modified process that is more "suited to forward-looking system and policy needs" as required by the Commission in the Order Instituting Proceeding in Case 20-G-0131, issued on March 19, 2020. They also believe that a long-term plan should include

specific annually declining GHG emission limits to serve as constraints to ensure that utilities' long-term plans are aligned with ECL §75-0107. NYCP/NY-CRP further state that, since sectors like agriculture and aviation as well as energy intensive and trade exposed entities are hard to fully decarbonize, the building sector and gas distribution systems could be required to reduce emissions to a greater extent and at a faster pace.

NYCP/NY-CRP opines that without proportional reduction in the size of the distribution system, the percentage of fugitive emissions and therefore the real carbon intensity of the gas remaining on the system will continue to increase. Additionally, they state that the bulk of RNG will be intentionally produced methane from biogenic sources, which is methane that would not otherwise be produced, making RNG a net positive emissions source. Further, they assert that the emissions characteristics of RNG are highly sensitive to its feedstock, so one specific emissions standard cannot be applied to RNG as a whole. In addition, they state that RNG dependent on out-of-state feedstocks is more unreliable than the supply of in state feedstocks.

Hydrogen itself acts a greenhouse-effect enhancing agent with an estimated 20-year global warming potential of around 37, according to NYCP/NY-CRP. They add that producing hydrogen from methane directly is a more energy-efficient pathway than using methane to generate electricity to replace the renewable generation diverted for electrolysis. Further, NYCP/NY-CRP maintains that zero-emission hydrogen must be reserved for hard-to-electrify industrial uses, displacing the current supply of gray hydrogen in industrial and manufacturing applications and for long duration energy storage. NYCP/NY-CRP points out that blending of hydrogen in the gas distribution

system must be kept at low levels as hydrogen can cause metal embrittlement and leakage risks.

NYCP/NY-CRP states that statewide pipeline gas demand for residential space heating could fall by about a third by 2040, with water heating demand for natural gas falling by about a fourth, solely due to recent federal policy with no additional costs for New York State. They state that NFG should consider completely eliminating leakage and safety risks through a strategic plan to shrink the gas system and replace most LPP with NPAs. They also state that a vast majority of ground-source heat pumps and thermal energy network installations in NFG's service territory will "easily qualify" for a 40% investment tax credit or a similar benefit from the federal government's 2022 Inflation Reduction Act, along with other benefits from other programs, and NFG's service territory is home to several disadvantaged communities that should receive preferential investment from the New York Climate Investment Account.

NYCP/NY-CRP state that accepting NFG's long-term plan will both be inconsistent with and will interfere with the attainment of the statewide GHG emissions limits because the use of fossil natural gas for space and water heating continued in the long-term plan is the largest contributor to the State's GHG emissions. They state that NFG has run an anti-electrification robocalling campaign and used a website funded by its ratepayers for energy efficiency for that robocalling campaign, and that NFG spent over $1 million to lobby against climate bills including CLCPA. NYCP-NY-CRP claims that NFG's long-term plan is noncompliant with the Planning Order and CLCPA and months of Commission, stakeholder, consultant, and Staff time could be wasted in nearly futile attempts to rectify a series of unreasonable and untenable long-term plan filings.

6. Natural Resources Defense Council

NRDC states that NFG's long-term plan is not a credible plan for operating and maintaining the gas system consistent with its public service responsibilities and is incapable of informing prudent investment decisions that are consistent with CLCPA and Public Service Law. NRDC points to an analysis from Synapse that demonstrates this long-term plan would put NFG on a path that leads to a self-perpetuating cycle of rate increases that spur customer exit from the gas system, which could create unmanageable customer defections driving stranded costs that threaten the financial viability of NFG.

NRDC suggests that the long-term plan ignores state and federal emissions policies and incentives which will make it even more financially attractive for customers to electrify and leave the gas system. Thus, in NRDC's view, the long-term plan underestimates the pace of electrification. In addition, according to NRDC, NFG's long-term plan includes modeling that lacks basic transparency and critical functionality, fails to consider any use of NPAs or to identify no-infrastructure alternatives to LPP replacement, and dramatically overstates RNG availability and RNG's ability to reduce emissions.

NRDC faults NFG's use of net accounting to estimate the monetized value of avoided emissions as it conflicts with the State's use of gross accounting to track and enforce compliance with CLCPA's emissions limits. NRDC also faults NFG's refusal to incorporate any lessons learned from the informational scenarios it developed, all of which had higher BCA ratios than the long-term plan.

NRDC states that the Commission must ensure that NFG produces a long-term plan that can guide a substantial reduction of gas use and a strategic downsizing of the gas system. It recommends that the Commission reject NFG's long-term plan and

order NFG to modify the areas of material deficiency identified by CRA. NRDC states that NFG will likely require as much specific direction as possible from the Commission to ensure modifications to the long-term plan result in a credible and analytically sound analysis. Finally, NRDC recommends that the Commission consider directing NFG to modify its long-term plan after the DEC promulgates regulations to ensure compliance with statewide emissions reductions limits, due no later than January 1, 2024.

7. New York Geothermal Energy Organization

NY-Geo believes that the long-term plan should include a greater emphasis on effective electrification and less emphasis on combustion of gasses of any type. It also points out that NFG does not include the long-term cost to ratepayers of depreciation and stranded asset costs related to the subsidized service lines and mains that bring fossil fuels to buildings.

NY-GEO states that a hybrid system, like any other modern space or water heating system, could result in the same safety risks and extreme weather electrical outages, such as the December 2022 Buffalo storm event. It adds that there are existing heat pumps (both ground source and cold climate air source) that can handle the entire heating loads of buildings on heating degree days in the NFG territory. NY-Geo states it has data supporting new build residential geothermal space and hot water heating and cooling systems with lower installation costs than installing two separate systems to heat and cool a home in western New York.

8. Sierra Club and Earth Justice

SC/EJ state that they recognize that the long-term gas planning process is intended to be iterative, but it is critical that long-term plans set the LDCs in a direction that can

produce a least-cost, least-risk approach to reliable service while achieving the mandates of CLCPA. They point out that CRA's final report details how NFG's unrealistic assumptions regarding the pace of electrification obscure the true cost of NFG's long-term plan while overstating the cost of electrification-based pathways. As a result, the Commission must reject NFG's long-term plan and require significant modifications.

SC/EJ state that the Commission should require NFG to develop a plan that takes advantage of increasingly high efficiency ccASHPs to fully electrify many of its current customers. According to SC/EJ, NFG's approach to alternative fuels such as RNG and hydrogen is fraught with unrealistic assumptions that overstate their feasibility and understate the cost of NFG's preferred pipeline-based approach. SC/EJ adds that NFG also fails to adequately consider opportunities for demand response, thermal energy networks and NPAs. In addition, according to SC/EJ, NFG's failure to consider delivered fuels as an alternative to pipelines to address any potential excess peak heating demand is arbitrary due to the cost-superiority of delivered fuels to pipeline fuels in a world of significantly diminished throughput and low-carbon fuels.

SC/EJ state that NFG's long-term plan fails to adequately address industrial decarbonization opportunities and must ensure that at least 35% to 40% of investments are directed to disadvantaged communities. SC/EJ add that NFG's plan would not remove a single existing customer from its system over the next 20 years. SC/EJ points out that CRA says adjusting many of NFG's assumptions, such as the number of customers who weatherize prior to electrification or incorporating federal incentives as a benefit in a New York-based societal cost test, would improve the BCA ratio for electrification. SC/EJ

continues that the need to transition away from fossil gas will be further reinforced by the New York Cap and Invest program.

SC/EJ state that the stranded cost risk is particularly acute under NFG's long-term plan because it continues heavy investment in LPP replacement. They continue to opine that cost effective alternatives to LPP replacement are readily available, including NPAs, demand response and repairing pipe instead of replacing it. SC/EJ add that RNG and hydrogen must be conserved for hard-to-electrify sectors, and replacing fossil gas with RNG will cost ratepayers billions of dollars on top of current gas expenses and result in GHG emissions increases because of the leakage during transport. They state that RNG produced through anaerobic digestion can incentivize unsustainable practices and out-of-state RNG cannot count towards emissions reductions because the emissions accounting system used by New York State only reflects emission reductions that occur in New York. Further, SC/EJ state that green hydrogen should be conserved for uses that cannot be electrified.

SC/EJ refer to the American Council for an Energy-Efficient Economy's "Impact of Electrification and Decarbonization on Gas Distribution Costs," published June 6, 2023, which concludes that an unmanaged transition wherein electrification occurs on a household-by-household basis is the costliest scenario and replacing a gas distribution line and helping customers electrify could save utilities up to $1,300 per customer. SC/EJ state that NFG must dramatically scale up network geothermal solutions and develop an electrification goal in each long-term plan. In addition, they recommend that NFG ramp up NPAs to allow the decommissioning of specific gas lines and embrace demand response programs.

SC/EJ assert that NFG disregarded the potential for delivered fuels to serve as a more flexible and cost-effective backup energy source for ccASHPs if they require supplemental heating. SC/EJ state that propane will become more cost-effective than pipeline delivery of fossil gas due to declining customer counts and gas throughput reversing the current cost advantages of pipeline fuel delivery. NFG should separate its industrial customers into subsectors, according to SC/EJ, which would allow NFG, stakeholders, and the Commission to determine viable and cost-effective options to electrify and reduce their GHG emissions.

SC/EJ point out that the long-term plan "fails to discuss the impacts on disadvantaged communities in NFG's service territory or direct at least 35% to 40% of the benefits of investments to disadvantaged communities as required by the Gas Planning Order and the CLCPA." Specifically, they assert the long-term plan also fails to ensure that disadvantaged communities will not be disproportionately burdened and fails to assess utility bill impacts. Further, SC/EJ state that the long-term plan incorrectly provides that disadvantaged communities will see emissions benefits from RNG and hydrogen blended into the system. SC/EJ contend that reliance on RNG and hydrogen will only exacerbate existing health disparities.

9. PUSH Buffalo

On November 8, 2023, PUSH Buffalo submitted a number of comments on customers' behalf as form comment cards. In its letter to the Commission, PUSH Buffalo asserts that NFG's plan would fail to accomplish the State's CLCPA goals, and would have harmful economic and environmental impacts on marginalized communities. PUSH Buffalo asserts that its efforts are intended to improve and ensure equitable implementation of the CLCPA. Each of the comment cards similarly asserted that the long-term

plan does not comply with the State's GHG emission goals or its requirements to invest in disadvantaged communities, that the plan will require significant cost to ratepayers to maintain the gas system, fails to keep its customers safe, and ignores opportunities for union job growth through investment in renewable thermal energy networks.

10. Comments from Others

As of November 30, 2023, the Commission has received 50 comments from members of the public. Most of the comments express support for meeting clean energy goals and state that NFG's long-term plan ignores climate reality. Some of these comments are form letters and provide limited input regarding specific elements of NFG's long-term plan. One commenter provided detailed feedback on the long-term plan, however, and mentions that NFG minimizes the benefits of geothermal heat pumps, discounts the high cost of replacing LPP and the GHG impacts of burning methane, minimizes potential stranded costs associated with the lack of strategic decommissioning of the gas distribution system, and obscures the deleterious effects of both RNG and hydrogen. A few comments support NFG's long-term plan as filed, namely from the Business Council of New York State, Inc. (Business Council), the New York State Association of Plumbing-Heating-Cooling Contractors, Inc., the Buffalo-Niagara Partnership, and CH4 Biogas.

The Business Council states that the plan demonstrates the Company's commitment to reducing GHG emissions, increasing resilience of its gas supply system, and delivering safe, reliable and affordable service. The Business Council also recognizes challenges specific to the region and to industry. The New York State Association of Plumbing-Heating-Cooling Contractors states that NFG's long-term plan balances GHG emissions reductions and utilizing futures sources of energy and

technology to meet winter heating demands, and ensuring reliability of supply and delivery capabilities. In addition, that organization indicates it supports the pursuit of RNG and hydrogen as meaningful decarbonization opportunities and state that contractors need time to adjust their business model, which would be provided by the NFG long-term plan compared to other parts of New York with more aggressive scenarios. The Buffalo-Niagara Partnership states that NFG's long-term plan shows a commitment to a reliable, resilient system, cost effectiveness and emissions reductions. CH4 Biogas supports NFG's efforts to include green gas and fuels and to provide and maintain top of the line gas infrastructure to Western New York.

11. National Fuel Gas Distribution Corporation Response

NFG filed reply comments on September 18, 2023. NFG states that it is too speculative to conclude that NPAs and strategic retirements of natural gas assets are viable solutions. NFG adds that the long-term plan reduces GHG emissions and ensures that future energy sources and delivery capability are as reliable as today's natural gas system, while maintaining affordability. Further, NFG proffers that its approach is fully consistent with the Climate Action Council's Scoping Plan, the Planning Order and New York's climate goals at large.

NFG states that the opposing stakeholders' focus on decommissioning natural gas infrastructure is "irresponsible, inconsistent with the laws of the state and is not in the best interests" of NFG customers. Moreover, NFG indicates these stakeholders are out of step with the needs of NFG's customers due to their lack of focus on the cost of their proposals.

NFG notes that many of CRA's recommendations call for revision to the current long-term plan, and it would be more appropriate for NFG to reflect some recommendations in the next

three-year long-term plan. NFG states that it has incorporated assumptions and proposals from stakeholders and CRA that improve the long-term plan and are consistent with NFG's guiding principles. NFG also states that many of the recommendations from stakeholders are anti-customer choice, and that its long-term plan preserves optionality and customer choice through leveraging NFG's existing reliable system through use of hybrid heating systems and low carbon fuels. NFG notes that neither it or its long-term plan oppose or prevent customers from choosing to electrify.

NFG asserts that the opposing stakeholders fundamentally mischaracterize the CLCPA and its GHG emissions reduction targets as applicable on a sector-by-sector and utility-by-utility basis, and states that both the Commission itself and CRA recognize that the CLCPA contains no mandates or guidelines directly related to emissions associated with the State's gas distribution system. NFG goes on to state that the opposing stakeholders also mischaracterize the Climate Action Council Scoping Plan, which NFG notes is not a legally binding document, and that the requirement of ECL §75-0117 is a statewide target, not utility-specific, and the assertions that the long-term plan do not comply with it are incorrect and should be disregarded.

NFG states that the Commission should determine that every gas utility's long-term plan will be reviewed within the context of the unique characteristics and needs of each utility's service territory. NFG avers that the opposing stakeholders may be the most vocal group to comment on the long-term plan, but they express views of just one segment of stakeholders, and NFG has hundreds of thousands of customers counting on NFG to provide safe, reliable, and affordable natural gas service.

NFG responds to certain specific recommendations made by CRA. In its final report, CRA noted that when a systemwide increase in demand of 1.4% was applied to the design day for the Buffalo region, the hydraulic model solution indicated that there would be isolated low pressure pockets on the low-pressure system and broader pressure issues in the Clarence, New York, suburbs. After the second hydraulic modeling session, NFG identified a system reinforcement project which would correct the forecasted low pressure situation in Clarence, New York. NFG disagrees that the Clarence reinforcement project should be analyzed for a NPA project as it is expected to commence in less than 12 months. NFG contends that it should not alter the key variables that impact decarbonization in its modeling because there are no "referenceable studies or data" behind CRA's request to the Company to model customer behavior related to decarbonization and its impact on adoption rates using only "referenceable studies or data." The fundamental problem with this recommendation, according to NFG, is that there are no "referenceable studies or data" that would inform the assumptions regarding customer adoption of decarbonization measures, to NFG's knowledge. Moreover, NFG states there is not enough heat pump adoption in its service territory to produce meaningful measures of customer behavior.

NFG also disagrees with CRA's criticism of its labor and resource constraint assumptions. CRA recommended that NFG conduct future studies to understand the skilled contractor base and its ability to work with electrification options and the impact on adoption rates of heating electrification. NFG agrees that this is an area that requires further study, pointing to comments from the New York State Association of Plumbing-Heating-Cooling Contractors, Inc. that make clear that retraining workers to install electrification is not something

that can happen overnight. NFG contends such studies should be conducted by entities such as state or federal agencies.

Regarding the informational scenarios, NFG claims that CRA's Final Report misrepresents the process of developing these scenarios. NFG asserts it adopted more than 20 assumptions proposed by CRA and the stakeholders. NFG explains, however, that it did not include assumptions that were subject to uncertainty or were inconsistent with NFG's guiding principles. NFG also opines the stakeholders place too much emphasis on BCAs, and recommends rejecting use of tests like the UCT and RIM since the BCA Framework Order adopts the SCT. Further, according to NFG, incorporating the other tests would require time, resources, and expense, and NFG dismisses the differences in the BCA ratio between the scenarios, given that they are all below 1.0.

NFG states that recommendations related to New York Cap and Invest should be rejected given that it will take years to develop and implement the program. NFG disagrees with the characterization of federal incentives as benefits for the purposes of SCT and disagrees that incentives should be recognized as a factor that will influence customer adoption rates. NFG states that neither CRA nor Strategen can point to how to model adoption rates because the necessary data to build the model does not exist.

NFG suggests that emissions reduction benefits for RNG should be included based on a net accounting convention to track progress toward meeting CLCPA goals. According to NFG, it included both net and gross accounting methodologies for RNG in the long-term plan. NFG opines that the Commission's decision in the Bluebird Order demonstrates that the Commission has been generally supportive of NFG's approach toward RNG as a method of reducing emissions. Further, NFG asserts its approach is

consistent with the Scoping Plan, which states on page 351 that New York may evaluate adoption of alternative fuel decarbonization strategies utilizing the full life-cycle analysis adopted at the federal level. NFG also contends that RNG avoided emissions in other states, especially those neighboring New York, will impact New York, but the long-term plan assumes higher emissions for out-of-state RNG.

NFG interprets the language in the Planning Order regarding a no-infrastructure option to apply to future long-term plans and not the current long-term plan. NFG explains this is because NFG currently has no system constraints, as CRA noted in its reports. NFG agrees to analyze how it would address any future upstream supply needs via a "no infrastructure" solution. NFG further states that it intends to include in its May 2024 Annual Update to this long-term plan an approach to implement its NPA criteria to identify segments of LPP that can be abandoned in favor of NPAs. In the interim, NFG insists that LPP replacement is a necessity for a safe and reliable system. NFG also asserts that NPA opportunities on its system will be more limited than utilities that are experiencing system constraints.

NFG points to a report prepared by ICF Resources, LLC, for NYSERDA, "Potential of Renewable Natural Gas in New York State," Report Number 21-34, published April 2022, which states that New York has significant potential RNG feedstock resources and that developers have contacted NFG to review several project proposals. NFG acknowledges that further research and investigation of systemwide hydrogen blending is required, and it promises to monitor advancements in research and demonstration projects.

NFG states that it will eliminate rebates for gas-fired appliances in its next long-term plan and it will propose

a demand response pilot program. NFG believes that including ccASHPs in its hybrid heating approach would increase the cost of the long-term plan by almost 40% and produce only 7% more emissions reductions. NFG notes that it did not include homes with boilers in its modeling because such homes would incur additional costs associated with electrification and, at least initially, electrification should focus on newer homes with furnaces. NFG commits to including in its next rate case filing pilot projects to test its hybrid heating system using both standard heat pumps and ccASHPs. NFG agrees to update the assumed costs for heat pump installation in its next long-term plan to reflect changes to actual installation costs in western New York.

NFG states that it does not assume the CLCPA goal of 100% clean energy by 2040 will be met because the NYISO and the Commission have recognized that the technology to achieve this goal does not yet exist. Nevertheless, the long-term plan does include this assumption in the informational scenarios. NFG states that the Commission should determine that no further analysis regarding the impacts of customer migration from the gas system is required at this time because the Commission has not accepted the idea that CLCPA-mandated reduction of statewide GHG emissions will necessarily require the shortening of natural gas asset lives.

NFG states that rate and bill analysis due to the impacts of costs on customers of varying load profiles is possible in a rate case but well beyond the scope of the long-term plan. NFG also states that the requirements of ECL §75-0117, namely that 35% of the overall benefits of spending on clean energy and energy efficiency program inure to disadvantaged communities, is not applicable to the long-term plan, and instead applies to the development of statewide

policies and programs. Notwithstanding, NFG states it will determine how the associated benefits with clean energy and energy efficiency projects will accrue to disadvantaged communities with a focus on the receipt of 35% of those benefits. NFG adds that LPP replacement in disadvantaged communities will reduce GHG emissions and that the use of RNG to reduce GHG emission is a well-established approach, and, thus, will benefit disadvantaged communities.

In conclusion, NFG states that its Final LTP is superior to alternative scenarios because it preserves optionality and customer choice, which allows the long-term plan to evolve with energy technology and policy in the future.