Initial Long-Term Plan

Executive Summary

National Fuel Gas Distribution Corporation

December 22, 2022

Case 22-G-0610

National Fuel®

Executive Summary

Executive Summary

A. National Fuel's New York Service Territory and Emissions Reduction Strategy

National Fuel Gas Distribution Corporation (“National Fuel” or “Company”) submits this Long-Term Plan ("LTP" or "Long-Term-Plan") in accordance with the New York Public Service Commission’s (“Commission” or “PSC”) May 12, 2022 *Order Adopting Gas System Planning Process* (“Gas Planning Order”) and to demonstrate the Company’s commitment to pursuing responsible greenhouse gas ("GHG") emissions reductions, enhancing the resilience of the energy supply system, and delivering safe, reliable and affordable energy service to approximately 540,000 customers across a population of more than 1.6 million people[1] in western New York.[2]

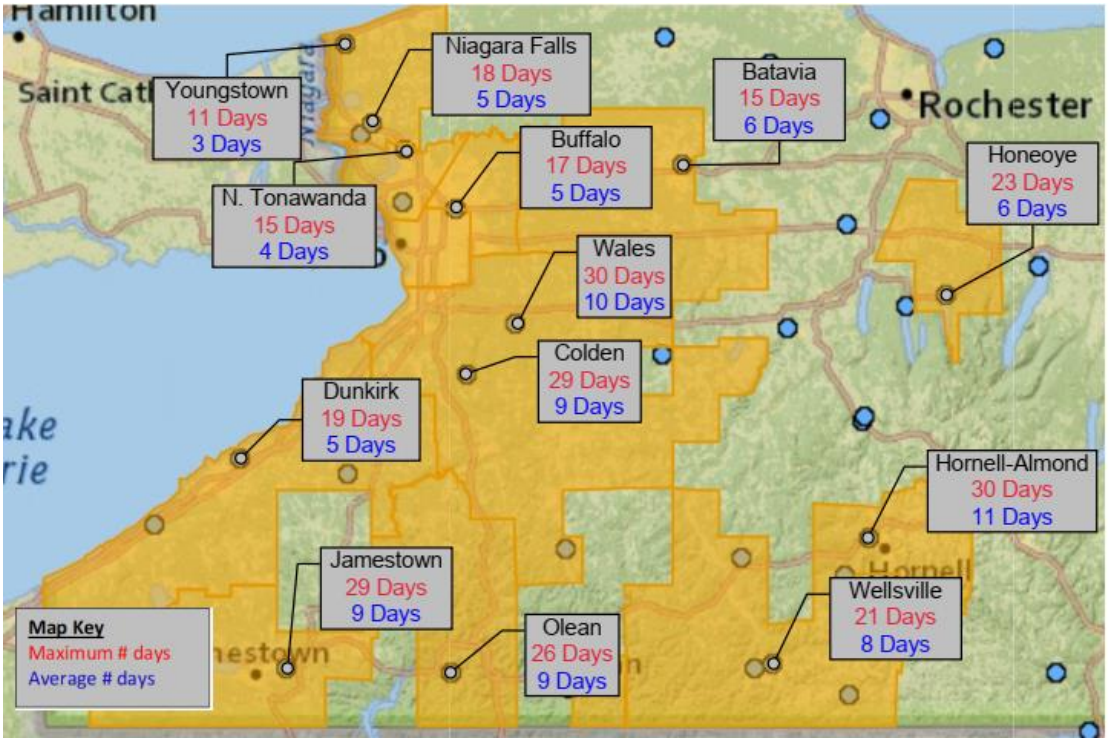
Ensuring reliable, resilient, and affordable energy for heating is especially important in National Fuel’s service territory. The Company’s approach to decarbonization is influenced by the fact that approximately 90% of its 505,000 residential customers rely on natural gas for heating and the communities it serves experience longer winters with some of the coldest temperatures in New York. The map at Figure ES-1 represents National Oceanic and Atmospheric Administration (“NOAA”) reporting stations with the Company’s service territory, showing customers frequently experience very cold days for prolonged periods of time, with some cities that can experience almost 30 days in a year with average daily temperatures at or below 10 degrees. On these cold winter days, gas represents approximately 94% of a typical residential customer’s energy use. As such, a plan that contemplates alternative sources of energy to meet the peak winter demands of National Fuel's service territory must ensure that the source and delivery capabilities are as reliable as today's natural gas system.

[1] Values obtained from 2020 US Census data for each community within National Fuel’s service territory.

[2] National Fuel retained Concentric Energy Advisors, Inc., a management consulting and financial advisory firm that focuses on the North American energy market, to perform underlying analyses and prepare this Long-Term Plan report.

Figure ES-1

Annual Winter Days with an Average Temperature at or Below 10°F [3]



Maintaining energy affordability is also critical to a responsible plan for decarbonization. The region's median household income remains below national and state averages, with the city of Buffalo having almost double the national and state poverty rate.[4] Furthermore, approximately 45% of the natural gas delivered by the Company is used to fuel commercial and industrial customers, businesses that support local jobs and tax base. Many of these commercial and industrial customers rely on affordable energy as a major input in their business. The Company is cognizant of the fact that if significant increases in energy costs cause some customers to shut down their operations in western New York in favor of locations with lower energy prices, it would have a significant negative effect on the local economy.

Today, the economy in western New York benefits from access to abundant, reliable, resilient, and relatively inexpensive energy supplies. Any responsible plan to reduce emissions in western New York must maintain these attributes by properly balancing affordability and prioritizing economically efficient investments without sacrificing reliability or resiliency. The

[3] These temperatures represent the 15-year (2006-2020) average for the winter period of November – March as reported by NOAA.

[4] "American Community Survey 5-Year Estimates 2017-2021"; U.S. Census Bureau QuickFacts for the United States, New York, and Buffalo, NY.

natural gas delivery system, stretching more than 10,000 miles across National Fuel's service territory, is an asset that can be leveraged to balance these attributes and contribute to New York's climate goals.

The Climate Leadership and Community Protection Act of 2019 ("CLCPA" or "Climate Act") established economy wide goals to reduce GHG emissions in New York by 85 percent from 1990 levels by 2050.[5] Notably, National Fuel initiated decarbonization efforts well before enactment of the CLCPA. Since 1990, the Company's annual GHG emissions, including end-user combustion, have declined approximately 30%. The Company's investment in the replacement of leak-prone pipe across its distribution system has resulted in a 67% reduction in EPA Scope 1 GHG emissions (primarily methane) alone. These early efforts enabled National Fuel's parent, National Fuel Gas Company, to commit to its own GHG emissions reductions targets in March 2021, and later announce that it was targeting Scope 1 GHG emissions reductions of 75% by 2030, and 90% by 2050, from 1990 levels for its utility delivery system.[6]

In 2021, National Fuel published a study that explored various pathways for economy-wide decarbonization of the Company's western New York service territory, including vehicles, buildings, and energy delivery ("Pathways Study").[7] The Pathways Study considered a diverse set of decarbonization actions, including building electrification and application of various existing and emerging technologies across the energy spectrum. It also quantified the costs of these actions and presented scenarios that contemplated two fundamental approaches to decarbonization: "electrify everything" versus an "all-of-the-above" approach that seeks to optimize all available technologies and sources of energy including, among others, renewable natural gas ("RNG") and hydrogen to be transported using the natural gas delivery system.

The Pathways Study revealed that an all-above-the-above approach can achieve the Climate Act's statewide emissions reduction goals while being significantly less costly than an electrify everything approach. In addition to being economically preferable, the all-of-the-above approach preserves customer choice and avoids taking unnecessary risks that would endanger reliability if western New York relied on a single, less resilient energy source under the electrify everything approach. For National Fuel's customers and communities in western New York, the

---

5 The CLCPA established GHG emissions reductions targets of 40 percent by 2030 and no less than 85 percent by 2050 from 1990 levels.

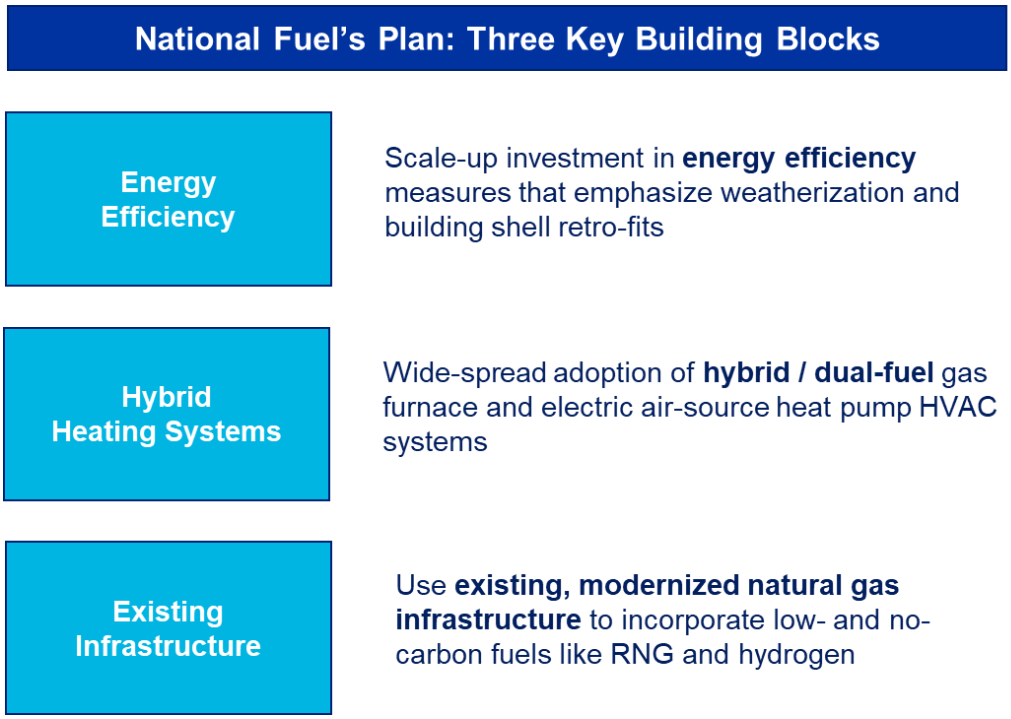
6 "National Fuel Announces Greenhouse Gas Emissions Reduction Targets and Emissions Reduction Pathway for New York Utility Business", Press Release and accompanying presentation entitled "Achieving A Low-Carbon Future in New York State," March 29, 2021.

7 "Meeting the Challenge: Scenarios for Decarbonizing New York's Economy," Guidehouse, Inc. February 19, 2021. Provided in Appendix E.

Pathways Study clearly demonstrated that a responsible plan for emissions reductions must consider a wide range of decarbonization actions.

Building upon the analyses included in the Pathways study, National Fuel continued to refine its decarbonization strategy and identified several actionable decarbonization initiatives that have been categorized into three key building blocks, shown on Figure ES-2.

Figure ES-2



Energy Efficiency refers to programs that are designed to help customers use less energy. National Fuel launched an energy efficiency program in 2007 that has resulted in more than 1.7 million metric tons of carbon dioxide emissions reductions since its inception, but investment in this program will need to increase significantly to achieve the Climate Act's decarbonization goals. Specific initiatives include weatherization and building shell retrofits that reduce energy loss through enhancements to building envelopes, primarily by increasing insulation, sealing air leaks, and upgrading windows. Improving energy efficiency has been recognized as a key component of any decarbonization strategy.

Hybrid Heating Systems (also called dual-fuel heating systems or hybrid electrification) use both an electric air-source heat pump and a high-efficiency gas furnace to heat and cool a home.

A hybrid system would typically use its electric air-source heat pump during the summer for cooling and during the spring and fall shoulder periods for heating, as well as during the winter months when the outdoor temperature is above the switch-over set point (typically 30 degrees Fahrenheit). The high efficiency gas furnace generally would be used when it is too cold to effectively heat with an air-source heat pump (i.e., when the outdoor temperature falls below the switch-over set point). This hybrid heating system optimizes heating efficiency, ensures reliability while reducing peak demand on the electric grid during the coldest parts of the year, generates meaningful reductions in gas usage and GHG emissions, and is less expensive to install and operate compared to a fully electric system.

Existing Infrastructure refers to using the existing natural gas infrastructure to deliver low and no-carbon fuels to facilitate decarbonization in the state. Incorporating RNG and hydrogen into the Company's gas supplies can have significant GHG emissions reductions benefits. RNG is produced by capturing emissions from waste that otherwise would have been released into the atmosphere and processing it into the chemical equivalent of natural gas. Producing and burning RNG can have net negative GHG emissions because in some cases the amount of emissions captured for the production of RNG is larger than the emissions created by processing and burning it. These avoided emissions are further magnified by the Climate Act's adoption of a 20-year global warming standard. Studies show that significant supplies of RNG will be available in and around New York in the future, and there are a number of RNG projects currently identified within the Company's service territory. Burning hydrogen instead of natural gas eliminates GHG emissions associated with combustion, therefore, blending hydrogen into the gas supply can reduce GHG emissions. The total amount of hydrogen that can be safely blended into a specific gas distribution system will require significant system-specific analysis to determine the make-up and condition of the existing pipelines and other equipment that may be affected by the introduction of hydrogen.

Finally, while the nature, timing, and extent of New York's decarbonization is subject to uncertainty and will continuously evolve over the coming years and decades, it will be critical for National Fuel to maintain a safe and reliable natural gas system over the full course of the transformation. As such, National Fuel will continue to replace segments of leak-prone pipe ("LPP") and invest in system modernization and safety. These efforts will also drive down GHG emissions, primarily methane, from the Company's distribution system and contribute to meeting New York's climate goals.

B. Highlights of National Fuel's Long-Term Plan

National Fuel's LTP is derived from these three key building blocks and defines specific decarbonization actions the Company will pursue. The Company's LTP was developed by performing a detailed analysis of potential decarbonization actions, including full building

electrification, with the goal of realizing meaningful GHG emissions reductions at a reasonable overall plan cost while maintaining safety, reliability, resilience, and affordability throughout the plan period. The results of this analysis support National Fuel's commitment to an "all-of-the-above" strategy that preserves options with respect to the breadth of decarbonization actions and leverages the natural gas system to drive significant emissions reductions.

National Fuel's LTP focuses on six specific decarbonization actions:

- **Energy Efficiency** – An aggressive residential weatherization program comprised of the most efficient measures with a broader set of measures offered to low- and moderate-income ("LMI") customers, consistent with a residential weatherization potential study performed by The Cadmus Group, Inc. ("Cadmus") in 2022.[8] The LTP also includes a behavioral program for all residential customers. Both the weatherization and behavioral programs are based on well-documented approaches and the Company intends to pursue any necessary regulatory approvals as soon as possible.

- **Hybrid Heating Systems and Other Heating Electrification** – The LTP includes development of a large-scale project to expediently begin converting certain residential customers to a hybrid heating system that provides a reliable, effective, and affordable source of heating even on cold days, and electrify the heating systems of many non-residential customers (small commercial, universities, large multi-family buildings). Conversions occur at the end of equipment life and participation increases over time with measurable incremental savings starting in 2025 and reaching full conversion of end-of-life equipment in 2038.

- **Industrial Customers** – Reduce process load through energy efficiency programs starting in 2024 focused on developing custom measures for industrial customers. Also begin a program to electrify certain non-boiler-based heating systems at industrial customers starting in 2025 and reaching full conversion of end-of-life equipment in 2038. Direct use of hydrogen by industrial customers is not included in this LTP, but industrial customers will benefit from RNG and hydrogen blended into the gas supply for all customers.

- **Thermal Energy Networks ("TENS")** – Develop one approximately 50-home geothermal network project per year to replace natural gas in a new sub-division starting in 2027. Continue initial TEN pilot projects in the short-term to inform future projects.

[8] "Residential Weatherization Potential Study Report," Cadmus, prepared for National Fuel, November 2, 2022. Provided in Appendix F.

- **RNG** – Promote regional anaerobic digestion projects that produce RNG from landfills, animal manure, food waste, and wastewater facility operations and deliver those volumes to the Company's system as soon as possible.

- **Hydrogen** – Blend hydrogen into system supply starting at 0.5% in 2030 and increasing over time to a target of 5% in 2039. Monitor hydrogen blending projects developed by other utilities, and begin preliminary project planning in the short-term.

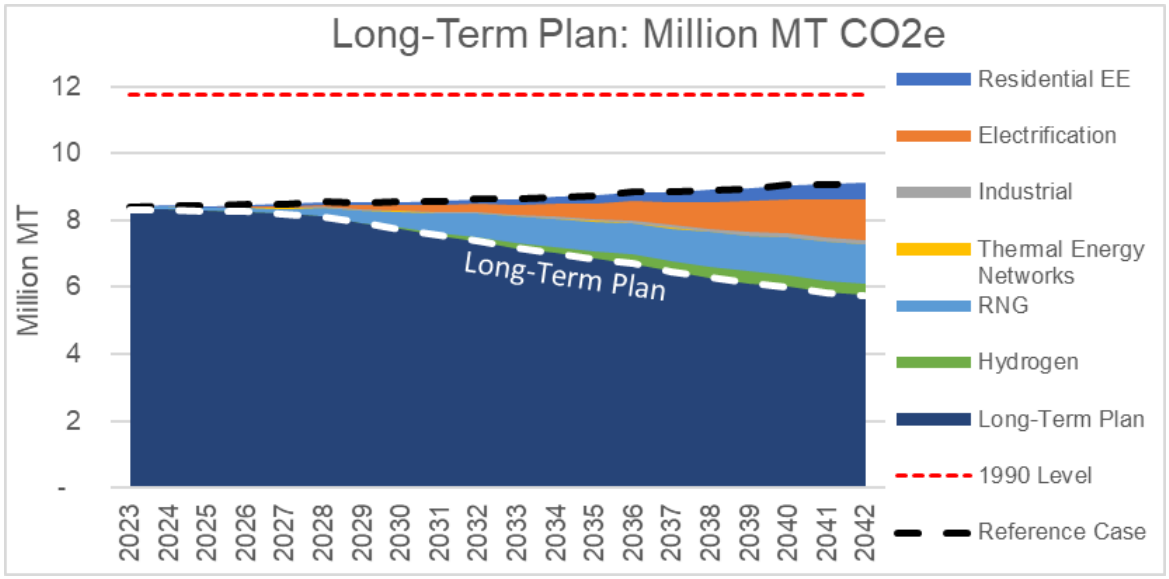
Where necessary, the Company will seek appropriate regulatory approval(s) for implementation of these initiatives.

The largest emissions reductions in 2042 result from adding RNG to the gas supply mix and from electrification primarily with hybrid heating systems.

The Company's LTP was developed using a bottom-up approach where per unit costs (e.g., incremental equipment cost and incremental energy bills per participating customer or incremental cost per unit of RNG or hydrogen) and benefits (e.g., decreased emissions per participating customer, decreased emissions per unit of RNG or hydrogen) were estimated for each decarbonization action. It was then determined how much of each decarbonization action was included in the LTP based on its feasibility, relative cost, and the specific characteristics of National Fuel's system, service territory, customer base, and market. An effort was made to be as aggressive as possible as long as the relative cost efficiency of the action was in line with or lower than alternatives and National Fuel was confident that it would be able to execute the plan. Although not identified as a new "decarbonization action" because its primary goal is to enhance safety of the distribution network, continuation of the Company's LPP replacement program will be a meaningful contributor to reductions in GHG emissions.

National Fuel's LTP will make significant strides toward achieving its decarbonization goals. The LTP is projected to reduce emissions by 37% by the end of the 20-year horizon (2042) compared to Reference Case (business-as-usual) levels, and by 51% from 1990 levels as shown in Figure-ES-3. The emissions reductions start modestly and increase over time as constraints on deploying technology are resolved. Emissions reductions are projected to continue after 2042, through 2050 and beyond.

Figure ES-3



As shown in Figure ES-3, the largest emissions reductions in 2042 result from adding RNG to the gas supply mix and from electrification primarily with hybrid heating systems. The incremental cost of equipment at the customer premises, incremental gas supply costs for RNG and hydrogen, and incremental energy bills for participating customers associated with the LTP as a whole are estimated to total approximately $3.0 billion on a net present value basis over the next 20 years.

The Commission's Gas Planning Order requires National Fuel to file its next plan in three years, and every three years thereafter. In the short term, National Fuel plans to design and execute programs and projects to implement the decarbonization actions specified in the LTP. National Fuel expects subsequent long-term plans may change materially as technology, policy and energy markets evolve.[9]

C. Assessment of the LTP

The LTP was developed by comparing the results of multiple scenarios (a Reference Case, a Supply Constrained Economy Scenario, and an Aggressive Scenario) to better understand the tradeoffs associated with the various decarbonization actions. Each scenario was comprised of

[9] For example, major significant breakthroughs such as carbon capture may change the timing and trajectory of future decarbonization strategies.

specific levels of each of the six decarbonization actions described above. An Aggressive Scenario was developed that 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. The Aggressive Scenario is not limited by the costs required to achieve the GHG emissions associated with the decarbonization actions included in the scenario.

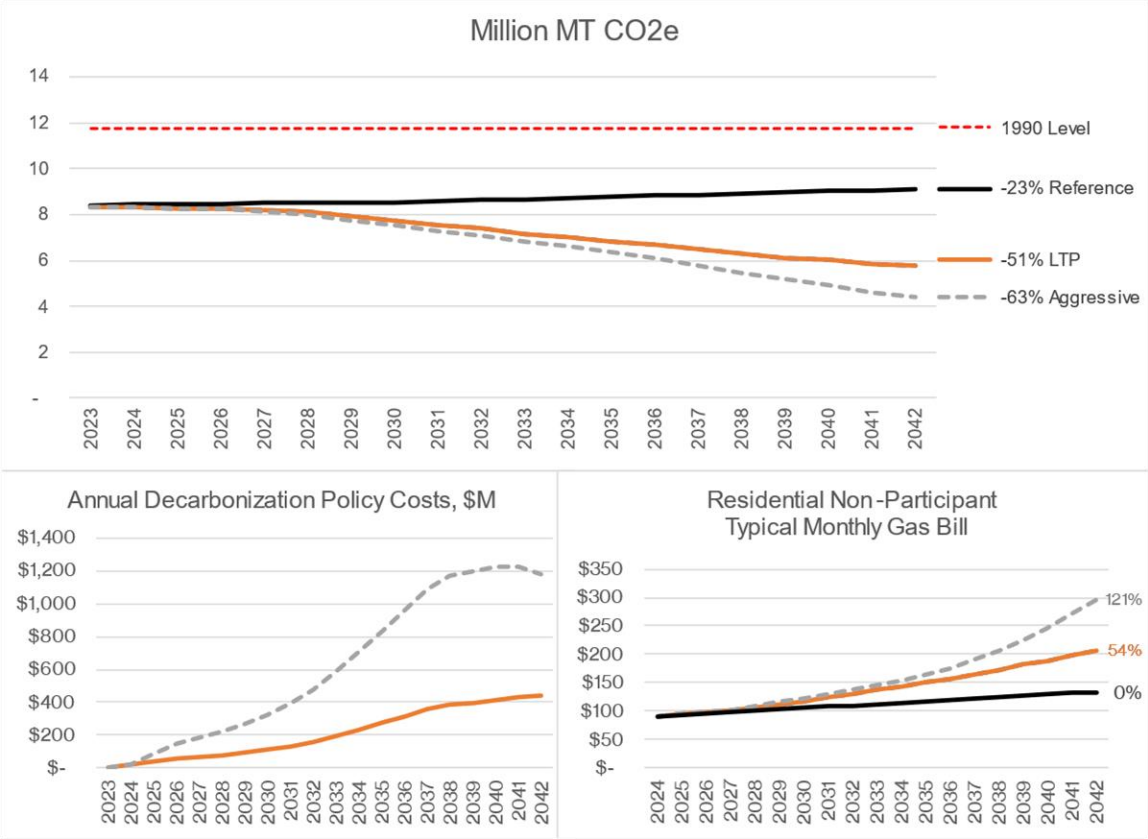
The LTP performs well with regard to total cost, reliability, resiliency, and affordability when compared against the Aggressive Scenario. The primary difference between the LTP and the Aggressive Scenario is that the Aggressive Scenario assumes residential customers convert to full electrification of all major home appliances whereas the LTP assumes residential customers convert to a hybrid heating system along with electrification of all other non-heating appliances, including water heating, cooking and clothes drying. As shown, the LTP is substantially more cost-effective compared to an Aggressive Scenario. As shown in Table ES-1, the LTP produces significant reductions in GHG emissions (3.36 million metric ton reduction of CO2e emissions in 2042) at a total NPV cost of $3.0 billion. The Aggressive Scenario produces somewhat higher reductions In GHG emissions (4.73 million metric ton reduction of CO2e emissions in 2042), but at a cost that is more than double the LTP at $6.3 billion. This is primarily due to the relatively lower upfront and ongoing operating costs of converting residential customers to a hybrid gas/electric heating solution in the LTP compared to conversion to an all-electric/cold climate heat pump solution in the Aggressive Scenario. The residential natural gas bill for customers that have yet to convert to electricity ("non-participants") in 2042 is also substantially lower in the LTP than in the Aggressive Scenario ($206 per month compared to $295 per month).

Table ES-1
GHG and Cost Metrics

	Long-Term Plan		Aggressive Scenario	
Change from Reference Case	**2042 CO2e (000's MT)**	**Total Cost NPV ($M)**	**2042 CO2e (000's MT)**	**Total Cost NPV ($M)**
	(3,357)	$ 3,025	(4,726)	$6,257
Residential Typical Monthly Natural Gas Bill	**2024**	$91	**2024**	$91
	2042	$206	**2042**	$295

Figure ES-4 presents the same information on an annual basis in line diagrams that illustrate the GHG and cost impacts among the Reference Case, Aggressive Scenario, and LTP.

Figure ES-4
Annual Metrics



D. Key Strategy: Enhance Energy Efficiency Measures

Reducing overall energy use through energy efficiency is an important feature of many decarbonization strategies. National Fuel recently retained Cadmus to perform a residential weatherization potential study specific to its service territory, which served as the basis for the design of the Company's LTP related to weatherization. The Cadmus study identified several weatherization measures as well as the estimated cost and gas usage reduction associated with each measure. Cadmus also identified that LMI customers would likely have greater gas savings for most weatherization measures due to the characteristics of LMI housing. It was assumed that the maximum achievable potential estimated by Cadmus was realized across all weatherization measures and across standard and LMI customers in the Aggressive Scenario. The weatherization program in the Aggressive Scenario cost approximately $1.0 billion on an NPV basis and reduced 2042 emissions by 518 thousand metric tons of CO2e. The LTP is able

to achieve similar 2042 emissions reductions of 452 thousand metric tons of CO2e at a cost of $577 million by eliminating several of the least cost-effective weatherization measures for standard income customers. At least initially, National Fuel intends to include windows, a relatively expensive measure, in its weatherization program exclusively for LMI customers.

The LTP also includes an aggressive behavioral energy efficiency program where home energy reports are sent to all residential customers. While the savings associated with home energy reports can be limited, the program is very low cost compared to the other decarbonization measures studied, so it is included in the LTP at the most aggressive levels possible.

E. Key Strategy: Promote Hybrid Heating Systems

As discussed above, National Fuel's customers frequently experience very cold days and western New York has a large population of LMI customers, so ensuring reliable, effective, and low-cost heat is especially important. Standard air-source heat pumps are typically found in warmer climates such as the southern and southwest U.S. and are not designed and built to operate effectively in colder northern U.S. climates such as National Fuel's. Therefore, they are generally not considered a viable sole heating source in the Company's service territory. Cold-climate heat pumps are typically larger and more efficient versions of a standard heat pump and are designed to operate in colder climates. However, as the temperature decreases, cold-climate heat pumps begin to see their efficiency and capacity drop and can struggle to maintain indoor air temperatures. At even colder outdoor air temperatures, the cold-climate heat pumps use built in electric resistance heating to supplement the heat pump's ability to keep a home warm. This reduced efficiency at low temperatures drastically increases the amount and cost of electricity needed to operate these systems and puts additional strain on the electric grid. Two approaches for residential heating were modeled:

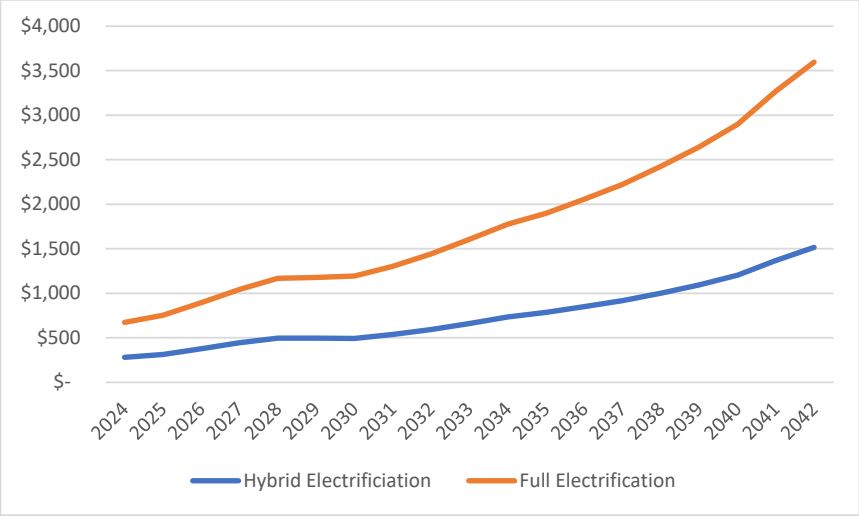
- A hybrid gas/electric heating system option that relies on a gas furnace on colder days and a standard electric air-source heat pump on less cold days, and
- A cold-climate electric air-source heat pump that relies on electricity for heating on all days.

The upfront cost of a cold-climate heat pump is more than double the cost of a hybrid system ($22,200 compared to $10,100).[10] Figure ES-5 illustrates that a typical residential customer heating with a gas furnace who decides to convert to a fully electric home with a cold-climate heat pump is also projected to have energy bills that are 2.4 times higher than the energy bill of

[10] "Residential Home Energy Analysis," CJ Brown Energy prepared for National Fuel Gas Distribution Corp. New York Division, August 2022 Update. Provided in Appendix G.

a customer who converts to a hybrid system. In 2042 the projected annual energy bill Increase for a customer using a cold-climate heat pump is $3,600 compared to approximately $1,500 if they converted to a hybrid heating system under the LTP. The difference in energy bills increases over time as significant upward pressure is expected on electric rates due to the infrastructure necessary to implement decarbonization and other grid modernization efforts.

Figure ES-5
Incremental Ongoing Annual Cost of Residential Electrification
(Gas plus Electric Bills)



Full electrification using cold-climate heat pumps will also place additional strain on the electric system, and likely add exponential cost, as more electric system build-out will be required to meet peak heating demand on cold days. According 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. In addition, it has been estimated that managing winter peaks through hybrid heating could avoid almost $75 billion of electric capital expenditures across New York State through 2050.[11] Similar concerns have been noted In Quebec where the electric utility is supporting hybrid heating as a benefit to the electric system.[12]

Hybrid heating systems increase electric grid utilization during off-season periods (i.e., spring and fall when outdoor air temperatures are mild) without increasing electric loads during peak

11 "Achieving a Low-Carbon Future in Western New York," National Fuel/National Grid, February 2022.
12 " Dual Energy for Sustainable Decarbonization", Hydro-Québec.

heating hours. Furthermore, facilities that are currently air-conditioned can implement hybrid heating equipment without increasing their electric service capacity or requiring neighborhood utility grids to be upgraded.

Although much has been made of the promise of cold-climate heat pumps, it is conceivable that they may never reach the efficiency and cost levels necessary to be practical in National Fuel's service territory's climate. Electrifying a gas furnace-heating home by converting to a hybrid heating system significantly reduces gas usage (64%) compared to taking no action, requires less upfront costs and results in lower ongoing energy bills compared to full electrification with cold-climate heat pumps. Furthermore, shifting winter heating loads to the electric grid before it has adequate transmission and distribution capacity and before it is supplied by 100% renewable generation can have dangerous consequences on reliability and potentially increase GHG emissions as the energy shortfall is met with fossil fuel generation. As a result, the LTP adopts a program for converting residential customers to hybrid heating systems, and cold-climate heat pumps for residential customers are not included in the LTP at this time.

F. Key Strategy: Leverage Existing Infrastructure to Deliver Low Carbon Fuels

National Fuel's existing infrastructure is necessary to transport RNG and hydrogen in the LTP. LTP levels of RNG are based on an optimistic growth scenario from recent RNG studies[13] related to the potential to develop anaerobic digestion projects that produce RNG from landfills, animal manure, food waste, and wastewater facilities in western New York.

Significant research is being done to determine safe levels of hydrogen that can be blended into natural gas systems. In addition, the 2022 Inflation Reduction Act contains subsidies for clean hydrogen production, which should facilitate additional hydrogen development. Current technology and the current composition of the U.S. gas distribution systems suggests that approximately 5-10% hydrogen can be blended into natural gas systems safely. Given the possible safety concerns associated with higher concentrations of hydrogen, the LTP proceeds conservatively with a hydrogen blend starting at 0.5% in 2030 and increases over time to a target of 5% in 2039.

It is reasonable to include significant levels of RNG in National Fuel's LTP because there is substantial evidence that low- and no-carbon fuels will have a material impact on GHG emissions reductions at a relatively low cost. Some jurisdictions have recognized the potential benefits of

[13] "Potential of Renewable Natural Gas in New York State, ICF April 2022. NYSERDA Report Number 21-34, p 44. National Fuel Gas Company, "RNG Potential in NY & NFGDC Territory", April 2020. Provided in Appendix J.

these low- and no- carbon fuels and have created policies that encourage gas utilities to pursue their development. For example, Minnesota passed the Natural Gas Innovation Act In 2021, which allows gas utilities to pursue and recover prudently incurred costs related to innovative resources aimed at reducing GHG emissions and meeting renewable energy goals, which include biogas, RNG, and power-to-hydrogen, among others.[14] Florida also passed legislation in 2021 that provides for the cost recovery of RNG procurement by a gas utility.[15] These and other market mechanisms, like the renewable gas standards developed in California and Oregon and the clean heat standard recently considered In Vermont, should be evaluated In New York to stimulate alternative fuels development in the state.

G. Key Uncertainties and Considerations

The LTP represents a 20-year perspective on a challenging future that will be characterized by continued evolution of policies, economic and environmental trends, and technological innovation. As such each of its key drivers is subject to some level of uncertainty, including:

- Customer perspective and acceptance with respect to building heating and cooling system modernization as they apply to fuel sources, equipment technologies, and conservation;
- Regulatory actions related to the CLCPA legislation and emission reduction targets that may be imposed on the gas distribution system over the next 20 years;
- Continued evolution of New York energy policy and Commission regulatory requirements (e.g., allowing the cost of RNG and hydrogen to be recovered by utilities, policies to mitigate up-front cost barriers associated with installing equipment at customer premises to enable decarbonization);
- Technology advancement including the viability and scalability of several different technologies related to: (1) heat pumps; (2) RNG; (3) hydrogen; (4) TENS (including district geothermal); and (5) carbon capture and storage; and
- Market conditions including workforce training and availability, supply-chain issues, inflationary pressures, investor initiatives, and global energy instability.

Important considerations in developing the LTP include: (a) whether certain emerging technologies can be quickly implemented to contribute to meaningful GHG emissions reductions within the first three years (i.e., by 2025), and (b) whether pilot programs will be needed to test technologies' and/or new business models' viability and scalability to meet customer demands or contribute to the supply portfolio. The Company will carefully evaluate these considerations

[14] H.F. No. 164 June 2021 - Natural Gas Innovation Act, Article 8 Sec.20.

[15] SB 896 approved June 29, 2021. Page 4. Chapter No. 2021-178.

as it pursues the decarbonization initiatives in its Long-Term Plan, all while continuing to ensure that it provides safe, reliable, resilient and affordable energy for its customers.

A summary assessment of National Fuel's LTP is as follows:

NATIONAL FUEL'S LTP DELIVERS ESSENTIAL FEATURES AND BENEFITS TO ITS CUSTOMERS AND COMMUNITIES:

1) The LTP prioritizes safety and reliability by diversifying energy sources and continuing the Company's LPP replacement program;

2) The LTP preserves customer choice and provides a more affordable option while relying on the gas system to ensure effective heating during the coldest days and nights of the year;

3) The LTP addresses affordability and reduces energy cost burdens for LMI and other customers;

4) The LTP achieves meaningful reductions in GHG emissions by 2042, prioritizing emissions reductions for LMI customers;

5) The LTP is not merely aspirational; it is technically feasible and contemplates technology advances during the 20-year period;

6) The LTP is also feasible from an infrastructure standpoint. It reflects 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;

7) The LTP contributes to a resilient energy system that involves coordination between the natural gas and electricity industries; and

8) The LTP is flexible and can adapt as energy technology and policy evolve in the future.