



**Fueling
tomorrow
today** 
Using less. Doing more.

Achieving a Low-Carbon Future in New York State

March 29, 2021

National Fuel Gas Distribution Corporation



Achieving a Low-Carbon Future in New York State¹

National Fuel Gas Distribution Corporation (Distribution)

When the Climate Leadership and Community Protection Act (the Climate Act) was signed into law in 2019, it placed New York State at the forefront of one of the most ambitious greenhouse gas reduction commitments of any major economy. It also called for the formation of a Climate Action Council (CAC) to create a scoping plan to offer recommendations on how the state should achieve these commitments. There are several possible pathways New York State can take to achieve the Climate Act's goals – **but these pathways need to be carefully evaluated to develop a solution that reduces carbon emissions while minimizing impacts upon various sectors, regions, and consumer groups across the state.**

We believe the best emissions reduction pathway is the one that provides both environmental and economic sustainability, achieving the Climate Act's targets while providing energy delivery system resiliency, integrity, and reliability, and offering options for more affordable carbon reduction measures.

By focusing policy on an “all-of-the-above” carbon reduction approach, the Climate Act targets can be achieved while preserving essential energy delivery resilience for consumers. This includes doubling down on energy efficiency, embracing a broad range of energy-agnostic technologies and hybrid-heating systems, and carbon capture and storage.

(1) This presentation includes forward-looking statements. Please review the safe harbor for forward looking statements at the end of this presentation.



**National Fuel's (Distribution)
Pathway to a Low-Carbon Future
in New York State**



Pathway to a Low-Carbon Future

An “all-of-the-above” approach is the optimal solution for consumers, providing a broad range of emissions reduction solutions while ensuring a safe, reliable, and resilient energy delivery system.

Four Pillars for Achieving New York State’s Climate Goals

I	Scale Energy Efficiency	II	III	IV
<ul style="list-style-type: none">▪ Transportation▪ Buildings▪ Industrial		<ul style="list-style-type: none">▪ Continued reduction in fugitive methane emissions▪ Invest in system modernization and safety▪ Commitment to substantial reduction of delivery system emissions	<ul style="list-style-type: none">▪ Renewable Natural Gas▪ Hydrogen-enriched Natural Gas▪ Industrial Local Hydrogen▪ Carbon Capture and Storage▪ Community Geothermal	<ul style="list-style-type: none">▪ Serve hard-to-electrify customers with low-carbon options▪ Mitigate peak electricity demand / avoid more substantial infrastructure build-out▪ Assure a reliable and resilient energy system





Pillar I: Scale Energy Efficiency

Energy efficiency is the most efficient pathway to achieve greenhouse gas (GHG) reduction.

Ensuring maximum efficiency of downstream end uses of energy will be critical to achieving the Climate Act's emissions reduction targets.

While New Yorkers are currently among the most energy-efficient consumers in the nation, ample opportunity for further efficiency gains exists in **three key sectors: buildings, transportation, and industrial.**





Pillar I: Scale Energy Efficiency

Ample Opportunity in Three Key Sectors

- **Buildings** – While current residential and commercial building codes and appliance standards are expected to increase the energy efficiency of buildings by about 15% by 2050, additional efficiency opportunities are available to further reduce energy consumption from the built environment, such as:
 - **Building envelope upgrades:** insulation, windows, and air sealing of existing buildings to code or above-code performance
 - **High-efficiency appliances:** heating, lighting, electronic, and kitchen and laundry appliances
 - **Emerging technologies:** such as hybrid gas furnace/electric air source heat pumps
- **Transportation** – Emissions from transportation increased by about 25% from 1990 to 2016, and the transportation sector currently produces over one third of New York State’s GHG emissions – the largest contributor of any sector. While federal fuel economy standards and the increased adoption of electric-motor vehicles will continue to reduce transportation sector emissions, these measures, coupled with the adoption of natural gas vehicles and other technology improvements, could result in as much as a 42% overall reduction of energy intensity across the transportation sector.
- **Industrial** – The energy efficiency of the industrial sector may be improved by capitalizing on those residential and commercial building efficiency opportunities described above, as well as measures that target industrial process efficiency. Industrial green hydrogen and other low-carbon fuel solutions will provide further opportunity to decarbonize heavy industry.





Energy Efficiency in Action: MyHEAT

National Fuel partnered with MyHEAT in early 2020 to enhance energy efficiency awareness and engagement as part of a pilot program within a cross section of WNY households. By utilizing aerial, high-resolution thermal photography, MyHEAT provided thermal imaging of heat loss from customer homes and peer comparisons.



Of the approximately 60,000 customers in the initial pilot that received the first round of messaging, almost 1,700 customers viewed their home profile. One third of those customers went on to click a call-to-action (rebate page, tip page, or NYSERDA page).

As the program continues, additional customer outreach efforts will grow activation and engagement.





Energy Efficiency in Action: Sealed

Sealed is a company specializing in building envelope and equipment upgrades that offers customers financing for these upgrades with no upfront costs or changes to monthly budget, offering an alternative way to finance energy efficiency upgrades.

Sealed

Sealed pays to install the improvements, and is paid back with the money saved on consumers' energy bills.

National Fuel has entered into a co-marketing agreement with Sealed and began marketing in early February 2021. We believe this is yet another growth opportunity for our well-established energy efficiency program.



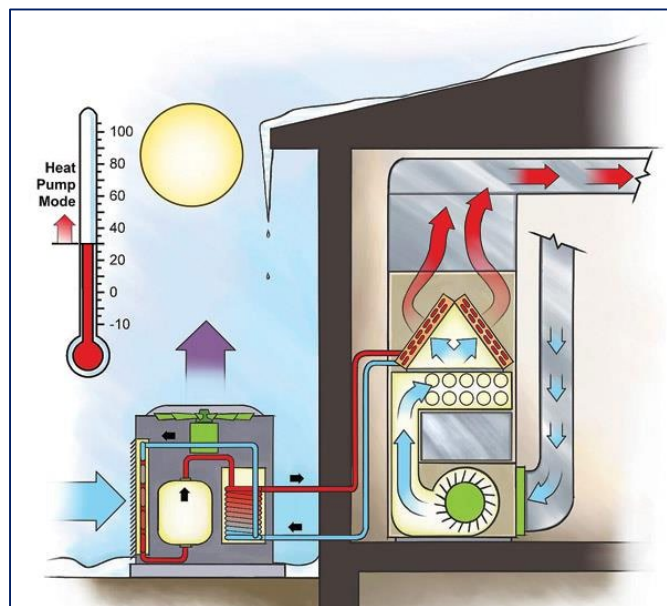


Hybrid Gas/Electric Air Source Heat Pump Projects

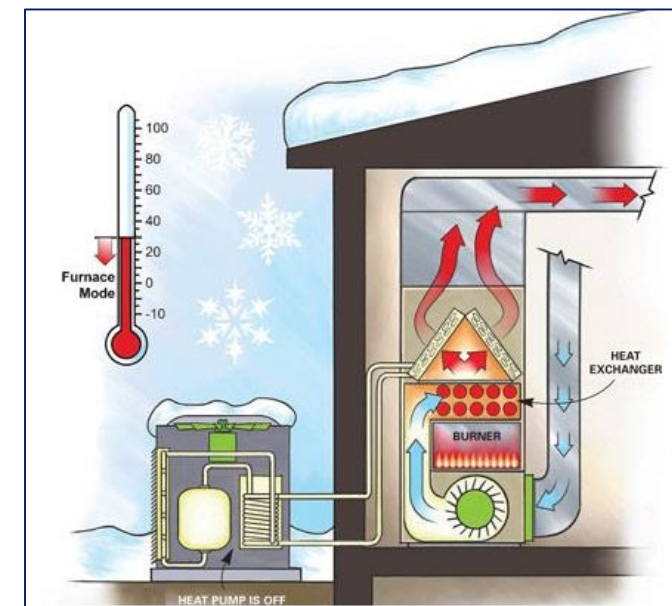
National Fuel is evaluating a new emission reduction pathway using hybrid gas furnace/electric ASHP systems

- ASHP installed with a 96% high-efficiency natural gas furnace
- Designed to switch to heating with high-efficiency gas furnace at temperatures below 30°
- \$800 rebate added to energy efficiency program for combination 14 SEER ASHP/ high-efficiency furnace
- Gas consumption and emissions can be cut in half

Heat Pump – High-Efficiency Furnace



COOL Period Operation



COLD Period Operation





Pillar II: Reduce Utility Emissions

National Fuel recognizes that in order to meet the goals of the Climate Act, we must dramatically lower our own GHG emissions – and the utility is committed to doing so. Through our modernization program, including leak reductions and other key infrastructure investments, annual emissions on our utility system have dropped by over 400,000 metric tons – or more than 62% from 1990 levels.

And at the current pace of our program, we expect total reductions of 75% by 2030, and 90% by 2050.

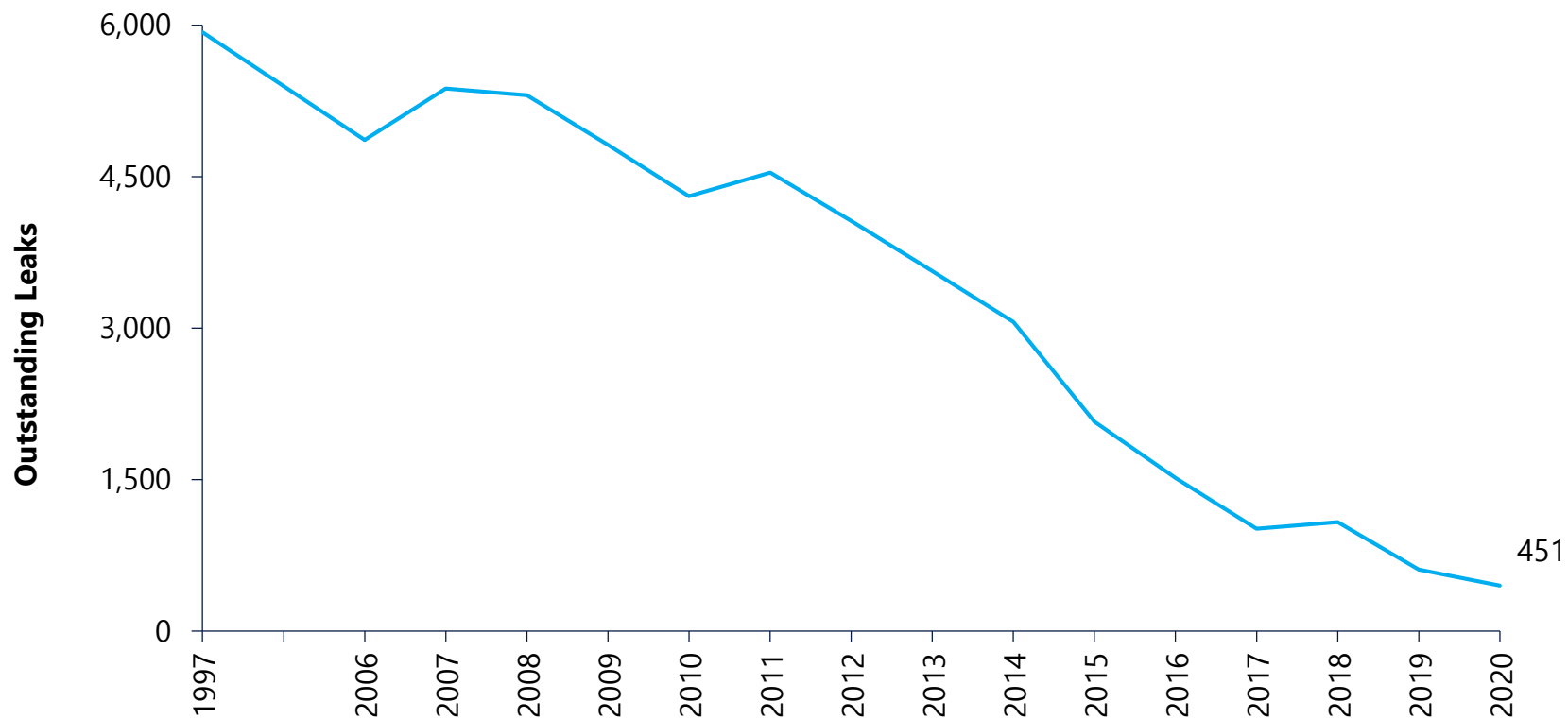




Pillar II: Reduce Utility Emissions

Significant Reductions in GHG Emissions

National Fuel Utility System Leak Backlog (New York State)

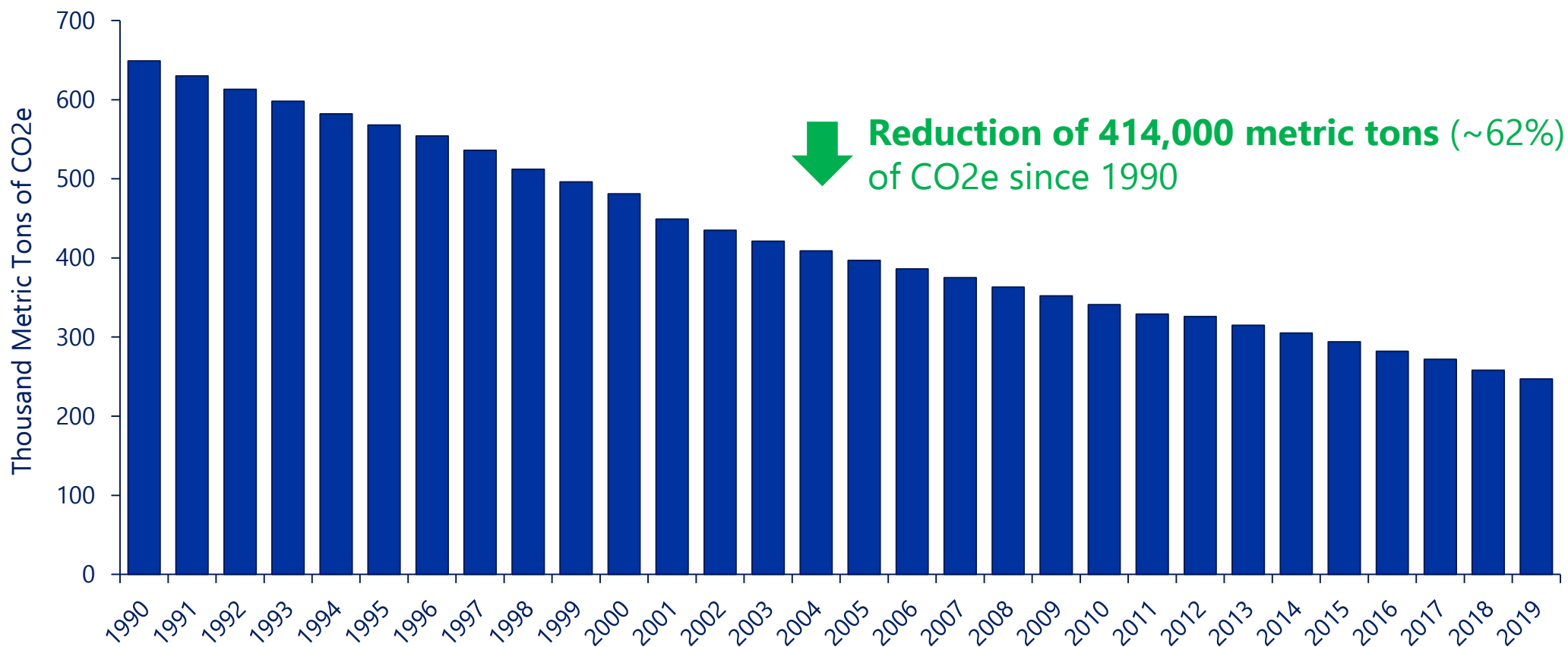




Pillar II: Reduce Utility Emissions

Significant Reductions in GHG Emissions

Utility EPA Subpart W Emissions – Mains and Services



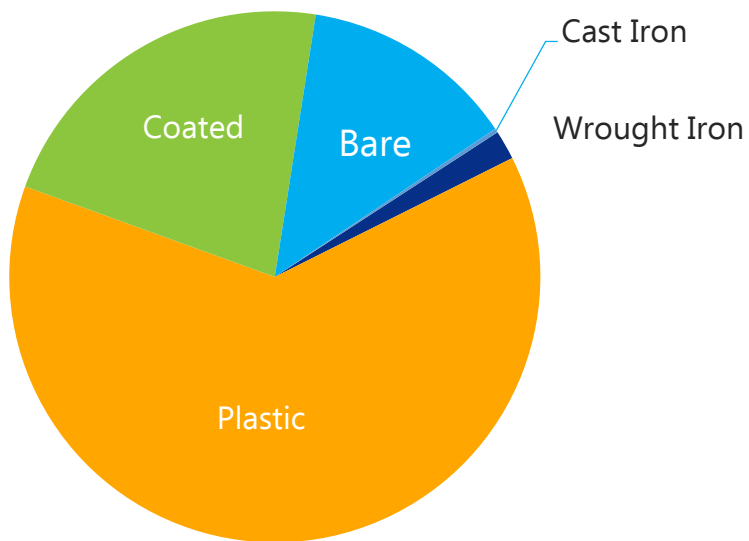


Pillar II: Reduce Utility Emissions

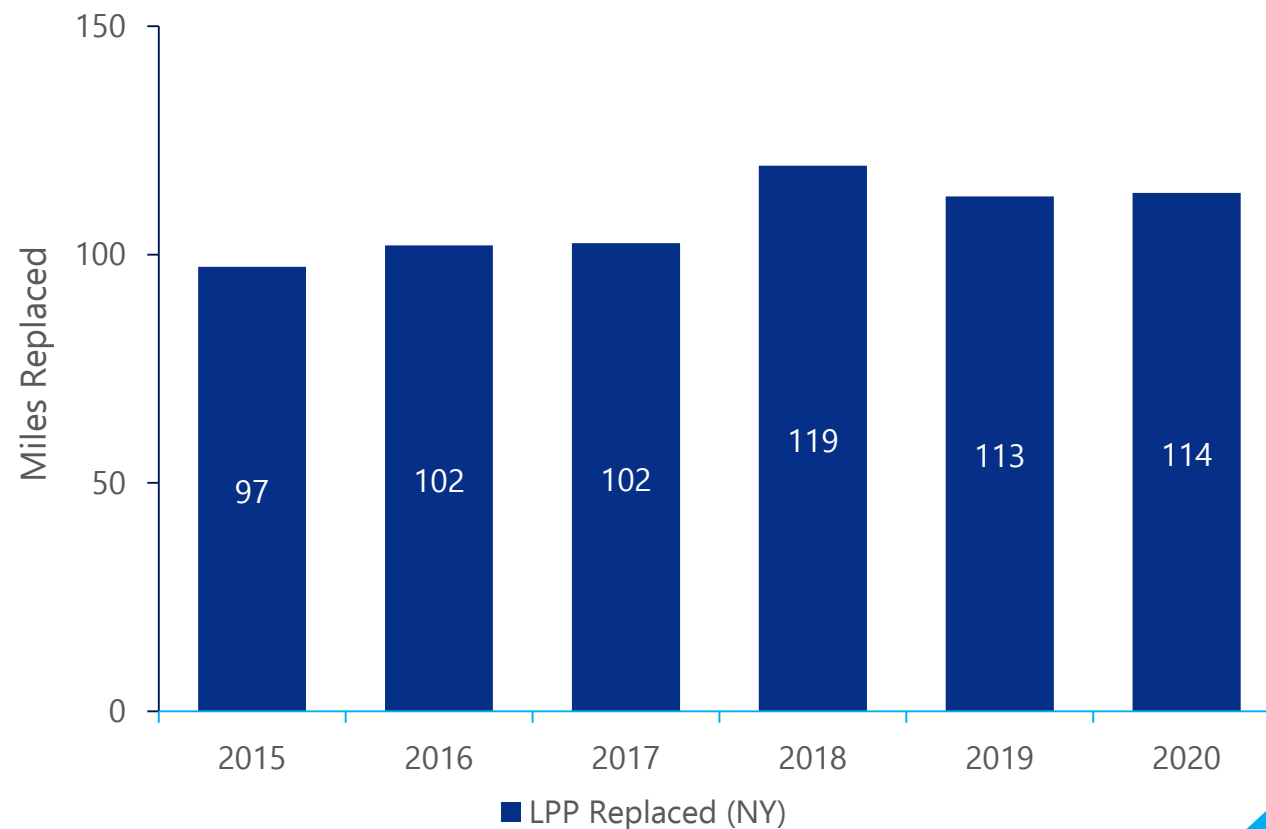
System Modernization

Utility Mains by Material⁽¹⁾

NY
9,758
miles



Miles of Leak-Prone Pipe Replaced⁽²⁾



(1) As of December 31, 2020
(2) Note: Values reported on a CY basis



Pillar III: Decarbonize the Energy Source

Low- and zero-carbon renewable sources like wind and solar will be essential to meeting the state's emissions reduction goals. But to ensure a resilient energy system, they can't do it alone. Decarbonizing our existing infrastructure through the use of low- or zero-carbon resources such as renewable natural gas and hydrogen will be critical in developing viable pathways for reducing GHG emissions while affording essential energy options to consumers and businesses.

This comprehensive "all-of-the-above" approach will be key to meeting the Climate Act's GHG emissions reduction targets cost-effectively, and reducing the transition's impact on consumers.





Pillar III: Decarbonize the Energy Source

Low-Carbon Solutions Using Existing Infrastructure

- **Renewable Natural Gas (RNG)** – RNG is an energy source with lower carbon intensity and similar operational and performance characteristics to natural gas. RNG can be produced through several production technologies – including landfill gas collection, anaerobic digestion, and thermal gasification systems – and can reduce emissions in a variety of applications that currently use natural gas and other fossil fuels.
- **Hydrogen-Enriched Natural Gas (HENG)** – HENG can be produced through electrolysis using dedicated renewable generation or curtailed renewable generation systems (power-to-gas or green hydrogen) and through natural gas reformation combined with carbon capture (blue hydrogen). It can then be blended into existing natural gas pipelines to reduce emissions.
- **Industrial Local Hydrogen** – Hydrogen may also be delivered to industrial customers through dedicated distribution systems designed for 100% hydrogen gas, known as hydrogen clusters or districts, which could play a critical role in decarbonizing the industrial sector by serving as a natural gas replacement.
- **Carbon Capture and Storage (CCS)** – CCS technologies reduce the emissions from combustion of natural gas, RNG, or production of blue hydrogen fuels by capturing CO₂ exhaust gas for sequestration, storage, or utilization. CCS would generally occur at large centralized facilities such as gas-fired generation facilities or blue hydrogen production facilities. Northeast geological formations could store enough carbon to offset several decades, if not centuries, of stationary emissions.





Pillar IV: Leverage Existing Energy Delivery System

Embracing strategic use of our existing gas delivery system will be crucial for the delivery of low-carbon energy to reduce the emissions profile of hard-to-electrify end uses – such as high-temperature industrial processes and heavy-duty trucking – as well as protecting our energy system’s reliability, resiliency, and delivery certainty, which will become increasingly important with the growth of renewables on the power grid.

Our Utility has invested \$341 million in the last five years in the modernization of its energy delivery system to ensure safe and reliable service, achieving substantial emissions reductions as a result. Given this progress to date, as well as the continued reductions we project for the decades ahead, we believe this important asset has a critical role to play in helping achieve the Climate Act’s goals.





Pillar IV: Leverage Existing Energy Delivery System

- **Decarbonizing Hard-to-Electrify End Uses** – Leveraging our existing pipeline system for the delivery of low-carbon energy will be critical to decarbonizing hard-to-electrify end uses, including high-temperature industrial processes and heavy-duty trucking. Creating a pathway to decarbonize these industrial and transportation end uses will, in turn, create a more equitable distribution of the cost burden of decarbonization across various sectors, ensuring that residential and small commercial customers are not disproportionately burdened with otherwise deeper decarbonization requirements.
- **Maintaining Reliability** – Reliability is the ability of the energy system to deliver services in the quantity and with the quality demanded by end users. On the coldest day in WNY, for example, a typical residence will use 94% of its energy input in the form of natural gas. Natural gas, therefore, can play a role in addressing reliability challenges associated with intermittent renewable resources.
- **Ensuring Delivery Certainty** – Similar to reliability, delivery certainty refers to our energy system’s ability to prevent, withstand, adapt to, and quickly recover from damage or operational disruption caused by high-impact, low-probability incidents such as extreme weather events. Because our state’s existing gas infrastructure is underground, it remains shielded from major disruptions that could impact resiliency. As our reliance on renewables grows, natural gas, RNG, and hydrogen – all of which utilize this protected underground infrastructure – will be increasingly critical for maintaining the resilience of our energy grid during severe weather events.





Guiding Principles

National Fuel's pathway to a low-carbon future is guided by the following key principles: affordability, reliability, resiliency, and delivery certainty.

Affordability

Achieving the carbon-reduction goals of the Climate Act will require substantial investments, and economic impacts must be considered. Cost effectiveness can be supported both by prioritizing least-cost methods of reducing greenhouse gasses, and through choosing pathways for investing that take current cost effectiveness into account.

By offering options for more affordable carbon reduction measures, and by pursuing decarbonization opportunities as broadly as possible across all relevant sectors, we can successfully achieve the Climate Act's goals without placing undue burden on any one industry, region, or economic class.

Reliability

Reliability is critical for consumers and must be maintained. Gas-fired generation is among the most effective solutions for meeting reliability needs, and can do so over a longer time period and at a lower cost than other technologies that promote grid reliability.

Natural gas generation and distribution, therefore, can serve an essential, complementary role in supporting the increase of renewable energy from intermittent sources like solar and wind.

Resiliency

Resilience refers to our energy system's ability to prevent, withstand, adapt to, and perform during high-impact incidents such as extreme weather events.

Because our state's existing gas infrastructure is underground, it remains shielded from major disruptions that could impact resiliency. As our reliance on renewables grows, natural gas, RNG, and hydrogen – all of which utilize this protected underground infrastructure – will be increasingly critical for maintaining the resilience of our energy grid during severe weather events.

Delivery Certainty

Two out of every three households in New York State currently rely on natural gas to heat their homes. Mass electrification of household heat will require substantially more electric generation capacity during the winter heating season, creating a need for innovative solutions to ensure the reliable delivery of needed winter heating.

Technologies such as dual-fuel heating options that combine heat pumps with high-efficiency gas-fired heating systems will be key to reducing emissions in a way that maintains reliability and delivery certainty.



Safe Harbor For Forward Looking Statements



National Fuel®

This presentation may contain “forward-looking statements” as defined by the Private Securities Litigation Reform Act of 1995, including statements regarding future prospects, plans, objectives, goals, projections, estimates of oil and gas quantities, strategies, future events or performance and underlying assumptions, capital structure, anticipated capital expenditures, completion of construction projects, projections for pension and other post-retirement benefit obligations, impacts of the adoption of new accounting rules, and possible outcomes of litigation or regulatory proceedings, as well as statements that are identified by the use of the words “anticipates,” “estimates,” “expects,” “forecasts,” “intends,” “plans,” “predicts,” “projects,” “believes,” “seeks,” “will,” “may,” and similar expressions. Forward-looking statements involve risks and uncertainties which could cause actual results or outcomes to differ materially from those expressed in the forward-looking statements. The Company’s expectations, beliefs and projections are expressed in good faith and are believed by the Company to have a reasonable basis, but there can be no assurance that management’s expectations, beliefs or projections will result or be achieved or accomplished.

In addition to other factors, the following are important factors that could cause actual results to differ materially from those discussed in the forward-looking statements: the length and severity of the recent COVID-19 pandemic, including its impacts across our businesses on demand, operations, global supply chains and liquidity; changes in economic conditions, including global, national or regional recessions, and their effect on the demand for, and customers’ ability to pay for, the Company’s products and services; changes in the price of natural gas or oil; impairments under the SEC’s full cost ceiling test for natural gas and oil reserves; the creditworthiness or performance of the Company’s key suppliers, customers and counterparties; financial and economic conditions, including the availability of credit, and occurrences affecting the Company’s ability to obtain financing on acceptable terms for working capital, capital expenditures and other investments, including any downgrades in the Company’s credit ratings and changes in interest rates and other capital market conditions; changes in laws, regulations or judicial interpretations to which the Company is subject, including those involving derivatives, taxes, safety, employment, climate change, other environmental matters, real property, and exploration and production activities such as hydraulic fracturing; delays or changes in costs or plans with respect to Company projects or related projects of other companies, including disruptions due to the COVID-19 pandemic, as well as difficulties or delays in obtaining necessary governmental approvals, permits or orders or in obtaining the cooperation of interconnecting facility operators; the Company’s ability to complete planned strategic transactions; the Company’s ability to successfully integrate acquired assets and achieve expected cost synergies; governmental/regulatory actions, initiatives and proceedings, including those involving rate cases (which address, among other things, target rates of return, rate design and retained natural gas), environmental/safety requirements, affiliate relationships, industry structure, and franchise renewal; changes in price differentials between similar quantities of natural gas or oil at different geographic locations, and the effect of such changes on commodity production, revenues and demand for pipeline transportation capacity to or from such locations; the impact of information technology disruptions, cybersecurity or data security breaches; factors affecting the Company’s ability to successfully identify, drill for and produce economically viable natural gas and oil reserves, including among others geology, lease availability, title disputes, weather conditions, shortages, delays or unavailability of equipment and services required in drilling operations, insufficient gathering, processing and transportation capacity, the need to obtain governmental approvals and permits, and compliance with environmental laws and regulations; increasing health care costs and the resulting effect on health insurance premiums and on the obligation to provide other post-retirement benefits; other changes in price differentials between similar quantities of natural gas or oil having different quality, heating value, hydrocarbon mix or delivery date; the cost and effects of legal and administrative claims against the Company or activist shareholder campaigns to effect changes at the Company; uncertainty of oil and gas reserve estimates; significant differences between the Company’s projected and actual production levels for natural gas or oil; changes in demographic patterns and weather conditions; changes in the availability, price or accounting treatment of derivative financial instruments; changes in laws, actuarial assumptions, the interest rate environment and the return on plan/trust assets related to the Company’s pension and other post-retirement benefits, which can affect future funding obligations and costs and plan liabilities; economic disruptions or uninsured losses resulting from major accidents, fires, severe weather, natural disasters, terrorist activities or acts of war; significant differences between the Company’s projected and actual capital expenditures and operating expenses; or increasing costs of insurance, changes in coverage and the ability to obtain insurance. Forward-looking statements include estimates of oil and gas quantities. Proved oil and gas reserves are those quantities of oil and gas which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible under existing economic conditions, operating methods and government regulations. Other estimates of oil and gas quantities, including estimates of probable reserves, possible reserves, and resource potential, are by their nature more speculative than estimates of proved reserves. Accordingly, estimates other than proved reserves are subject to substantially greater risk of being actually realized. Investors are urged to consider closely the disclosure in our Form 10-K available at www.nationalfuel.com. You can also obtain this form on the SEC’s website at www.sec.gov.

For a discussion of the risks set forth above and other factors that could cause actual results to differ materially from results referred to in the forward-looking statements, see “Risk Factors” in the Company’s Form 10-K for the fiscal year ended September 30, 2020 and the Form 10-Q for the quarter ended December 31, 2020. The Company disclaims any obligation to update any forward-looking statements to reflect events or circumstances after the date thereof or to reflect the occurrence of unanticipated events.



**National Fuel is committed
to achieving New York State's
Climate Act goals**

Thank you

