National Fuel®

Fueling a Sustainable Tomorrow

2019 Corporate Responsibility Report

Letter to Stakeholders

Dear Stakeholders,

National Fuel Gas Company ("National Fuel" or the "Company") is an integrated, diversified energy company with assets and operations that span the entirety of the natural gas value chain, from the well-bore to the burner tip. As a company incorporated in 1902, with roots in the infancy of the natural gas industry, National Fuel has a long history of safely and responsibly operating its upstream, midstream, and downstream businesses, with a continuing focus on the long-term sustainability of our operations.

Sustainability is embodied in the Company's guiding principles of safety, environmental stewardship, community, innovation, satisfaction, and transparency, which form the foundation of our daily operations. In 2019, National Fuel provided essential natural gas service to more than 743,000 utility customers in Western New York and northwestern Pennsylvania, transported approximately 700 billion cubic feet ("Bcf") of natural gas on our interstate pipelines, and produced over 210 Bcf equivalent of natural gas and oil in Pennsylvania and California, with all Appalachian natural gas production flowing through the Company's gathering facilities.

On behalf of the more than 2,100 National Fuel employees, we are pleased to share the Company's initial Corporate Responsibility Report ("Report"), which is an important step in the continuous improvement of National Fuel's environmental, social, and governance ("ESG") disclosures. This Report is a supplement to the Company's existing corporate responsibility website, which was launched in early 2018, and the Company's current disclosures under the American Gas Association's ESG and Sustainability Template.

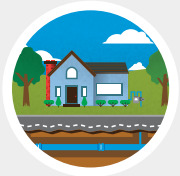
Based on feedback from stakeholders, including our long-standing shareholders, we developed this initial Report in accordance with the Sustainability Accounting Standards Board frameworks for our respective businesses, as well as various Global Reporting Initiative standards, and additional key performance indicators. This Report highlights National Fuel's significant and ongoing efforts to ensure that our operations have minimal environmental impacts on the communities in which we operate, and make positive contributions to these communities and the numerous stakeholders with which we interact thousands of times each year. Furthermore, this Report highlights our focus on business continuity and our steadfast commitment to our workforce, both of which have been front and center during the COVID-19 pandemic.

With respect to the pandemic, over the past several months, our business, like so many across the globe, has experienced significant new challenges. However, despite these challenging times, during this "new normal," we are proud to say that National Fuel has continued to safely and reliably provide natural gas service to our utility customers, operate our extensive network of transportation, compression and gathering infrastructure, and produce critical natural gas supplies. The continuity of our operations has been the direct result of the dedication and hard work of our employee group. Moreover, we have remained committed to our workforce – the bedrock of our Company– and did not implement any furloughs or workforce reductions.

As a business that is keenly focused on the responsible development of our natural gas and oil reserves, the integrated development of our midstream and upstream assets in Appalachia, and the continued reliability of our utility operations, National Fuel is also uniquely situated to make meaningful investments to further reduce our environmental footprint across the entirety of the energy value chain, as well as to be an industry leader across our operating segments. In this regard, National Fuel has made significant investments and commitments to enhance system safety, reliability, and integrity, and to reduce emissions.

In late 2018, each principal subsidiary of National Fuel became an active participant in the U.S. Environmental Protection Agency's ("EPA") Methane Challenge Program. As part of this program, for each of our businesses, we made independent commitments under the Methane Challenge Best Management Practices ("BMP"), and will provide annual disclosures demonstrating our incremental methane emissions reductions. National Fuel's companies have also committed to analyze new and innovative approaches for further emissions reduction and to explore the expansion of current best practices.

In addition, as part of our capital allocation strategy, over the past several years the Company has made significant investments to enhance the safety and integrity of our pipeline systems and related facilities, as well as to further reduce our environmental impacts across our operations. While this Report details many of these activities, we highlight a few notable items:



- **Downstream:** our Utility business has invested approximately$325 million in distribution system modernization since 2015, with replacement of older vintage mainlines and service lines ongoing, driving an approximately 16% reduction in EPA-reported greenhouse gas emissions over this same period.

- **Midstream:** our Pipeline and Storage business has invested over $350 million in pipeline and compression modernization since 2014, with further replacement of aging infrastructure in progress.

- **Upstream:** our Exploration and Production business continues to make significant investments in water handling and recycling facilities, and to use EPA-approved best management practices for emissions controls at its production facilities.

We encourage you to read the remainder of this Report for additional details. We hope that you find the information within useful in your evaluation of National Fuel as a corporate citizen. As we look forward, we view this Report as a key step in enhancing National Fuel's ESG disclosure, which we will continue to build on in the future.

David Bauer
President and Chief Executive Officer

Table of Contents

Glossary of Terms

Frequently used abbreviations, acronyms, or terms used in this report:

National Fuel Gas Companies

Company	National Fuel Gas Company and its subsidiaries or its subsidiaries as appropriate in the context of the disclosure.
Distribution Corporation	National Fuel Gas Distribution Corporation
Empire	Empire Pipeline, Inc.
Highland	Highland Field Services, LLC
Midstream Company	National Fuel Gas Midstream Company, LLC
Midstream Segment	Midstream operations carried out collectively by Supply Corporation, Empire and Midstream Company
National Fuel	National Fuel Gas Company
Seneca Resources	Seneca Resources Company, LLC
Supply Corporation	National Fuel Gas Supply Corporation

Regulatory Agencies

CalGEM	California Geologic Energy Management Division
CARB	California Air Resources Board
DOT	United States Department of Transportation
EPA	United States Environmental Protective Agency
NYPSC	New York Public Service Commission
PADEP	Pennsylvania Department of Environmental Protection

PaPUC	Pennsylvania Public Utility Commission
PHMSA	Pipeline and Hazardous Materials Safety Administration
OSHA	Occupational Health and Safety Organization
SEC	Securities and Exchange Commission

Other

AGA	American Gas Association
AXPC	The American Exploration and Production Council
BAT	Best available technology
Bbl	Barrel (of oil)
Bcf	Billion cubic feet (of natural gas)
Bcfe (Mcfe) – represents Bcf (or Mcf) equivalent	The total heat value (Btu) of natural gas and oil expressed as a volume of natural gas. The Company uses a conversion formula of 1 barrel of oil = 6Mcf of natural gas.
BMP	Best management practices
Capital expenditure	Represents additions to property, plant, and equipment, or the amount of money a company spends to buy capital assets or upgrade its existing capital assets.
CIP	Conservation Incentive Program
CLCPA	Climate Leadership and Community Protection Act
Code	Company's Code of Business Conduct
COVID-19	Novel coronavirus
EDM	Engineering Design Manual
EHS	Environmental, health and safety

EIA	United States Energy Information Administration
ESCAMP	Erosion and Sedimentation Control and Agricultural Mitigation Procedure
ESG	Environmental, social, and governance disclosures
GHG	Greenhouse Gas
GHGRP	United States EPA's Greenhouse Gas Reporting Program
GRI	Global Reporting Initiative
HFCs	Hydrofluorocarbons
IFC	International Finance Corporation
InfoSec	Information security
INGAA	Interstate Natural Gas Association of America
IPCC	Intergovernmental Panel on Climate Change
LDAR	Leak Detection and Repair
LIHEAP	Low Income Home Energy Assistance Program
LIURP	Low Income Usage Reduction Program
LPP	Leak prone pipe
MFC	Merchant Function Charge Revenues
MSC	Marcellus Shale Coalition
Mmbtu	One million British thermal units
NMFR	Near-miss frequency rate
NRCIP	Non-Residential Rebate Program
PFCs	Perfluorocarbons

PNDI	Pennsylvania Natural Diversity Inventory
PSE	Process safety event
PSMS	Pipeline Safety Management Systems
PPE	Personal protective equipment
RACT	Reasonably Available Control Technology
RCA	Root Cause Analysis
RDM	Revenue Decoupling Mechanism
ROW	Right-of-way
RP	Recommended Practice
SASB	Sustainability Accounting Standards Board
STIMP	Storage Integrity Management Program
T&E	Threatened and endangered
TIMP	Transmission Pipeline Integrity Management Program Plan
TRIR	Total recordable incident rate
WEO	World Energy Outlook

Report Overview

Report Overview

Welcome to National Fuel's first stand-alone Corporate Responsibility Report. National Fuel is an integrated, diversified energy company engaged principally in the exploration and production, gathering, transportation and storage, and distribution of natural gas.

In this report, we refer to the Sustainability Accounting Standards Board ("SASB") portion of our disclosures as our "Sustainability Report." Generally, companies use the SASB industry standard specific to their primary business or operations as identified in the Sustainable Industry Classification System ("SICS"), which for National Fuel is the Gas Utilities and Distributors standard. However, due to our integrated business model, the Company has elected to report on additional SASB industry standards, including Oil & Gas – Midstream and Oil & Gas – Exploration & Production, to communicate additional significant sustainability information to investors and other stakeholders. Additionally, the Company has elected to include corporate governance information relevant to the Global Reporting Initiative ("GRI") framework, as well as cross-references to applicable GRI economic, environmental, and social disclosures contained within our Sustainability Report. We refer to the Sustainability Report collectively with the governance portion of the Report as our "Corporate Responsibility Report."

This Corporate Responsibility Report provides discussion and analysis of our relevant environmental, social and governance ("ESG") metrics, management of those metrics, and Company programs and policies in place to achieve National Fuel's commitment to the safe and environmentally conscious operation of its business. Listed below are some report highlights:

- **Corporate Responsibility Governance:** Our management approach to sustainability and ESG involves all levels of the Company, from the Board of Directors to our over 2,100 employees. The Nominating/Corporate Governance Committee provides board level oversight and guidance with respect to corporate responsibility and ESG factors that are important to the Company and its stakeholders. Our Vice President of Corporate Responsibility is responsible for ESG disclosure and identifying further sustainable business practices for the Company to consider in strategic decision making across the Company, as well as leading a larger cross-functional Corporate Responsibility Management Committee that engages subject matter experts from different operating segments who provide reporting information and support for sustainable business practices. Additionally, the Vice President of Corporate Responsibility is responsible for regularly updating the Company's Corporate Responsibility Executive Committee, which is comprised of senior management who are accountable for integrating applicable sustainability practices in their respective areas.

- **COVID-19 Impacts and Company Response:** As a provider of essential services, the Company has continued to provide safe and reliable natural gas service with a focus on employee and customer safety throughout this unprecedented health crisis. During the pandemic, National Fuel has remained committed to its workforce, has taken numerous steps to ensure the safety and well-being of our employees and customers and has not instituted any furloughs or workforce reductions.

- **Disclosure to SASB Standards:** Based on communications with its principal shareholders, as well as a review of suggested disclosures by such shareholders, the Company has elected to primarily use the applicable SASB standards for its upstream, midstream, and downstream segments to help inform our sustainability reporting. Additionally, as the SASB standards are generally focused on environmental and social disclosures, the Company is supplementing this information with various GRI disclosures with respect to our corporate governance practices.

COVID-19 Impacts and Company Response

The worldwide outbreak of the novel coronavirus ("COVID-19") has negatively affected economies, individual companies and our customers. As a provider of an essential service, National Fuel has continued its operations, in compliance with COVID-related regulations, remaining committed to the safe and reliable delivery of natural gas while maintaining the safety of our employees and customers. As we confront the pandemic, we continue to support our communities during the economic recovery. The Company recognizes that some of our customers may be dealing with financial hardship, and as a result, and consistent with recently passed legislation in New York as well as other guidance from state regulators, has suspended service terminations (except for emergency purposes), offered customers flexible repayment agreements, waived late fees when requested, and reconnected services that had been previously terminated.

The Company's Pandemic Response Team was activated in February to monitor the progression of COVID-19 and begin response planning. Since that time, the Pandemic Response Team has implemented a comprehensive response plan to ensure business continuity, the safety of our workforce, and our continued commitment to that workforce during these unprecedented times.

- **Business Continuity:** Throughout the crisis, the Pandemic Response Team has provided weekly updates, and more frequently when circumstances warranted, to senior leadership regarding the Company's pandemic response initiatives. To ensure business continuity, that team has monitored critical backlogs in each department, established health and safety inspectors to monitor continued construction activity, and monitored the ability of the Company's contractors and suppliers to fulfill their contractual obligations. Additionally, the Pandemic Response Team provides regular employee communication and safety education to ensure that our employees – who are directly responsible for our continuity of operations – remain informed and confident that the Company is monitoring and implementing any government and health department orders and guidance.

- **Workforce Safety:** With respect to our in-field workforce and customer service representatives, the Company has adopted appropriate social distancing measures and has provided necessary personal protective equipment ("PPE") in line with directives from federal, state and local agencies. The Company has instituted telecommuting for all employees, where possible, to minimize employee exposure. For any employees who could not work remotely, the Company developed COVID-19 reporting and screening procedures; implemented staggered start times and/or satellite work locations, where possible, to encourage social distancing; and developed sequestering plans for critical service employees. As evidence of our safety culture, National Fuel's Supply Chain Team, which was formed in the early stages of the pandemic, was recognized by the Northeast Gas Association as an industry leader for their best practices in planning for and securing hard-to-find PPE and sanitizing supplies needed to ensure a safe and healthy workspace.
- **Committed to Our Workforce:** National Fuel has remained committed to our workforce and has not instituted any furloughs or workforce reductions. With a large portion of employees working remotely during the pandemic, the Company implemented a number of initiatives to provide flexibility to our workforce, including additional paid time off to address child care needs, and encouraging the use of alternative work schedules. Our efforts included numerous actions to protect the health and safety of our workers as well as our customers and has enabled us to ensure adequate staffing for provision of essential services during the pandemic.

Company Overview

Company Overview

Organizational Profile
(GRI 102-1 to 102-6)

National Fuel is a holding company organized under the laws of the State of New Jersey and headquartered in Western New York. The Company is a diversified domestic energy company engaged principally in the production, gathering, transportation and distribution of natural gas in the United States. The Company operates an integrated business, with assets centered in Western New York and Pennsylvania, being used for, and benefiting from, the production and transportation of natural gas from the Appalachian basin. Current natural gas production development activities are focused in the Marcellus and Utica shales, geological formations that are present nearly a mile or more below the surface in the Appalachian region of the United States. Pipeline development activities are designed to transport natural gas production to new and growing markets. The common geographic footprint of the Company's subsidiaries enables them to share certain management, labor, facilities and support services across various businesses and pursue coordinated projects designed to produce and transport natural gas from the Appalachian basin to markets in the eastern United States and Canada. The Company also develops and produces oil reserves, primarily in California. The Company owns directly or indirectly all of the outstanding securities of its subsidiaries, which are represented in the Downstream, Midstream, and Upstream operating segments.

- **Downstream:** Our utility operations are carried out by National Fuel Gas Distribution Corporation ("Distribution Corporation" or "Downstream Segment"), a New York corporation. Our Downstream Segment provides natural gas utility services to over 743,000 customers through a local distribution system located in Western New York and northwestern Pennsylvania. The principal metropolitan areas served by Distribution Corporation include Buffalo, Niagara Falls and Jamestown, New York and Erie and Sharon, Pennsylvania.

- **Midstream:** Our midstream operations are carried out by National Fuel Gas Supply Corporation ("Supply Corporation"), Empire Pipeline, Inc. ("Empire") and National Fuel Gas Midstream Company, LLC ("Midstream Company" and together with Supply and Empire, our "Midstream Segment"). Our pipeline and storage operations are carried out by Supply Corporation, a Pennsylvania corporation, and Empire, a New York corporation. Supply Corporation and Empire provide interstate natural gas transportation through integrated gas pipeline systems in Pennsylvania and New York. Supply Corporation also provides storage services through its underground natural gas storage fields. Our gathering operations are carried out by wholly-owned subsidiaries of Midstream Company, a Pennsylvania limited liability company. Through these subsidiaries, Midstream Company builds, owns and operates natural gas pipeline gathering and compression facilities in the Appalachian region.

- **Upstream:** Our exploration and production operations are carried out by Seneca Resources Company, LLC ("Seneca" or "Upstream Segment"), a Pennsylvania limited liability company. Seneca is engaged in the exploration for, and the development and production of, natural gas and oil reserves in the Appalachian region of the United States and in California.

Guiding Principles

National Fuel understands that to deliver long-term sustainable value for the benefit of stakeholders – shareholders, employees, customers and communities where we operate – we must continue to conduct our business activities in a way that promotes our six guiding principles. These principles underpin all aspects of our operations, as well as our daily interactions with our communities and stakeholders.

Safety: The Company values the safety of all our customers, employees and communities, and works diligently to establish a culture of safety that is embraced throughout the entire organization.

Environmental Stewardship: Environmental protection and conservation of resources are high priorities for National Fuel. We utilize procedures, technologies, and best management practices across our businesses to develop, build, and operate our assets in a manner that respects and protects the environment.

Community: The Company is committed to the health and vitality of the local communities where it operates. We work where we live and raise our families, and are constantly focused on the highest standards of corporate responsibility and accountability.

Innovation: The Company strives to exceed the standards for safe, clean and reliable energy development and invests in the future of our regions' energy resources.

Satisfaction: The Company works to achieve satisfaction for all stakeholders. We want our shareholders to see a strong return on their investment. We want out employees to work in a positive, safe and rewarding environment. We work to deliver reliable, high-quality service for our customers. We want our communities to be proud to call us neighbors.

Transparency: The Company believes that open communication is key to maintaining strong relationships. We see value in educating our shareholders, employees, customers and communities about all aspects of our business.

Governance and Risk Oversight

Governance and Risk Oversight

Governance
(GRI 102-18, 102-19, 102-20)

Good corporate governance measures go hand-in-hand with our guiding principles of satisfaction and transparency. National Fuel employees, managers and officers conduct the Company's business under the oversight of the Board of Directors to serve the long-term interests of the Company's shareholders and meet the needs of its customers. The Board has a fiduciary duty to oversee the management of the Company's operations and uphold those shareholder interests. The Board of Directors is composed of ten non-management directors and the President and CEO – each with a diversity of experience and perspectives that helps the Board identify strategic risks and opportunities. The Board's structure and responsibilities are outlined in the Company's Corporate Governance Guidelines. The Board has also appointed a Lead Independent Director.

The Board has five committees to help execute its responsibilities:

- Audit;
- Compensation;
- Executive;
- Financing; and
- Nominating/Corporate Governance.

All members of the Audit, Compensation and Nominating/Corporate Governance Committees are independent. Each of these committees has a charter that describes its responsibilities. The Nominating/Corporate Governance Committee is responsible for overseeing and providing guidance concerning the Company's practices and reporting with respect to corporate responsibility and ESG factors that are of significance to the Company and its stakeholders, as well as making recommendations to the Board regarding ESG initiatives and strategies, including but not limited to the Company's progress on integrating ESG factors into business strategy and decision-making. The Nominating/Corporate Governance Committee is also responsible for reviewing the Company's programs and reporting with respect to ESG, including this Corporate Responsibility Report.

In 2020, the Company appointed Jeffrey Hart as Vice President of Corporate Responsibility. The creation of this new post recognizes the expanding scope of National Fuel's corporate responsibility initiatives, as well as its strategic importance to the Company. The Vice President of Corporate Responsibility will lead the Company's Corporate Responsibility Management Committee, which engages subject matter experts from different operating segments who provide reporting information and support sustainable business practices. This position will be responsible for ESG disclosure and identifying further sustainable business practices for the Company to consider in strategic decision making across the Company. Additionally, the Vice President of Corporate Responsibility will regularly update the Corporate Responsibility Executive Committee, comprised of senior management who are accountable for integrating applicable sustainable practices in their respective areas, and the Nominating/Corporate Governance Committee.

Risk Oversight
(SASB EM-EP-540a.2)

The Board retains oversight of safety, environmental, social, operational and corporate governance risks, among other areas central to corporate responsibility, including strategic, financial and regulatory risks and opportunities. An important aspect of the Board's oversight role is the enterprise risk management process, under which major enterprise-wide risks have been identified and assessed, along with the mitigative measures to address and manage such risks. Significant risks that have a low-likelihood of occurring due to the mitigative efforts and resources the Company deploys include, among other things, risks that could impact human health, local community or environmental impacts. See *Integrity of Gas Delivery Infrastructure*, *Ecological Impacts*, *Operational Safety*, *Emergency Preparedness & Response*, *Biodiversity Impacts*, *Workforce Health & Safety* and *Critical Incident Management* for more information related to management systems, safety training and technical controls in place to mitigate these significant risks.

The enterprise risk management process allows the Board to remain informed of risks or potential problems that might require their attention. Management reports quarterly to the Board on significant risk categories. In addition, management provides a detailed presentation on a topic related to one or more risk categories at each Board meeting. Additional review or reporting on enterprise risks is conducted as needed or requested by the Board. The Board and management consider enterprise risks and opportunities in their strategic and capital spending decision process.

Leadership and Governance – Business Ethics
(SASB EM-EP-510a.2; GRI 102-17)

National Fuel seeks to promote and maintain a culture committed to high standards of ethical conduct and integrity. The Company communicates its expectations for responsible and ethical conduct through our Code of Business Conduct and Ethics (the "Code"). The Code reflects the Company's culture and long-standing commitment to adhere to high standards of ethics and integrity which meet, and frequently exceed, the requirements of law.

Managing Business Ethics Internally

All employees share the responsibility for making ethical conduct central to our business operations and dealing. The Code applies to the Company's directors, principal executive officer, principal financial officer, controller, other officers and employees. The Code is designed to deter wrongdoing and to promote honest and ethical conduct. The Company's internal Ethics Committee, chaired by the Company's Chief Compliance Officer who is also the Company's General Counsel, administers the Code as it relates to Company employees who are not executive officers and regularly reports on its activities to the Audit Committee. The Audit Committee is responsible for administering the Code as it relates to the Company's directors and executive officers. Additionally, the Audit Committee monitors compliance with the Company's Code and reviews management's response to violations of the Code. Discipline may be imposed for violations of the Code, including, where appropriate, termination of the offending individual's relationship and/or employment with the Company.

The Company also has an Employee Handbook Policy relative to the Code that explains and elaborates on what is expected of all employees to comply with the Code. The Employee Handbook, among other things, outlines company policies relating to compliance with laws, rules and regulations on the following topics:

- Insider trading;
- Improper corporate payments, bribes, kickbacks, and/or gifts;
- Political contributions;
- Equal employment opportunity;
- Non-discrimination and anti-harassment;
- Health and safety;
- Environmental compliance; and
- Data privacy and cybersecurity

The Company's Human Resources Department reviews the Employee Handbook with all new employees, which includes this policy. Annually, all National Fuel officers and supervisory employees are required to provide a personal statement of disclosure relating to any conflicts of interest and any known occurrences of fraud ("Annual Ethics Disclosure"). Additionally, officers and employees are reminded through their Annual Ethics Disclosure that they may use the toll-free hotline to anonymously report suspected wrongdoings, possible conflicts of interest or fraud. This same hotline is also publicized on the Company's investor relations website. For calendar year 2019, the hotline received one call, which was the Audit Services periodic test of the hotline. In addition to the Annual Ethics Disclosures, the Company requires employees to undergo additional ethics and compliance training with respect to conducting business with government officials.

Managing Business Ethics with Our Business Partners

The Company expects its business partners to comply with the standards of conduct set forth in the Code, the Company's Code of Vendor Conduct, National Fuel's Labor & Human Rights Guidelines, as well as other procurement guidance from and contractual obligations to National Fuel. The Company sends an annual letter to vendors, suppliers and contractors highlighting the Code, the standards therein, and the Company's expectation that vendors are aware of and comply with those standards (the "Vendor Ethics Letter"). The Vendor Ethics Letter communicates the Company's expectation that vendors, suppliers and contractors carefully consider, and comply with, National Fuel's business ethical standards. Among other standards, the Vendor Ethics Letter highlights that employees of National Fuel may not, under any circumstances:

- Use their position as a National Fuel representative for personal gain through preferential treatment of vendors, suppliers, or contractors;

- Place themselves in a position that compromises their integrity or represents a conflict of their personal interest with National Fuel's interests; or

- Require vendors, suppliers or contractors to participate in or support any group, activity, political campaign, or organizations as a requirement of doing business with National Fuel.

Additionally, as part of National Fuel's commitment to promoting responsible business operations, the Company expects its suppliers, vendors and contractors to conduct business with integrity and in accordance with the Company's Code of Vendor Conduct. The Code of Vendor Conduct communicates to our business partners the Company's expectations that they conduct business with integrity and ensure that their employees, workers, representatives and subcontractors do the same. The Code of Vendor Conduct is not all inclusive, but provides guidelines for business partners to follow and serve as an overview of National Fuel's expectations for all those who do business with the Company. Among other things, the Code of Vendor Conduct addresses the Company's expectations with respect to the following:

- Code of Business Conduct & Ethics;
- Safety;
- Environment;
- Diversity;
- Labor Practices & Human Rights;
- Information Security; and
- Compliance.

Management of the Environmental and Social Legal & Regulatory Environment
(SASB EM-EP-530a.1)

The Company's businesses are subject to regulation under a wide variety of federal, state and local laws, regulations and policies related to both environmental and social factors. Existing statutes and regulations may be revised or reinterpreted and new laws and regulations may be adopted or become applicable to the Company, which may increase the Company's costs or affect its business in ways that are difficult to predict. The Company considers existing, emerging and known future risks and opportunities related to operational and regulatory compliance as part of its enterprise risk management process, and the Board and senior management use that process to inform strategic decision making.

Environmental

The natural gas and oil industries are subject to regulatory requirements that are incredibly strict and rigorous with respect to environmental and ecological impacts. The Company's business operations are subject to federal, state, and local laws and regulations relating to, among other things, environmental protection including obtaining and complying with permits, leases, approvals, consents and certifications from various governmental and permit authorities. These laws and regulations concern the generation, storage, transportation, disposal, emission or discharge of pollutants, contaminants, hazardous substances and greenhouse gases into the environment, the reporting of such matters, and the general protection of public health, natural resources, wildlife and the environment. Non-compliance with these laws and regulations could expose the Company to material losses, expenditures and environmental, health and safety liabilities. The Company continually reviews and evaluates the impact that existing and proposed environmental regulations may have on our business segments. The Company has developed robust compliance programs to address these laws and regulations and provides training to the appropriate employees, so that our workforce remains informed of current requirements. See *Ecological Impacts* and *Greenhouse Gas Emissions* in the Downstream Segment disclosure, *Greenhouse Gas Emissions*, *Air Quality* and *Ecological Impacts* in the Midstream Segment disclosure, and *Greenhouse Gas Emissions*, *Air Quality*, *Water Management*, *Biodiversity Impacts* and *Reserves Valuation & Capital Expenditures* in the Upstream Segment disclosure for more information related to the Company's compliance

with and consideration of environmental laws and regulations. Additionally, the Company routinely engages with trade associations such as the Interstate Natural Gas Association of America ("INGAA"), the American Gas Association, the Northeast Gas Association and the Marcellus Shale Coalition ("MSC") on existing and proposed environmental laws and regulations. For example, in addition to adhering to the numerous applicable federal, state and local laws and regulations, National Fuel closely follows various natural gas industry group initiatives, such as INGAA's Commitments to Responsible Pipeline Construction, Methane Emissions, Pipeline Security, Landowners, and Pipeline Safety.

In addition to current environmental regulation, climate change, and the regulatory and legislative developments related to climate change, may affect the Company's operations and financial results. Additionally, the trend toward increased conservation, competition from renewable energy sources, and technological advances to address climate change may reduce the demand for gas and oil. Federal, state and local legislative and regulatory initiatives proposed or adopted in recent years in an attempt to limit greenhouse gas emissions and the effects of climate change could have significant impacts on the energy industry. These initiatives could include government-imposed limitations, prohibitions or moratoriums on the use of gas and oil. For example, the U.S. Congress has from time to time considered bills that would establish a cap-and-trade program to reduce emissions of greenhouse gases. Additionally, a number of states have adopted energy strategies or plans with goals that include the reduction of greenhouse gas emissions. Listed below are different state requirements within our operating territories that could affect the Company's operations, and therefore are considered during the enterprise risk management process.

- **California:** Cap-and-trade guidelines, which increase the Company's cost of environmental compliance in its Upstream Segment.
- **New York:** The Climate Leadership and Community Protection Act (CLCPA), which created emissions reduction and electric generation mandates, and could impact the Downstream Segment's customer base and restrict the Midstream Segment's ability to build new projects or facilities.
- **Pennsylvania:** Methane reduction framework for the oil and gas industry that has resulted in permitting changes with the stated goal of reducing methane emissions from well sites, compressor stations and pipelines.

Legislation or regulation that aims to reduce greenhouse gas emissions could also include greenhouse gas emissions limits and reporting requirements, carbon taxes, restrictive permitting, increased energy efficiency standards, and incentives or mandates to conserve energy or use renewable energy sources.

Social

The Company is subject to a wide variety of federal and state regulations with respect to its human capital management. The ongoing success of National Fuel and its subsidiaries is the direct result of our employees' and, before them, our retirees', hard work and dedication. National Fuel employs over 2,100 employees across its Western New York, Western Pennsylvania, California and Houston, Texas locations. The Company prides itself on being a local employer that never compromises its integrity and commitment to the Company's guiding principles. To address the social risks inherent in any workplace, the Company has developed a robust compliance program and set of policies designed to create a safe, inclusive and productive work environment. That program includes, among other things:

- **Labor & Human Rights Guidelines**: Guided by the International Labor Organization's ("ILO") core labor principles concerning nondiscrimination, freedom of association and collective bargaining, forced labor and underage workers in the workplace. The Company also includes information with respect to grievance reporting.

- **Nondiscrimination Statement**: Provides notice of the Company's policy on nondiscrimination and accessibility requirements, as well as notice of free language assistance services available to stakeholders.

- **Safety Culture:** The Company has implemented numerous safety programs and management practices to ensure that a culture of safety is prioritized and embraced throughout the whole organization. See *Integrity of Gas Delivery Infrastructure*, *Operational Safety*, *Emergency Preparedness & Response* and *Workforce Health & Safety* for more information related to the Company's safety programs and management practices.

Our Employees and Communities

Our Employees and Communities

Human Capital – Labor Practices
(SASB IF-WM-310a.1, IF-WM-310a.2; GRI 407-1)

National Fuel respects its employees' right to self-organization, to form, join or assist labor organizations, to bargain collectively through representatives of their own choosing, and to engage in other concerted activities for the purpose of collective bargaining or other mutual aid or protection, as well as their right to refrain from any or all such activities, without fear of reprisal, intimidation, or harassment.

As of December 31, 2019, 48.56% of the Company's active workforce was covered under collective bargaining agreements. During calendar year 2019, National Fuel did not incur any work stoppages (strikes or lockouts) and therefore experienced zero idle days for the year.

Human Capital Management – Employee Attraction and Retention

The ongoing success of National Fuel is the direct result of our employees' hard work and dedication. The Company aims to attract the best employees, to retain those employees through offering career development and training opportunities while also prioritizing their safety and wellness, and to create a safe, inclusive and productive work environment for everyone.

Employee Benefits
(GRI 401-2, GRI 403-6)

To attract employees and meet the needs of our workforce, National Fuel offers a robust benefits package at all of our subsidiaries. Our benefits package options may vary depending on type of employee (full-time versus part-time) and date of hire. Additionally, the Company continuously looks for ways to improve employee work-life balance and well-being. A list of these benefits are presented below:

Healthcare	Financial	Insurance	Lifestyle
Medical and prescription drug	401(k) retirement savings with matching company contribution	Life insurance	Paid time off
Dental	Health savings account	Accidental death and disability	Tuition aid program
Vision	Flexible spending accounts for daycare and adoption expenses	Short-term disability	Alternative work schedules
		Long-term disability	Flex hours
		Optional life insurance	Matching charitable giving program
		Business travel accident	Family and medical leave (includes parental leave)
			Faces of Fuel volunteer program
			Lactation friendly workplace
			Fertility care benefits
			Professional part time employment track

Employee Development
(GRI 404-2)

National Fuel is only as strong as the human capital that we retain and develop. The Company provides employees with the tools and developmental resources to enhance their skills and careers at National Fuel. Some examples include:

- Encouraging employees to discuss their professional development and identify interests or possible cross-training areas during annual performance reviews with their supervisors;
- Corporate and technical training programs based on position, regulatory environment, and employee needs;
- Tuition aid program for educational pursuits related to present work or possible future positions;
- Continuous talent review and succession planning;
- Opportunities for on-the-job growth, through stretch assignments or temporary projects outside of an employee's typical responsibilities; and
- New initiative with all supervisory employees at the regulated companies pertaining to employee development and workforce planning. Each supervisor will meet annually one-on-one with a member of the leadership team to discuss career pathing and employee development.

Diversity and Inclusion
(SASB TC-SI-330a.3; GRI 405-1)

National Fuel is committed to hiring and developing qualified individuals who can enhance and contribute to the diversity of our workforce and reflect the diverse communities we serve. The Company recognizes that a diverse talent pool provides the opportunity to gain a diversity of perspectives, ideas and solutions to help the Company succeed. To further our commitment to diversity and our guiding principle of transparency, National Fuel tracks diversity indicators and shares that demographic data below. National Fuel believes that being transparent is one way we can remain accountable, and show progress in future years that reflect our diversity and inclusion commitment.

The Company considers diversity when making hiring and promotional decisions. National Fuel endeavors to cast a wide net of potential candidates to ensure we are considering all qualified applicants. Although the Company continues to confront challenges in locating and attracting qualified minority candidates for high-demand positions, between 2015 and 2020 minority hiring trended upwards at a rate that exceeded workforce growth across the entire

employee populations during the same period. Due to the rural nature of many of our service locations and employment positions associated with those locations, the Company faces unique hiring challenges in attracting qualified individuals for those locations. The Company continues to work with community groups and organizations to help promote awareness of job opportunities within diverse communities. The Company also participates in community outreach events to educate job seekers about our commitment to equitable employee representation. This is a trend that the company aims to continue.

Additionally, the management and executive groups regularly participate in the interview process and are actively involved in the promotion process which helps reinforce their accountability for equitable representation. The Company has also partnered with community organizations to sponsor scholarship programs, which provides significant financial support to underrepresented minority individuals pursuing college degrees in STEM or business related fields. The Company maintains touchpoints with the scholarship recipients in an attempt to provide support throughout their college experience, as well as opportunities to learn about National Fuel and potential internships.

National Fuel has several policies that reinforce our commitment to inclusion within the workplace. The Company's Employee Handbook Policy relative to our Code of Business Conduct and Ethics includes equal employment opportunity commitments and non-discrimination and anti-harassment disclosures, which communicate the Company's expectations with respect to maintaining a professional workplace free of harassment. The Company prohibits discrimination or harassment against any employee or applicant on the basis of sex, race/ethnicity, or the other protected categories listed within the Company's Non-Discrimination and Anti-Harassment Policy.[1] We are committed to a harassment free workplace, which is supported through prevention training for employees. Annually, the Chief Executive Officer of National Fuel Gas Company reinforces the Company's commitment to equal employment opportunity by signing a corporate EEO policy statement. This statement is then displayed at all Company locations, included in all employee handbooks, and discussed with all new hires during their onboarding process and all employees annually through the employee survey and attestation process.

Female Leadership

Women have long occupied National Fuel's top corporate levels. Female representation in leadership positions highlights the Company's commitment to inclusion at all corporate levels. Today, four of the Company's ten designated executive officers are women who hold the following important policy-making positions: President of the Company's Utility segment; General Counsel and Secretary; Treasurer and Principal Financial Officer; and Controller and Principal Accounting Officer.

The percentage of gender representation for (1) salaried employees, (2) hourly employees, and (3) all employees as of December 31, 2019 is as follows:

	Female	Male
Salaried Employees[2]	25.85%	74.15%
Hourly Employees[3]	29.65%	70.35%
All Employees	28.14%	71.86%

1 The Company's Non-Discrimination and Anti-Harassment Policy lists the following protected categories: age, race, creed or religion, color, national origin, sexual orientation, gender identity or expression, military or veteran status, sex or gender (including pregnancy, childbirth or related conditions), disability, predisposing genetic characteristics, familial status, marital status, status as a victim of domestic violence, and employee or dependent's reproductive health decision making.
2 Salaried employees represents all job titles that are exempt from overtime regulations as defined by the Fair Labor Standards Act.
3 Hourly employees represents all job titles that are not exempt from overtime regulations as defined by the Fair Labor Standards Act.

Representation of Racial and Ethnic Minorities

National Fuel recognizes the need to improve its diversity levels throughout the organization. The Company believes that measuring and sharing this demographic data shows our commitment to our guiding principle of transparency, and offers the Company the opportunity to show progress in the future. The Company has instituted scholarship programs with different community organizations to reach underrepresented minorities, and will continue to conduct extensive campus and community outreach in the future. The percentage of racial/ethnic group representation for (1) salaried employees, (2) hourly employees, and (3) all employees as of December 31, 2019 is as follows:

	Minority[1]	Non-Minority
Salaried Employees[2]	5.15%	94.85%
Hourly Employees[3]	11.35%	88.65%
All Employees	8.88%	91.12%

Multi-Generational Workforce

The Company is also committed to fostering an inclusive work environment where our multi-generational workforce can succeed. The Company offers family-friendly programs to promote flexibility, where possible without interfering with business operations. For example, the Company allows flexible time to begin and end the workday and alternative work schedules, which help employees balance work and personal commitments. Additionally, the Company's parental leave and paid family leave policies provide flexibility to the generations represented below if they need to care for a family member.

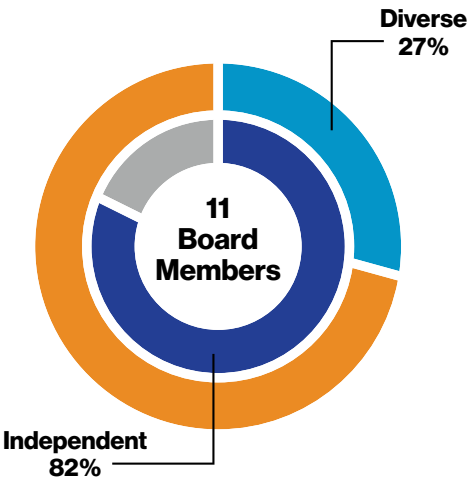
	Age	Percentage of Workforce
Baby Boomers	56-76 years old	16.37%
Generation X	41-55 years old	33.44%
Millennials (Gen Y)	26-40 years old	42.84%
Gen Z	25 and younger	7.35%

Board Diversity

National Fuel's commitment to diversity also extends to our Board of Directors. Under National Fuel Gas Company's Corporate Governance Guidelines, the Board of Directors is required, when selecting candidates for re-election and candidates for Board membership, to consider factors that include a diversity of experience related to the Company's business segments in which it operates, as well as a diversity of perspectives to be brought to the Board by the individual members. In 2018, the Board updated the Director Qualifications Guidelines, contained in the Company's Corporate Governance Guidelines, to clarify that "diversity of perspectives" includes all aspects of diversity. In recent years, National Fuel's Nominating/Corporate Governance Committee, which makes recommendations to the full Board on nominees for director positions, has invited qualified diverse candidates to stand for election to the Board, with successful results. Additionally, Board member Rebecca Ranich serves as Chair of the Nominating/Corporate Governance Committee and women have long occupied National Fuel's top corporate levels as described in the Female Leadership section above. The Board will continue its efforts to attract qualified diverse Board Candidates whose expertise and personal characteristics align with the Company's long term business strategy. It is important to note that 3 of the last 6 directors who were added to the Board are diverse.

1 Minority includes the following classifications: Asian, Black or African American, Hispanic or Latino, Native American or Alaska Native, Native Hawaiian or Pacific Islander or Two or More Races.
2 Salaried employees represents all job titles that are exempt from overtime regulation as defined by the Fair Labor Standards Act.
3 Hourly employees represents all job titles that are not exempt from overtime regulations as defined by the Fair Labor Standards Act.

Diverse and Independent[1] Board of Directors



Supplier Diversity

Supplier diversity is an important part of National Fuel's commitment to diversity and inclusion. The Company believes in creating access and opportunity for certified women-owned businesses, minority-owned businesses, and other businesses with recognized diversity classifications. Annually, the Company contacts its suppliers to remind entities that the Company recognizes these certifications and values diversity, and communicates its expectations that suppliers observe the same nondiscriminatory practices to which the Company is committed.

Employee Engagement (SASB TC-SI-330a.2)

In our most recent employee engagement survey, the Company experienced a 91% response rate of those employees surveyed. The engagement survey was developed by a third-party, in consultation with the Company's Human Resources department. All survey responses were submitted to the third-party, who anonymized and presented summary results to the Company so that employees felt comfortable being open and honest with their submissions. The survey focused on the following:

- Overall Satisfaction;
- Workplace Description;
- Leadership;
- Supervisor Relationship;
- Work Environment;
- Co-Worker Relationships;
- Resources and Workspace;
- Training and Development;
- Feedback and Compensation;
- Work/Life Balance;
- Future Orientation;
- Benefits;
- Community Programs; and
- Change.

Employees were able to select answers on a rating scale, or could decline to provide a rating by responding that the question was either not applicable or that they did not have an opinion on the question. Summary results of the engagement survey were shared with senior management and all department heads, as an informative tool to continually enhance the Company's culture and identify areas for improvement.

1 In accordance with the NYSE Listed Company Manual, the Company does not consider a director independent if he or she is, or has been within the last three years, employed as an executive officer of the Company.

Serving Our Communities and Customers

For more than a century, National Fuel has been the hometown energy team, providing safe, reliable and affordable gas service to the communities where we live and work. Our relationships with our customers and local communities are central to our mission and ongoing success as a company.

Serving Our Customers

Quality Customer Service

Our goal is to deliver quality service that our customers expect and deserve. Our Downstream Segment operates its primary utility call centers in the heart of its service territories in Buffalo, New York and Erie, Pennsylvania. Our customer service calls are promptly answered by a National Fuel employee physically located in the Downstream Segment's service territory – not an automated voice or an offshore call center. Distribution Corporation's telephone response rates have ranked among the best for utilities in both New York and Pennsylvania.

As a result of this customer driven approach, we have achieved high levels of utility customer satisfaction and a remarkably low customer complaint rate that is amongst the lowest in the states in which we operate. In fiscal 2019, our Downstream Segment achieved a 92% residential customer satisfaction rate in both New York and Pennsylvania.

Service Affordability

Our Downstream Segment has been successful in keeping utility services affordable for our customers. Our utility customers have seen the direct benefit of regional shale natural gas development in the form of lower energy costs. In 2019, a U.S. Energy Information Administration ("EIA") analysis found that the Company had the lowest residential gas delivery rates in New York and Pennsylvania and ranked #2 and #3, respectively, in the entire northeastern United States. Distribution Corporation, with the support of the New York and Pennsylvania state commissions, has also prioritized the development and administration of programs designed to reduce energy costs for low-income utility customers. See *Energy Affordability* for more information about these programs.

Customer Accounts as of 9/30/19

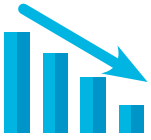
FY 2019 Customer Service Rating

92%

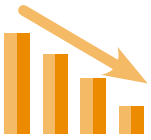
92%

Average Residential Winter Bill

50% Decrease in NY since 2008-09



52% Decrease in PA since 2008-09



2019 Utility Residential Rates (EIA)

LOWEST IN NEW YORK

2ND LOWEST IN NORTHEAST U.S.

LOWEST IN PENNSYLVANIA

3rd LOWEST IN NORTHEAST U.S.

Social Capital – Data Security

National Fuel believes that a strong information security program is critical to the Company's success. National Fuel is committed to strengthening the Company's cyber security posture. To fulfill this commitment, an Information Security Committee regularly meets to discuss emerging threats, and the efforts to remediate or defend against associated risks. The Information Security Committee is comprised of Information Security (InfoSec) professionals, and senior management for the Company.

National Fuel's Information Security Program is aligned to the Cybersecurity Framework published by the National Institute of Standards and Technology. The InfoSec team is dedicated to promoting security awareness and training to personnel, monitoring for anomalous behavior, investigating potential security events, mitigating vulnerabilities, and assisting business partners with the goal of providing secure and resilient systems.

National Fuel periodically reevaluates the cyber security program and roadmap to assess that planned initiatives are appropriate for the ever changing threat landscape, and to ensure defense in depth.

Serving Our Communities

In addition to meeting the energy needs of our customers, the Company also strives to serve our communities in other ways – by supporting worthy causes through our volunteer and charitable giving programs. We strive to fund innovative programs, initiatives, and special events that fall within the pillars of National Fuel's community giving policies, and promise to advance strong, vibrant, and stable communities. These pillars, or focus areas, include veteran services, education, community vitality/economic impact, and the underserved and economically disadvantaged.

Charitable Giving

Each year, National Fuel employees donate hundreds of thousands of dollars to local and national charitable organizations, of their choosing. The National Fuel Foundation matches those donations dollar for dollar, up to $750 per employee, doubling the impact of each employee's contribution. Since 2005, National Fuel, our employees and the National Fuel Foundation have given more than $20 million to over 800 charitable organizations, such as the Make-A-Wish Foundation, the United Way, and Hospice.

Investing in Our Communities

National Fuel also invests in our communities through conservancy efforts. For example, in 2019 the Company sponsored and financially supported the French Creek Watershed Cleanup. This effort involved hundreds of volunteers spread along over 75 miles of watershed in an effort to collect garbage and other waste. French Creek watershed is one of the most valuable and ecologically diverse waterbodies in western Pennsylvania.

Faces of Fuel Volunteer Program

Faces of Fuel provides opportunities for National Fuel employees to participate in philanthropic efforts in their local communities. These events range from fundraising walks and runs to volunteering at local food banks. In 2019, 390 employees, family, and friends participated in 56 events, totaling more than 1,098 hours volunteered. These efforts raised nearly $40,700 for nonprofit organizations in our communities in Western New York and northwestern Pennsylvania.

Downstream

Downstream

Energy Affordability
(SASB IF-GU-240a.1, IF-GU-240a.2, IF-GU-240a.3, IF-GU-240a.4)

Distribution Corporation has a strong record of providing safe and reliable supply and delivery of natural gas at affordable rates. Our utility customers continue to benefit directly from the shale development in the Appalachian region, which has improved the availability and affordability of natural gas supplies. Our Downstream Segment also has a proven history of efficiently managing its system and controlling costs, which has limited the occurrence of delivery cost rate increases. An EIA analysis of data published by the EIA found that in 2018 the Company had the lowest residential gas delivery rates in New York and Pennsylvania, respectively, and ranked #2 and #3 in the entire northeastern United States.

External Factors Impacting Affordability

There are a number of external factors outside of our Downstream Segment's direct control that could impact the affordability of natural gas and/or Distribution Corporation's utility services. The following is a discussion of the nature of these external factors and the potential impact on this segment.

Regional Economic Conditions

Our Downstream Segment's utility service territories are located in Western New York and northwestern Pennsylvania, principally serving the Buffalo, New York and Erie, Pennsylvania metropolitan markets. While these markets have experienced some modest improvement after an extended period of economic decline that started in the 1970's, the Buffalo and Erie markets have historically lagged most of the larger U.S. markets in several key economic factors shown in the following table. Additionally, the impacts of COVID-19 have exacerbated the unemployment rates for both regions, which in May 2020 increased to 14.1% and 13.9% respectively. Distribution Corporation recognizes that some of our customers may be dealing with financial hardship during the pandemic, and as a result, and consistent with recently passed legislation in New York as well as other guidance from state regulators, Distribution Corporation has suspended service terminations (except for emergency purposes), offered customers flexible repayment agreements, waived late fees when requested, and reconnected services that had been previously terminated.

	Buffalo-Niagara, NY		Erie, PA		U.S.
	Region	City	Region	City	
Population[1]	1,130,000	256,322	106,093	98,970	327,000,000
Median Household Income[1]	$56,195	$37,359	$36,724	$35,802	$61,937
Poverty Rate[1]	14.6%	30.9%	26.0%	26.8%	13.1%
Unemployment Rate[2]		4.7%		5.0%	3.5%

1 2018 Figures from the U.S. Census Bureau
2 December 2019 Figures from the Bureau of Labor Statistics

Commodity Prices

Costs to purchase, transport, store, and deliver natural gas supplies to our Downstream Segment's local distribution system are passed along to customers through a commodity supply charge. Volatility in national and regional commodity markets, upstream disruptions in the natural gas supply chain, pipeline constraints, and general imbalances in supply and demand have the potential to increase the cost of natural gas supplies and ultimately the rate charged to customers as natural gas is consumed.

Weather

Our Downstream Segment's New York and Pennsylvania service territories are known for their harsh winters. Nearly all of Distribution Corporation's residential customers use natural gas for space heating. As a result, a colder than normal winter generally increases customer consumption and has the potential to increase a customer's average bill through higher natural gas supply and delivery charges. Additionally, extreme weather has the potential to generate price spikes on natural gas supplies purchased in daily spot markets to meet the increased customer demand. The impact of weather variations on delivery charges billed to its New York customers is mitigated by that jurisdiction's weather normalization clause ("WNC"). The WNC, which covers an eight-month period during the winter heating season, is a billing mechanism that has a stabilizing effect on customers' bills by mitigating the impacts of colder weather.

Additionally, each year Distribution Corporation engages in a comprehensive winter planning process in both New York and Pennsylvania to ensure that our Downstream Segment has adequate pipeline capacity, supplies in storage, and long-term purchase contracts in place to meet the anticipated winter demand, including the coldest winter day. Distribution Corporation's planning process ensures supply reliability while reducing the risk of potential commodity price spikes.

Regulation

Our Downstream Segment's delivery rates are regulated and set by the state utility commissions in New York and Pennsylvania. While the rate setting process is generally designed to produce a rate structure that is just and reasonable for all customers, the commissions could take certain positions or impose the recovery of costs for activities and programs outside of the Distribution Corporation's cost of service that would increase customer rates. There are a number of other circumstances where legislation and government policy at the federal, state and local levels could directly or indirectly impact our rates. These include environmental regulations that restrict natural gas production or the development and operation of transmission pipelines, the implementation of additional taxes on natural gas services, and income tax policy.

The external factors described above, which could significantly increase our rates and potentially place stress on our customers' ability to pay their monthly natural gas bills, may result in higher costs for the Company in the form of uncollectible accounts. To mitigate these risks and ease the burden on our customers, our Downstream Segment has implemented a number of customer service initiatives, such as budget billing and extending deferred payment arrangements, designed to stabilize customer bills and encourage customer payments.

The Downstream Segment has also been attentive to providing assistance for its low-income customers. Some examples include:

- **Low Income Home Energy Assistance Program (LIHEAP)** — Distribution Corporation has been an industry leader in providing outreach and support to our low-income customers to help them secure federal LIHEAP funding to pay their winter heating bills. Since the winter of 2009-2010, our Downstream Segment customers have received more than $470 million in assistance.

- **Low-Income Customer Affordability Programs** — Distribution Corporation also provides robust programs for its low-income customers, offering monthly bill discounts, reduced rates and debt forgiveness opportunities.

- **Neighbor for Neighbor Heat Fund** — A program that offers grants to customers in need that is funded by contributions from National Fuel Gas Company, its customers, employees, and other private entities.

Average Retail Gas Rates

The following table shows the average retail gas rates per thousand cubic feet (Mcf) for (1) residential, (2) commercial and (3) industrial customers, as well as transportation only services for those respective customer groups:

Utility Average Retail Gas Rates per Mcf [1,2]

	CY 2017	CY 2018	CY 2019
Bundled Retail Sales[3]			
Residential	$8.33	$8.34	$8.14
Commercial	$7.62	$7.44	$7.36
Industrial	$6.83	$6.90	$6.41
Total Retail	**$8.23**	**$8.21**	**$8.02**
Transportation Sales			
Residential	$4.01	$3.69	$3.63
Commercial	$2.22	$2.10	$2.04
Industrial	$0.72	$0.72	$0.73
Total Transportation	**$1.77**	**$1.67**	**$1.61**

1 Bundled retail revenues and consumption by customer type for total Distribution Corporation are reported quarterly and on a fiscal year basis in the Company's SEC filings (10-Q/10-K). Revenues and consumption are also reported on a calendar year basis for total Distribution and the New York Division in the annual report to the New York Public Service Commission (NYPSC). This Report's Downstream Segment section utilizes Mcf as the volumetric unit of measure to remain consistent with Distribution Corporation's public disclosures to state utility commissions and SEC filings.
2 Average retail rate for each bundled customer class is calculated on a calendar year basis by dividing the revenues by the consumption attributed to each customer class as reported in the respective utility commission reports.
3 Recent trends in bundled rates are largely driven by fluctuations in gas prices and the related impact on gas supply revenues. Distribution Corporation's New York and Pennsylvania service territories have been operating under the same base rates for the last three, and thirteen calendar years, respectively.

Typical Monthly Gas Bill for Residential Customers

The following table shows the typical monthly gas bill for residential customers for (1) 50 Mcf and (2) 100 Mcf of gas delivered per year.[1]

NY Division

	50 Mcf			100 Mcf		
Bundled Residential	**CY 2017**	**CY 2018**	**CY 2019**	**CY 2017**	**CY 2018**	**CY 2019**
Delivery	$30.22	$30.40	$30.26	$37.09	$37.39	$37.09
Supply	$16.40	$18.98	$17.94	$32.79	$37.96	$35.89
Surcharges/(Refunds)[2]	$1.51	$0.85	$(0.37)	$3.04	$1.69	$(0.75)
Avg. Monthly Bill	**$48.13**	**$50.23**	**$47.83**	**$72.92**	**$77.04**	**$72.23**

PA Division

	50 Mcf			100 Mcf		
Bundled Residential	**CY 2017**	**CY 2018**	**CY 2019**	**CY 2017**	**CY 2018**	**CY 2019**
Delivery	$25.78	$25.56	$24.70	$37.09	$36.63	$34.91
Supply	$18.46	$18.41	$17.60	$36.93	$36.82	$35.21
Surcharges/(Refunds)[3]	$(0.03)	$(0.11)	$0.05	$(0.01)	$(0.17)	$0.14
Avg. Monthly Bill	**$44.21**	**$43.86**	**$42.35**	**$74.01**	**$73.28**	**$70.26**

1 The calculation methodology used here is that which Distribution Corporation uses for reporting to state commissions and disclosure on the Company's corporate website. This methodology also better captures the impact of seasonal rates and delivery patterns, and the recovery and/or refund of regulatory deferrals.
2 Surcharge and refund items include, among other things, the recovery of the system modernization tracker and costs to administer the Conservation Incentive Program ("CIP"), and returning the benefits of tax reform to ratepayers.
3 Surcharge and refund items include the impact of various rate riders for low income customer programs and the state tax adjustment.

Residential Customer Gas Disconnections

As our Downstream Segment meets its obligation to provide safe, reliable natural gas services at affordable rates, Distribution Corporation has the right to charge, collect and receive just compensation for its services. New York and Pennsylvania state laws and regulations allow Distribution Corporation to disconnect service to a customer due to non-payment, subject to certain restrictions and requirements that Distribution Corporation must carefully manage. As such, our Downstream Segment and state commissions have implemented a number of policies and programs designed to comply with state laws and regulations on collections and terminations, improve affordability for vulnerable customers, and ultimately limit the number and reduce the duration of residential customer disconnections resulting from non-payment.

Improving Affordability and Access to Payment Assistance

Low Income Customer Affordability Programs:

- **New York State Low Income Program** (NY SLIP): provides bill discounts designed to ensure that a low income customer's energy burden does not exceed a targeted level;
- **Pennsylvania Low Income Residential Assistance** (LIRA) program: provides customers with bill discounts, arrearage forgiveness, and energy conservation education;
- Distribution Corporation collaborates with local Health and Human Services agencies to connect low income customers with available federal LIHEAP funding and other financial assistances through social services; and
- Sponsor of the National Fuel Neighbor for Neighbor program, which provides energy grants to customers with special needs.

Policies/Programs Aimed at Limiting Number of Disconnections:

- Suspension of disconnections during extreme winter weather events, prolonged periods of extreme cold, and the holidays;
- Suspension of disconnections to low income customers during winter months;
- Suspension of disconnections to known Elderly, Blind or Disabled (EBD) coded accounts during the time between September 1st and April 15th; and
- Recent laws / emergency orders banning, and regulatory guidance regarding, the shutoff of residential utility services during the COVID-19 crisis.

Policies/Programs Aimed at Reducing Duration of Disconnections:

- Providing flexible, deferred payment arrangements coupled with LIHEAP assistance to accelerate turn-ons;
- Restoration of service for medical emergencies and suspected serious impairments; and
- Company Gatekeeper Program that identifies and assists vulnerable customers.

The following table shows the number of residential customer gas disconnections for nonpayment, as well as the percentage of those disconnections that were reconnected within 30 days. Distribution Corporation tracks and reports these disconnections due to non-payment to the NYPSC and Pennsylvania Public Utility Commission ("PaPUC"). Additionally, the COVID-19 pandemic will impact our Downstream Segment's termination and collection efforts in 2020 as Distribution Corporation suspended service terminations consistent with recently passed legislation in New York as well as other guidance from state regulators as a result of the pandemic. Additionally, as discussed above, Distribution Corporation has strong customer service programs in place for customers struggling to pay their bills and facing potential termination, including LIHEAP assistance, low income bill discount programs, and deferred payment arrangement opportunities.

	CY 2017	CY 2018	CY 2019
New York Division			
Disconnections for Non-Payment[1]	17,986	12,003	25,973
Reconnections within 30-days	10,537	7,418	12,826
% Reconnected within 30-days[2]	59%	62%	49%
Pennsylvania Division			
Disconnections for Non-Payment	5,560	4,865	7,533
Reconnections within 30-days	3,066	2,904	3,433
% Reconnected within 30-days	55%	60%	46%

End-Use Efficiency
(SASB IF-GU-420a.1, IF-GU-420a.2)

For nearly five decades, our Downstream Segment has been focused on promoting energy efficiency and conservation. We partner with our regulators, industry groups and local businesses to develop and administer outreach and incentive programs designed to reduce our customers' energy usage through improved appliance efficiency and consumption habits.

In New York, Distribution Corporation's energy efficiency activities have centered around our Conservation Incentive Program ("CIP"). Adopted by the NYPSC in 2007, the CIP was the first of its kind in New York State. The CIP budget is funded by ratepayers through a monthly bill surcharge. Since inception, the Company's CIP has resulted in a cumulative total reduction of approximately 1.2 million metric tons of carbon dioxide emissions.

1 Trends in customer terminations are driven by a number of factors, which can vary from year to year. The reduction in terminations in 2018 was due largely to an internal billing system issue that re-set the collection cycles for a large population of customers. In 2019, normal collections resumed and Distribution Corporation refocused its efforts and procedures around the summer termination and collection cycles.
2 Distribution Corporation does not currently track and report disconnection that are reconnected within 30 days. The Company was able to generate a query from its internal billing system of all reconnections that occurred during the calendar year that generated both the disconnection and reconnection date for each record. The Company then determined the number of records where the reconnection had occurred within 30 days and divided that number by the total disconnections determined above.

The Company's CIP is comprised of the following programs:

- **Residential Rebate Program:** An equipment replacement program that offers rebate incentives to replace aging and inefficient space heating and water heating equipment with high efficiency appliances in single-family residential dwellings.
- **Non-Residential Rebate Program (NRCIP):** An equipment replacement program that offers businesses rebate incentives to replace aging and inefficient space, water and process heating equipment with high efficiency appliances. Through the program, the Company is also able to offer customized incentives that could provide up to $15 per Mcf of natural gas savings.
- **Low Income Usage Reduction Program (LIURP):** A weatherization program that is specifically designed to help low income residential customers lower their energy consumption. The program, which is administered through New York State Energy and Research Development's (NYSERDA) EmPower New York program, offers qualifying customers heating system checks, energy audits, and weatherization measures.
- **Outreach and Education:** Our Downstream Segment has developed an extensive outreach program, which includes marketing across a variety of media and platforms, to educate customers about their energy usage habits, promote energy efficiency and the CIP programs.

Customer Gas Savings from Efficiency Measures

The following table shows the total amount of gas savings delivered to customers from the CIP in our Downstream Segment's New York Division. Apart from a Low Income Usage Reduction Program, a weatherization program available to certain eligible customers with high usage, the Downstream Segment does not presently have an extensive energy efficiency program in its Pennsylvania Division. However, our Downstream Segment does regularly offer energy efficiency tips to its Pennsylvania customers, and in 2018, Pennsylvania enacted legislation giving the PaPUC express authority to approve alternative rate mechanisms for electric, natural gas, and water or wastewater utilities, and Distribution Corporation may explore the possibility of offering an energy efficiency program under such authority in a future Pennsylvania rate case.

NY CIP Gross Savings (Mcf) [1]

	CY 2017	CY 2018	CY 2019
Residential Rebate Program	82,762	116,943	153,112
NRCIP	7,545	65,422	36,760
LIURP	27,504	40,181	28,674

Our Downstream Segment has seen steady growth in its residential rebate programs while non-residential programs appear to fluctuate year to year based on activity. The recent Energy Efficiency proceeding in New York provided utilities with additional rate-payer funding for energy efficiency programs over and above current CIP budgets. Distribution Corporation expects to spend nearly $80 million on energy efficiency programs and initiatives through 2025. In line with the State of New York's CLCPA greenhouse gas ("GHG") reduction requirements, our Downstream Segment continues its focus on, and to direct resources to, efficiency programs and activities.

1 Gas savings are calculated on a gross basis consistent with the New York energy efficiency proceeding (NY 07-M-0458).

Percentage of Gas Utility Revenues from Decoupled Rate Structures

Our Downstream Segment has a revenue decoupling mechanism ("RDM") in place in its New York Division that is designed, in part, to limit any financial benefit that Distribution Corporation could receive by increased customer usage while ensuring that the Company is able to earn its regulatory approved revenue requirement. Distribution Corporation's RDM is based on usage per account targets for residential and certain non-residential customer service classifications. To the extent that our customers' actual usage decreases as a result of energy efficiency measures and programs, the Downstream Segment's revenues would be adjusted under the RDM to match the usage per account target.

Based on the SASB definitions of "decoupled revenues," the Company determined that the New York Division has three sources of revenues that are earned on a volumetric basis, but have adjustment mechanisms that reconcile the actual revenues earned and collected during any given period back to a target that was based on the revenue requirement set in the last rate case. These mechanisms are in place, in part, to limit any financial incentives to increase customer usage. There are no revenues or rate mechanisms in place at this time in Distribution Corporation's Pennsylvania Division that would meet the scope of this standard.

Decoupled Revenues as % of Total Revenues

	CY 2017	CY 2018	CY 2019
Total Utility Revenues ($000s)	$656,445	$720,912	$701,610
Decoupled Utility Revenues ($000s)	$161,499	$165,283	$166,691
Decoupled Revenues as a % of Total	24.6%	22.9%	23.8%

The Company did not include the revenues earned from fixed monthly minimum bill charges. The three revenue sources and their corresponding adjustment mechanisms are as follows:

- **Residential and Non-Residential Block Margin Revenues.** Distribution Corporation's RDM adjusts delivery revenues based on normalized usage per account targets set for residential and certain non-residential customers in the Company's 2016 rate proceeding. Additionally, Distribution Corporation's WNC adjusts delivery revenues to limit the impact of weather that is colder or warmer than normal.

- **Industrial Margin Revenues:** Distribution Corporation's 90/10 Symmetrical Sharing mechanism in its 2016 rate proceeding set a target for industrial revenues of approximately $27 million per year. To the extent that actual revenues are below the target, Distribution Corporation can surcharge ratepayers to recover 90% of the shortfall. To the extent that actual revenues are above the target, Distribution Corporation is required to refund 90% of the overage.

- **Merchant Function Charge Revenues (MFC).** Distribution Corporation's last rate proceeding set a target of approximately $16 million per year to recover the Record and Collection - Procurement of Commodity component of the MFC each year. The MFC rate is charged to ratepayers volumetrically. Distribution Corporation can surcharge/refund the difference between the target and actual collections as a result of lower/higher usage.

The percentage of decoupled revenues relative to total utility revenues has remained roughly between 20-25% of total revenues. The fluctuations in the percentage are primarily due to changes in purchased gas costs, which are market driven and passed on to retail customers at cost. Absent a rate case filing in either of the New York or Pennsylvania jurisdictions, the percentage range of decoupled revenues is unlikely to change significantly over the near-term.

Integrity of Gas Delivery Infrastructure

(SASB IF-GU-540a.1, IF-GU-540a.2, IF-GU-540a.3, IF-GU-540a.4)

At National Fuel our highest priority is the safety of our customers, employees and the communities we serve. Distribution Corporation operates more than 35,960 kilometers of pipelines, including service lines, which serve 743,000 customers in Western New York and northwestern Pennsylvania. Our pipeline system is sizable, and therefore requires our unwavering attention. While we are proud of our safety record, we are also experienced enough to know that we can never become complacent. This is why we have worked hard to establish a culture that embraces continuous improvement in all aspects of safety.

Reportable Pipeline Incidents, Corrective Action Orders and Notices of Probable Violations

Distribution Corporation places a high priority on having a rapid response to emergencies and a thorough investigation once onsite. We believe this is critical to preventing an emergency situation from becoming an incident. As a result of our commitment to emergency response, Distribution Corporation is an industry leader in this area as confirmed by annual industry benchmarking and statewide regulatory performance measure reporting.

When investigating pipeline emergencies and incidents, Distribution Corporation utilizes a comprehensive Root Cause Analysis (RCA) process to determine the cause of the incident and to identify lessons learned to prevent future incidents. The process includes the use of trained facilitators and the oversight of an RCA Standards Team comprised of subject matter experts from across the organization. The following table summarizes the number of U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) Reportable Pipeline Incidents, Corrective Action Orders and Notices of Probable Violation for Distribution Corporation during the period 2017 through 2019.

Distribution Corporation Incident and Compliance Summary

	2017	2018	2019
Reportable Gas Distribution Pipeline Incidents	0	0	2
Corrective Action Order Cases Initiated	0	0	0
Notices of Probable Violation Cases Initiated	0	0	0

During the three (3) year period 2017 through 2019 Distribution Corporation had two (2) natural gas pipeline incidents reported to PHMSA, as defined and reported in accordance with 49 CFR §191. Both incidents were a result of other outside force damage where vehicles struck above ground gas facilities, and were reported as a result of property damage that exceeded the $50,000 PHMSA reporting threshold. Neither was a "PHMSA serious incident" as defined by SASB.

System Modernization — Percentage of Distribution Pipeline that is Cast and/or Wrought Iron or Unprotected Steel[1]

Distribution Corporation began accelerating the replacement of unprotected bare steel, cast iron and wrought iron distribution mains on its system in the mid 1990's with the implementation of a system modernization program ("System Modernization Program"). The Company designed this comprehensive program to identify and prioritize pipeline replacements system-wide based on historic leakage rates and risk. Distribution Corporation's System Modernization Program is robust and designed to ensure the safety and reliability of our system, and, in turn, reduces leakage rates and GHG emissions.

Since 1996, our Downstream Segment has made significant and consistent progress in this effort, having eliminated approximately 5,403 kilometers or 58.6% of its unprotected bare steel, cast iron and wrought iron distribution mains and approximately 131,322 or 69.8% of its bare steel services. Distribution Corporation has emphasized the replacement of cast iron mains over the past 8 years in our New York service area and anticipates replacing our remaining cast iron mains over the next 2 years. The Company does not have any cast iron mains in its Pennsylvania service area.

Over the past five years, Distribution Corporation has invested over $323 million in the safety of our utility pipeline network, including the reduction of its unprotected bare steel, cast iron and wrought iron distribution mains inventory by an average of 234 kilometers (5.2%) annually and bare steel service inventory by an average 3,686 services (5.5%) annually. Distribution Corporation's current inventory of unprotected bare steel, cast iron and wrought iron distribution pipelines is currently 13.7% as shown in the following table.

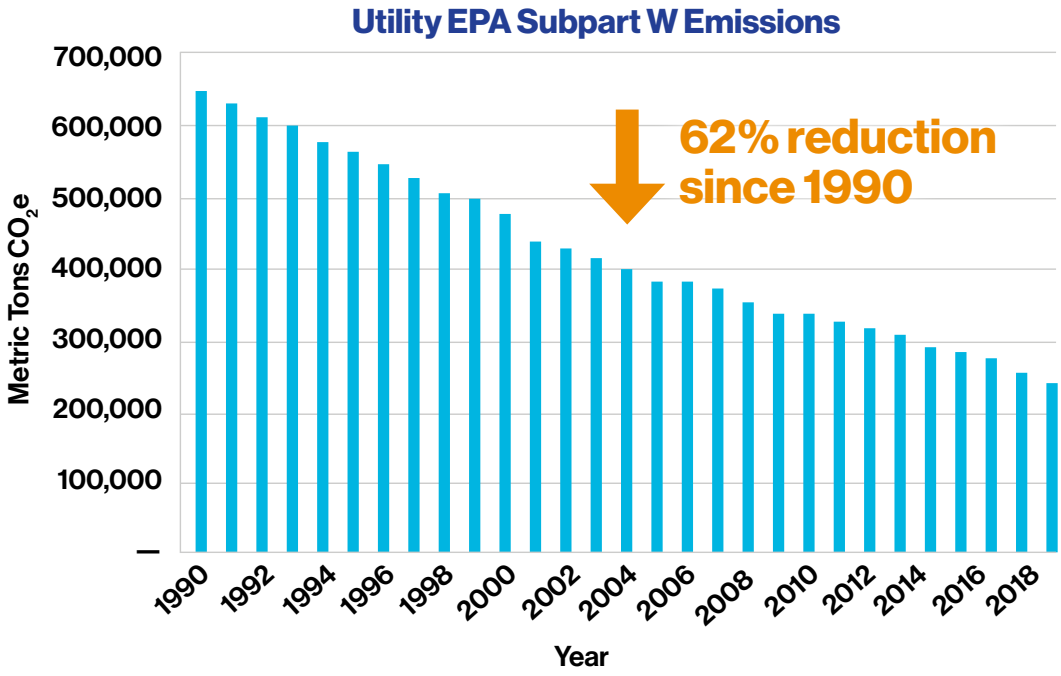
Percentage of Distribution Pipelines that are Cast and/or Wrought Iron or Unprotected Steel

Distribution Pipelines As of December 31, 2019	Unprotected Bare	Cast Iron	Wrought Iron	Total System
Distribution Mains (Kilometers)	**3,252.4**	**54.5**	**518.4**	**23,465.8**
% by Material	13.9%	0.2%	2.2%	100.0%
Services (Number)	56,809	0	0	654,745
Services (Kilometers)	**1,072.8**	**0**	**0**	**12,288.0**
% by Material	8.7%	0.0%	0.0%	100.0%
Total Distribution Pipelines (Kilometers)	**4,325.2**	**54.5**	**518.4**	**35,753.8**
% by Material	12.1%	0.2%	1.4%	100.0%

1 U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, 2019 Gas Distribution Annual Report for National Fuel Gas Distribution Corporation (Operator IDs 13061 and 13062).

The System Modernization Program has resulted in significant annual GHG emission reductions, as well as annual leak reductions.

- **GHG Emission Reductions CO_2e:** Over the past 5 years, Distribution Corporation's System Modernization Program has resulted in an average annual GHG emission reduction of 11,604 MT CO_2e (4.1% average annual reduction), which is equivalent to eliminating 2,469 passenger vehicles each year (based on EPA estimated annual emissions of 4.7 MT CO_2 for a typical passenger vehicle). Since 1990, the baseline year for EPA GHG Inventory (GHGI) reporting, Distribution Corporation's System Modernization Program has reduced annual GHG Emissions by nearly 62%, with a cumulative reduction of nearly 6.7 Million MT CO_2e over the 29 year period from 1990 to 2019, which is equivalent to the annual emissions of nearly 1.34 Million passenger vehicles.
- **Leak Reduction:** Over the past 5 years, our Downstream Segment's System Modernization Program has resulted in a significant reduction in annual reported leaks and year-end leak backlogs. At calendar year-end 2019, Distribution Corporation had 72% fewer outstanding leaks than at calendar year-end 2014. Distribution Corporation also experienced a 36% reduction in reported leaks over this same period.



Transmission Pipelines Inspected

Distribution Corporation operates 7 transmission pipelines totaling 109.5 kilometers in length. Over 90% of this pipeline length is characterized as low stress, which means it is less likely to rupture in the event of a leak. Beginning in 2019, Distribution Corporation initiated a pipeline modernization program for transmission and high pressure distribution pipelines. Under this program Distribution Corporation replaced 4.7 kilometers of protected bare steel transmission pipeline in 2019 and expects to replace 3.2 kilometers in 2020. Both replacement segments are located in higher populated areas.

With respect to 49 CFR §192, Gas Transmission Pipeline Integrity Management compliance, Distribution Corporation's transmission pipelines are operated under the National Fuel Gas Company Transmission Pipeline Integrity Management Program along with the transmission pipelines of National Fuel's Midstream subsidiaries.

See *Operational Safety*, *Emergency Preparedness & Response* for additional information on the Natural Fuel Gas Company Transmission Pipeline Integrity Management Program and Facility Design & Construction Management process which also apply to Distribution Corporation's transmission pipeline modernization and integrity management programs.

Percentage of Downstream Segment Transmission Pipelines Inspected [1]

	2017	2018	2019
Transmission Pipelines (Kilometers)	108.6	108.5	109.5
Pipelines Inspected (Kilometers)	0.4	12.7	0
% of Pipelines Inspected	0.4%	11.7%	0.0%

Managing the Integrity of Our Gas Delivery Infrastructure

National Fuel has been building and operating natural gas pipelines for more than a century and continues to embrace a culture of "safety first." As such, we plan maintenance efforts to meet or exceed safety requirements and invest tens of millions of dollars annually to improve the safe operation of our systems. The following highlights major programs and systems utilized by our Downstream and Midstream Segments to ensure pipeline integrity and the safety of our employees, business partners and the communities we serve.

Customer Safety

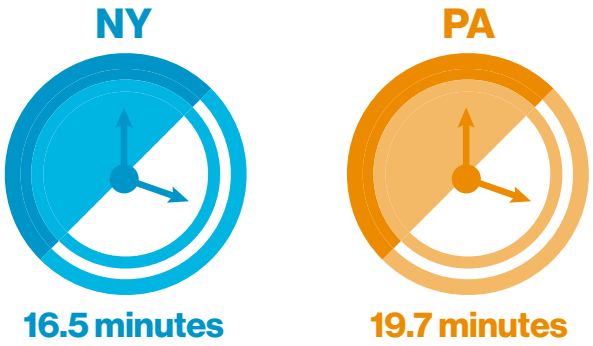
Every day through every season, National Fuel places the highest priority on the safety of our customers and the communities we serve. From our call center representatives to construction and customer service personnel in the field, our employees are dedicated to delivering natural gas to our customers in a safe and efficient manner. National Fuel has a long-standing culture of safety that encourages continuous improvement of our safety performance, with demonstrated success in the following core areas of customer safety:

1 U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, 2019 Gas Transmission and Gathering Annual Report. The Pipeline Inspected Length and Percentage may count the same mileage twice in limited instances where a different inspection method is utilized on the same segment of pipe, in the same year, to inspect for multiple threats.
2 No mileage schedule for assessment in 2019 based on Baseline/Reassessment Plan.

Emergency Response

It is National Fuel's belief that the most hazardous condition is the unknown condition, and that quick emergency response is critical to operating a safe utility system. Distribution Corporation's emergency response time is among the best for gas utilities in both New York and Pennsylvania. In 2019, Distribution Corporation responded to over 95% of emergency calls in under 30 minutes in its New York service territory.

Average Emergency Response Time (2019)



In Pennsylvania, where our Downstream Segment's service territory is more rural than in New York, Distribution Corporation responded to emergency calls in under 45 minutes over 99% of the time.

Distribution Corporation offers a number of training alternatives for emergency response personnel in the communities we serve, including an online First Responder Natural Gas Safety Training Program, a self-directed, interactive, online training package that provides emergency response personnel with the information they need to safely identify and respond to incidents that involve natural gas pipelines and other natural gas facilities. This free training program was designed in partnership with fire chiefs, safety trainers, educational experts and instructional design professionals. Distribution Corporation also offers and promotes free in-person training for first responders and emergency management agencies in our service territory and sponsors and participates in regional meetings covering pipeline safety with local excavators, emergency responders and public officials.

Leak Management

With thousands of kilometers of underground piping that are subject to corrosion, frost conditions and other outside forces, some leaks are inevitable on any gas distribution system. Therefore, an effective leak management program is essential to ensure safety and to reduce greenhouse gas emissions from natural gas leaks. Using accelerated and targeted leak surveys, our leak management program is designed to find and repair leaks before they can become a hazard.

Damage Prevention

While we cannot control the actions of all third-party excavators in our region, National Fuel dedicates significant resources to educate and train contractors, our customers and the general public on the importance of damage prevention and safe excavation practices through our "811 - Call Before You Dig" awareness campaigns. These awareness campaigns have included customer newsletters in multiple languages, radio and print advertisements, social media posts, outdoor billboard ads within operating territories, educational outreach to local municipalities and to third party excavators. Our Downstream Segment averages approximately 150,000 requests for pipeline marking prior to excavation on an annual basis. As a result of our focus on public education and continuous improvement, our Downstream Segment has achieved a 17.2% decrease in excavation damage rates over the last five years. Additionally, operations personnel attend pre-construction meetings with contractors and facility owners to emphasize safe excavation practices while working near natural gas facilities. Company personnel will also perform standby inspection during excavation near critical facilities such as transmission and high pressure pipelines, or where trenchless construction near gas facilities is utilized.

To mitigate the impact of damages on service lines, over the past 5 years Distribution Corporation has installed more than 51,300 Excess Flow Valves (EFV's), which shut-off the flow of gas if a service line is damaged. We currently have over 165,900 EFV's installed on our system.

Nearly all National Fuel operations personnel and every contractor employee are required to attend a class on operator excavation and backfilling in the vicinity of a pipeline. This class covers the basics of the natural gas industry and instructs the employees and contractors on the safe operation of mechanized equipment in the vicinity of a transmission or distribution gas facility for maintenance or installation of a pipeline. One-Call regulations, facility marking colors, proper support of pipelines and backfilling procedures are also covered in this class. With the knowledge received from this class, National Fuel Operations field employees can be considered "Damage Prevention Ambassadors" when interacting with excavators.

17%

decrease in excavation damage rates over the last 5 years

In 2015, National Fuel implemented a "Look Out for the Mark Out" program which encourages National Fuel employees to intervene in any excavation activity near Company facilities without a One-Call request. Employees are incented to participate by a series of tiered monetary awards. National Fuel employees have intervened in excavations ranging from landscaping done with hand tools to large scale building projects with heavy equipment. These efforts have prevented damages to gas facilities ranging from utility service lines to high-pressure transmission lines. Since the inception of the program, employees have discovered at least 500 occurrences in which excavators were working without a valid one-call ticket, which had the potential to result in a damage to our facilities, within our New York service territory, and at least 1,000 instances have been reported company-wide. Education from this program continues to have a direct impact on safe excavation practices as Company personnel interface directly with the excavator at the time of the excavation.

Public Awareness Program

Our Downstream and Midstream Segments' Public Awareness Program was established in 2006, and is designed to enhance public safety by increasing the public's knowledge of pipeline locations and safety issues. By sharing information with the four affected stakeholder audiences - the affected public, emergency responders, excavators, and public officials - National Fuel endeavors to raise the awareness of our pipeline facilities and help the public better understand the role they can play in pipeline safety.

Major objectives of our Public Awareness Program are to educate stakeholders on:

- Use of a one-call notification system prior to excavation and other damage prevention activities;
- Possible hazards associated with unintended releases from a gas pipeline facility;
- Physical indications of a possible release;
- Steps to be taken for public safety in the event of a gas pipeline release, and;
- Procedures to report such an event.

System Safety

Our Downstream and Midstream Segments maintain robust integrity management programs to identify and mitigate risks and ensure safety in the operation of our distribution and transmission pipeline systems and underground gas storage assets. In addition to the integrity management programs discussed below, these segments maintain a high level of pipeline safety and integrity during day to day operations, and regular scheduled inspection and maintenance activities through such programs as:

- Quarterly, Semi-annual and Annual Pipeline Patrols;
- Leakage Surveys, including Business District, Public Buildings and Frost surveys, as well as additional Targeted Risk Based Quarterly and Semi-annual Leak Surveys;
- Aerial Patrols;
- Exposed Piping Inspections;
- Annual Pressure Regulating Station Inspections;
- Continuous SCADA and Remote Monitoring of Operating Pressures;
- Atmospheric Corrosion Inspections;
- Odorant Inspections;
- Bi-monthly and Annual Cathodic Protection Monitoring;
- Annual Emergency Valve Inspections;
- Underwater Inspections of Waterbody Crossings;
- Incident Investigation and Root Cause Analysis; and
- Plastic System Inspection and Remediation Program.

Distribution Integrity Management Program

The purpose of the Distribution Integrity Management Program (DIMP) is to enhance safety by identifying and reducing gas distribution pipeline integrity risks. The DIMP was designed to promote continuous improvement in pipeline safety by identifying and investing in risk control measures beyond previously established regulatory requirements. The DIMP plan addresses the following elements:

- System knowledge including material, construction practices and operational data;
- System threats including corrosion, excavation damage, other outside force damage, natural force damage, pipe, weld or joint failure, equipment failure, incorrect operations;
- Evaluating and ranking risks based on the probability and consequence of failure;
- Identifying and implementing measures to address risks through new safety programs and targeted accelerated actions;
- Measuring performance, monitoring results, and evaluating effectiveness using performance measures and reviewing data trends;
- Periodic evaluation and improvement through annual program reviews; and
- Reporting results through management and regulatory reporting.

Our DIMP plan details 54 programs and accelerated actions that are utilized to enhance system knowledge and identify, manage and mitigate risks.
Future enhancements to DIMP include the implementation of a probabilistic risk model currently under development. Using the latest technology the new model will interface with the National Fuel Geographic Information System (GIS) to better evaluate asset risk across the entire distribution system, including risks associated with low-probability, high-consequence incidents.

Pipeline Safety Management System

On July 10, 2012 the National Transportation Safety Board (NTSB) made a recommendation to the American Petroleum Institute (API) to facilitate the development of a safety management system standard specific to the pipeline industry. A Safety Management System (SMS) provides a systematic approach to managing safety, including the structures, policies and procedures an organization uses to direct and control its activities. The Transportation, Airline, Chemical Process and Nuclear Industries have all improved their safety records by implementing SMS.

Stakeholders from across the pipeline industry including operators, regulators, industry trade associations and safety experts representing the public were involved in developing the API 1173 Recommended Practice (RP) on Pipeline Safety Management Systems (PSMS) which was published in July 2015.

API RP 1173 provides a systematic approach to safety and continuous improvement through 231 requirements organized into the following 10 essential elements:

1. Leadership & Management Commitment;
2. Stakeholder Engagement;
3. Risk Management;
4. Operations Controls;
5. Incident Investigation, Evaluation & Lessons Learned;
6. Safety Assurance;

7. Management Review & Continuous Improvement;
8. Emergency Preparedness & Response;
9. Competence Awareness and Training; and
10. Documentation & Record Keeping.

On May 21, 2019, Senior Management of our Downstream and Midstream segments, along with AGA membership, made a commitment to implement an API RP 1173 compliant PSMS within three years. The first step in implementing a PSMS is to perform a gap analysis to determine alignment of existing programs and procedures with API RP 1173 requirements. The Company completed its gap analysis in 2019 using an experienced 3rd party consultant. The final Gap Analysis Report was issued January 9, 2020.

The Company has since formed an Executive Steering Committee and Managing Committee and has completed a risk assessment of identified gaps used to develop the implementation schedule.

Employee and Contractor Safety

Safety is a guiding principle at National Fuel. It is imperative that every employee and contractor return home safely each day. Integral to our safety commitment is a robust training and qualification program to ensure that our employees and contractors are knowledgeable and competent in performing their work, in accordance with procedures designed to ensure regulatory compliance and reduce the probability of incidents. Distribution Corporation trains and certifies contractor employees performing construction or operations and maintenance work on its pipeline facilities using the same classroom training and qualification/requalification exams as Distribution Corporation employees. The education of our employees extends beyond the classroom through regular emergency drills and tabletop exercises that test our employee's response to simulated emergencies. These exercises periodically include representatives from local emergency management agencies.

Utility and Pipeline & Storage

OSHA Recordable Injury Rates

Past 5 Years
27%

Past 10 Years
36%

Across the Company, we have implemented safety programs and management practices to ensure that a culture of safety is prioritized and embraced throughout the entire organization. These important initiatives include:

- Safety Culture Program for promoting safe work behaviors and inspiring teamwork for safety;
- Comprehensive web based operating procedures designed for ready access by employees and contractors to ensure safety and compliance, including our Operational Compliance Program to ensure gas safety requirements of laws, regulations and orders are incorporated into procedures and that employees are trained to any new procedures, and that compliance is audited in the field with annual "roll-up" certifications;
- Operator qualification, training and certification as well as numerous other employee safety trainings;
- Construction site work rules, safety procedures and guidelines on personal protective equipment;
- Jobsite safety inspections and 3rd party safety audits of large construction sites to ensure safety compliance;
- Multi-level employee and management interactions to identify and review incidents, safety concerns and lessons learned, and to set safety expectations and deliver timely safety messages, to raise safety awareness and build safety culture. This includes Bi-weekly Safety Calls including senior management, supervision and union safety coordinators; quarterly "All Employee" Safety Calls including senior management, supervision and hourly employees; quarterly Labor-Management Safety Coordinator meetings; and published Weekly Safety Tips;
- Corporate Officer Health and Safety Goals tied to executive compensation to promote safety including routine interaction with employees at shift kick-off meetings, safety presentations, safety culture programs, and Company performance with respect to OSHA recordable injuries;
- "Stop work responsibility" given to all employees and contractors in the event they observe an unsafe practice or condition;
- Table top simulations and live drills for emergency response preparedness including participation of local first responders;
- Contractor safety pre-qualifications and reporting on environmental, health and safety (EHS) performance;
- Vehicle safety programs and driver safety training, including the use and review of driver cameras; and
- INGAA Safety Culture Survey; performed every 3-years the survey is utilized to monitor our progress in cultivating a culture of safety across our organization, and to identify areas for improvement.

The workplace safety record at Distribution Corporation, Supply Corporation and Empire has improved significantly over the last 10 years. Since these subsidiaries share a significant portion of their labor and field operations, the Company tracks and reports safety incidents on a consolidated basis. In fiscal year 2019, the combined OSHA recordable injury rate and DART injury rate was 3.57 and 2.3, respectively, representing a 36% decline for OSHA recordable injuries and 33% decline in the DART rate since 2009.

Activity Metrics
(SASB IF-GU-000.A, IF-GU-000.B, IF-GU-000.C)

Number of Customers

New York

	CY 2017	CY 2018	CY 2019
Residential	490,062	494,954	496,318
Commercial	34,561	34,804	34,953
Industrial	429	432	428
Total Customers	**525,052**	**530,190**	**531,699**

Pennsylvania

	CY 2017	CY 2018	CY 2019
Residential	194,944	195,505	195,448
Commercial	15,779	15,871	15,915
Industrial	588	589	594
Total Customers	**211,310**	**211,966**	**211,957**

Total Distribution

	CY 2017	CY 2018	CY 2019
Residential	685,006	690,460	691,766
Commercial	50,339	50,675	50,869
Industrial	1,017	1,021	1,022
Total Customers	**736,362**	**742,156**	**743,656**

Amount of Natural Gas Delivered (MMcf)

New York

	CY 2017	CY 2018	CY 2019
Bundled Retail Sales			
Residential	38,876	44,759	46,498
Commercial	5,301	6,060	6,178
Industrial	222	490	479
Total Retail	**44,399**	**51,310**	**53,155**
Transportation Sales			
Residential	9,619	9,131	7,432
Commercial	18,168	20,572	20,489
Industrial	18,967	19,371	17,936
Total Transportation	**46,754**	**49,074**	**45,857**

Pennsylvania

	CY 2017	CY 2018	CY 2019
Bundled Retail Sales			
Residential	15,602	17,347	17,027
Commercial	2,923	3,377	3,278
Industrial	178	192	236
Total Retail	**18,703**	**20,916**	**20,540**
Transportation Sales			
Residential	2,604	2,912	2,775
Commercial	6,308	6,802	6,805
Industrial	17,235	18,882	18,876
Total Transportation	**26,148**	**28,597**	**28,456**

Total Distribution

	CY 2017	CY 2018	CY 2019
Bundled Retail Sales			
Residential	63,524	62,107	63,524
Commercial	9,455	9,437	9,455
Industrial	715	683	715
Total Retail	**73,695**	**72,226**	**73,695**
Transportation Sales			
Residential	10,206	12,044	10,206
Commercial	27,294	27,375	27,294
Industrial	36,813	38,253	36,813
Total Transportation	**74,314**	**77,671**	**74,314**

Distribution, Service, and Transmission Pipeline Data

The following tables include the distribution pipeline, including service lines, and transmission and regulated gathering pipeline lengths for National Fuel Gas Distribution Corporation, the Utility segment of National Fuel Gas Company.

Utility Distribution Pipeline Length (kilometers) [1]

	Length
Mains	23,466
Services	12,288
Total	35,754

Utility Transmission and Regulated Gathering Pipeline Length (kilometers) [2]

	Length
Transmission	110
Regulated Gathering	100

Total Utility Pipeline Length (kilometers) – by Year[3]

	2017	2018	2019
Distribution Mains	23,425	23,426	23,466
Distribution Services	12,216	12,248	12,288
Transmission Pipelines	109	109	110
Regulated Gathering Pipelines	101	100	100
Total Utility Pipelines	35,851	35,883	35,962

Other Elected Metrics

Ecological Impacts

At National Fuel, we strive to meet the needs of our customers through the consistent and safe transportation of natural gas. As such, a well-maintained and reliable infrastructure of integrated natural gas facilities is key. To accommodate the ongoing operation of such facilities, projects involving their maintenance and replacement are necessary. As the construction of these projects often entails proper coordination with local, state, and federal authorities, notably environmental agencies, it is important that robust and effective environmental management policies and practices are in place. See *Environmental Management Policies and Practices*.

Greenhouse Gas Emissions

For over 100 years, National Fuel and its employees have been committed to operating safely and responsibly as important members of our local, national, and world communities. One of our six guiding principles is "Environmental Stewardship" which reflects our understanding of the vital role that we play in upholding standards of environmental protection. In addition to regulatory mandates to reduce emissions, each of National Fuel's subsidiaries made independent emissions reduction commitments under the EPA's Methane Challenge Program by entering into partner agreements with the EPA in 2018. This voluntary program promotes and tracks ambitious, transparent commitments to reduce methane emissions beyond regulatory requirements.

1 DOT Gas Distribution Annual Report Form PHMSA F 7100.1-1 (2019)
2 DOT Gas Transmission and Gathering Annual Report Form PHMSA F 7100.2-1 (2019
3 DOT Annual Reports (2019).

To that end, National Fuel has agreed to collaborate with the EPA to reduce methane emissions through a BMP Commitment for each subsidiary. These agreements outline National Fuel's commitment to methane mitigation that include measures strategically selected for each of the business units based on the unique aspects of their operations and emissions sources.

Over the past several years, Distribution Corporation has seen significant reductions in greenhouse gas emissions from its facilities, driven by the continued modernization of its main and service lines. With respect to LPP mains, in 2019, Distribution Corporation reduced its inventory of unprotected steel mains by 5.0% and cast/wrought iron mains by 7.6%. Our overall reduction of LPP mains was 5.4%. Our reduction in unprotected steel services was 5.3%.

Additionally, Distribution Corporation joined the EPA's Methane Challenge Program in the fall of 2018. As part of the Methane Challenge Distribution Corporation has committed to:

- Replacing or retiring cast/wrought iron and unprotected steel mains (collectively, "leak-prone pipe" or "LPP") at an average rate of 3% per year for the period 2019 to 2023;
- Replacing or retiring unprotected steel services when the associated main is replaced/retired; and
- Tracking various data/information on excavation damages through 2021. At that point Distribution will determine whether a damage reduction goal is warranted.

Historic Scope 1 Greenhouse Gas Emissions (Metrics Tons CO_2e)[1,2]

	2017	2018	2019
New York	175,982.7	167,885.0	159,221.2
Pennsylvania	96,007.8	90,263.8	88,823.3
Total	271,990.5	258,148.8	248,044.5

Historic Methane (CH_4) Emissions (Metrics Tons)[3]

	2017	2018	2019
New York	7,029.0	6,706.5	6,359.6
Pennsylvania	3,835.5	3,606.1	3,548.6
Total	10,864.5	10,312.6	9,908.12

1 Per reporting to U.S. EPA under Subpart W. Distribution-owned transmission and gathering assets, though subject to Subpart W, do not meet reporting thresholds and are therefore not included
2 Greenhouse gases include only methane (CH_4), carbon dioxide (CO_2), and nitrous oxide (N_2O). There are no sources of other Kyoto gases (HFC's, PFC's, SF_6, and NF_3) in natural gas distribution systems within the current inventory boundary.
3 Per reporting to U.S. EPA under Subpart W.

Midstream

Midstream

Greenhouse Gas Emissions
(SASB EM-MD-110a.1, EM-MD-110a.2)

As a Partner of the Methane Challenge Program, National Fuel is committed to continuously analyzing new and innovative approaches for further methane reductions through technology enhancements and work practice improvements. Accordingly, Supply Corporation submitted a formal proposal to the EPA to initiate a BMP for fugitive emissions at compressor stations for the transmission and storage industry segment in March 2019. Supply Corporation's proposed BMP focuses on addressing specific leak sources in order to maximize methane reductions and is based on existing EPA industry reporting data, which identifies a great potential for leak mitigation and methane reduction – targeting compressor unit isolation and blowdown valve leakage. In July 2020, the EPA finalized this BMP, which the Company plans to adopt.

To further our goals and objectives for this program, National Fuel has identified a Methane Challenge Implementation Manager for each subsidiary, who will be responsible for overseeing the implementation of the BMP agreements, tracking of emissions reductions, and annual reporting of progress. The subsidiaries plan to submit their first annual progress reports to the EPA later in 2020.

In addition to our Methane Challenge commitments, our Midstream Segment employs the following regulatory and voluntary measures to minimize methane emissions:

- Minimizing pipeline blowdowns where practicable;
- Leak Detection and Repair ("LDAR") programs at several facilities;
- Installation of low-bleed, zero-bleed, or air-driven pneumatic devices at new facilities whenever technically and practically feasible;
- Supply Corporation and Empire's use of vent gas recovery ("VGR") systems for planned compressor blowdown events at several facilities whenever technically and practically feasible;
- Application of Best Available Technology ("BAT") for new/modified equipment; and
- Application of Reasonably Available Control Technology ("RACT") at existing major sources assets.

Our Supply Corporation and Empire subsidiaries are also members of INGAA and an active participant in INGAA's Environmental Committee. These subsidiaries co-chair the committee's GHG Task Force, an industry trade group that seeks to develop and share best practices among industry peers. In addition, Supply Corporation and Empire are committed to INGAA's voluntary Methane Emissions Commitments.

Greenhouse Gas Emissions

For this reporting year, our Midstream Segment is providing gross global Scope 1 emissions data that includes direct emissions from stationary and fugitive sources at our operating facilities. Our current GHG emissions monitoring and reporting infrastructure is focused on stationary and fugitive sources at facilities subject to reporting under the U.S. EPA's Greenhouse Gas Reporting Program (GHGRP).

Under the GHGRP, our Midstream Segment's facilities are subject to the Petroleum and Natural Gas Systems source category (i.e., 40 CFR Part 98 Subpart W), which consists of the following impacted industry segments: onshore natural gas transmission compression, underground natural gas storage, onshore natural gas gathering and boosting, and onshore natural gas transmission pipeline. Facilities with actual GHG emissions greater than 25,000 metric tons of carbon dioxide equivalent (CO_2e) (i.e., GHGRP reporting threshold) are subject to monitoring and reporting of GHG emissions.

Notably, the GHGRP's definition of facilities and its emission sources are dependent on the specific industry segment. Currently, the emissions from the reportable facilities (i.e., actual GHG emissions greater than 25,000 metric tons of CO_2e) are estimated to comprise approximately 80% of the total GHG inventory from GHGRP defined stationary sources in our Midstream Segment.

Included in the following table are emissions from sources at Pennsylvania and New York facilities that exceeded the GHGRP reporting threshold. Global Scope 1 emissions data for 2019 is provided in units of metric tons on a carbon dioxide equivalent (CO_2e) basis, as the sum of three of the seven GHG pollutants covered under the Kyoto Protocol (CO_2, CH_4, and N_2O)[1]. Emissions for each pollutant have been calculated in accordance with the methodology prescribed by the U.S. EPA's GHGRP (40 CFR Part 98, as applicable). CO_2e values have been calculated based on those values in accordance with the published 100-year time horizon global warming potential (GWP) values from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5, 2014) as preferred by SASB.[2] In addition to gross global Scope 1 emissions, we are providing the percentage of those emissions from methane. Gross emissions are GHGs emitted to the atmosphere before accounting for GHG reduction activities, offsets, or other adjustments that have reduced or compensated for emissions.

2019 Reported Scope 1 GHG Emissions Information[3][4][5]

Subsidiary	CO_2e (metric tons)	% of Emissions from Methane
Empire	27,864	11
Midstream Company	267,964	25
Supply Corporation	298,270	44
Total	594,098	34

1 HFCs, PFCs, and SF6 emissions have not been evaluated for this report as these are expected to be de minimis. The Midstream Segment expects to quantify emissions of those pollutants in the future as applicable. Nitrogen trifluoride (NF3) is associated with a few specialized industrial processes (e.g., manufacture of solar panels, lasers, semiconductors, etc.) and is not applicable to National Fuel operations.
2 Note that the EPA requires CO_2e to be calculated using IPCC Fourth Assessment Report (AR4) under the GHGRP, which is approximately 3.6% lower on a CO_2e basis.
3 This table does not include Scope 1 GHG Emissions from Empire, Midstream Company, or Supply Corporation facilities that are under the 25,000 CO_2e metric tons reporting threshold for the following impacted industry segments: onshore natural gas transmission compression, underground natural gas storage, onshore natural gas gathering and boosting, and onshore natural gas transmission pipelines.
4 GHGRP's definition of facilities and its emission sources are dependent on the specific industry segment as defined by 40 CFR Part 98 Subpart W.
5 The percentage of emissions from methane as shown above is calculated as methane (metric tons CO_2e) divided by Scope 1 total (metric tons CO_2e).

In 2018, each of the Midstream Segment's subsidiaries has made voluntary emission reduction commitments under the EPA's Methane Challenge Program, which are currently in progress and are expected to reduce methane emissions over the next five years.

In future years, we expect to continue to expand the scope of our Scope 1 emissions reporting to include smaller facilities (< 25,000 metric tons CO_2e) that are not subject to GHGRP, office buildings, vehicles, and mobile equipment, as well as any additional newly constructed or acquired facilities, and will assess any emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF6) as applicable to our facilities and operations (although emissions from these pollutants are expected to be de minimis).

Flared Hydrocarbons, Other Combustion, Process Emissions, Other Vented Emissions, and Fugitive Emissions

The following table shows a breakdown of GHG emissions by major source category for Midstream Segment subsidiaries. The largest contribution to CO_2e emissions overall is from combustion sources, with respect to which our Midstream Segment utilizes opportunities to minimize CO_2 emissions from its compressor stations by improving the fuel efficiency of its compressor engines. Empire is in the process of constructing its first electric-driven compressor station and will continue to evaluate the technical and economic feasibility of similar projects in the future, when practicable. As illustrated in this table, the next largest source categories contributing to overall GHG emissions are vented sources (which would include, among other things, pneumatic devices) and fugitive sources (which would include, among other things, compressor seal/rod packing leaks). For this reason, we strategically selected BMPs under the Methane Challenge program for pneumatic devices and rod packing for methane reduction strategies.

2019 Reported Scope 1 GHG Emissions by Source Category (metric tons CO_2e) [1] [2] [3]

Source Category	Flared Hydrocarbons	Combustion Sources	Process Emissions	Vented Emissions	Fugitive Emissions	Total
Empire	1	24,806	0	1,402	1,656	27,864
Midstream Company	0	200,650	7,588	57,373	2,354	267,964
Supply Corporation	115	167,380	0	29,082	101,693	298,270
Total	116	392,836	7,588	87,856	105,702	594,098

1 This table does not include Scope 1 GHG Emissions from Empire, Midstream Company, or Supply Corporation facilities that are under the 25,000 CO_2e metric tons reporting threshold for the following impacted industry segments: onshore natural gas transmission compression, underground natural gas storage, onshore natural gas gathering and boosting, and onshore natural gas transmission pipelines.
2 GHGRP's definition of facilities and its emission sources are dependent on the specific industry segment as defined by 40 CFR Part 98 Subpart W.
3 Rounded to the nearest whole number.

Air Quality
(SASB EM-MD-120a.1)

Criteria Pollutants (Metric Tons) - NOx, SOx, Volatile Organic Compounds (VOCs), and Particulate Matter (PM10)

As part of our air quality compliance program, we are required to calculate and report emissions from stationary and fugitive emissions sources at operating facilities meeting specified reporting criteria, which varies by state. This includes all Midstream Segment compressor stations and other facilities with stationary sources (e.g., interconnects with engines or dehydration units) in Pennsylvania, as well as federal Clean Air Act Title V major source facilities in New York (i.e., any facility with potential to emit more than 100 tons per year of any regulated pollutant).

Emissions are calculated using the best available data in accordance with agency guidelines and accepted methods, which include:

- Records of source operating hours, fuel consumption, and other key operating parameters (e.g., throughput, temperature and pressure, etc.);
- Site-specific analyses, periodic monitoring, and stack test results;
- Emissions modeling software (e.g., GRI-GLYCalc, TankESP, ProMax, etc.); and
- Published emission factors (e.g., Manufacturer, AP-42, 40 CFR 98 Subpart W).

We are committed to minimizing emissions by operating our facilities in a manner consistent with applicable air quality control standards. All new sources are designed to be controlled to stringent Best Available Technology (BAT) or better emission standards. Existing sources at Title V facilities have incorporated requirements to meet Reasonably Available Control Technology (RACT) standards for NOX and VOC emissions. In addition to regulatory mandates to reduce emissions, each of National Fuel's subsidiaries has made voluntary emission reduction commitments under EPA's Methane Challenge Program, which will ultimately reduce VOC emissions (along with methane) over the next five (5) years. As a Partner under this program, we have committed the personnel and financial resources to implement company-wide BMPs that go beyond regulatory requirements to mitigate emissions from key sources associated with our operations.

Included below are emissions from sources at all Midstream Segment Pennsylvania and New York facilities subject to annual emissions reporting requirements under the respective state emissions inventory programs. In future years, we plan to include emissions from other facilities not subject to annual state reporting.

2019 Reported Air Emissions (metric tons)[1,2]

Subsidiary	NOX	SOX	VOC	PM10
Empire	0.00	0.00	0.03	0.00
Midstream Company	74.49	1.75	41.18	12.57
Supply Corporation	348.32	1.69	267.79	22.23
Total	422.81	3.43	309.00	34.80

1 Includes air emissions from stationary and fugitive emission sources at all facilities subject to annual emissions reporting requirements in Pennsylvania and New York. Note that emissions reported to state agencies are reported in short tons.
2 Emissions are calculated in accordance with state and federal agency-accepted methods using best available data.

Ecological Impacts
(SASB EM-MD-160a.1, EM-MD-160a.2, EM-MD-160a.3, EM-MD-160a.4)

Environmental Management Policies and Practices

At National Fuel, we strive to meet the needs of our customers through the consistent and safe transportation of natural gas. As such, a well-maintained and reliable infrastructure of integrated natural gas facilities is key. To accommodate the ongoing operation of such facilities, projects involving their expansion and maintenance are necessary. As the construction of these projects often entails proper coordination with local, state, and federal authorities, notably environmental agencies, it is important that robust and effective environmental management policies and practices are in place.

Project Planning and Development

For each project proposed, our Midstream Segment takes into account the potential for environmental impacts. In addition to following the provisions of Company-specific guidance relating to resource impact minimization and environmental compliance such as National Fuel's Engineering Design Manual ("EDM") and its Erosion and Sedimentation Control and Agricultural Mitigation Procedure ("ESCAMP"), a great level of effort is undertaken early on to evaluate potential impacts of project activities, the best measures to avoid these impacts, and where unavoidable, how to properly mitigate them. These early efforts are facilitated and bolstered through coordination with applicable environmental permitting agencies and industry experts who specialize in, amongst other things, air emissions, soil and geology, noise impacts, spill prevention and response procedures, water resource identification and delineation, threatened and endangered species and critical habitat survey, waste generation, cultural and historic resource identification, and surveying, routing, and siting practices to avoid or minimize impacts to identified resources. The result of this coordination/consultation effort is the preparation, and ultimate implementation, of project-specific plans that take into account the considerations described above, in addition to any others identified during the project planning process.

Project-Specific Considerations and Stakeholder Engagement

In an effort to minimize impacts to natural or historic resources and ensure project stakeholders are well-informed and their concerns well addressed, we engage routinely in the following practices when developing a project scope and plan for facility construction:

- Early identification of, and coordination with private, local, state, and federal agency authorities/ stakeholders;
- Early coordination, negotiation, and issue-resolution with those landowners who will be affected, and those potentially affected, by proposed project activities;
- Participation in public meetings to discuss potential short term and long term environmental and landowner considerations with the general public, local, state, and federal authorities, as well as any other stakeholders;

- Engagement with applicable environmental experts/agencies to assess potential impacts to stream and wetland resources, cultural and historic resources, threatened and endangered species, and to consider potential storm water, civil engineering, and steep slope stabilization/mitigation concerns; and

- Engagement in project routing and rerouting exercises to assist with resource avoidance, impact minimization, and development of project-specific alternatives analyses, where practicable.

Project Construction and Restoration

Pre-Construction

Once all applicable landowner agreements and environmental approvals have been acquired, the project moves into the pre-construction phase. At this point, a thorough review of all finalized approvals and agreements is conducted at pre-construction conferences, often held with permitting agencies present, to review the project-specific considerations such as permit conditions and provisions, construction techniques, timelines, and restoration expectations. Additionally, this is where construction plan implementation, monitoring, and remediation procedures are discussed in detail with the project's internal project management personnel and with the general contractor and their sub-contractor(s), where applicable. Often, to facilitate transmittal of important information relating to environmental permit/approval and/or other stakeholder requirements, we host a formal pre-construction training, and require all contractor, subcontractor and company personnel who will have involvement with the project to attend and complete the training.

Construction

Once construction commences, in addition to the adherence to all agency-approved permits and plans, our Midstream Segment demands full compliance and implementation of all applicable environmental management policies and practices. These may include, but are not limited to, the previously mentioned internal ESCAMP and EDM documents, which address applicable local, state, and federal regulatory requirements, principles, policies, and best management practices (BMPs) and, also, site-specific erosion and sedimentation control, site restoration, and/or post-construction stormwater management plans, often developed by third-party environmental consulting firms utilizing applicable local, state, and federal codes and guidance.

Inspection

During construction, company and contractor personnel implement thorough inspection procedures for the project site to ensure that all compliance requirements are being met. It is through this inspection, construction management overview, and thorough internal review of these efforts that a project-wide culture of environmental protection, redundancy, and transparency is established. Similarly, as we are subject to frequent agency inspections on our project sites, we view these agency-led and often unannounced inspections as a useful platform to communicate project goals and demonstrate our compliance expectations with the respective agencies themselves.

High Biodiversity and Critical Habitat Protection

As identified through our project coordination process, every reasonable effort is made to avoid areas identified as high value in terms of habitat for protected, threatened, and endangered species, or generally high ecological value for species richness or diversity, such as scrub shrub or forested wetlands. For example, with respect to threatened, endangered, and protected species, we consult directly with agencies such as the U.S. Fish and Wildlife Service, the New York Natural Heritage Program, the PA Fish and Boat Commission, PA Game Commission, and PA Department of Conservation and Natural Resources. These consultations yield critical habitat location information, survey requirements, and recommendations for avoidance and impact minimization for species such as the timber rattlesnake, northern long-eared bat, northern riffleshell clam, blue-spotted salamander, and the log-fern. Where these areas cannot be avoided, enhanced cooperation and planning is undertaken and measures are designed that either meet or exceed the mitigation standards provided by the permitting agency. Proper tracking, monitoring, and completion of these mitigative efforts often spans several years, which our Midstream Segment views as a vital component of the project-closeout process.

Restoration

At National Fuel, one of the most important goals is to retain, strengthen, and enhance positive relationships with all project stakeholders. To help accomplish this goal, we pride ourselves on delivering on the promises made to agency personnel and landowners when it comes to restoring resources and property to a condition as good, or better, than prior to project commencement. Landowner discussion of the restoration of their property with company construction management staff, inspection personnel, and land agents is encouraged and facilitated, as are mechanisms for landowners to report any grievances if such restoration does not meet their expectations. From an agency perspective, many projects require follow-up inspections, monitoring, and reporting on the status of vegetative growth, invasive species mitigation, stream/wetland restoration, and post-construction stormwater control effectiveness, among other items. As a result of agency cooperation and initiatives taken in many cases, the restoration of a project site may enhance existing habitat through the utilization of special wetland seeding and planting practices, additional species habitat creation through proper placement of timber, brush, stone, and streambank stabilization techniques that may exceed past the limits of our right-of-way to ensure proper remediation and reduction of sedimentation to adjacent waterbodies.

Facility Operation

Once the construction or maintenance of a facility is complete and all associated areas have been restored, the facility moves into the operational phase where the initial overall goals of the project can be realized. During this phase, routine maintenance and monitoring practices help ensure that the facilities installed remain incorporated into, and often enhance, the natural environment. For pipeline rights-of-way ("ROW") for example, in addition to habitat creation through plantings or creation of natural structures, invasive species mitigation efforts and timely mowing and ROW maintenance practices ensure that these often remote areas flourish with native plant species, including pollinators, and also provide habitat for migratory bird species, sensitive plant and animal species, and allow for the proper establishment of valuable wetland and stream resources.

Biodiversity Enhancement & Habitat Conservation

In addition to the routine restoration and maintenance procedures our Midstream Segment undertakes to retain and protect habitat within our operating area, there are often additional opportunities to further engage with applicable stakeholders to create, conserve, or enhance natural areas, or otherwise offer additional ecological protection. Recent examples include:

- **Line Q Allegheny River Replacement (2018)** Salvage and relocation of common, and threatened and endangered ("T&E") species of mussels within a 4,152 square meter (44,692 square foot) area in the Allegheny River in accordance with the U.S. Fish and Wildlife Service Biological opinion. Approximately 22,720 common mussel species and 2,715 state and federally listed threatened and endangered mussels were salvaged. Threatened and endangered species of mussels were relocated to a site upstream of the project area and to a previously established site in the Allegheny River. All non-T&E species were transferred to the PA Fish and Boat Commission for relocation to streams within Pennsylvania. Sweet-Scented Indian Plantain, a U.S. Forest Service Regional Forester listed sensitive species was found onsite. Mitigation measures were implemented to transplant approximately 100 plants during construction. The plants were replanted in the original habitat during restoration.

- **Line C46 Pipe Creek Replacement Project (2018):** Supply Corporation engaged in enhanced stream bed and stream bank stabilization efforts to promote preservation of the pipeline crossing, crucial in-stream habitat, and riparian area. The stream enhancement effort was the result of substantial stream bank erosion due to natural forces. Some of the proactive measures taken to mitigate and enhance the area included; in-stream energy dissipation devices, habitat creation, and tree and shrub plantings and enhanced seeding in stream buffer areas.

- **Heath Station Abandonment (2019):** In an effort to naturalize the area once occupied by Heath Compressor Station, Supply Corporation engaged in the removal of all above ground facilities and buildings, and then planted the entire area with low growing grasses and pollinators (native wild flowers) in efforts to enhance visual impacts and insect habitat found on-site.

- **FM120 Replacement Project (2019):** Supply Corporation was able to reduce environmental impacts for this project by obtaining a special permit from the U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) to allow the use of composite pipe for a "down-sized" replacement of a 5.8 mile transmission pipeline in Elk and McKean Counties, Pennsylvania. By using 6" composite pipe

instead of steel, we were able to insert the composite pipe into the larger diameter pipe being abandoned. This minimized the number of trees cut within the Elk State Forest and reduced our total disturbed area from 35 acres down to 14 acres (60% reduction) and our disturbed wetlands from 2.7 acres to 0.7 acres (74% reduction).

Another agreement with environmental agencies and public stakeholders relating to land our Midstream Segment owns or operates includes an agreement with the Pennsylvania Fish & Boat Commission (PAF&BC) for access and use of land at the former Heath Compressor Station for a fish hatchery.

Land Owned, Leased, or Operated Located within Sites with Protected Conservation Status or Endangered Species Habitat (acres)

Our Midstream Segment strives to minimize impacts to protected conservation areas and endangered species habitat. Although land may be located in these areas, through continual agency consultation, a thorough analysis of appropriate avoidance, minimization, and mitigation measures, and implementation of modified construction techniques to decrease species habitat impacts, project activities typically present very low risk to biodiversity. The *Environmental Management Policies and Practices* portion of this section further discusses the processes our Midstream Segment uses to build, operate, and maintain the system while taking into consideration the effects on the environment and sensitive areas.

The following table shows the percentage of land operated near or within areas of protected conservation status or critical endangered species habitat ("Designated Areas"). Although approximately 48.6% of land that our Midstream Segment owns, leases, and operates is near (within 5 kilometers of) a Designated Area, only approximately 1.6% is within Designated Areas. This reduced percentage is due to our efforts related to project siting, scoping, and resource avoidance measures

Subsidiary	Total Operating Footprint (Acres)[1]	Operating Footprint (Acres) Near Designated Areas [2 3]	% of Total	Operating Footprint (Acres) Within Designated Areas [4]	% of Total
Supply Corporation	12,871	6,381	49.6%	223	1.7%
Empire	1,636	890	54.4%	16	1.0%
Midstream Company	793	162	20.4%	0	0.0%
Total	15,300	7,433	48.6%	239	1.6%

1 Operating Footprint includes acreage that is owned, leased and operated, and excludes land that is owned but not operated. Total acres includes a calculation of all Pipeline ROW mileage with an average 50 foot buffer on the pipeline's centerline, as well as a 50 foot buffer of all wells and all stations points. Large station acreage is calculated from the actual footprint of the station operation and is defined as area inside the station fencing. Leased storage acreage with no facilities is not included in this analysis.
2 Acreage within 5 kilometers of the boundary of lands designated as a protected conservation area or as endangered species habitat.
3 World Database on Protected Areas (WDPA) and Ramsar Wetlands of International Importance data was used to determine areas of protected conversation status. The United States Fish and Wildlife Service Environmental Conservation Online System (USFWS ECOS) was used to analyze land considered to be active proposed and final critical habitat for endangered species. This database was used in lieu of the IUCN Red List of Threatened Species defined in the SASB standard due to USFWS's involvement and review of our Midstream Segment's projects. These datasets were accessed in June 2020
4 Acreage within the boundary of lands designated as a protected conservation area or as endangered species habitat.

Acreage Disturbed and Restored

The terrestrial acreage restored by our Midstream Segment as a percentage of impacted area is provided in the following table. The acreage of disturbed land was calculated by totaling the acreage associated with projects requiring a state earth disturbance permit in the calendar year 2019. If restoration is initiated after October 15, areas are winterized or temporarily restored and stabilized until the seasonal conditions allow for permanent restoration, generally after April 1. National Fuel's ESCAMP is a guide used during construction and restoration, unless specific requirements are given by regulatory agencies or landowners. For more discussion on the restoration practices that our Midstream Segment follows, see Environmental Management Policies and Practices portion of this Section.

Subsidiary	Acres not Permanently Restored from prior years	Acres Disturbed in current year[1]	Total Acres Impacted	Acres Permanently Restored in current year	% of Impacted Area Temporarily Restored in current year	% of Impacted Area Permanently Restored in current year
Supply Corporation	164.1	178.8	342.9	272.0	20.7%	79.3%
Empire	-	43.2	43.2	22.0	49.1%	50.9%
Midstream Company	10.8	60.0	70.8	10.8	84.7%	15.3%
Total	174.9	282.0	456.8	304.7	33.3%	66.7%

Number and Volume of Hydrocarbon Spills (Bbls)

Our Midstream Segment did not have any hydrocarbon spills greater than 1 bbl (42 U.S. gallons or 159 liters) during the 2019 reporting year.

Our Midstream Segment works diligently to prevent the occurrence of hydrocarbon spills on projects and at worksites. We have site specific plans in place to prevent spills from occurring and steps to follow in the event of a hydrocarbon release. In an event of a leak or spill, personnel are quickly notified, the spill is contained or properly remediated, and appropriate agencies are notified as required by plans, procedures, and/or regulations. Spills are remediated according to federal, state, and local regulatory requirements.

1 Operating Footprint includes acreage that is owned, leased and operated, and excludes land that is owned but not operated. Total acres includes a calculation of all Pipeline ROW mileage with an average 50 foot buffer on the pipeline's centerline, as well as a 50 foot buffer of all wells and all stations points. Large station acreage is calculated from the actual footprint of the station operation and is defined as area inside the station fencing. Leased storage acreage with no facilities is not included in this analysis.

Competitive Behavior
(SASB EM-MD-520a.1)

Our Midstream Segment had no penalties in fiscal year 2019 related to unfair pricing, discriminatory service, or market manipulation from the Federal Energy Regulatory Commission (FERC), the Fair Trade Commission (FTC) or the Commodity Futures Trading Commission (CFTC). The Company has a robust compliance program and trains employees annually to address applicable regulations related to these issues.

Operational Safety, Emergency Preparedness & Response
(SASB EM-MD-540a.1, EM-MD-540a.2, EM-MD-540a.3, EM-MD-540a.4)

The Company's highest priority is the safety of our customers, employees and the communities we serve. Our Midstream Segment's pipeline system is sizable, and therefore requires our unwavering attention, which is why we have worked hard to establish a culture that embraces continuous improvement in all aspects of safety.

Reportable Pipeline Incidents

Our Midstream Segment places a high priority on having a rapid response to emergencies and a thorough investigation of incidents once onsite. When investigating pipeline emergencies and incidents, our Midstream Segment utilizes a comprehensive RCA process, which is further described in *Integrity of Gas Delivery Infrastructure*. The following table summarizes the number of U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) Reportable Pipeline Incidents, Corrective Action Orders and Notices of Probable Violation for our Midstream Segment initiated during the period 2017 through 2019.

Midstream Segment Incident and Compliance Summary

	2017	2018	2019
Reportable Onshore Gas Transmission Pipeline Incidents	0	2	0
% Significant[1] Onshore Gas Transmission Pipeline Incidents	0%	0%	0%
Corrective Action Order Cases Initiated	0	0	0
Notices of Probable Violation Cases Initiated	0	0	0

During the three (3) year period 2017 through 2019, our Midstream Segment had two (2) natural gas pipeline incidents reported to the U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA), as defined and reported in accordance with 49 CFR §191.

1 Significant is defined as an accident or incident that resulted in (1) fatality or injury requiring in-patient hospitalization, (2) $50,000 or more in total costs, measured in 1984 U.S. dollars, (3) highly volatile liquid releases of 5 bbls or more or other liquid releases of 50 barrels or more, or (4) liquid releases resulting in an unintentional fire or explosion.

Midstream Segment Transmission Pipelines Inspection (%)[1]

With respect to 49 CFR §192, Gas Transmission Pipeline Integrity Management compliance, our Midstream Segment's transmission pipelines are operated under the National Fuel Gas Company Transmission Pipeline Integrity Management Program.

	2017	2018	2019
Transmission Pipelines (Kilometers)	3,111	3,110	3,094
Pipelines Inspected (Kilometers)	286	472	285
% of Pipelines Inspected	**9.2%**	**15.2%**	**9.2%**

Safety Management Systems

Every pipeline and natural gas-related facility is built to meet or exceed a comprehensive set of construction standards and regulatory requirements. Federal and state pipeline safety codes require that pipeline operators comply with extensive requirements for material quality, design, construction, testing, inspection, and operations and maintenance for all facilities. Our Midstream Segment strives to meet or exceed the requirements of all state and federal laws and regulations applicable to the construction and operation of natural gas infrastructure. In carrying out our responsibilities we value community perspective, and have extensive and transparent outreach to stakeholders involved in or affected by pipeline construction activities.

In addition to the Safety Management Systems and Programs explained below, see *Integrity of Gas Delivery Infrastructure* for additional information about our safety management systems and programs, including the Pipeline Safety Management System and extensive safety training and public outreach programs that also apply to the Midstream segment.

Remote Control Valve Installation

According to the U.S. Department of Transportation ("DOT") Pipeline and Hazardous Materials Safety Administration ("PHMSA"), pipelines are the safest, most environmentally-friendly, and most efficient and reliable mode of transportation for gas and hazardous liquids. Although rare, pipeline accidents, including ruptures, can and do occur, in which case our Midstream Segment has implemented an ongoing program to mitigate the potential effects by installing remote control valves ("RCVs") to protect higher populated areas. RCV's allow for a rapid shutdown of pipeline facilities when an incident has been confirmed. Our Midstream Segment currently has 116 RCV's across our systems designed to stop the flow of gas in the event of an emergency.

System Modernization

Corrosion, together with manufacturing and construction related defects, often associated with early vintage pipelines, are leading causes of significant incidents on onshore transmission pipelines. To reduce the risk associated with these early vintage pipelines, the Midstream Segment has committed to the ongoing modernization of older bare steel pipelines, especially those pipelines operating at higher pressures in populated areas. From 2014 to 2019, the Midstream Segment has invested over $366 million on modernization efforts, including 227 kilometers of aging transmission pipelines and modernization of compressor and other station facilities to employ best available technologies. An additional 150 kilometers of pipelines are scheduled for modernization over the next 3 years.

1 U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration, 2019 Gas Transmission and Gathering Annual Report for the Midstream subsidiaries. The Pipeline Inspected Length and Percentage may count the same mileage twice in limited instances where a different inspection method is utilized on the same segment of pipe, in the same year, to inspect for multiple threats.

Leak Patrol and Surveillance

Our Midstream Segment devotes considerable resources to leak patrol and surveillance of its high-pressure pipelines. Regular foot and aerial patrols are conducted to look for indications of leakage, and to identify any population growth or third party encroachment activity along our pipeline corridors. Additional patrolling is conducted after severe weather events to evaluate right-of-way conditions for erosion or land subsidence that could impact pipeline integrity or environmental resources.

Facility Design & Construction Management

To ensure safety and quality during construction and post construction facility operations National Fuel maintains a robust construction management program and processes. Our program is designed to ensure that the facilities we build will provide a lifetime of safe and reliable service, and includes the following.

- Construction Inspection Training program for all inspectors;
- Design and Construction Specifications and Procedures;
- Insuring quality materials through purchasing from an approved manufacturers list, placing inspectors at manufacturing plant facilities and conducting factory acceptance tests of critical highly engineered manufactured equipment;
- All Steel Transmission Facility Inspectors Certified to API 1169;
- Certified Welding Inspection ("CWI") training for select individuals;
- Design and testing protocols for remote control valve installations;
- Construction Quality Management System including internal construction audits and lessons learned;
- Periodic audits of radiography and other non-destructive examination procedures and results by 3rd parties;
- Geohazard analysis and mitigation measures implemented during design and construction phases for new transmission facilities in landslide prone areas. Consultants with civil engineering and geotechnical expertise are under contract to provide these services for initial design as well as for post construction short notice "on-call" mitigation;
- Preconstruction planning checklist to ensure personnel qualifications and adherence to project specific commissioning and abandonment plan; and
- Comprehensive commissioning and start-up procedures.

Transmission Integrity Management Program

The integrity of Midstream and Downstream transmission pipelines is maintained under a comprehensive Transmission Pipeline Integrity Management Program and Plan ("TIMP") that was developed in accordance with the requirements of the U.S. Department of Transportation ("DOT") Pipeline and Hazardous Materials Safety Administration ("PHMSA") Integrity Management Rule, in 49 CFR Part 192 Subpart O – Pipeline Integrity Management.

The Integrity Management Rule specifies how our transmission pipeline operators must identify, prioritize, assess, evaluate, repair and validate the integrity of gas transmission pipelines that could, in the event of a leak or failure, affect High Consequence Areas (HCAs), which include certain populated and occupied areas.

The National Fuel TIMP Plan includes the following major elements which ensure a consistent and thorough approach to identifying and managing threats to the transmission pipeline system (i.e. corrosion, excavation damage, other outside force damage, natural force damage, pipe, weld or joint failure, equipment failure, or incorrect operation):

- Roles and Responsibilities;
- High Consequence Area Identification;
- Threat Identification;
- Risk Analysis and Prioritization;
- Assessment Method Selection;
- Baseline Assessment Plan;
- Conducting Assessments;
- Remediation;
- Preventive and Mitigative Measures;
- Continual Evaluation and Reassessment;
- Management of Change;
- Performance Measurement; and
- Quality Assurance.

Under its TIMP Plan, our Downstream and Midstream Segments perform regular integrity assessments on over 1,340 kilometers of pipelines which include 339 kilometers of HCAs and cover 90% of the population living, working or congregating within the potential impact radius of our transmission pipelines. These assessments are generally conducted every 7-years or less using one of the following methods, based on the threats to the pipeline:

- **In-line Inspection ("ILI"):** uses electronic inspection tools called "smart pigs" which are propelled through the line using gas pressure or sometimes air pressure. The sensors on the smart pig are able to detect dents, internal and external corrosion, and certain manufacturing defects.
- **Pressure Test:** generally uses pressurized water for safety (i.e. hydrotest). During a hydrotest the pipeline is taken out of service, cleaned and filled with water which is then pressurized generally to 1.5 times the maximum allowable operating pressure of the pipeline for a period of at least 8 hours.
- **Direct Assessment:** uses specialized tools to identify potential areas of corrosion which are then excavated, examined and repaired as required.

Based on assessment results any discovered anomalies that impact the integrity of the pipeline are repaired or replaced. When the assessment is complete the results are analyzed to determine if any identified threats may be present in other areas of the pipeline within or outside of the HCAs and if so additional preventive and mitigative measures such as additional cathodic protection, installation of line markers, increased patrolling or more frequent assessments may be implemented to ensure the integrity of the pipeline.

Underground Storage Integrity

Our Midstream Segment developed the first underground natural gas storage facility in the U.S. in 1916. Now with 30 storage fields and over 100 years of experience, our Midstream Segment has a proven track record for safely operating our storage assets. Storage well integrity has always been an important aspect of our maintenance program for storage fields. With the enactment of the Pipeline and Hazardous Materials Safety Administration ("PHMSA") Safety of Underground Natural Gas Storage Facilities Interim Final Rule, our Midstream Segment built on its long standing storage integrity program and created its Storage Integrity Management Program ("STIMP"), which complies with API Recommended Practice 1171 as required by 49 CFR §192.12 – Underground Natural Gas Storage Facilities. The STIMP plan includes the following important elements:

- Annual wellhead and wellsite inspections to identify existing or potential hazards and encroachments in the vicinity of surface facilities;
- Annual functional testing of master gate and pipeline isolation valves to verify isolation capability;
- Storage inventory verification performed on several storage fields each year using a third-party consultant;
- Casing integrity inspections using wireline tools;
- Identification and evaluation of corrosion impacts of wellbore or pipeline fluids or solids;
- Annual plugged and abandoned well inspections within the storage boundary and buffer;
- Weekly indicator well inspections to monitor reservoir pressures;
- Monthly storage well site inspections of surface facilities to evaluate integrity and monitor well head pressures; and
- Periodic storage integrity meetings with a multifunctional group representing Gas Storage, Operations, Design and Integrity Engineering, Corrosion, and Gas Control to review system operations, risk assessment results and scheduled remediation or other storage field work to ensure the work is coordinated between the various groups.

A large part of the STIMP involves inspecting the integrity of the metal casings that contains the storage pressure within the wellbore. This is accomplished by running a high resolution logging tool down the wellbore to provide important information about the well. The tool can detect metal loss and the geometry of the anomaly, which are used to calculate the remaining strength of the casing and to help determine if any remedial work will be required.

Our Midstream Segment has been running electronic logging tools to inspect storage well casing integrity since the early 1970's. This casing inspection logging program targets running 75 casing integrity logs each fiscal year. Through 2019, nearly 83% of our storage wells have had casing inspection logs, with 100% of wells scheduled to be completed by 2023.

Underground Storage Facility Attributes and Casing Inspections (2017 - 2019)

Fields Operated	Capacity (Top gas)	Wells Operated	Casing Inspections		
			2017	2018	2019
30	82 Bcf	1,175	90	93	87

Other Elected Metrics

No Instances of Non-Compliance that Resulted in Enforcement or Monetary Penalties

For calendar year 2019, our Midstream Segment was not subject to any violations of permits, standards, and/or regulations relating to waste, air quality/emissions, water discharges, water withdrawal exceedances, effluent limit exceedances, wastewater pretreatment requirements, oil or hazardous substance spills, land use, or endangered species which reached the level of enforcement action or monetary penalties.

Activity Metrics – Volume of Natural Gas Transported

For this reporting year, National Fuel is providing the total million standard cubic feet (MMcf) of natural gas transported by Supply Corporation, Empire, and Midstream Company owned and operated pipelines in the below table.

2019 MMcf of Natural Gas Transported

Company	Natural Gas Throughput (MMcf)	Pipelines (Kilometers)[1]	Compression Horsepower
Supply Corporation	491,378	2,624	154,012
Empire	166,765	433	20,620
Midstream Company	244,858	81	98,726

This information was calculated utilizing throughput information.[2]

1 DOT Gas Annual Report Form PHMSA F 7100.2-1 (2019) – Total length of regulated pipelines.
2 For both Supply Corporation and Empire, in lieu of the Company's Form 10-K/10-Q throughput figures, which are focused on billed determinants, this report utilized publically reported EIA Form 176 data for throughput, specifically line item 7.0, "Total supply within report state," which is focused on volumes that flow through a natural gas meter. EIA Form 176 is reported at the state level. As transportation paths along the Supply Corporation pipeline system traverse multiple states, in order to prevent double-counting. Supply Corporation throughput was calculated by adding PA Supply Corporation and New York Supply Corporation line item 7.0, and then reducing those totaled gas volumes by the quantity that crossed state lines.

Upstream

Upstream

Greenhouse Gas Emissions (SASB EM-EP-110a.1, EM-EP-110a.2, EM-EP-110a.3)

Our Upstream Segment is committed to reducing methane emissions and limiting its environmental footprint. As part of these efforts, over the past several years, Seneca has committed to the following voluntary emission reduction programs: EPA Natural Gas STAR (2015), EPA Methane Challenge (2018), and The Environmental Partnership (2018). Since joining EPA voluntary methane reduction programs, Seneca has documented methane reduction strategies totaling nearly 1,900,000 Mcf (approximately 104,000 metric tons of CO_2e).

In connection with its participation in the Natural Gas STAR and Methane Challenge programs, Seneca makes publicly available program data on its emission reduction activities through the EPA's website.

Seneca's emissions reduction activities under the Natural Gas STAR Program include the following:

- installing flash tank separators on glycol dehydrators;
- eliminating unnecessary equipment and/or systems;
- improving system design;
- identification and replacement of pneumatic devices with zero-bleed devices;
- replacement of orifice meters with ultra-sonic meters;
- replacements of natural gas pneumatic pumps with electric pumps;
- directed inspection and maintenance, such as LDAR surveys;

- testing and repair of pressure safety valves;
- implementation of artificial lift; and
- utilization of EPA-approved reporting on well pad equipment design to bulk/test versus single well separators.

With respect to Seneca's participation in the EPA Methane Challenge Program, it has committed to various EPA-approved best management practices, including pneumatic controllers; fixed roof, atmospheric hydrocarbon tanks; and rod packing vents for reciprocating compressors.

In addition, Seneca has control measures in place for a myriad of combustion and non-combustion equipment to abate and/or to mitigate methane emissions. These control measures include:

- state-of-the-art catalytic converters for engines;
- ultra-low-emissions burners for heater treaters and steam generators;
- high-efficiency flares;
- installation of vent gas recovery systems;
- installation of compressed air systems;
- utilization of no/low bleed pneumatics controls/ actuators;
- use of capture and recovery systems for glycol dehydrators and tanks; and
- use of bi-fuel drilling rigs, frac and fleet vehicles.

Additionally, Seneca's West Division, located in California, participates in California's cap and trade program. This program, launched in 2013, is one of a suite of major policies the state is using to lower its greenhouse gas emissions. California expects its emissions trading system to reduce greenhouse gas emissions from regulated entities by more than 16 percent between 2013 and 2020, and by an additional 40 percent by 2030.

Greenhouse Gas and Methane Emissions[1]

Seneca's upstream business operates in two uniquely different basins, namely the Appalachia and San Joaquin (California) basins. In the Appalachia basin, production is from unconventional dry gas wells. In California, Seneca uses steam assist recovery to produce crude oil. The production processes vary with respect to each of these energy sources, which effect their characteristic GHG and methane volumes and intensities, as shown below.

The main contributor to GHG emissions in our California operations results from the combustion of natural gas for steam generators which are used to heat the heavy oils, allowing recovery. In 2019, this contributed over 90 percent of the overall CO_2e reported in our California operations, and accounts for the large difference in GHG intensity factors between our California and Appalachia production operations.

1 Per Seneca's calendar year reporting to U.S. EPA under federal Greenhouse Gas Reporting Rules utilizing AR4 GWP. Seneca reports at a basin level which is inclusive of all onshore oil and gas production sources. In addition, Natural Gas processing emissions are included as reported through the California Air Resources Board Mandatory Reporting Rule. Excluded from the above totals are those sources currently categorized as de minimus, such as company office buildings, company fleets, and subsidiary Highland Field Services. As HFS continues to grow its operations, emissions are expected to be incorporated in future year reporting.

Overall, methane intensity is higher in our Appalachia production operations, which can be attributed to the use of field gas for the operation of pneumatic controller devices. In 2019, this contributed over 90 percent of the total methane emissions (as converted to metric tons of CO_2e) reported in Appalachia. However, through Seneca's recent adoption of the use of bulk and test separation on multi-well pads, we have been lowering the use of these devices on a per well basis.

Additionally, the mitigation technologies mentioned earlier in this section are aimed at reducing Seneca's overall CO_2, CH_4, and NO_2 emissions. As a barometer of the success of these mitigation technologies, Seneca compares its intensity numbers, particularly as they pertain to methane, vs other peers operating in the respective basins. As it relates to our Appalachian production, Seneca regularly compares its methane intensity, as calculated under the Pennsylvania DEP's standard reporting standards, which has been more recently updated than the EPA-reporting standards. In this regard, Seneca ranks 3rd best out of 17 peer companies in the 2019 reporting year.

2019 Reported Scope 1 Greenhouse Gas Emissions

	Appalachia	California	Total
Metric Tons CO_2e[1]	189,966	321,580	511,546
Gross Production (Bcfe)	257.0	18.3	275.3
Gross Production (Mboe)[2]	42,824.5	3,056.2	45,880.7
GHG Intensity (CO_2e/Bcfe)	739.3	17,537.0	1,858.3
GHG Intensity (CO_2e/Mboe)	4.4	105.2	11.2

2019 Reported Methane (CH4) Emissions

	Appalachia	California	Total
Metric Tons CO_2e	112,786	3,743	116,528
CH_4 Intensity (CO_2e/Bcfe)	439.0	204.1	423.3
CH_4 Intensity (CO_2e/Mboe)	2.6	1.2	2.5

2019 Flared Hydrocarbons, Other Combustion, Process Emissions, Other Vented Emissions, and Fugitive Emissions (Metric Tons CO_2e)[1]

Flared Hydrocarbons	16,149
Other Combustion (Combustion Equipment, Compressors)	380,379
Process Emissions (Dehydration)	4,586
Other Vented Emissions	107,294
Fugitive Emissions	3,137
TOTAL	511,546

1 Emissions associated with the supply of natural gas and natural gas liquids (NGLs) that would result from the complete combustion or oxidation of the products that are placed in commerce via the Natural Gas Processing segment are not included in Scope 1 emission totals.
2 Gross production utilizes a conversion factor of 6 MCF to 1 BOE.

Air Quality
(SASB EM-EP-120a.1)

Criteria Pollutants (Metric Tons) – NOx, SOx, Volatile Organic Compounds (VOCs), and Particulate Matter (PM10)[1,2]

Our Upstream Segment, where practical, looks for mechanisms to reduce criteria emissions. In 2019, Seneca saw a decrease in criteria pollutants, which was attributable to its transition from diesel engines to bi-fuel or natural gas engines, where feasible. This included a transition of its completion operations to a dual fuel fleet in Appalachia, as well as the transition of temporary diesel generator use to natural gas generators. In addition, for stationary engines, Seneca maintains emission source test and screening programs to ensure engines are meeting permit and regulatory thresholds for emissions.

2019 Criteria Pollutant Emissions (Metric Tons)

NOX	310.2
PM-10	18.0
SOX	1.6
VOCs	37.1

Water Management
(SASB EM-EP-140a.1, EM-EP-140a.2, EM-EP-140a.3, EM-EP-140a.4)

For a detailed discussion of Seneca's best-in class water management practices, see *Biodiversity Impacts* of this Report.

In connection with Seneca's operations, we attempt to minimize our use of freshwater. In Appalachia, all of our freshwater is sourced from locations without high water risk due to the abundance of groundwater. In California, our freshwater usage is essential for the processes that allow us to recycle approximately 60% of our produced water volumes, allowing us to mitigate our overall withdrawals. Due to the high demand for agriculture water, withdrawals have exceeded recharges in the San Joaquin Valley, therefore, all freshwater withdrawn in 2019 was sourced from areas that are considered high water risk.

2019 Freshwater Withdrawn and Freshwater Consumed (Thousands of Cubic Meters)[3,4]

	Appalachia	California	Total
Total Freshwater Withdrawn	811	114	925
% of Water Withdrawn from Locations with High or Extremely High Water Risk	0%	100%	12%
Total Freshwater Consumed	793	114	907
% of Water Consumed from Locations with High or Extremely High Water Risk	0%	100%	13%

1 With respect to Appalachia, data is per PA DEP Air Emissions Report under 25 Pa. Code § 135.3. With respect to California, data is per San Joaquin Valley Unified Air Pollution Control District. Emission Inventory Report. California criteria emissions include permitted combustion sources including engines, steam generators, heater treaters, and flares. Appalachia criteria emissions including stationary engines, flares, tanks, dehydrators, reboilers/heaters, pneumatics, venting and blowdowns, fugitives, completions, and drill rigs.
2 Methods utilized for calculation are based on MSC Guidelines for PA DEP Air Emissions Inventory and generally recognized and accepted standards for emission calculation of stationary engines and heaters.
3 With respect to Seneca's California operations, freshwater is acquired through local water utility company providers, and to a lesser extent from agricultural water sources. Freshwater withdrawn and consumed is reported to the California Geologic Energy Management Division (CalGEM). Produced water is reported to the California Air Resources Board (CARB), and CalGEM. Recycled and disposed water volumes are measured and recorded daily as per standard field operating procedures, and disposed volumes are reported to CalGEM.
4 With respect to our Appalachian operations, freshwater withdrawn and consumed is tracked per PA DEP bi-annual and annual reports, and volumes are reported to the PA DEP and Susquehanna River Basin Commission. Recycled water and disposed water volumes are measured and recorded daily as per standard field operating procedures, and disposed volumes are reported to PA DEP.

2019 Volume of Produced Water and Flowback Generated (Thousands Cubic Meters)

	Appalachia	California	Total
Produced Water and Flowback	897	3,844	4,741
% Discharged	0.0%	0.0%	0.0%
% Injected	5.7%	39.8%	33.3%
% Recycled	94.3%	60.2%	66.7%
Hydrocarbon Content in Discharged Water[1]	Not applicable	Not applicable	Not applicable

Public Disclosure of Fracturing Chemicals Used

Since February 2011, 100% of the chemicals used in Seneca's hydraulically fractured wells have been disclosed on www.fracfocus.org, the chemical registry website created by the Ground Water Protection Council and the Interstate Oil and Gas Compact Commission. This site contains detailed information about the hydraulic fracturing process and a listing on a well-by-well basis specifying the contents of hydraulic fracturing fluids used at each location.

Pre- and Post-Drill Water Groundwater Sampling

In connection with each new drilling permit, Seneca prepares a list of property owners within 4,000 feet of the well and sends letters to said property owners notifying them of the proposed drilling activities and Seneca's intentions to sample their water source(s). Thereafter, a water sampling company contacts water owners and collects necessary samples. Those samples are sent to a certified laboratory for testing, and thereafter to the PA DEP in accordance with applicable regulations. In accordance with applicable regulations, Seneca conducts post-drill sampling as necessary.

In 2019, Seneca received no landowner complaints with respect to diminished water quality or quantity.

Biodiversity Impacts
(SASB EM-EP-160a.1, EM-EP-160a.3)

Environmental Management Policies and Practices

Environmental Management System Overview

Environmental stewardship is a core Company value, which is clearly defined in Seneca's EHS Values and included in Seneca's EHS Policy. All Seneca executives, Division heads, and EHS Managers, review, approve and sign off on the EHS Policy on an annual basis. The Seneca Environmental Management System ("EMS") is a comprehensive system that applies to all aspects and phases of our operations. This system is part of an Environmental, Health, and Safety system that is modeled after the ISO standards.[2] Although Seneca does not formally participate in or apply for certification in ISO 14001 (Environmental Management), or ISO 45001 (Occupational Health

1 Seneca does not discharge produced fluid.

2 Seneca is in compliance with the majority of the provisions of the International Finance Corporation Performance Standards, particularly IFC Performance Standard No. 1 (IFC PS1). While many of the provisions are designed to address global and diverse operations, Seneca's environmental management system focuses on those items applicable to our activities and operating areas. For example, Seneca has strong emergency preparedness and response programs that include planning, training, and community involvement. As such, compliance with these IFC PS1 provisions (Nos. 20 and 21) could be classified as complete. However, as Seneca does not operate in areas with indigenous peoples, Seneca's environmental management system does not focus on that provision (No. 32).

IFC Performance Standards Nos. 3, 4, and 6 pertain to resource efficiency/pollution prevention, community health, safety, and security, and biodiversity, respectively. As discussed throughout this report, Seneca Resources has robust systems for achieving each of those items. Seneca's compliance with the respective IFC PS is similar to IFC PS1.

& Safety Management), it is used as the foundation for creating a complete management system for our upstream operations. Seneca also has a set of BMPs for critical operations such as containment construction and flowback operations. This is in addition to standard operating procedures and other guidance documents for normal activities. In 2019, we had zero incidents that would qualify as "process safety events," which are considered incidents of a serious nature or consequence.

Development and Risk Management

Before our Upstream Segment acquires any property, EHS professionals conduct an Environmental Site Assessment (ESA). This ESA consists of a detailed review of potential environmental liabilities (e.g. underground storage tanks, landfills, hazardous material, pesticides, sumps, asbestos, lead paint, PCBs, and radon), identification of biological habitats, environmental condition of the soil/vegetation, and the condition of any equipment (e.g. wells, pipelines, tanks, facilities, etc.). This information is presented so that any economic assessments may include these environmental considerations.

Once Seneca decides to develop an area, environmental considerations are a top priority. We have conducted and continue to conduct in-depth biological assessments to identify protected habitats. We also conduct wetland surveys to identify any wetlands and/or streams. In nearly every development project, our footprint is designed to avoid these areas. We work closely with federal, state, county, and local agencies as well as non-profit environmental organizations to ensure that we have identified habitats and have taken steps to protect them.

For example, our California operations employees and contractors who work around development or disturbance areas are required to undergo annual training for environmental awareness. This training includes identification of endangered plants and animals in the area, how to avoid them, what steps to take if they are identified, and applicable regulations. This training also focuses on protection of cultural and paleontological resources including Native American artifacts, ensuring that our employees and contractors that encounters a sensitive area are trained on how to handle the situation.

Air Quality Practices

Seneca has a robust air quality control, management, and improvement program, which in various facets goes above and beyond regulatory requirements. In addition, Seneca has dedicated resources available to ensure that controls are in place and monitored to ensure best practices in air quality management.

As part of our air quality practices, various plans have been created and are available to assist in defining the myriad of air quality requirements, as well as the methods utilized and implemented to comply with applicable requirements, to ensure quality control of procedures and data collection, and to review for improvement.

This includes Seneca's Greenhouse Gas ("GHG") Monitoring Plan, which establishes procedures for accurate monitoring and reporting of GHGs in accordance with 40 CFR §98.3(g)(5) and 17 CCR §95105(c), as applicable. Specifically, the plan identifies the following items:

- Identification of positions of responsibility (i.e., job titles) for collection of the emissions data;
- Explanation of the processes and methods used to collect the necessary data for the GHG calculations; and
- Description of the procedures and methods used for quality assurance, maintenance, and repair of all continuous monitoring system, flow meters and other instrumentation used to provide data for the GHGs reported.

Additionally, in connection with Seneca's full leak detection and repair program in both our Appalachian and California divisions, Seneca follows a Leak, Detection, and Repair ("LDAR") Monitoring Plan, which defines the requirements for our LDAR program, detailed procedures on how LDAR surveys will be conducted, and the process for leak identification and repair. In California, although we are required to conduct these inspections every 3 months, we inspect all 105,000-plus components every month to ensure that we identify and repair problems early.

As detailed in *Air Quality*, our Upstream Segment participates in several voluntary environmental management programs that are focused on improvement of emissions..

Water Management Practices

Seneca prides itself on being an industry leader in managing water assets. For calendar 2019, based on a survey of environmental performance conducted by the The American Exploration and Production Council ("AXPC") - a national trade association representing the largest independent oil and natural gas exploration and production companies in the United States - Seneca Resources ranked 2nd overall for use of recycled water.

Protecting Fresh Water Aquifers

As detailed in *Water Management*, Seneca performs pre-drilling water samples on any water source within a 4,000-foot radius from the center of the pad to obtain a baseline measurement. Seneca Resources' horizontal drilling practices use only water-based drilling fluid or air when drilling through fresh water zones. During other stages of drilling, a synthetic oil-based mud system is used once fresh water zones are protected by casing and cement.

"Zero Surface Discharge" Policy

For all unconventional operations, Seneca follows a strict "Zero Surface Discharge" policy, which requires containment for any liquids or solids that may be considered residual waste in all aspects of our operations, as a means of protecting surface and groundwater resources throughout the life of a well. All wastes are managed in "primary containment" vessels, which are placed inside of secondary containment systems, and often tertiary containment, designed to capture and control spills or leaks.

Highland Field Services

In 2014, our Upstream Segment formed its own water logistics company, Highland Field Services, LLC ("Highland"), to manage the sourcing, handling and recycling of fluids generated by and used in its Appalachian operations. Since then, Highland has invested over $20 million in water infrastructure in Pennsylvania, including storage and treatment facilities, on-pad tanks and containment vessels, and a network of water distribution pipelines. The environmental, operational and economic goals and achievements of Highland include:

- **Recycling Produced Fluids:** Seneca plans its development schedule and works closely with Highland and Seneca's other third-party service companies to optimize Seneca's ability to utilize recycled produced fluids. Highland also receives and recycles produced volumes generated from third-party operators who would otherwise need to transport their produced fluids for out-of-state disposal. In fiscal 2019, Highland recycled 94% of Seneca's produced fluids, or 6.4 million barrels, plus an additional 440,000 barrels of fluids that were generated by and received from third-party operators.

- **Minimizing Freshwater Used in New Well Completions:** Seneca's ability to reuse recycled fluids in new well completions has significantly reduced the amount of freshwater consumed by our operations. In 2019, Seneca's Marcellus and Utica shale well completions used 75% recycled fluids and only 25% freshwater, an improvement from 70% recycled fluids and 30% freshwater in fiscal 2018. The freshwater consumed in our completions was sourced from Seneca-owned groundwater wells and permitted stream withdrawal locations.

- **Reduce Environmental Footprint:** Highland manages the movement of approximately 1.3 million barrels of fluid every month, more than 95% of which is pumped through Highland's pipeline distribution system to deliver fluids from storage facilities directly to Seneca's Marcellus and Utica development pads. As a result, Seneca was able to avoid an estimated 110,000 truck trips in fiscal 2019, eliminating the associated air emissions and reducing the impact on local roads and public infrastructure.

- **Develop Innovative, Environmentally Sound Disposal Solutions:** While our goal is to recycle 100% of the produced fluids generated by Seneca's production, it is important to have disposal capabilities available to cover any potential operational delays or other issues. As such, Seneca and Highland have been actively developing their own underground disposal well capabilities under an underground injection control (UIC) program designed to manage Seneca's disposal needs in an environmentally sound manner, and currently have operating UIC wells in Pennsylvania and Ohio.

- **Promote Transparency and Regulatory Compliance:** All fluid handled by Highland, including type, volume, origin and destination, is tracked for regulatory and internal reporting purposes. In Pennsylvania, we are required to report the fluid movement and usage in various forms including downhole volumes for well completion, incoming/outgoing loads at the storage facilities and pads, fluids utilized by third-party operators, and freshwater storage levels across our operations.

- **Lower Fluids Management Costs:** The environmental benefits derived from Highland's efforts to recycle and avoid the disposal of produced fluids also results in significant economic benefits for Seneca and its third party operator customers.

Natural Resources Consumption

Seneca recognizes the need to use resources prudently and to find opportunities to reduce and improve our use of natural resources. In this regard, Seneca was the first company in the Appalachian Basin to use a bi-fuel drilling rig. Our Upstream Segment has since expanded that use to include bi-fuel frac pumps that use field gas in lieu of diesel as a fuel source. Seneca estimates that during these operations it can run on field gas about 60% of the time, which drives significant reductions in emissions. In our California operations, we make extensive use of pump-off controllers and variable speed drives. Both of these technologies allow us to reduce energy usage and extend the life of our equipment.

In addition, Seneca has made significant efforts to incorporate solar power facilities into its operations, where practicable. In 2016, Seneca brought online a solar plant at its North Midway Sunset field in Kern County, California. This plant uses over 10,000 individual solar panels to generate more than 2.5 megawatts of power, which is used to power Seneca's wells and facilities in that area. The amount of power generated replaces approximately 20% of our overall electricity usage in that field. Seneca has also installed solar throughout the parking facility at its division office in Bakersfield, California. This system generates almost 80 kilowatts of power, which satisfies most of the power needs for that office. Seneca is actively looking at numerous other solar projects within our California footprint.

Chemical Usage

Seneca's hydraulic fracturing fluids are in full compliance with both EPA and state regulations. As discussed in *Water Management*, Seneca voluntarily participates in www.fracfocus.org, an independent website that provides information to help stakeholders understand the additives in the water used for each of Seneca's shale development operations in Appalachia, as well as our oil operations in California. Seneca also voluntarily provides this data to the PaDEP.

Ecological and Biodiversity Impacts

As there is the potential for habitats of various endangered species to be encountered within Seneca's operating areas, we have conducted biological surveys with respect to a large portion of or operations footprint to identify these specific habitats. Our development groups use these surveys in site selection – more specifically to avoid areas where there are known habitats or nests. In the event it is not possible to avoid disturbance, we work with professional biologists and botanists to develop mitigation measures, including natural barriers (e.g. a ridgeline or stand of trees), artificial barriers (e.g. biologic protective fencing) and other measures (e.g offset acreage).

As a best practice, we generally avoid sensitive areas that would require additional permitting and protective requirements. A number of environmental protection lists (e.g. IUCN Redlist) describe general habitats and areas where protected species may be present, and our practice is to review these lists to ensure we are avoiding impacts to protected flora and fauna to the extent reasonably possible. The foundation of our practices are built around our compliance with application federal, state, and local laws and regulations.

Number and Volume of Hydrocarbon Spills – 2019 (Bbls) [1][2]

Number of Spills Greater than 1 Bbl	4
Total Volume of Spills Reported Above	4.6
Total Volume of Spills Occurring in the Artic	Not Applicable
Total Volume of Spills Impacting Environmentally Sensitive Shoreline	0

Reserves Located Within Sites with Protected Conservation Status or Endangered Species Habitat (Bcfe)

Appalachia

Seneca has submitted 276 Pennsylvania Natural Diversity Inventory (PNDI) permits over the past 5 years. These PNDIs are a part of the Pennsylvania Natural Heritage Program (PNHP) partnership between various state regulatory agencies which reviews these submittals for potential impacts to threatened, endangered, special concern species and special concern resources in Pennsylvania.

Permits are submitted and reviewed against the varying agencies' mapping of protected habitats statewide. If there is not a threatened or endangered species in submitted permit's area, the permit is approved. If threatened or endangered species do show up on this review, Seneca contracts a third party environmental engineering firm to survey the area. A biological survey will then confirm whether the species of special concern is actually present in the permit area. If these species are found, mitigating actions are taken, including route avoidance, special fencing, or other restrictions.

Approximately 3% of PNDI permits over the past 5 years were in areas of confirmed endangered species habitat; however, in all cases Seneca was able to mitigate the impact to these known species. These mitigation efforts coupled with alternate routing options and horizontal drilling has minimized impact to critical habitat while ensuring efficient reserves extraction. Within Appalachia, currently 76.9 Bcfe of proved reserves are located on or adjacent to land which is designated as known endangered or threatened species habitat. This constitutes approximately 2.6% of the Seneca's total reserves base.

1 Includes reported spills from produced hydrocarbons. On occasion, Seneca may experience a spill of non-produced hydrocarbons, such as when an engine leaks motor oil onto the ground. In 2019, Seneca had 2 of these type of spills (greater than 1 Bbl each) totaling 3 Bbls.
2 Seneca has not had any spills into areas where total recovery of hydrocarbons is not possible. Accordingly, we estimate that 100% of spilled hydrocarbons are recovered and disposed of in accordance with applicable regulations. The State of California Office of Spill Prevention and Response has a defined method of calculation of recovery, but we have not had any incidents that have required testing of contaminated soil/vegetation following this method.

California

With respect to Seneca's California operations, a third party environmental engineering consulting firm helps Seneca evaluate the need for biological surveys for new well permits and material surface alterations. These consultants review submitted plans by first cross referencing the California Natural Diversity Database ("CNDDB") for identified habitat of Threatened and Endangered species.

If a requested permit involves proposed work in areas of habitat, additional surveys are performed by the firm. These include recon surveys, clearance surveys, and state prescribed protocol level surveys when necessary depending on the species and likelihood of habitat. If in the course of these surveys a species or habitat is found, Seneca works with applicable regulatory agencies to take mitigating action to minimize possible impacts to these threatened or endangered species.

Within California, for 2019, approximately 26.5 Bcfe of proved reserves are booked on acreage overlapping with possible habitat of threatened or endangered species. This accounts for 0.8% of Seneca's total reserves base.

Total Reserves (Bcfe) at fiscal year-end 2019	3,099
Reserves Within Sites with Protected Conservation Status[1]	23
% of Reserves	0.7%
Reserves Within Areas In Which Endangered Species Habitat Identified[2]	103
% of Reserves	3.3%

Security, Human Rights & Rights of Indigenous Peoples (SASB EM-EP-210a.1, EM-EP-210a.2, EM-EP-210a.3)

Reserves Located In or Near Areas of Active Conflict

Not applicable to Seneca, as 100% of our reserves for fiscal year 2019 are located in the United States.

Reserves Located In or Near Indigenous Land

None of Seneca's fiscal year 2019 reserves are located on or near (within 5 kilometers of) indigenous land as recognized by the US Bureau of Indian Affairs.

1 Includes sites located per comprehensive review of local, state, and nationally designated protected/conservation areas.
2 Seneca is required to complete biological surveys in both Pennsylvania and California for threatened and endangered species prior to initiating operations. Given the level of state engagement in protecting habitat in our operating areas, the IUCN Redlist database was not utilized in formulating this response. Instead, Seneca leveraged state-specific habitat permitting processes to identify areas of operations where threatened and endangered species habitat has been identified and confirmed by third party biological surveys. The reserves located within these habitat areas has been totaled and shown as a percent of the total reserves base.

Engagement Processes and Due Diligence Practices with Respect to Human Rights, Indigenous Rights, and Operation in Areas of Conflict

Although Seneca does not currently explore for or develop any oil and gas reserves located within indigenous lands or an area of conflict, Seneca is committed to ensuring that all people are treated with respect and fairness and expects all employees, contractors and vendors to maintain the same standard of inclusion that Seneca supports.

Community Relations
(SASB EM-EP-210b.1, EM-EP-210b.2)

Management of Risks and Opportunities Associated with Community Rights and Interests

Most of the considerations concerning community economic and social impacts of oil and gas development in Pennsylvania and California are codified by the respective governing and regulatory bodies that oversee such operations. In Pennsylvania, for example, Act 13 became law when Governor Corbett signed House Bill 1950 on Feb. 14, 2012. The Act outlines and defines the rights and interests of communities in areas where natural gas development occurs.

In addition, Seneca utilizes recommended practice guidelines from the various trade associations such as the California Independent Petroleum Association, Marcellus Shale Coalition, and American Exploration and Production Council where we operate.

Seneca maintains a corporate giving program that is designed to leverage community capital - both in-kind and financial - to simultaneously address issues that affect the community at-large, our current and future constituents, and our business objectives. These community grants generally fall into four core areas: Health and Human Services / Health recreation; Emergency Response and Disaster Relief; Community, Employee, Pedestrian and Child Safety; and, Education. In 2019, Seneca donated over $160,000 to local communities.

The Company uses a variety of tools to educate and update elected officials at all levels of government, including videos, brochures, in person meetings, site visits and operational tours. Seneca also tries to educate and inform the communities about its operations. For example, Highland Field Services, LLC, a subsidiary of Seneca, held an open house for the local community at its injection well site giving people the opportunity to tour the facility and ask questions. Many of the employees and vendors of Seneca live in and around where our operations take place, so Seneca strives to work with and educate these communities. Seneca collaborates with the local communities in their preparations to respond effectively to emergency situations and ensures compliance with statutes and regulations concerning our operations.

Impacts from Non-Technical Delays

Seneca did not experience any non-technical delays during 2019.

Workforce Health & Safety
(SASB EM-EP-320a.1, EM-EP 320a.2)

2019 Total Recordable Incident Rate (TRIR), Fatality Rate, and Near-Miss Frequency Rate (NMFR)

Seneca provides employees and contractors with training on near misses and regular communications to emphasize the importance of near miss reporting. In addition, a quarterly summary of near misses and associated follow-up actions are published in our Monthly EHS Report which is distributed to all Seneca employees.

	TRIR	Fatality Rate	NMFR[1]
Full-Time Employees	0.41	0.00	8.86
Contract Employees	0.99	0.00	–
Short-Service Employees[2]	–	–	–

Average Hours of Health, Safety, and Emergency Response Training

In 2019, on average, Seneca employees received 17.32 hours of health, safety, and emergency training. In addition, Seneca provides significant training to its contractors (over 5,000 total hours in 2019), including an annual contractor safety meeting, annual EHS site orientation, and contractor safety stand downs.

Safety Management Systems

As described in detail in *Integrity of Gas Delivery Infrastructure*, safety is a guiding principle and our highest priority at National Fuel. Additionally, Seneca has an Environmental Health, and Safety Mission, Vision, and Principles, which provides a further foundation for its safety program.

The overall objective of Seneca's oil and gas operations is to maximize the value of its mineral and human assets. The accomplishment of this objective is a function of conducting its business in a manner that provides for a healthful environment for its employees, contractors, and the public, in accordance with laws and regulations governing environmental and safety compliance.

Seneca's senior management demonstrates support for EHS in various ways that are visible to employees and contractors, including:

- Executive messaging in a monthly EHS Report;
- Quarterly EHS-Executive Management Review Meetings, which are attended by EHS staff as well as senior management;
- Senior management presentations on various EHS topics at annual Contractor Safety Meetings which are attended by both employees and contractors;
- Safety messaging by senior management during staff meetings and town hall meetings which are attended by all employees; and
- Management participation in the Management Audit Program which is comprised of teams of various disciplines that perform quarterly safety inspections.

1 Seneca tracks near misses reported by contractors and employees as a single metric.
2 For 2019, Seneca did not categorize an individuals as Short-Service Employees.

To promote a culture of safety, Seneca also provides regular safety communications to its employees, including:

- Monthly safety training covering a variety of topics, including driving safety, ergonomics, and winter weather hazards;
- EHS Intranet site dedicated to safety;
- Periodic safety stand downs in the field to discuss safety issues; and
- Annual EHS Site Orientation for employees and contractors to reinforce safety expectations.

To ensure compliance with rules, regulations, and industry best practices Seneca undertakes the following actions:

- Before onboarding, contractor's safety metrics and written safety programs are reviewed against established criteria. Once onboarded, metrics continued to be reviewed and concerns are addressed through variances, and performance improvement plans;
- Regular safety inspections are performed by EHS Representatives;
- Safety audits of contractor safety programs and activities are performed;
- Annually, an external assessment of an aspect of Seneca's operations is performed by a third-party subject matter expert; and
- Seneca actively participates in industry groups such as the MSC, AXPC, and STEPS of Pennsylvania.

Reserves Valuation & Capital Expenditures

(SASB EM-EP-420a.1, EM-EP-420a.2, EM-EP-420a.3, EM-EP-420a.4)

Sensitivity of Reserve Levels to Scenarios that Account for a Price on Carbon Emissions

Seneca reviewed reserves sensitivities utilizing pricing from the World Energy Outlook ("WEO") Report 2019 to estimate forward looking commodity pricing given three different Carbon emissions policy scenarios outlined. The Current Policies Scenario assumes no changes in policies from the mid-point of the year of publication. The New Policies Scenario assumes that broad policy commitments and plans that have been announced by countries (including national pledges to reduce greenhouse gas emissions and plans to phase out fossil-energy subsidies) occur even if the measures to implement these commitments have yet to be identified or announced. The Sustainable Development Scenario assumes that an energy pathway occurs that is consistent with the goal of limiting the global increase in temperature to 2°C by limiting concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO_2e.

Oil and Gas prices were extrapolated from the WEO Report (see below for excerpt) and held flat after 2040. All associated operating costs and capital inputs were based on current conditions without escalation.

2019 WEO Report Commodity Prices

				Stated Policies				Sustainable		Current Policies	
Real Terms	**2000**	**2010**	**2018**	**2025**	**2030**	**2035**	**2040**	**2030**	**2040**	**2030**	**2040**
IEA crude oil ($/barrel)	40	90	68	81	88	96	103	62	59	111	134
Natural gas ($/MMBtu)											
United States	6.1	5.0	3.2	3.2	3.3	3.8	4.4	3.2	3.4	3.8	5.1
European Union	4.0	8.6	7.6	8.0	8.0	8.4	8.9	7.5	7.5	8.9	9.9
China	3.5	7.7	8.2	9.1	9.0	9.3	9.8	8.6	8.7	9.8	10.7
Japan	6.7	12.7	10.1	10.0	9.7	9.8	10.2	8.8	8.7	11.0	11.4

Based on the above assumptions, Seneca calculated net reserves for the three WEO Report policy scenarios, the results of which are shown in the following table.

Seneca Estimated Net Proved Reserves (Bcfe) Under WEO Report Scenario Analysis

Scenario	California	Appalachia	Total
SEC Reserves Report	183	2,916	3,099
Current Policy	193	2,916	3,109
Stated Policies	191	2,916	3,107
Sustainable Development	182	2,916	3,098

Investments in Renewable Energy and Related Revenues

Over the past several years, Seneca has placed two solar projects in service. In 2016, Seneca's West Division placed in service a solar plant to facilitate its North Midway Sunset Operating Field, the cost of which was approximately $6.6 million. In 2018, Seneca's West Division placed into service a solar project to facilitate its utility needs at its Bakersfield, California office, the total cost of which was approximately $0.3 million. Neither of these projects has generated any revenues to date from energy sales.

Impacts of Hydrocarbon Price and Demand, and Climate Regulation on Capital Expenditures

The Company monitors developments surrounding climate change, including statutory, regulatory, physical, technological and operational risks, as well as corresponding opportunities. The Board and management consider these risks and opportunities in their strategic and capital spending decision process, which includes acquisitions, such as the Company's approximately $504 million acquisition of Appalachian upstream and midstream assets from a subsidiary of Royal Dutch Shell in fiscal 2020. Further, since the Company operates an integrated business with assets being utilized for, and benefiting from, the production, transportation and consumption of natural gas, the Board and management consider the impact of climate change developments on future natural gas usage.

The U.S. Energy Information Administration (EIA) provides relevant data and projections in this regard. The EIA's 2019 International Energy Outlook projects that worldwide natural gas consumption will increase more than 40% from 2018 through 2040. Natural gas is a versatile fuel and this increase is projected to impact all sectors, with the largest increases seen in the industrial and electric generation sectors. The EIA's 2019 Annual Energy Outlook further projects that U.S. electricity generation from natural gas will continue to increase through 2050 and will then account for the largest share of total energy production. The EIA anticipates that shale gas and tight oil production could potentially account for 90% of U.S. natural gas production by 2050 due to the "sheer size of the associated resources . . . and improvements in technology that allow for the development of these resources at lower costs." The

EIA anticipates that "total U.S. natural gas production … is driven by continued development of the Marcellus and Utica shale plays in the East."

The Company believes that its conservative approach to capital investments combined with its history, experience, assets, and fully-integrated approach put it in a position for success in the current and evolving regulatory landscape. As recognized by the EIA, natural gas is a clean form of energy when compared to other fossil fuels such as oil or coal with respect to greenhouse gas emissions. In its 2019 New York State Greenhouse Gas Inventory Report, the New York State Energy Research and Development Authority noted that from 1990 to 2016, "emissions from electricity generated in-State dropped 56% during this … period, acting as a major driver of New York State's decreasing GHG emissions. This drop is due in part to the significant decrease in the burning of coal and petroleum products in the electricity generation sector. Emissions from residential, commercial, and industrial buildings also decreased, showing a reduction of approximately 23% from 1990 to 2016." The Company believes that expanded use of natural gas in those sectors significantly contributed to these emissions reductions and that ongoing development of natural gas will help drive a continued reduction in overall greenhouse gas emissions.

The Company also recognizes the evolving landscape of international accords and federal, state and local laws and regulations regarding greenhouse gas emissions and climate change initiatives. Changing market conditions, new laws and new regulatory requirements, as well as unanticipated or inconsistent application of existing laws and regulations by administrative agencies, make it difficult to predict a long-term business impact across twenty or more years. However, as detailed above, the WEO Report's Sustainable Development Scenario, which assumes an energy pathway occurs that is consistent with the goal of limiting the global increase in temperature to 2°C by limiting concentration of greenhouse gases in the atmosphere to around 450 parts per million of CO_2e, has little to no expected impact on longer-term commodity prices, and thus is projected to have limited to no impacts on Seneca's reserves based on the underlying WEO Report price assumptions.

Additionally, commodity prices, demand and regulatory environment are integral parts of the Company's strategic and capital spending decision process, and our approach to capital investment is adjusted in response to developments with respect to these considerations. The Company regularly monitors both U.S. crude oil and natural gas commodity prices, and determines whether to increase or decrease its activity levels in its producing areas based on medium and long-term commodity pricing strips. While outside the time period of this report, the Company's current fiscal year serves as an example of its prompt response to fluctuations in commodity prices. During fiscal 2020, Seneca decreased its activity levels, and thus its capital expenditure levels, in Appalachia from three horizontal drilling rigs to just a single rig in response to the recent deterioration in natural gas prices. In addition, the Company's aforementioned 2020 acquisition included significant proved developed producing reserves, which, on a dollar per million cubic foot basis, the Company obtained at a value well below that for which it would reasonably expect to produce its own natural gas reserves within the basin.

Business Ethics and Transparency (SASB EM-EP-510a.1, EM-EP-510a.2)

Reserves in Countries that have the 20 Lowest Rankings in Transparency International's Corruption Perception Index

Not applicable to Seneca, as 100% of our reserves for fiscal 2019 are located in the United States.

Management System for Prevention of Corruption and Bribery throughout the Value Chain

See *Leadership and Government – Business Ethics* concerning the Company's management of business ethics, including with respect to its business partners.

Management of the Legal and Regulatory Environment (SASB EM-EP-530a.1)

Corporate Positions Related to Government Regulations and Policy Proposals that Address Environmental and Socials Factors Affecting the Industry

See *Management of the Environmental and Social Legal and Regulatory Environment* concerning the Company's management of the legal and regulatory environment.

Critical Incident Management (SASB EM-EP-540a.1, EM-EP-540a.2)

Process Safety Event (PSE) Rates for Loss of Primary Containment

In 2019, Seneca did not have any events that are classified as process safety events ("PSE"). To determine classification of PSEs, Seneca used the International Association of Oil & Gas Producers Publication 456: Process Safety – Recommended Practice on Key Performance Indicators.

Management Systems Used to Identify and Mitigate Catastrophic and Tail-End Risks

See response to *Risk Oversight* of this Report.

Other Elected Responses

Environmental Impacts of Project Development

Seneca maintains a constant focus on compliance with all applicable environmental laws, regulations, and other requirements, which includes monitoring by an internal Compliance Department that is focused on ensuring such compliance, as well as participation in industry groups such as the American Exploration and Production Council, MSC, and California Independent Producers Association.

In California, our Upstream Segment operations are subject to applicable regulation and oversight from the local County, County Environmental Health Department, Air Pollution Control District, Regional Water Quality Control Board, CalGEM (California Geologic Energy Management Department), Cal EPA, CARB, CA Fish and Wildlife Department, US Pipeline and Hazardous Materials Safety Administration, US Environmental Protection Agency, US Bureau of Land Management, and other agencies.

In Pennsylvania, our Upstream Segment operations are subject to applicable regulation and oversight from the Department of Environmental Protection (PADEP), Susquehanna River Basin Commission, PA Fish and Game Commission, PA Department of Natural Resources, PA Department of Labor and Industry, and the US Environmental Protection Agency.

In 2019, the Company was inspected a total of 1,546 times by the following agencies: PADEP, San Joaquin Valley Unified Air Pollution Control District, Kern County Department of Environmental Health, and CalGEM. In Pennsylvania, Seneca had the 3rd lowest violation rate out of its 16 peers in the Appalachian Basin at 1.04%.

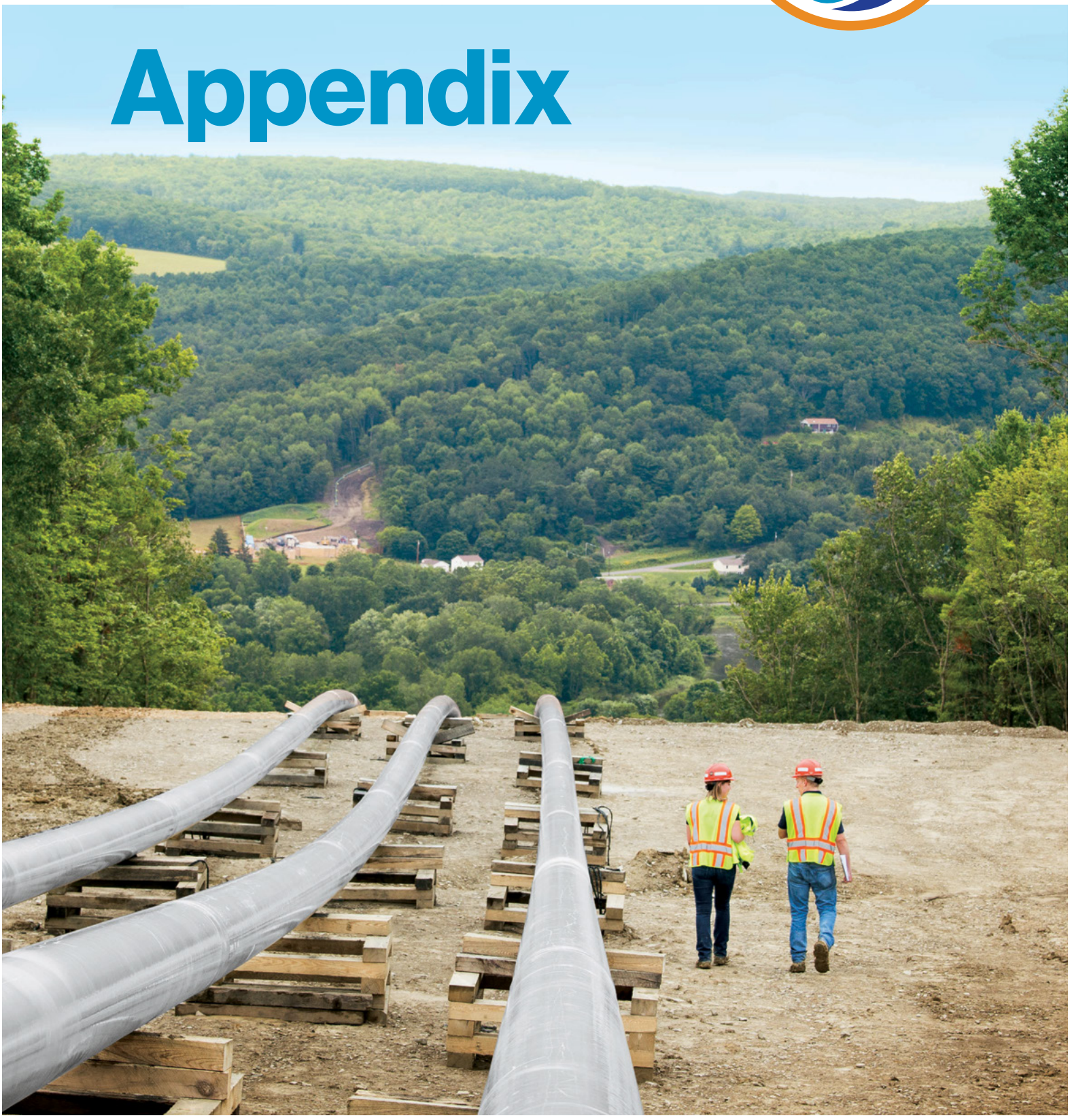
Activity Metrics
(SASB EM-EP-000.A, EM-EP-000.B, EM-EP-000.C)

	2019
Net Gas Production (MMcf/day)	566.7
Net Oil Production (Mbbl/day)	6.44
Number of Offshore Sites	0
Number of Terrestrial Sites	2,475

Cautionary Note on ESG Data and Forward-Looking Statements

All information included in this Corporate Responsibility Report is being provided on a voluntary basis, and as such, the Company has included and excluded certain topics to customize the sustainability template to our specific needs. The decision to include data for historical and future years is at the discretion of the Company and its subsidiaries, and the specific years used as a historical baseline were chosen as appropriate for each reporting segment. The ESG data included in this report does not constitute financial data calculated in accordance with generally accepted accounting principles ("GAAP"). This Corporate Responsibility Report also contains "forward-looking statements" as defined by the Private Securities Litigation Reform Act of 1995. Forward-looking statements are all statements other than statements of historical fact, 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. This Corporate Responsibility Report and the statements contained herein are submitted for the general information of Company stakeholders and are not intended to induce any sale or purchase of securities or to be used in connection therewith. While the Company's expectations, beliefs and projections are expressed in good faith and are believed to have a reasonable basis, actual results may differ materially from those projected in forward-looking statements. Furthermore, each forward-looking statement speaks only as of the date on which it is made. 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: (1) the Company's ability to estimate accurately the time and resources necessary to meet the reporting and testing standards applicable to the additional measures we expect to include in future reports; and (2) the other risks and uncertainties described in (i) the Company's Form 10-K at Item 7, MD&A, and Forms 10-Q at Item 2, MD&A, under the heading "Safe Harbor for Forward-Looking Statements," and (ii) the "Risk Factors" included in the Company's Form 10-K at Item 1A, as updated by the Company's Forms 10-Q for subsequent quarters at Item 1A. The Company disclaims any obligation to update any forward-looking statements to reflect events or circumstances after the date hereof. Because of these risks and uncertainties, readers should not place undue reliance on these forward-looking statements or use them for anything other than their intended purpose. This report contains references to National Fuel's website and other reporting documents. National Fuel is not incorporating this report by reference into any other document and is not incorporating any other document posted on the website into this report. Except where specified, this report and the data presented have not been externally audited, assured, attested or verified. The Company makes no warranty, express or implied, regarding the accuracy, adequacy, completeness, legality, reliability or usefulness of this report.

Appendix



Appendix A: Index of Sustainability Reporting Topics, by Segment

Company Overview and Governance

Topic	Corporate Responsibility or Sustainability Metric	SASB(a)	GRI (Core)(b)	Page
Statement From Senior Decision Maker	Statement from most senior decision-maker about the relevance of sustainability to the organization and its strategy for addressing sustainability	–	102-14	2
Organizational Profile	Name of the organization; a description of the organization's activities; location of organization's headquarters; location of operations; and markets served.	–	102-1 102-2 102-3 102-4 102-6	16
Governance Structure	Governance structure of the organization, including committees of the highest governance body, and committee responsible for decision-making on economic, environmental and social topics.	–	102-18	19
Delegating Authority	Process for delegating authority for economic, environmental and social topics from the highest governance body to senior executives and other employees.	–	102-19	19
Executive-Level Responsibility	Appointment of executive-level position with responsibility for economic, environmental and social topics and whether that post reports directly to the highest governance body.	–	102-20	19
Risk Oversight	Description of key impacts, risks and opportunities, and the highest governance body's role in reviewing the effectiveness of the organization's risk management processes. Description of the management systems used to identify and mitigate catastrophic and tail-end risks.	EM-EP-540a.2	102-15 102-30	20
Ethics and Integrity	Description of the organization's values, principles, standards and norms of behavior. Description of the management system for prevention of corruption and bribery throughout the value chain.	EM-EP-510a.2	102-16	20
Mechanisms for Advice and Concerns About Ethics	Description of internal and external mechanisms for (1) seeking advice about ethical and lawful behavior, and organizational integrity, and (2) reporting concerns about unethical or unlawful behavior, and organizational integrity.	–	102-17	21
Management of the Legal & Regulatory Environment	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry.	EM-EP-530a.1	102-30	22
Human Capital – Labor Practices	Percentage of active workforce covered under collective bargaining agreements.	IF-WM-310a.1	102-41	26
	(1) Number of work stoppages and (2) total days idle.	IF-WM-310a.2	–	26
Human Capital – Employee Benefits	Benefits provided to full-time employees and promotion of worker health.	–	401-2 403-6	26
Human Capital – Employee Development	Programs for upgrading employee skills and transition assistance programs.	–	404-2	27
Human Capital – Diversity & Inclusion	Diversity of governance bodies and employees with respect to gender, age group and other indicators of diversity where relevant. Percentage of gender and racial/ethnic group representation for (1) management, (2) technical staff, and (3) all other employees.	TC-SI-330a.3	405-1	27
Human Capital – Employee Engagement	Employee Engagement as a percentage.	TC-SI-330a.2	–	30
Social Capital – Data Security	Description or approach to identifying and addressing data security risks, including use of third-party cybersecurity standards.	TC-SI-230a.2	–	32

Downstream Segment

Topic	Sustainability Accounting Metric	SASB(a)	GRI (Core)(b)	Page
Energy Affordability	Average retail gas rate for (1) residential, (2) commercial, (3) industrial customers and (4) transportation services only.	IF-GU-240a.1	–	37
	Typical monthly gas bill for residential customers for (1) 50 MMBtu and (2) 100 MMBtu of gas delivered per year.	IF-GU-240a.2	–	38
	Number of residential customer gas disconnections for non-payment, percentage reconnected within 30 days.	IF-GU-240a.3	–	39
	Discussion of impact of external factors on customer affordability of gas, including the economic conditions of the service territory.	IF-GU-240a.4	–	35
End Use Efficiency	Customer gas savings from efficiency measures by market.	IF-GU-420a.2		40
	Percentage of gas utility revenues from rate structures that (1) are decoupled or (2) contain a lost revenue adjustment mechanism.	IF-GU-420a.1	–	42
Integrity of Gas Delivery Infrastructure	Number of (1) reportable pipeline incidents, (2) Corrective Action Orders (CAO), and (3) Notices of Probable Violation (NOPV).	IF-GU-540a.1	–	43
	Percentage of distribution pipeline that is (1) cast and/or wrought iron and (2) unprotected steel.	IF-GU-540a.2	–	44
	Percentage of gas (1) transmission and (2) distribution pipelines inspected.	IF-GU-540a.3	–	46
	Description of efforts to manage the integrity of gas delivery infrastructure, including risks related to safety and emissions.	IF-GU-540a.4	203-1	46
Activity Metrics	Number of: (1) residential, (2) commercial, and (3) industrial customers served.	IF-GU-000.A	102-6	54
	Amount of natural gas delivered to: (1) residential customers, (2) commercial customers, (3) industrial customers, and (4) transferred to a third party.	IF-GU-000.B	–	54
	Length of gas (1) transmission and (2) distribution pipelines.	IF-GU-000.C	–	55

Midstream Segment

Topic	Sustainability Accounting Metric	SASB(a)	GRI (Core)(b)	Page
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage methane, percentage covered under emissions-limiting regulations.	EM-MD-110a.1	305-1	59
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets.	EM-MD-110a.2	–	58
Air Quality	Air emissions of the following pollutants: (1) NOx (excluding N_2O), (2) SOx, (3) volatile organic compounds (VOCs), and (4) particulate matter (PM10).	EM-MD-120a.1	305-7	61
Ecological Impacts	Description of environmental management policies and practices for active operations.	EM-MD-160a.1	103-2	62
	Percentage of land owned, leased, and/or operated within areas of protected conservation status or endangered species habitat.	EM-MD-160a.2	304-1	66
	Terrestrial acreage disturbed, percentage of impacted area restored.	EM-MD-160a.3	304-3	67
	Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume in Unusually Sensitive Areas (USAs), and volume recovered.	EM-MD-160a.4	306-3	67
Competitive Behavior	Total amount of monetary losses as a result of legal proceedings associated with federal pipeline and storage regulations.	EM-MD-520a.1	–	68
Operational Safety, Emergency Preparedness, and Response	Number of reportable pipeline incidents, percentage significant.	EM-MD-540a.1	–	68
	Percentage of (1) natural gas and (2) hazardous liquid pipelines inspected.	EM-MD-540a.2	–	69
	Discussion of management systems used to integrate a culture of safety and emergency preparedness throughout the value chain and throughout project lifecycles.	EM-MD-540a.4	103-22	69
Activity Metric	Total metric ton-kilometers of: (1) natural gas, (2) crude oil, and (3) refined petroleum products transported, by mode of transport.	EM-MD-000.A	–	73

Upstream Segment

Topic	Sustainability Accounting Metric	SASB(a)	GRI (Core)(b)	Page
Greenhouse Gas Emissions	Gross global Scope 1 emissions, percentage methane, percentage covered under emissions-limiting regulations.	EM-EP-110a.1	305-1	77
	Amount of gross global Scope 1 emissions from: (1) flared hydrocarbons, (2) other combustion, (3) process emissions, (4) other vented emissions, and (5) fugitive emissions.	EM-EP-110a.2	305-1	77
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets.	EM-EP-110a.3	103-2	75
Air Quality	Air emissions of the following pollutants: (1) NOx (excluding N_2O), (2) SOx, (3) volatile organic compounds (VOCs), and (4) particulate matter (PM10).	EM-EP-120a.1	305-7	78
Water Management	(1) Total fresh water withdrawn, (2) total fresh water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress.	EM-EP-140a.1	303-3	78
	Volume of produced water and flow back generated; percentage (1) discharged, (2) injected, (3) recycled; hydrocarbon content in discharged water.	EM-MP-140a.2	306-1	79
	Percentage of hydraulically fractured wells for which there is public disclosure of all fracturing fluid chemicals used.	EM-EP-140a.3	–	79
	Percentage of hydraulic fracturing sites where ground or surface water quality deteriorated compared to a baseline.	EM-EP-140a.4	–	79
Biodiversity Impacts	Description of environmental management policies and practices for active sites.	EM-EP-160a.1	103-2	79
	Number and aggregate volume of hydrocarbon spills, volume in Arctic, volume impacting shorelines with ESI rankings 8-10, and volume recovered.	EM-EP-160a.2	306-3	84
	Percentage of (1) proved and (2) probable reserves in or near sites with protected conservation status or endangered species habitat.	EM-EP-160a.3	–	84
Security, Human Rights, and Rights of Indigenous Peoples	Percentage of (1) proved and (2) probable reserves in or near areas of conflict.	EM-EP-210a.1	–	85
	Percentage of (1) proved and (2) probable reserves in or near indigenous land.	EM-EP-210a.2	–	85
	Discussion of engagement processes and due diligence practices with respect to human rights, indigenous rights, and operation in areas of conflict.	EM-EP210a.3	–	86
Community Relations	Discussion of process to manage risks and opportunities associated with community rights and interests.	EM-EP-210b.1	–	86
	Number and duration of non-technical delays	EM-EP-210b.2	–	86
Work Force and Health Safety	(1) Total recordable incident rate (TRIR), (2) fatality rate, (3) near miss frequency rate (NMFR), and (4) average hours of health, safety, and emergency response training for (a) full-time employees, (b) contract employees, and (c) short-service employees.	EM-EP-320a.1	–	87
	Discussion of management systems used to integrate a culture of safety throughout the exploration and production lifecycle.	EM-EP-320a.2	103-2	87

Upstream Segment (continued)

Topic	Sustainability Accounting Metric	SASB(a)	GRI (Core)(b)	Page
Reserves Valuation & Capital Expenditures	Sensitivity of hydrocarbon reserve levels to future price projection scenarios that account for a price on carbon emissions.	EM-EP-420a.1	–	88
	Estimated carbon dioxide emissions embedded in proved hydrocarbon reserves.	EM-EP-420a.2		88
	Amount invested in renewable energy, revenue generated by renewable energy sales.	EM-EP-420a.3		90
	Discussion of how price and demand for hydrocarbons and/or climate regulation influence the capital expenditure strategy for exploration, acquisition, and development of assets.	EM-EP-420a.4	201-2	90
Business Ethics & Transparency	Percentage of (1) proved and (2) probable reserves in countries that have the 20 lowest rankings in Transparency International's Corruption Perception Index.	EM-EP-510a.1	–	92
	Description of the management system for prevention of corruption and bribery throughout the value chain.	EM-EP-510b.2	102-16	92
Management of Legal & Regulatory Environment	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry.	EM-EP-530a.1	102-30	92
Critical Incident Risk Management	Process Safety Event (PSE) rates for Loss of Primary Containment (LOPC) of greater consequence (Tier 1).	EM-EP-540a.1	306-3	92
	Description of the management system used to identify and mitigate catastrophic and tail-end risks.	EM-EP-540a.2	102-15 102-30	92
Activity Metrics	Production of: (1) oil, (2) natural gas, (3) synthetic oil, and (4) synthetic gas.	EM-EP-000.A	–	93
	Number of offshore sites.	EM-EP-000.B	102-4	93
	Number of terrestrial sites.	EM-EP-000.C	102-4	93

National Fuel®

NATIONAL FUEL GAS COMPANY
6363 Main Street, Williamsville, New York 14221
716-857-7000 www.nationalfuel.com
NYSE: NFG