An Integrated Company Approach – Voluntary GHG Reductions

2019 Natural Gas Star & Methane Challenge Workshop

November 6, 2019
Presented by Ronald Kraemer
Safe Harbor For Forward Looking Statements

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

In addition to other factors, the following are important factors that could cause actual results to differ materially from those discussed in the forward-looking statements: changes in laws, regulations or judicial interpretations to which the Company is subject, including those involving derivatives, taxes, safety, employment, climate change, other environmental matters, real property, exploration and production activities such as hydraulic fracturing; delays or changes in costs or plans with respect to Company projects, or projects involving others; market prices, including prices of natural gas or oil sold at different geographic locations; the effect of such changes in commodity production, revenues and demand for pipeline transportation capacity; governmental/regulatory actions, initiatives and proceedings, including those involving rate cases; the availability of credit and occurrences affecting the Company’s ability to obtain financing on acceptable terms for working capital, capital expenditures and other investments, including any downgrades in the Company’s credit ratings and changes in interest rates and other capital market conditions; changes in the price of natural gas or oil; impairments under the SEC’s full cost ceiling test for natural gas and oil reserves; factors affecting the Company’s ability to successfully identify, drill for and produce economically viable natural gas and oil reserves, including among others, lease availability, title disputes, weather conditions, shortages, delays or unavailability of equipment and services required in drilling operations, insufficient gathering, processing and transportation capacity, the need to obtain governmental approvals and permits, and compliance with environmental laws and regulations; increasing health care costs and the resulting effect on health insurance premiums and on the obligation to provide other post-retirement benefits; changes in price differentials between similar quantities of natural gas or oil sold at different geographic locations; the effect of such changes on commodity production, revenues and demand for pipeline transportation capacity to or from such locations; other changes in price differentials between similar quantities of natural gas or oil having different quality, heating value, hydrocarbon mix or delivery date; the cost and effects of legal and administrative claims against the Company or activist shareholder campaigns to effect changes at the Company; uncertainty of oil and gas reserve estimates; significant differences between the Company’s projected and actual production levels for natural gas or oil; changes in demographic patterns and weather conditions; changes in the availability, price or accounting treatment of derivative financial instruments; changes in laws, actuarial assumptions, the interest rate environment and the return on plan/trust assets related to the Company’s pension and other post-retirement benefits, which can affect future funding obligations and costs and plan liabilities; changes in economic conditions, including global, national or regional recessions, and their effect on the demand for, and customers’ ability to pay for, the Company’s products and services; the creditworthiness or performance of the Company’s key suppliers, customers and counterparties; the impact of information technology, cybersecurity or data security breaches; economic disruptions or uninsured losses resulting from major accidents, fires, severe weather, natural disasters, terrorist activities or acts of war; significant differences between the Company’s projected and actual capital expenditures and operating expenses; or increasing costs of insurance, changes in coverage and the ability to obtain insurance.

Forward-looking statements include estimates of oil and gas quantities. Proved oil and gas reserves are those quantities of oil and gas which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible under existing economic conditions, operating methods and government regulations. Other estimates of oil and gas quantities, including estimates of probable reserves, possible reserves, and resource potential, are by their nature more speculative than estimates of proved reserves. Accordingly, estimates other than proved reserves are subject to substantially greater risk of being actually realized. Investors are urged to consider closely the disclosure in our Form 10-K available at www.nationalfuelgas.com. You can also obtain this form on the SEC’s website at www.sec.gov.

For a discussion of the risks set forth above and other factors that could cause actual results to differ materially from results referred to in the forward-looking statements, see “Risk Factors” in the Company’s Form 10-K for the fiscal year ended September 30, 2018 and the Forms 10-Q for the quarter ended December 31, 2018, March 31, 2019, and June 30, 2019. The Company disclaims any obligation to update any forward-looking statements to reflect events or circumstances after the date thereof or to reflect the occurrence of unanticipated events.
National Fuel Gas - Company Overview

Upstream

Exploration & Production

Midstream

Gathering

Pipeline & Storage

Downstream

Utility

Energy Marketing
Developing our large, high quality acreage position in Marcellus & Utica shales

- **785,000** Net acres in Appalachia
- **~560 MMcf/day** Net Appalachian natural gas production

Expanding and modernizing pipeline infrastructure to provide outlets for Appalachian natural gas production

- **$1.6 Billion** Investments since 2010
- **4.2 MMDth** Daily interstate pipeline capacity under contract

Providing safe, reliable and affordable service to customers in WNY and NW Pa.

- **750,000** Utility customers
- **$300 Million** Investments in safety since 2014

(1) This presentation includes forward-looking statements. Please review the safe harbor for forward looking statements on slide 2 of this presentation.
(2) Twelve months ending June 30, 2019.
Integrated Model Enhances Value…

Geographic and Operational Integration Drives Synergies

- Co-Development of Marcellus and Utica
- Just-in-time gathering facilities
- Pipeline expansion opportunities

- Rate-regulated entities share common resources, reducing operating expense
- Utility business is a large Pipeline & Storage customer
Near Term Strategy Leverages Integration Across the Value Chain

- Integrated Upstream and Midstream development of 785,000 acre Marcellus and Utica shale position
- Further expansion of interstate pipeline systems to satisfy growing natural gas supply and demand
- Ongoing investment in safety and modernization of pipeline transportation and distribution systems
Visions and Perspective as an Integrated Company
NFG: Our Core Values

National Fuel’s Guiding Principles

**Safety**
We value the safety of all of our customers, employees, and communities, and work diligently to establish a culture of safety that is embraced throughout the organization.

**Environmental Stewardship**
We play a unique and vital role in upholding standards of environmental protection in every area of our business. We are proactive and detailed in our compliance with local, state, and federal laws.

**Community**
We are committed to the health and vitality of our local communities. We work where we live and raise our families, and are constantly focuses on the highest standards of corporate responsibility and accountability.

**Innovation**
We strive to exceed the standards for safe, clean, and reliable energy development. We invest in the future of our regions’ energy resources. We envision a long and healthy future for our company.

**Satisfaction**
We work to deliver reliable, high quality service for our customers. We want our shareholders to see a strong return on their investment. We want our employees to work in a positive, safe, and rewarding environment. We want our communities to be proud to call us neighbors.

**Transparency**
We believe that open communication is key to maintaining strong relationships. We see value in educating our customers, shareholders, employees and the larger community about all aspects of our work.
National Fuel’s Commitment to the Environment

We strive to:

✓ Integrate environmental protection into planning and decision-making
✓ Monitor environmental performance and make corrective actions to stimulate continual improvements
✓ Promote and encourage energy conservation and environmental protection through new technologies
✓ Encourage employees to take responsibility for preserving and protecting the environment

To see our entire Environmental Policy Statement please visit: https://www.natfuel.com/CorporateResponsibility/nat-fuel-enviro-policy-statement.pdf
Sustainability – Methane Emissions - Transparency

**Seneca Resources** – member of EPA’s Natural Gas STAR program since 2015. A program focused on identifying opportunities and implementing emission reducing technologies throughout operations.

**Seneca Resources** – member of the American Petroleum Institute’s (API) Environmental Partnership since 2018. An industry led organization to share best practices and new technology information relating to emissions controls with commitments to implement those controls.

**NFG Supply & Empire Pipeline** worked with the Interstate Natural Gas Association of America (INGAA) to develop a set of voluntary methane emissions commitments to continuously improve practices to minimize methane emissions from interstate natural gas transmission and storage operations. Commitments were finalized and agreed upon in 2018.

**NFG Distribution** worked with the American Gas Association (AGA) to develop a set of gas utility-focused metrics for environmental, social, governance and sustainability to assist AGA-member natural gas utility companies in their voluntary sustainability reporting. Starting in 2018, NFG Distribution published data from the previous year.
Methane Challenge Commitments

Overview
Reducing Methane Emissions

In October, 2018, five subsidiaries of National Fuel Gas Company volunteered to participate in the U.S. EPA Methane Challenge by making independent commitments under the Methane Challenge Best Management Practices Option.

- Seneca Resources Co., LLC
- NFG Midstream Co., LLC
- NFG Supply Corp.
- & Empire Pipeline, Inc.
- NFG Distribution Corp.
Methane Challenge Commitments – Seneca Resources

**Pneumatic Controllers**

*Onshore Production, Gathering & Boosting, Processing*

- Utilize natural gas-actuated controllers ≤ 6scfh, or
- Utilize zero emitting controllers (e.g., instrument air, solar, electric, or mechanical controllers), or
- Remove natural gas pneumatic controllers from service with no replacement

**Reciprocating Compressors - Rod Packing**

*Gathering & Boosting, Processing*

- Commit to enhanced maintenance schedule, or
- Route rod packing vent to a capture system for beneficial use, to flare, or to a control device to achieve at least 95% reduction in methane emissions

**Fixed Roof, Atm. Pressure Hydrocarbon Storage Tanks**

*Onshore Production*

- Commit to installing vapor recovery units at all future and existing hydrocarbon liquid storage tanks
## Methane Challenge Commitments – Supply, Empire, & Midstream

<table>
<thead>
<tr>
<th>Committed in 2018</th>
<th>Committed in 2018</th>
<th>Approval Pending</th>
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<tbody>
<tr>
<td><strong>Pneumatic Controllers</strong></td>
<td><strong>Rod Packing</strong></td>
<td><strong>Equipment Leaks/Fugitives</strong>*</td>
</tr>
<tr>
<td>• Supply, Empire, &amp; Midstream</td>
<td>• Supply &amp; Midstream</td>
<td>• Supply</td>
</tr>
<tr>
<td>• Prioritize compressor stations</td>
<td>• Commit to maintenance schedule of 26,000 operating hours</td>
<td>• Commit to measuring leaks from Isolation &amp; Blowdown Valves</td>
</tr>
<tr>
<td>• Conduct inventories and replace high bleed pneumatic devices when practical</td>
<td>• Document results annually as they occur</td>
<td>• Develop a valve maintenance, repair, and replacement program</td>
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*Proposed BMP submitted on 3/21/2019
## Methane Challenge Commitments – Distribution

<table>
<thead>
<tr>
<th>Mains – Cast Iron &amp; Unprotected Steel</th>
</tr>
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<tbody>
<tr>
<td>• Based on remaining mileage – minimum 2% per year replacement rate</td>
</tr>
<tr>
<td>• <em>Commit to 3% per year replacement rate</em></td>
</tr>
<tr>
<td>• Emphasis on eliminating Cast Iron in the next 4 years. 46 miles remain in NY LDC.</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Services – Cast Iron and Unprotected Steel</th>
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</thead>
<tbody>
<tr>
<td>• Upgrade services when unprotected steel/cast iron mains are upgraded</td>
</tr>
<tr>
<td>• Distribution does not have any Cast Iron services in its system</td>
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</tbody>
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<thead>
<tr>
<th>Excavation Damages</th>
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<tbody>
<tr>
<td>• Commit to reducing the number of third-party damages to the Distribution system</td>
</tr>
<tr>
<td>• Actively promote excavation safety</td>
</tr>
<tr>
<td>• Collect data &amp; analyze incidents</td>
</tr>
<tr>
<td>• Proposing to collect and report data through 2021, then assess goal</td>
</tr>
</tbody>
</table>
Historical Reductions
Minimizing Emissions While Manually Unloading Wells

➢ Seneca uses several methods to reduce emissions during unloading wells.

➢ Preventing wells from loading and managing loaded wells are parts of the solution.

➢ See presentation from Seneca at this conference.

➢ CO₂e reduction ≈ 96,000 metric tons
Substitute Pneumatic Devices with Low or Zero Bleed Devices

- Seneca identified and categorized its natural gas driven pneumatic controllers
- 950 of pneumatic controllers have been substituted to low or zero-bleed controllers
- CO₂e reduction ≈ 149,000 metric tons
Install Flash Tanks on Dehydrators

- Recovers entrained methane in triethylene glycol
- Midstream incorporates flash tanks system-wide
- CO$_2$e reduction $\approx 62,000$ metric tons
Historical Highlights – NFG Midstream

Capped Emergency Shutdown (ESD) Testing

➢ Committed to testing ESD systems at compressor stations on an annual basis
➢ Adopted acceptable DOT alternative: blind flanges
➢ Prevents entire station blowdowns
➢ CO₂e reduction ≈ 25,000 metric tons
Historical Highlights – NFG Supply

Isolation Valve Program

➢ EPA’s annual GHG inventory data indicates 80-90% of fugitives at T&S compressor station emissions are from isolation & blowdown Valves, and rod packing

➢ Supply targeted isolation valves

➢ NFG Case Study: Maintenance & replacement of isolation valves (9 in total) on 3 units

➢ \( \text{CO}_2 \text{e reduction} \approx 109,000 \text{ metric tons} \)
Eliminating facilities & achieving efficiencies

CO$_2$e Reduction $\approx$ 110,000 metric tons

Example: Porterville Compressor Station Modernization

- Removed four 150-hp 1950’s vintage units
- Modernization included replacement of ALL station piping, valves, measurement, filtration, and heaters
- Installed one 400-hp GE Waukesha F18SE compressor engine
Historical Highlights – Empire Pipeline

Hot Taps

➢ Alternative to blowing down a line when making a new connection to the pipeline

➢ Empire uses this technology when feasible

➢ CO₂e reduction ≈ 10,000 metric tons
Historical Highlights – NFG Distribution

Background
National Fuel Gas Distribution Corporation ("NFGDC") is a natural gas utility serving approximately 750,000 residential, commercial, and industrial customers in western New York and northwestern Pennsylvania. NFGDC has a deep appreciation for the vital role it plays in upholding standards of environmental protection in the communities where its customers and employees work and live. As part of that responsibility, NFGDC is committed to reducing greenhouse gas emissions from its operations.

Historical Highlights

Upgrading Cast Iron and Unprotected Steel Mains
NFGDC continuously upgrades its distribution systems in order to ensure safe and reliable delivery of natural gas. These upgrades also benefit the environment by reducing greenhouse gas emissions. From 2013 to 2017, upgrading mains has reduced NFGDC’s estimated emissions by about 7,700 metric tons CO₂e per year on average. That’s about the same as the emissions from over 1,065 passenger vehicles.

Upgrading Unprotected Steel Services
NFGDC also upgrades services – the small diameter pipe that connects the customer to the mains – when mains are upgraded. On average, NFGDC replaces approximately 4,000 unprotected steel services every year resulting in another 3,400 metric tons CO₂e of reduced emissions annually. That’s another 722 cars.
Recent Reductions ≈ 1,380,000 metric tons of CO$_2$e

Reductions equivalent to any one of the following: (1)

- **240,653** homes' electricity use for one year
- **292,994** passenger vehicles driven for one year
- **52,417,670** incandescent lamps switched to LEDs
- **56,414,000** propane cylinders used for home barbecues
- **155,282,998** gallons of gasoline consumed
- **22,818,592** tree seedlings grown for 10 years

(1) [https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator](https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator)
Thank you!