OMB Control No. 2060-0722
Approval expires 08/31/2021

Natural Gas STAR Methane Challenge Program
Implementation Plan

Partner Name

National Fuel Gas Supply Corporation

Current as of (date)

Apr 19, 2019

Partner Implementation Manager

Name: _____

Title: _____

Address: _____

City/State/Zip: _____

Telephone/Fax: _____ E-mail: _____

Partner Methane Challenge Commitments[1]

BMP Commitment Option

	Source	Start Date	Achievement Year
	Onshore Production		
☐	Pneumatic Controllers		
☐	Fixed Roof, Atmospheric Pressure Hydrocarbon Liquid Storage Tanks		
	Gathering and Boosting		
☐	Pneumatic Controllers		
☐	Fixed Roof, Atmospheric Pressure Hydrocarbon Liquid Storage Tanks		
☐	Reciprocating Compressors - Rod Packing Vent		
☐	Centrifugal Compressors - Venting		
	Natural Gas (NG) Processing		
☐	Reciprocating Compressors - Rod Packing Vent		
☐	Centrifugal Compressors - Venting		
	NG Transmission & Underground Storage		
■	Reciprocating Compressors - Rod Packing Vent	Oct 8, 2018	2022
☐	Centrifugal Compressors - Venting		
☐	Transmission Pipeline Blowdowns between Compressor Stations		
■	Pneumatic Controllers	Oct 8, 2018	2022
	NG Distribution		
☐	Mains – Cast Iron and Unprotected Steel *(Commitment Rate:)*		
☐	Services – Cast Iron and Unprotected Steel		
☐	Distribution Pipeline Blowdowns *(Commitment Rate:)*		
☐	Excavation Damages		

Partner Methane Challenge Commitments

ONE Future Emissions Intensity Commitment Option

Segment:		Intensity Target:		Target Year:	

[1] Partners may delete unused rows within the table, and may duplicate rows and add relevant details as needed (e.g., a corporate parent partner that has different commitments for each LDC can duplicate relevant rows to list the commitments for each LDC).

Milestones/Timeframes for Meeting Commitments

Provide information on steps for achieving commitments such as anticipated rate of progress, key milestones, or other context (e.g., referencing work to be done during the next planned shutdown of a facility).

NFGSC Methane Challenge Program(s)

The programs will commence in 2018 for National Fuel Gas Supply Corporation (NFGSC) transmission compressor and storage stations. In fall 2018, the Methane Challenge MOU was executed with EPA. Annual reports will be submitted by June 30 after the first full calendar year of being in the program, with the first report submitted by June 30, 2020. The programs, which are described below, will be implemented at all facilities over a five year period (2018 - 2022), with anticipated interim milestones as follows.

NFGSC natural gas transmission compressor stations (32 total facilities):

- 2018 facilities - GHG Reporting Program facilities (approximately 20%);
- 2019 facilities - commitment target adds approximately 20%;
- 2020 facilities - commitment target adds approximately 20%;
- 2021 facilities - commitment target adds approximately 20%;
- 2022 facilities - commitment target adds approximately 20%.

Rod Packing

Key Program Elements include:

1. Evaluate and prioritize compressor stations and develop schedule. Initiate for GHG reporting program facilities in 2018 and implement across remaining facilities over the next 4 years.
2. Develop program to reduce leakage from reciprocating compressor rod packing. The initial maintenance schedule will be based on the Subpart OOOOa operating hour threshold (i.e., 26,000 operating hours) or a shorter frequency defined by NFGSC.
3. Document results annually as actions occur - e.g., maintenance action and interval, emission reduction estimates, and costs.
4. Analyze results to assess maintenance schedule, action, and the implications for maintenance intervals.
5. Identify improvement opportunities, and modify or adjust plan as needed for subsequent year(s). As appropriate, make recommendations for condition-based maintenance and adjust program implementation.

Pneumatic Controllers

Key Program Elements include:

1. Evaluate and prioritize compressor stations and develop schedule (2018);
2. Conduct field equipment survey and device count verification. Initiate for GHG reporting program facilities in 2018 and implement across remaining facilities over the next 4 years.
3. Document pneumatic device emission reduction strategy - i.e. replace high bleed devices when practical; ensure device functionality; evaluate air systems.
4. Prioritize facilities and pneumatic device replacements based on field survey.
5. Implement program.
6. Document results annually as actions occur - e.g., emission reductions and costs.
7. Reduction estimates will be based on vent rate specifications from vendor.
8. Annual facility-level reporting by June 30.

Additional Information/Context (optional)

Use this space, if desired, to provide other information about Program participation, such as plans for expanding Methane Challenge commitments, how historical actions informed Methane Challenge commitments, or other information on how the Program will be implemented.

Rod Packing

Available information (e.g., see Pipeline Research Council International (PRCI) report ("GHG Emission Factor Development for Natural Gas Compressors, "PRCI Catalog No. PR-312-16202-R02, April 2018) that collected and analyzed Subpart W data) documents that leak rate growth from reciprocating compressor rod packing wear can be a primary leak emissions source for compressor stations and storage facilities. On average, leaks from compressor rod packing, blowdown valves, and unit isolation valves have been shown to contribute more than 80% of total facility leak emissions. The leak mitigation program will focus on rod packing maintenance or replacement and will initially be based on operating hour thresholds.

The EPA annual GHG inventory includes estimates of leak emissions from natural gas transmission compressor stations and storage facilities. That EPA report indicates that about 90% of transmission station leak emissions are from compressors (versus the balance of the facility) and about 80% of storage facility leaks are from compressors. The primary sources of reciprocating compressor emissions are rod packing, blowdown valves, and unit isolation valves. Compressor isolation / blowdown valves are not included in this BMP. As noted above, an April 2018 PRCI report analyzed Subpart W data from natural gas transmission and storage facilities. Over 14,000 measurements were analyzed associated with 2011 - 2016 GHGRP reporting for compressor-related leaks. That data confirms that rod packing is a key emissions source when rod packing leakage increases from wear.

Methane Program Continuous Improvements

As a Partner of the Methane Challenge Program, NFGSC is committed to continuously analyzing potential new and innovative approaches for further methane reduction initiatives through technology enhancement and improved work practices. NFGSC plans to commit to future effective BMP's, once available, as EPA follows their proposal process for evaluating new and innovative approaches and finalizes for utilization. In addition, NFGSC looks forward to actively participating in EPA's BMP proposal process.