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Natural Gas STAR Methane Challenge Program
Implementation Plan

Partner Name

Dominion Energy Carolina Gas Transmission

Current as of (date)

May 30, 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		
☐	Centrifugal Compressors - Venting		
■	Transmission Pipeline Blowdowns between Compressor Stations	01/2019	01/2024
☐	Pneumatic Controllers		
	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).

Dominion Energy Carolina Gas Transmission (DECG)

Natural Gas STAR Methane Challenge Program

Implementation Plan – Transmission and Storage

Company Background

Nearly 7.5 million customers in 18 states energize their homes and businesses with electricity or natural gas from Dominion Energy, headquartered in Richmond, Virginia. The company is committed to sustainable, reliable, affordable and safe energy and is one of the nation's largest producers and transporters of energy with about $100 billion of assets providing electric generation, transmission and distribution, as well as natural gas storage, transmission, distribution and import/export services.

Dominion Energy Carolina Gas Transmission (DECG) is an interstate gas transmission subsidiary of Dominion Energy. DECG is primarily a provider of gas transportation services and maintains 1,500 miles of pipeline in two states – South Carolina and Georgia. DECG transports large quantities of natural gas to wholsesale and direct industrial customers throughout South Carolina.

Commitments and Projected Timeframe

On November 30, 2018, DECG submitted a "Partnership Agreement" to EPA in which DECG voluntarily commits to reducing pipeline blowdowns between compressor stations by 50% of total potential emissions of all planned maintenance activities by calendar year 2024 (CY2024). A copy of the signed agreement is provided in Appendix A.

DECG's natural gas transmission pipelines typically operate under a normal operating pressure in the range of 100-1400 psig. The pipeline systems periodically require maintenance, which could be minor repairs (Class 1, non-emergency repairs) to major repairs (Class 4, requiring new sections of pipe to be installed)[1]. Prior to repair of a section of the pipe, the natural gas in the pipe will need to be released either at the operating pressure of the pipe or under reduced pressure. Methane, being the predominant component of natural gas (>95%), is released during the pipeline blowdown. As part of the commitment

[1] Using Pipeline Pump-Down Techniques to Lower Gas Line Pressure Before Maintenance (https://www.epa.gov/sites/production/files/2016-06/documents/ll_pipeline.pdf)

under the Methane Challenge program, DECG will reduce the methane emissions released during planned blowdown activities. The emissions from pipeline blowdown from unplanned or emergency events are not covered by the commitment, but DECG will implement best management practices, as feasible, to reduce emissions during such events.

By Calendar Year 2024, DECG will implement data tracking systems and measures to reduce emissions from planned blowdown from pipes by 50%, i.e., a 50% decrease from the emissions that would have been emitted had the blowdown reductions not been implemented.

Dominion Energy will mainly target reduction through pressure pump downs or draw downs prior to planned maintenance events; however, DECG may utilize a combination of mitigation options to achieve the blowdown reductions, including:

- Routing gas to a compressor or capture system of beneficial use;
- Routing gas to a flare;
- Routing gas to a low-pressure system, temporary resetting or bypassing pressure regulators to reduce system pressure prior to maintenance, or installing temporary connections between high and low pressure systems; and
- Utilizing hot tapping for new pipeline connections (avoiding blowdowns by keeping the pipeline in service and under pressure during the connection).

Milestones and Associated Timeframes

The emissions associated with pipeline blowdowns will be calculated using engineering software to determine the volume of gas emitted from the pipeline blowdowns. These volumes and emissions will be submitted to a data analyst for tracking and recording. Annually, DECG Operations will work with DECG engineering to get a list of all the planned outages schedules for each calendar year through 2024. DECG Area Director will be informed of the schedules outages in order to plan for pressure reductions or other mitigation measures. Calculations and data will be evaluated by management on a semiannual basis to determine progress toward their commitment. Based on the number of planned pipeline maintenance activities and associated blowdown events planned for a given calendar year, DECG will develop a plan for methane emission during blowdowns.

A preliminary schedule for implementing measures under this program is shown in Table 1.

Table 1

Measure to be Implemented	Preliminary Schedule
Set up engineering software to determine volumes of gas emitted from pipeline blowdowns	2019
List of planned blowdown events	2019 completed, 1st Quarter every CY (2020-2023); update as necessary during the year
Calculate blowdown emissions data and perform emissions reductions calculations	Ongoing through the year
Summary of blowdown emissions and reductions, report to EPA	1st Half of following years (2020-2024)

Recordkeeping and Reporting

The reductions from the reduced blowdowns will be entered into the engineering software and tracked by a data analyst. For pressure reduction events, reductions are calculated in thousands of cubic feet (mcf) and are the difference between the gas loss at maximum or normal operating pressure and the release of gas at final pressure after pump down or draw down.

Dominion Energy will track and report progress on a calendar year basis, which coincides with the EPA Greenhouse Gas Reporting Program (GHGRP) and other corporate disclosures. Two data elements will already be reported annually under the GHGRP, 1st Quarter in 2020 for CY2019 data. The below table illustrates how DECG will voluntarily record and report supplemental data annually to EPA under the Methane Challenge Program.

Table 2

Emissions Source	**Quantification Method**	**Data Elements Collected via Facility-Level GHGRP Reporting**	**GHGRP**
Pipeline blowdowns between compressor stations (*reportable facilities*)	Subpart W Method 1, based on volume, temperature, and pressure	1. Total number of blowdowns per equipment or event type	X
		2. Total CH4 emissions (mt CH4) per equipment or event type (*calculated based on blowdown amount in MCF*)	X
Voluntary action to reduce methane emissions during the reporting year	Difference in potential and actual emissions	3. Total number of blowdowns to which a BMP was applied	
		4. Number of blowdowns that routed gas to a:	
		a. Compressor or capture system for beneficial use	
		b. Flare	
		c. Low-pressure system	
		5. Number of hot taps utilized that avoided the need to blowdown gas to the atmosphere	
		6. Total potential emissions (mt CH4)	
		7. Emission reductions from voluntary action (mt CH4) (*6 minus 2*)	
		8. *Percent Annual Reduction (7 divided by 6)*	

Plans for Future Expansion of Methane Challenge Commitments

Dominion Energy is evaluating plans for additional participation under the Methane Challenge Program and will update the implementation plan if and when those decisions are made. Dominion Energy continues to participate, and has recently expanded participation, in the Natural Gas STAR program for other voluntary methane reduction efforts outside the Methane Challenge Program. Best Management Practices (BMPs) and Partner Reported Opportunities (PROs) implemented by DECG under the NgSTAR program include:

- Directed Inspection and Maintenance at Compressor Stations
- Identifying and Replacing High Bleed Pneumatic Devices
- Replacing Orifice Meters with Ultrasonic Meters
- Use of YALE Enclosures during ESDs

Historic Methane Emissions Reductions

DECG joined the Natural Gas STAR Program in 2015. Under the Natural Gas STAR Program, DECG has saved nearly 100 million cubic feet of natural gas from release to the atmosphere by implementing best management practices. Two of those measures will be enhanced under the Methane Challenge Program. The remaining measures will continue to be implemented and reported under the NgSTAR program.

Table 3

NgSTAR Reductions in Thousand Cubic Feet (mcf)				**Measures Moving to Methane Challenge Program**	**Measures Staying in Natural Gas STAR Program**
BMP	**Pre-2016**	**2016**	**2017**		
Inspection & Maintenance	25,405	56	25,620		X
Replace High Bleed Devices	5,614	124	2,728		X
Reduce Pressure Before Maintenance	0	16,318	11,198	X	
Replace Orifice with Ultrasonic Meters	N/A	20	20		X
Use Hot Taps	N/A	1,212	9,582	X	
Use of YALE Enclosures During ESDs	N/A	131	682		X
Total mcf Reduced:	**31,019**	**17,861**	**49,830**		
	98,710				