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Approval expires 08/31/2021

Natural Gas STAR Methane Challenge Program
Implementation Plan

Partner Name

Dominion Energy Wexpro

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	01/2019	01/2024
☐	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		
☐	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 Wexpro (DE Wexpro)

Natural Gas STAR Methane Challenge Program

Implementation Plan – Gathering and Boosting

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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.

Wexpro Company (DBA Dominion Energy Wexpro) (DE Wexpro) is an interstate gas production, gathering, and boosting subsidiary of Dominion Energy. The company's operations stretch from the northern tip of the Greater Green River Basin in Pinedale, Wyoming through the vermillion Basin of Wyoming and Colorado, down to the Uinta Basin of Utah.

Commitments and Projected Timeframe

On November 30, 2018, Dominion Energy Wexpro submitted a "Partnership Agreement" to EPA in which DE Wexpro voluntarily commits to implement a rod packing vent replacement program by calendar year 2024 (CY2024) such that all rod packing vents of reciprocating compressors are replaced every 26,000 hours of operation or every 36 months. A copy of the signed agreement is provided in Appendix A.

DE Wexpro operates ten reciprocating compressor engines in its Gathering and Boosting segment to increase the pressure of the natural gas. Reciprocating compressor engines have rod packing vents. Rod packing refers to the materials around the compressor piston that create a seal to reduce the amount of natural gas lost to the atmosphere during operation of the compressor engine. The natural gas that is emitted exits through the rod packing vent. Methane, being the predominant component of natural gas, is released from the rod packing vent. Over time and extended operation of the compressor engine, the rod packing materials (e.g. rings, gaskets, casing) wear down and the fittings of the assembly of these

materials loosen. As the materials degrade and the fittings loosen, emissions from the rod packing vent increase as more natural gas is lost.

As part of the commitment under the Methane Challenge program, DE Wexpro will reduce the methane emissions released from rod packing vents. By Calendar Year 2024, DE Wexpro will establish data tracking systems and implement measures to ensure that rod packing vents are replaced every 26,000 hours of operation or every 36 months. These replacements will ensure that the integrity of the rod packing is not compromised from extended use and operations.

DE Wexpro also operates reciprocating compressor engines in its Production segment. Although this commitment only covers DE Wexpro's Gathering and Boosting segment, DE Wexpro plans on following a similar rod packing vent replacement schedule (every 26,000 hours of operation or every 36 months) as it does for its Gathering and Boosting reciprocating compressor engines.

Milestones and Associated Timeframes

The hours of operation between rod packing replacements, dates of rod packing replacements, and emissions associated with reciprocating compressors will be tracked and recorded through an electronic records system. Annually, DE Wexpro Operations will review which compressors are due for rod packing replacement within the next year and create a list of all planned rod packing replacements for each calendar year through 2024. DE Wexpro's Director will be informed of the scheduled rod packing replacements for planning purposes to ensure minimal interruption of operations.

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

Table 1

Measure to be Implemented	**Preliminary Schedule**
Set up electronic records system	2019
List of planned rod packing replacements	2019 completed, 1st Quarter every CY (2020-2023); update as necessary during the year
Record dates of rod packing replacements	Ongoing through the year
Summary of reciprocating compressor engine hours of operation, dates of rod packing replacements, and emissions, report to EPA	1st Half of following years (2020-2024)

Recordkeeping and Reporting

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. The below table illustrates how DE Wexpro will voluntarily record and report supplemental data annually to EPA under the Methane Challenge Program.

Table 2

Emission Source	Quantification Method	Data Elements Collected via Facility-Level Reporting	GHGRP
Reciprocating compressors	Reciprocating compressor venting emission factor	1. Number of reciprocating compressors	X
		2. Annual CH4 emissions (mt CH4)	X
Each reciprocating compressor	NA	3. Is rod packing replacement occurring every 26,000 hours or 36 months (Y/N)	
		4. Date of last rod packing replacement	
		5. Number of operating hours since rod packing replacement	

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. DE Wexpro operates in both the Production and Gathering and Boosting natural gas segments. Below is DE Wexpro's evaluation of the other Methane Challenge BMP options for the Production and Gathering and Boosting segments:

- Replacement of Pneumatic Controllers: DE Wexpro already replaced all pneumatic controllers with low bleed controllers as of 2014.
- Replacement of Pneumatic Pumps: DE Wexpro already replaced all pneumatic pumps as of 2017.
- Centrifugal Compressors – Venting: DE Wexpro does not have any applicable units.
- Equipment Leaks/Fugitive Emissions: EPA has not yet developed this item as an implementation plan option.
- Liquids Unloading: EPA has not yet developed this item as an implementation plan option.

Dominion Energy is also evaluating plans for further participation in the Natural Gas STAR program for other voluntary methane reduction efforts outside the Methane Challenge Program.

Historic Methane Emissions Reductions

Since joining the Natural Gas STAR Program in 2012, DE Wexpro has saved more than 680 million cubic feet of natural gas from release to the atmosphere by implementing best management practices. A summary of these savings is included in the table below. As stated above, DE Wexpro has already replaced all pneumatic controllers with low bleed controllers and replaced all pneumatic pumps for both the Production segment and Gathering and Boosting segment. However, savings from the replacement of pneumatic controllers and pneumatic pumps span 7-10 years after replacement. DE Wexpro Engineering will continue to evaluate gas wells with the potential to use plunger lifts and other potential savings opportunities.

Table 3

NgSTAR Reductions in Thousand Cubic Feet (mcf) – DE Wexpro Production Segment						
BMP	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Artificial Lift: Install Plunger Lifts	0	0	0	1,152	3,072	10,368
Convert Natural Gas-Driven Chemical Pumps	882	2,999	2,999	2,999	2,999	163,738
Identify and Replace High-Bleed Pneumatic Devices	0	0	122,512	122,512	122,512	122,512
Total mcf Reduced:	**882**	**2,999**	**125,511**	**126,663**	**128,583**	**296,618**
	681,256					