



Natural Gas STAR Methane Challenge Program Implementation Plan

Partner Name

Current as of (date)

Partner Implementation Manager

Name: _____

Title: _____

Address: _____

City/State/Zip: _____

Telephone/Fax: _____

E-mail: _____

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Natural Gas STAR Methane Challenge Program Implementation Plan

Partner Methane Challenge Commitments¹

BMP Commitment Option

	Source	Start Date	Achievement Year
Onshore Production			
<input type="checkbox"/>	Pneumatic Controllers		
<input type="checkbox"/>	Fixed Roof, Atmospheric Pressure Hydrocarbon Liquid Storage Tanks		
Gathering and Boosting			
<input type="checkbox"/>	Pneumatic Controllers		
<input type="checkbox"/>	Fixed Roof, Atmospheric Pressure Hydrocarbon Liquid Storage Tanks		
<input type="checkbox"/>	Reciprocating Compressors - Rod Packing Vent		
<input type="checkbox"/>	Centrifugal Compressors - Venting		
Natural Gas (NG) Processing			
<input type="checkbox"/>	Reciprocating Compressors - Rod Packing Vent		
<input type="checkbox"/>	Centrifugal Compressors - Venting		
NG Transmission & Underground Storage			
<input type="checkbox"/>	Reciprocating Compressors - Rod Packing Vent		
<input type="checkbox"/>	Centrifugal Compressors - Venting		
<input type="checkbox"/>	Transmission Pipeline Blowdowns between Compressor Stations		
<input type="checkbox"/>	Pneumatic Controllers		
NG Distribution			
<input type="checkbox"/>	Mains – Cast Iron and Unprotected Steel (<i>Commitment Rate:</i>)		
<input type="checkbox"/>	Services – Cast Iron and Unprotected Steel		
<input type="checkbox"/>	Distribution Pipeline Blowdowns (<i>Commitment Rate:</i>)		
<input type="checkbox"/>	Excavation Damages		

Partner Methane Challenge Commitments

ONE Future Emissions Intensity Commitment Option

Segment:		Intensity Target:		Target Year:	
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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 Transmission (DTI)

Natural Gas STAR Methane Challenge Program

Implementation Plan – Transmission and Storage

Date:

Contact Name:

Contact Title:

Contact Address:

Contact Email:

Company Background

Dominion is one of the nation's largest producers and transporters of energy, with a portfolio of approximately 25,700 megawatts of generation, 12,200 miles of natural gas transmission, gathering and storage pipeline, and 6,500 miles of electric transmission lines. Dominion Transmission, Inc., headquartered in Richmond, Virginia, is the interstate gas transmission subsidiary of Dominion. The company is primarily a provider of gas transportation and storage services. Dominion operates one of the largest underground natural gas storage systems in the United States with links to other major pipelines and to markets in the Midwest, Mid-Atlantic and Northeast regions of the United States. We maintain 7,800 miles of pipeline in six states — Ohio, West Virginia, Pennsylvania, New York, Maryland and Virginia. We store and transport large quantities of natural gas for large customers, such as major utilities and power plants. Dominion Transmission also is a producer and supplier of natural gas liquids at a facility in West Virginia.

Commitments and Projected Timeframe

On March 25, 2016, Dominion Transmission, Inc. submitted a "Partnership Agreement" to EPA in which we voluntarily commit to reducing pipeline blowdowns between compressor stations by 50% of total potential emissions of all planned maintenance activities by calendar year 2021 (CY2021). A copy of the signed agreement is provided in Appendix A.

DTI's natural gas transmission pipelines typically operate under a maximum allowable operating pressure (MAOP) in the range of 500 – 1200 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 blow down. As a part of our commitment under the Methane Challenge program, DTI will reduce the

¹ EPA Natural Gas STAR Recommended Technology and Practices (<https://www3.epa.gov/gasstar/tools/recommended.html#pipelines>)

methane emissions released during planned blow down activities. The emissions from pipeline blow down from unplanned or emergency events are not covered by the commitment, but DTI will implement best management practice, as feasible, to reduce emissions during such events.

By Calendar Year 2021, DTI will establish procedures, data tracking systems, and implement measures to reduce emissions from planned blow down from pipes by 50%, i.e., a 50% decrease from the emissions that would have been emitted had the blow down reductions not been implemented.

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

- Routing gas to a compressor or capture system for beneficial use,
- Routing gas to a flare,
- Routing gas to a low-pressure system, temporarily resetting or bypassing pressure regulators to reduce system pressure prior to maintenance, or installing temporary connections between high and low pressure systems,
- 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 tracked and recorded using a system called Gas Loss Event Tracking (GLET). DTI currently uses the GLET system to track and report emission reductions under the Natural Gas STAR program. Annually, DTI Operations will work with DTI Gas Control to get a list of all the planned outages scheduled for each calendar year through 2021. DTI Area Directors will be informed of the scheduled outages in order to plan for pressure reductions or other mitigation measures. GLET 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 blow down events planned for a given calendar year, DTI will develop a plan for methane emissions during blow downs.

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

Set up GLET to collect blowdown gas loss data	4 th Quarter 2016
List of planned blow down events	1 st Quarter every CY (2017-2021); update as necessary during the year
Collect blowdown emissions data and perform emissions reductions calculations	Ongoing through the year
Summary of blow down emissions and reductions; report to EPA	1 st Quarter of following years (2017-2022)

Recordkeeping and Reporting

The reductions from the reduced blow downs will be tracked and entered into GLET. 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.

Dominion 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 2017 for CY2016 data. The below table illustrates how DTI will voluntarily record and report supplemental data annually to EPA under the Methane Challenge Program.

Emissions Source	Quantification Method	Data Elements Collected via Facility-Level GHGRP Reporting	GHGRP
Pipeline blowdowns between compressor stations	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 (mtCH4) per equipment or event type	x
Voluntary action to reduce methane emissions during the reporting year	Difference in potential emissions and actual emissions	3. Total number of blowdowns	
		4. Number of blowdowns that routed gas to a :	
		Compressor or capture system for beneficial use	
		Flare	
		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)		
	<i>Percent Annual Reduction (7 divided by 6)</i>		

Plans for Future Expansion of Methane Challenge Commitments

Dominion 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 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) implemented by DTI under the NG STAR program include:

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

Historic Methane Emissions Reductions:

Since joining the Natural Gas STAR Program in 2011, DTI has saved more than one billion 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 STAR program.

2015 NG STAR Reductions	Reductions in Thousand Cubic Feet (mcf)	Measures Moving to Methane Challenge Program	Measures Staying in Natural Gas STAR Program
Inspection & Maintenance	62,602		X
Replace High Bleed Devices	250		X
Compressor blowdown recovery	104,915		X
Reduce pressure before maintenance	177,919	X	
Replace orifice with ultrasonic meters	240		X
Use hot taps	50,943	X	
Use of YALE enclosures during ESDs	25,593		X
Total MCF Reduced in 2015:	422,462		
Total MCF Reduced in Previous Years:	1,058,188		