



## Natural Gas STAR Methane Challenge Program Implementation Plan

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**Partner Name**

**Current as of (date)**

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### 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 Commitments<sup>1</sup>

### BMP Commitment Option

Source		Start Date	Achievement Year
<b>Onshore Production</b>			
<input type="checkbox"/>	Pneumatic Controllers		
<input type="checkbox"/>	Fixed Roof, Atmospheric Pressure Hydrocarbon Liquid Storage Tanks		
<b>Gathering and Boosting</b>			
<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		
<b>Natural Gas (NG) Processing</b>			
<input type="checkbox"/>	Reciprocating Compressors - Rod Packing Vent		
<input type="checkbox"/>	Centrifugal Compressors - Venting		
<b>NG Transmission &amp; Underground Storage</b>			
<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		
<b>NG Distribution</b>			
<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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<sup>1</sup> 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 East Ohio (DEO) and Dominion Hope (DH)

Natural Gas STAR Methane Challenge Program

Implementation Plan - Distribution

**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 operates one of the nation's largest natural gas storage systems with 933 billion cubic feet of storage capacity and serves more than 5 million utility and retail energy customers in 14 states. Dominion East Ohio (DEO) and Dominion Hope (DH) are regulated natural gas delivery companies operating in Ohio and West Virginia, respectively.

DEO's Pipeline Infrastructure Replacement (PIR) program was launched in mid-2008. The \$4 billion project will involve the eventual replacement of more than 5,500 miles of the company's 22,000-mile pipeline system over a 25-year program. DH's Pipeline Replacement and Expansion Program (PREP) was launched on March 1, 2016. Dominion Hope will replace more than 1,000 miles of the company's 3,146 mile distribution pipeline system over a 50-year program. We will upgrade the bare-steel and cast iron pipe to either effectively-coated steel or plastic pipe. This will typically affect the mainline, which is usually in the street, and various service lines, which run from the mainline to the gas meter.

**Commitments and Projected Timeframe**

On March 25, 2016, Dominion East Ohio and Dominion Hope submitted a "Partnership Agreement" to EPA in which we voluntarily commit to replacing cast iron and unprotected steel pipeline mains at a rate of 1.5 percent per year, on average between the two companies, by Calendar Year 2021 (CY2021).

DEO and DH, at the end of 2015, had a combined total of 6,049 miles of cast iron and unprotected steel pipeline mains. The two companies combined fall under Tier 5 (>3,000 miles) in the Methane Challenge Program. The target percentage replacement rate of 1.5% for DEO and DH equates to 90.7 total miles of pipeline to be replaced in CY2021 to meet the target.

DEO and DH have also committed to replacing cast iron and unprotected steel services, which are typically upgraded during a pipeline main replacement project. EPA did not set specific target

replacement rates or methane reduction rates for replaced services; however, Dominion intends to track and report emission reductions from service replacements if the appropriate reporting mechanism is provided by EPA.

#### **Milestones and Associated Timeframes**

DEO and DH schedule replacements according to priority and budget allocated for the program and in compliance with their respective state PIR and PREP requirements. Our minimum combined pipeline replacement schedule is summarized in the below table.

Year	Miles of Cast Iron and Unprotected Steel Mains to be Replaced (Minimum)	Miles of Cast Iron and Unprotected Steel Mains Remaining at End of Year
2015	Under Natural Gas STAR Program	6,049
2016	91	5,958
2017	91	5,867
2018	91	5,776
2019	91	5,685
2020	91	5,594
2021	91	5,503 or Less

#### **Recordkeeping and Reporting**

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. Examples of the reporting currently being done for the GHG reporting program and the reporting data elements in the Methane Challenge program is shown in Appendix A. One outlines the “Existing Reporting Elements under Subpart W” populated with 2015 data for DEO and DH as a baseline. The other shows “New Reporting Elements under Methane Challenge” that Dominion intends to track and report in whatever system EPA designates for the Methane Challenge Program.

#### **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.

#### **Historic Methane Emissions Reductions**

Past reductions from the pipeline replacement program were reported under the Natural Gas STAR program in 2016 for DEO. From 2009 to 2015, estimated reductions were 364,720 thousand cubic feet of natural gas from the replacement of 1,208 miles of pipeline mains and 138,748 services. The gas savings equates to 6,652.5 metric tons of methane (CH<sub>4</sub>), or 166,312 metric tons of carbon dioxide equivalent (CO<sub>2</sub>e) reduced since 2009.

Year	Miles of Pipe Replaced	Number of Services Replaced	Number of Leaks Repaired	Estimated Reductions (mcf/yr)
2009	149	18,597	17,332	48,005
2010	130	17,534	14,803	44,108
2011	220	18,708	9,628	56,004
2012	175	23,292	7,996	58,846
2013	169	22,316	6,696	56,527
2014	181	18,612	6,563	51,550
2015	184	19,689	4,716	49,680
<b>Total</b>	<b>1,208</b>	<b>138,748</b>	<b>67,734</b>	<b>364,720</b>

## Appendix A

Existing Reporting Elements under Subpart W:

<b><u>Dominion East Ohio</u></b>	<b>Emission Source Type (Eq. W-32A) [98.232] [98.233(r)(1)]</b>	<b>Total number of emission source type, Count<sub>e</sub> [98.236(r)(1)(ii)]</b>	<b>CH4 Emissions (mt CH4) [98.236(r)(1)(v)]</b>
<b>Natural gas distribution [98.232(i)(5)]  (Distribution main equipment)</b>	Distribution Mains, Gas Service - Unprotected Steel	5,044	10,672.3
	Distribution Mains, Gas Service - Protected Steel	7,558	444.9
	Distribution Mains, Gas Service - Plastic	7,036	1,337.2
	Distribution Mains, Gas Service - Cast Iron	59	270.4
<b>Natural gas distribution [98.232(i)(6)]  (Distribution services equipment)</b>	Distribution Services, Gas Service - Unprotected Steel	417,623	13,345.7
	Distribution Services, Gas Service - Protected Steel	108,769	365.8
	Distribution Services, Gas Service - Plastic	617,933	103.9
	Distribution Services, Gas Service - Copper	50,618	255.4
<b><u>Dominion Hope</u></b>	<b>Emission Source Type (Eq. W-32A) [98.232] [98.233(r)(1)]</b>	<b>Total number of emission source type, Count<sub>e</sub> [98.236(r)(1)(ii)]</b>	<b>CH4 Emissions (mt CH4) [98.236(r)(1)(v)]</b>
<b>Natural gas distribution [98.232(i)(5)]  (Distribution main equipment)</b>	Distribution Mains, Gas Service - Unprotected Steel	946	1,901.5
	Distribution Mains, Gas Service - Protected Steel	823	46.0
	Distribution Mains, Gas Service - Plastic	1,434	258.9
	Distribution Mains, Gas Service - Cast Iron	0	-
<b>Natural gas distribution [98.232(i)(6)]  (Distribution services equipment)</b>	Distribution Services, Gas Service - Unprotected Steel	18,492	561.4
	Distribution Services, Gas Service - Protected Steel	16,090	51.4
	Distribution Services, Gas Service - Plastic	78,099	12.5
	Distribution Services, Gas Service - Copper	0	-
		<b>Total Number of Miles of Cast Iron and Unprotected Steel Mains for DEO and DH in CY2015:</b>	<b>Total CH4 Emissions (metric tons) from Cast Iron and Unprotected Steel Mains for DEO and DH in CY2015:</b>
		6,049	12,844.2



New Reporting Elements under Methane Challenge:

NEW Reporting Elements and Methane Challenge

Distribution mains - cast iron or unprotected steel with plastic liners or inserts	Distribution Mains, Gas Service - Plastic	TBD	Total number of emission source type, Count <sub>e</sub>	A. CH4 Emissions (mt) using cast iron or UPS Efs	B. CH4 Emissions (mt) using plastic Efs	Reduction in mt (A-B)
Voluntary action to reduce methane during reporting year	Difference in emissions before and after mitigation	Miles of Cast Iron mains Replaced with plastic				
		Miles of Cast Iron mains Replaced with protected steel				
		Miles of Cast Iron mains rehabilitated with plastic pipe inserts or cured-in-place liners				
		Miles of Unprotected steel mains Replaced with plastic				
		Miles of Unprotected steel mains Replaced with protected steel				
		Miles of Unprotected steel mains rehabilitated with plastic pipe inserts or cured-in-place liners				
					Total Reductions from Pipeline Mains	
Distribution services - cast iron or unprotected steel with plastic liners or inserts	Distribution Mains, Gas Service - Plastic	TBD	Total number of emission source type, Count <sub>e</sub>	A. CH4 Emissions (mt) using cast iron or UPS Efs	B. CH4 Emissions (mt) using plastic Efs	Reduction in mt (A-B)
Voluntary action to reduce methane during reporting year	Difference in emissions before and after mitigation	Miles of Cast Iron services Replaced with plastic				
		Miles of Cast Iron services Replaced with protected steel				
		Miles of Cast Iron services rehabilitated with plastic pipe inserts or cured-in-place liners				
		Miles of Unprotected steel services Replaced with plastic				
		Miles of Unprotected steel services Replaced with protected steel				
		Miles of Unprotected steel services rehabilitated with plastic pipe inserts or cured-in-place liners				
					Total Reductions from Services	