Natural Gas STAR Methane Challenge Program

Continuous Improvement Proposal

Create a Commitment Option for Supply of Renewable Natural Gas

Proposed by: Natural Gas STAR Methane Challenge Program

Date proposed: September 30, 2020

Category of change proposed: Finalizing a new BMP commitment option

Summary of proposed change: Develop a commitment option for reporting on supply of renewable natural gas through natural gas transmission and distribution systems.

Overview

Through the Natural Gas STAR Methane Challenge Program ("the Program"), EPA encourages Partners to make ambitious commitments to reduce natural gas (methane) emissions through broad scale implementation of cost-effective technologies and practices. EPA recognizes ongoing advances in technologies and approaches for identifying, measuring, and mitigating methane emissions and will consider creating new commitment options, as well as revising approaches to track, implement, and report on current commitments through the Continuous Improvement Process.[1]

This proposed program update would create a new Best Management Practice (BMP) commitment under which natural gas transmission and distribution companies that receive and supply renewable natural gas (RNG) through their systems would report on this RNG. The intent of this commitment option is to recognize efforts that Partner companies are making to diversify their portfolio and their role in facilitating recovery and use of otherwise-emitted methane from landfills, wastewater treatment plants, livestock farms, etc. By transmitting and distributing RNG in their pipelines and systems to end users, transmission and distribution companies are playing a valuable role in providing market access for these methane recovery projects. The mission of several of EPA's voluntary methane outreach programs, including AgSTAR and the Landfill Methane Outreach Program in particular, is to advance recovery and use of otherwise-wasted methane from these sources. Methane Challenge Partners that adopt this commitment option will be advancing information about the extent of RNG projects and these projects' overall impact in terms of reducing methane emissions from the biological decomposition of organic materials at municipal solid waste landfills, water resource recovery facilities

[1] Details available on the Program website at https://www.epa.gov/natural-gas-star-program/methane-challenge-continuous-improvement

(wastewater treatment plants), livestock farms, food production facilities, and organic waste management operations.

This would be an add-on commitment; Partners would be required to have at least one additional Methane Challenge commitment that directly addresses methane emission mitigation from their system (e.g., reduction of emissions from pipeline blowdowns, replacement of cast iron and unprotected steel distribution mains, etc.).

About Renewable Natural Gas

For the purposes of this document and the proposed commitment option, biogas is gas produced by the anaerobic digestion of organic matter at one or more of the following sources: municipal solid waste landfills or digesters at water resource recovery facilities (wastewater treatment plants), livestock farms, food production facilities, and organic waste management operations. For the purposes of this proposed commitment option, renewable natural gas[2] is defined as biogas that has been upgraded for use in place of fossil natural gas. As proposed, this commitment would not apply to hydrogen (i.e., hydrogen produced by electrolysis using renewable electricity and water) or 'power-to-gas' (i.e., the subsequent production of biogas with biomethanation) projects.[3]

As a substitute for natural gas, RNG has many end-uses, including in thermal applications, to generate electricity, for vehicle fuel, or as a bio-product feedstock. For the purpose of this commitment option, all of these end-uses are appropriate, and the end-use would be a requested, but not required, data element.

RNG can be used locally at the site where the gas is produced and upgraded, or it can be injected into natural gas transmission or distribution pipelines. This commitment option is focused on natural gas injected into transmission or distribution pipelines.

Raw biogas has a methane content between 45 and 65 percent, depending on the source of the feedstock, and must go through a series of steps to be converted into RNG. Treatment includes removing moisture, carbon dioxide (CO_2) and trace level contaminants (including siloxanes, volatile organic compounds, or VOCs, and hydrogen sulfide), as well as reducing the nitrogen and oxygen content. Once upgraded, the gas has a methane content of 90 percent or greater. Typically, RNG injected into a natural gas pipeline has a methane content between 96 and 98 percent.

Additional information on renewable natural gas can be found in a discussion paper published by EPA's voluntary methane programs in 2020: https://www.epa.gov/lmop/overview-renewable-natural-gas-biogas

[2] RNG is a "term of art" and there is not at present a standard definition. This description has been developed by EPA's voluntary methane programs.

[3] The Program recognizes that there is broad stakeholder interest in hydrogen and would welcome specific proposals and/or suggestions for a future program update that could possibly include hydrogen. At this time however, the Program is looking to finalize this commitment focused on RNG from biogas sources.

Proposed Best Management Practice Commitment

This commitment would apply to RNG that is injected into natural gas transmission and distribution systems. This commitment would not encompass RNG attributes that are purchased, unless the gas is also directly injected into the Partner's system. For the purpose of this commitment option, the biogas used to produce RNG may be derived from one or more of the following sources: municipal solid waste landfills, digesters at water resource recovery facilities (wastewater treatment plants), livestock farms, food production facilities, and organic waste management operations.

In making a commitment to the Renewable Natural Gas commitment option, a Partner in the transmission or distribution segments would need to:

- Directly receive (i.e., via pipeline interconnect or virtual pipeline—transportation via truck) and supply RNG generated by a biogas project (i.e., from a municipal solid waste landfill or from a digester at a water resource recovery facility, livestock farm, food production facility, or organic waste management operation), AND
- Have at least one other Methane Challenge commitment that directly addresses mitigation of methane emissions from its operations[4]

Within 5 years of its commitment start date, the Partner would commit to:

- Annually report RNG data elements to the Program;
- Research the nature and extent of RNG in its system (i.e., information about the biogas project that generated the gas and how the gas is being used by end users) so that the Partner can report as complete a representation of the RNG it has acquired, transported, and delivered as possible by the end of its commitment. However, EPA recognizes that transmission and distribution companies may not be privy to all of the information being requested, particularly about the end use of the RNG in their systems.

The primary goal of this proposed commitment option is to share data on RNG supply through natural gas systems, in order to develop a more robust understanding of the extent and nature of RNG distributed and used through natural gas systems. As such, this commitment will focus on collecting and publishing data from Partners that make a BMP RNG commitment. Partners that make this commitment would have the RNG commitment added to their Partner Profile Webpage and their RNG data added to their Methane Challenge Data Download. The dataset would include information on the biogas project(s) that generate the RNG, the pipeline interconnect(s) with the Partner company's system, and the designated end use of the RNG. Recognizing that the Partner company may not have all the information requested, the Program does not plan to create or track a 'commitment progress metric' for this commitment option at this time. However, the Program does encourage the Partner to work on understanding as much about the RNG in its system as possible by the end of its commitment.

If the project(s) from which a Partner receives all of its RNG go(es) offline during its commitment, the Partner should report this to the Methane Challenge Program as soon as possible. If the Partner does not plan to source RNG from another project, it can change its 'Commitment Achievement Year' to the year the project went offline and would not be required to report when not sourcing RNG.

[4] Active Partners in the ONE Future option may join the BMP option with just an RNG commitment if they remain active in the ONE Future option.

Proposed Reporting Approach

Methane Challenge reporting is done at the facility level, through the electronic Greenhouse Gas Reporting Tool (e-GGRT) system. The RNG data would be reported through the same mechanism. EPA's intention is to set up the reporting form to allow Partners to report the requested data elements for each RNG interconnect in its system. Partners would be asked to report the information about the biogas project(s) from which the RNG was sourced, the interconnect(s) through which the RNG was injected into the Partner's system, and the designated end use(s) for the gas. As part of the dataset, EPA intends to gather and publish data on the volumes of RNG injected into transmission and distribution systems to enhance understanding of the magnitude of biogas methane emissions avoided by the supply of RNG to end users. Partners should only report on RNG they receive directly from a biogas project (i.e., the RNG is directly injected into the Partner's system at an interconnect). Partners should not report on RNG attributes that are purchased unless the gas is directly injected into the Partner's system**.** Specific proposed data elements for Methane Challenge reporting on this commitment are detailed in Appendix A.

If you have feedback on this proposal

Send feedback to: Methane Challenge Program Managers at GasSTAR@epa.gov

Feedback due: October 30, 2020

The Program welcomes feedback on any aspect of the proposal but is particularly interested in feedback on:

- This document proposes a commitment focused on reporting data to Methane Challenge. The Program welcomes feedback on whether Partners are interested in more specific goals as part of the commitment, such as committing to a certain percentage of a company's throughput being RNG.
    - Would this more specific commitment be of interest to Partners?
    - Are there other commitment goals related to RNG that Partners are interested in?
- Whether the proposed data elements are sufficient to understand a company's use/supply of RNG.
- Whether the proposed data elements would complement data collection/reporting Partners may be doing for other programs (e.g., third party certifications)?
- For the data elements regarding pipeline gas quality specifications - whether any additional key constituents should be added to the list.
- Whether reporting the data at the 'interconnect level' provides the best level of granularity to understand how RNG is supplied by natural gas companies.

Appendix A. Proposed Updates to Methane Challenge BMP Technical Document

Renewable Natural Gas

Applicable Segments: Transmission & Storage; Distribution

Source Description: This commitment option addresses the supply of renewable natural gas (RNG) through natural gas transmission and distribution systems. For the purposes of this commitment option, renewable natural gas[5] is defined as biogas that has been upgraded for use in place of fossil natural gas. For the purpose of this commitment option, the biogas used to produce RNG may be derived from one or more of the following sources: municipal solid waste landfills, digesters at water resource recovery facilities (wastewater treatment plants), livestock farms, food production facilities and organic waste management operations. This commitment would not apply to hydrogen (i.e., hydrogen produced by electrolysis using renewable electricity and water) or 'power-to-gas' (i.e., the subsequent production of biogas with biomethanation) projects.[6]

Raw biogas has a methane content between 45 and 65 percent, depending on the source of the feedstock, and must go through a series of steps to be converted into RNG. Treatment includes removing moisture, carbon dioxide (CO_2) and trace level contaminants (including siloxanes, volatile organic compounds, or VOCs, and hydrogen sulfide), as well as reducing the nitrogen and oxygen content. Once upgraded, the gas has a methane content of 90 percent or greater. Typically, RNG injected into a natural gas pipeline has a methane content between 96 and 98 percent.

As a substitute for natural gas, RNG has many end-uses, including in thermal applications, to generate electricity, for vehicle fuel, or as a bio-product feedstock. For the purpose of this commitment option, the end-use is a requested, but not required, data element. To develop a greater understanding of the RNG market and the role of natural gas transmission and distribution systems in advancing use of RNG, the end use is a valuable piece of information. However, EPA recognizes that transmission and distribution companies may not be privy to the information about the end use of the RNG projects for RNG in their systems.

RNG can be used locally at the site where the gas is produced and upgraded, or it can be injected into natural gas transmission or distribution pipelines. This commitment option is focused on natural gas injected into transmission or distribution pipelines. This commitment does not encompass RNG attributes that are purchased, unless the RNG is directly injected into the Partner's system.

Additional information on renewable natural gas can be found in a discussion paper published by EPA's voluntary methane programs in 2020: https://www.epa.gov/lmop/overview-renewable-natural-gas-biogas

[5] RNG is a "term of art" and there is not at present a standard definition. This description has been developed by EPA's voluntary methane programs.

[6] The Program recognizes that there is broad stakeholder interest in hydrogen and would welcome specific proposals and/or suggestions for a future program update that could possibly include hydrogen. At this time however, the Program is looking to finalize this commitment focused on RNG from biogas sources.

Partners Commit To:

- Annually report RNG data elements to the Program;
- Research the nature and extent of RNG in its system (i.e., information about the biogas project that generated the gas and how the gas is being used by end users) so that the Partner can report as complete a representation of the RNG it has acquired, transported, and delivered as possible by the end of its commitment.

Commitment Timeframe: Partners commit to report as many data elements as possible annually and to research the nature and extent of RNG in their systems by the designated commitment achievement date, not to exceed five (5) years from the commitment start date. If the project(s) from which a Partner receives its RNG go(es) offline during its commitment, the Partner should report this to the Methane Challenge Program as soon as possible. If the Partner does not plan to source RNG from another project, it can change its 'Commitment Achievement Year' to the year the project went offline and would not be required to report when not sourcing RNG.

Facility-level Annual Reporting:

Data will be reported at the facility-level through e-GGRT as for other BMP commitments. The RNG reporting form tab would be set up so Partners can report the requested data elements for each interconnect (if more than one). Partners can also use multiple lines per interconnect to indicate multiple feedstocks, designated end uses, etc. Data should only be reported on RNG that is received directly from an interconnect with a biogas project or a virtual pipeline.

Data Category	**Data Elements Collected via Facility-Level Reporting**
List of interconnects in the facility	Interconnect ID[7]
	Location of the interconnect (*latitude/longitude*)
Information about the biogas source	Interconnect ID
	What is the feedstock for the biogas? (Anaerobic digester – livestock farm; Anaerobic digester – co-digestion; Anaerobic digester – food production facility; Anaerobic digester – organic waste management; Anaerobic digester – wastewater treatment plan; Landfill; Other (Specify))
	Name the specific municipal solid waste landfill or digester (i.e., at water resource recovery facilities (wastewater treatment plants), livestock farms, food production facilities or organic waste management operations) from which the RNG was generated
	What upgrading technology was used? [*to be selected from a list*]
	Any additional information on the biogas project/upgrading process you wish to share?
Information about the pipeline interconnect	Interconnect ID
	Volume of gas received this year (*scf gas*)
	What are the pipeline gas quality specifications?
	• Nitrogen (*vol %*)
	• Oxygen (*vol %*)
	• Water content (*lbs/MMscf gas*)

[7] Create a unique ID for each interconnect for use across tables on the reporting form

Data Category	Data Elements Collected via Facility-Level Reporting
	• CO_2 (*vol %*)
	• Hydrogen Sulfide (*grains/100 scf gas*)
	• Siloxanes (*mg Si/m^3*)
	• Heating value (*Btu/scf gas*)
	How far is the interconnect from the feedstock source (km)?
	Is there a virtual pipeline?
	• If yes, details about the virtual pipeline
	Any additional information on the interconnect process or gas quality specifications you wish to share?
Information about the end use(s)	Interconnect ID
	What is the intended destination for the RNG (city/state/facility) [*if known]*?
	What is the designated end use? (Thermal applications; Electricity generation; Vehicle fuel; Bio-product feedstock; Other (specify); Unknown)
	Volume of RNG going to this end use, this year (*scf gas*) [*if known*]
	For Distribution Partners -- does your company offer a 'green gas' option to residential customers?
	Any additional information on the end use you wish to share?
Information about the Transmission/ Distribution System	Total miles of main/transmission pipeline in the system that the gas is injected into and the material(s) of the pipeline[8]
Information about the Company's RNG strategy	Company-specific goals or strategies for supply of RNG (e.g., percent of natural gas supply to be RNG by a certain year; convert vehicle fleet to run on natural gas and use RNG for fuel)

[8] This information is not required if the Partner has a Distribution Mains commitment and already reports these data to Methane Challenge.