

# Annual Report 2015



## Transmission Sector

### Company Information

Company Name: \_\_\_\_\_

Contact: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Telephone: \_\_\_\_\_

Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

### Annual Report Summary

- BMP 1: Directed inspection and maintenance at compressor stations
- BMP 2: Use of turbines at compressor stations
- BMP 3: Identify and replace high-bleed pneumatic devices
- Partner Reported Opportunities (*please specify*):  
\_\_\_\_\_  
\_\_\_\_\_

Period covered by report: From: \_\_\_\_\_ To: \_\_\_\_\_

#### Partner Signature Required:

I hereby certify the accuracy of the data contained in this report. \_\_\_\_\_

Date

■ Because the implementation of some technologies reduces emissions for multiple years, Natural Gas STAR allows certain activities to count towards a company's emission reductions beyond the initial year of implementation. Natural Gas STAR designates the maximum length of time that these reductions may accrue as "sunset dates." The Appendix lists these sunset dates. Companies can report the corresponding methane emission reductions each year up to the allowable sunset date. Or, companies may wish to report reductions only once for the implementation year, and have EPA automatically apply the sunset date and count those emissions for the allowable number of years.

■ In addition to reporting methane emissions reductions, you are welcome to include other information about your company's participation in Natural Gas STAR in the "Additional Program Accomplishments" section of this form. The Natural Gas STAR Program will use any information entered in this section to recognize the efforts and accomplishments of outstanding partners.



# Transmission Sector Annual Report

OMB Control No. 2060-0328  
Expires 09/30/2018

## BMP 1: Directed Inspection and Maintenance at Compressor Stations

### Summary of Emission Reduction Activities

Please include aggregate information in this section for all locations. If multiple facilities/locations are represented, additional detail by specific facility/location can be provided in the table below.

**A. Facility/location identifier information:**

(If only one location note here, otherwise use table below.) \_\_\_\_\_

**B. Project summary:**

Number of surveys conducted at this facility for reporting period \_\_\_\_\_ surveys      Total number of leaks repaired: \_\_\_\_\_ leaks repaired

Total number of leaks found: \_\_\_\_\_ leaks found

**C. Cost summary:**

Total cost of surveys conducted: \$ \_\_\_\_\_      Total cost of leak repairs: \$ \_\_\_\_\_

**D. Methane emissions reduction:** \_\_\_\_\_ Mcf

\* BMP 1 must be reported on an annual basis according to actual survey activity.

Please identify the basis for the emissions reduction estimate, using the space provided to show any calculations

- Actual field measurement       Other (please specify): \_\_\_\_\_
- Calculation using default

Methane emissions reduction = Average annual leak rate for facility (12,200 Mcf) × Reduction efficiency (70%)

**E. Total value of gas saved:** \$ \_\_\_\_\_

Total value of gas saved = Methane emissions reduction (in Mcf) x Gas value (in \$/Mcf) [If not known, use default of \$3.50/Mcf]

**F. Do you plan to survey this facility/location next year?** \_\_\_\_\_ (Yes/No)

**Optional: Additional details by location**

Facility/Location identifier Information	Total Cost of Surveys (\$)	Total Cost of Repairs (\$)	Estimated Reductions (Mcf/yr)	Value of Gas Saved (\$)

**BMP 1 Comments:** Please use the back of the page for additional space if needed.



# Transmission Sector Annual Report

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## BMP 2: Use of Turbines at Compressor Stations

### Summary of Emission Reduction Activities

Please include aggregate information in this section for all locations. If multiple facilities/locations are represented, additional detail by specific facility/location can be provided in the table below.

**A. Facility/location identifier information:**

(If only one location note here, otherwise use table below.) \_\_\_\_\_

**B. Turbine summary:**

Number of turbines installed: \_\_\_\_\_ turbines

Total cost of turbine installations (equipment and labor): \$ \_\_\_\_\_

**C. Reciprocating summary:**

Number of reciprocating engines retired: \_\_\_\_\_ engines

**D. Equipment description:** Please provide specifications for turbines installed and/or reciprocating engines retired

	Turbines	Reciprocating Engines
Model:		
Horsepower:		
Fuel Consumption:		

**E. Methane emissions reduction:** \_\_\_\_\_ Mcf

**F. Are these emissions reductions a one-year reduction or a multi-year reduction?**  One-year  Multi-year

**If Multi-year:**

- Partner will report this activity once and let EPA automatically calculate future emission reductions based on sunset date duration (BMP 2 has a sunset period of 20 years).
- Partner will report this activity annually up to allowed sunset date.

**Please identify the basis for the emissions reduction estimate, using the space provided to show any calculations**

Standard Calculation

*Methane emissions reduction per turbine installation = [Emissions rate from reciprocating engine per MMcf of fuel used × Fuel consumption for reciprocating engine (in MMcf/hr)] - [Emissions rate from turbine per MMcf of fuel used × Fuel consumption for turbine (in MMcf/hr)]*

Please specify your data source:

- Field measurement  
 Manufacturer specifications

Calculation using default

*Methane emissions reduction = [0.234 scf/hp/hr × Horsepower of turbine engines installed × Hours turbine engines were used] / 1000*

Other (please specify):

**G. Total value of gas saved:** \$ \_\_\_\_\_

*Total value of gas saved = Methane emissions reduction (in Mcf) × Gas value (in \$/Mcf) [If not known, use default of \$3.50/Mcf]*

**H. Future activity summary:**

How many turbines do you plan to install next year? \_\_\_\_\_ turbines

How many reciprocating engines do you plan to retire next year? \_\_\_\_\_ engines

**Optional: Additional details by location**

Facility/Location identifier Information	# Turbines Installed	Total Cost of Installation (\$) (incl. equipment and labor)	# Reciprocating Engines Retired	Estimated Reductions (Mcf/yr)	Value of Gas Saved (\$)

**BMP 2 Comments:** Please use the back of the page for additional space if needed.



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## BMP 3: Identify and Replace High-Bleed Pneumatic Devices

### Summary of Emission Reduction Activities

Please include aggregate information in this section for all locations. If multiple facilities/locations are represented, additional detail by specific facility/location can be provided in the table below.

**A. Facility/location identifier information:**

(If only one location note here, otherwise use table below.) \_\_\_\_\_

**B. Project summary:**

Number of devices replaced: \_\_\_\_\_ devices

Percent of system now equipped with low/no-bleed units: \_\_\_\_\_ %

**C. Cost summary:**

Estimated cost per replacement (including equipment and labor): \$ \_\_\_\_\_ /replacement

**D. Methane emissions reduction:** \_\_\_\_\_ Mcf

**E. Are these emissions reductions a one-year reduction or a multi-year reduction?**  One-year  Multi-year

**If Multi-year:**

Partner will report this activity once and let EPA automatically calculate future emission reductions based on sunset date duration (BMP 3 has a sunset period of 7 years).

Partner will report this activity annually up to allowed sunset date.

**Please identify the basis for the emissions reduction estimate, using the space provided to show any calculations**

Standard calculation

*Methane emissions reduction = [Annual emissions from high-bleed devices replaced (in Mcf/yr) - Annual emissions for the replacement devices (in Mcf/yr)] x Number of devices replaced*

Please specify your data source:

- Field measurement  
 Manufacturer specifications

Calculation using default

*Methane emissions reduction = 124 Mcf/yr x Number of devices replaced*

Other (please specify):

**F. Total value of gas saved:** \$ \_\_\_\_\_

*Total value of gas saved = Methane emissions reduction (in Mcf) x Gas value (in \$/Mcf) [If not known, use default of \$3.50/Mcf]*

**G. How many high-bleed devices do you plan to replace next year?** \_\_\_\_\_ devices

**Optional: Additional details by location**

Facility/Location identifier information	# Devices Replaced	Total Cost of Replacements (incl. equipment and labor) (\$)	Estimated Reductions (Mcf/yr)	Value of Gas Saved (\$)

**BMP 3 Comments:** Please use the back of the page for additional space if needed.



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## Partner Reported Opportunities (PROs)

For more details on PROs, visit [epa.gov/gasstar/tools/recommended.html](http://epa.gov/gasstar/tools/recommended.html)

### Summary of Emission Reduction Activities

Please include aggregate information in this section for all locations. If multiple facilities/locations are represented, additional detail by specific facility/location can be provided in the table below.

**A. Facility/location identifier information:**

(If only one location note here, otherwise use table below.) \_\_\_\_\_

**B. Project description: Please provide a separate PRO reporting form for each activity reported. If reporting a DI&M activity, please use a separate page for each location/facility surveyed.**

Please specify the technology or practice that was implemented (choose from the list in the appendix or describe your own):

Please describe how your company implemented this activity:

**C. Level of Implementation (check one):**

- Number of units installed: \_\_\_\_\_ units
- Frequency of practice: \_\_\_\_\_ times/year

**D. Are emissions reductions a one-year reduction or a multi-year reduction?**  One-year  Multi-year

**If Multi-year:**

- Partner will report this activity once and let EPA automatically calculate future emission reductions based on sunset date duration\*.
- Partner will report this activity annually up to allowed sunset date.

**E. Methane emissions reduction:** \_\_\_\_\_ Mcf

**F. Cost summary:** Estimated cost of implementing this practice/activity (including equipment and labor): \$ \_\_\_\_\_

**Please identify the basis for the emissions reduction estimate, using the space provided to show any calculations**

- Actual field measurement  Other (please specify):
- Calculation using manufacturer specifications/other source

**G. Total value of gas saved:** \$ \_\_\_\_\_

*Total value of gas saved = Methane emissions reduction (in Mcf) x Gas value (in \$/Mcf) [If not known, use default of \$3.50/Mcf]*

**H. To what extent do you expect to implement this practice next year?**

**Optional: Additional details by location**

Facility/Location identifier Information	Frequency of Practice/Activity or # of Installations	Total Cost of Practice/Activity (incl. equipment and labor) (\$)	Estimated Reductions (Mcf/yr)	Value of Gas Saved (\$)

**PRO Comments:** Please use the back of the page for additional space if needed.

\*Because the implementation of some technologies reduces emissions for multiple years, Natural Gas STAR allows certain activities to count towards a company's emission reductions beyond the initial year of implementation. Natural Gas STAR designates the maximum length of time that these reductions may accrue as "sunset dates." The Appendix lists these sunset dates. Companies can report the corresponding methane emission reductions each year up to the allowable sunset date. Or, companies may wish to report reductions only once for the implementation year, and have EPA automatically apply the sunset date and count those emissions for the allowable number of years.





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### Additional Program Accomplishments

The Natural Gas STAR Program will use any information entered here to recognize the efforts and achievements of outstanding partners.

Please include any additional information you would like to share about your company's participation in Natural Gas STAR. Examples may include:

- Activities to strengthen your program (e.g., training/education, innovative technologies or activities, pilot projects, employee incentive programs).
- Efforts to communicate your participation and successes (e.g., internal newsletters, press releases, company website).
- Participation in Natural Gas STAR program activities (e.g., contributions to case studies, presentation at annual workshop).

Additional Accomplishments:

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**Additional Accomplishments Comments:** *Please use the back of the page for additional space if needed.*



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### Appendix

#### Methane Emission Reduction Technologies & Practices— Transmission Sector

The list below describes a variety of methane emission reduction technologies that Natural Gas STAR partners in the transmission sector have implemented and reported to Natural Gas STAR. You may use this list as a guide when completing your annual report. **Sunset dates (i.e., the length of time a technology or practice can continue to accrue emission reductions after implemented) are one year in duration unless otherwise noted in parentheses.** An asterisk (\*) indicates that a technical document related to the technology or practice is available online at [epa.gov/gasstar/tools/recommended.html](http://epa.gov/gasstar/tools/recommended.html).

##### Compressors/Engines

- Automate compressor systems operation to reduce venting
- Eliminate unnecessary equipment and/or systems\*
- Install automated air/fuel ratio controls (10 years)\*
- Install electric compressors (10 years)\*
- Install electric motors (10 years)
- Install electric motor starters (10 years)\*
- Install lean burn compressor (10 years)
- Lower compressor purge pressure for shutdown
- Redesign blowdown/alter ESD practices\*
- Reduce emissions when taking compressors offline\*
- Reduce natural gas venting with fewer compressor engine startups and improved engine ignition\*
- Replace compressor cylinder unloaders\*
- Replace compressor rod packing systems\*
- Replace gas starters with air or nitrogen (10 years)\*
- Replace wet compressor seals with dry seals (10 years)\*
- Use of turbines at compressor stations (20 years)

##### Dehydrators

- Convert pneumatics to mechanical controls (10 years)\*
- Install condensers on glycol dehydrators (10 years)
- Install flash tank separators/controls on transmission sector glycol dehydrators (10 years)\*
- Reduce glycol circulation rates in dehydrators\*
- Replace glycol dehydrator with separator & in-line heaters (10 years)
- Reroute dehydrators/tank vents to flare or station suction (10 years)\*
- Reroute glycol skimmer gas\*

##### Directed Inspection and Maintenance

- DI&M: aerial leak detection using laser and/or infrared technology\*
- DI&M at compressor stations\*
- DI&M at remote sites\*

- DI&M: inspect/repair compressor station blowdown valves\*
- DI&M: leak detection using IR camera/optical imaging\*
- DI&M: leak detection using ultrasound\*
- DI&M: survey and repair leaks\*

##### Pipelines

- Inspect/repair valves during pipeline replacement\*
- Pipeline replacement and repair
- Recover gas from pipeline pigging operations\*
- Reduce/downgrade system pressure
- Reduced emissions through third-party damage prevention
- Use composite wrap repair\*
- Use hot taps for in-service pipeline connections\*
- Use inert gas/pigs for pipeline purges\*
- Use pipeline pump-down techniques to lower gas line pressure before maintenance \*

##### Pneumatics/Controls

- Convert gas pneumatic controls to instrument air (10 years)\*
- Convert natural gas-driven chemical pumps (10 years)\*
- Install no bleed controllers (10 years)
- Identify and replace high-bleed pneumatic devices (7 years)\*
- Reduce meter run blowdowns
- Replace bi-directional orifice meter with ultrasonic meters\*
- Use add-on controls to reduce emissions from pneumatics (10 years)

##### Tanks

- Install flash gas compressors (10 years)
- Install vapor recovery units on pipeline liquid/condensate tanks (10 years)\*





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### Appendix (Continued)

#### Valves

- Close valves during repair to minimize blowdown\*
- Design isolation valves to minimize gas blowdown volumes (10 years)\*
- Move in fire gates at compressors (10 years)\*
- Test and repair pressure safety valves\*
- Use of YALE closures for ESD testing\*

#### Wells

- Switch from underbalanced to overbalanced drilling in gas storage field

#### Other

- Convert natural gas-fired generator to solar power (10 years)
- Improve system design/operation
- Inject blowdown gas into low pressure mains or fuel gas system\*
- Install flares (10 years)\*
- Replace aged heaters with new efficient gas fired heaters (10 years)
- Require improvements in quality of gas received

#### **Mailing Information:**

##### Standard Mail:

*The Natural Gas STAR Program*  
U.S. EPA (6207J)  
1200 Pennsylvania Ave, NW  
Washington, DC 20460  
U.S.A.

##### Express/Overnight Mail:

*The Natural Gas STAR Program*  
U.S. EPA (6207J)  
1310 L Street, NW  
Washington, DC 20005  
U.S.A.

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