

Annual Report 2015



Production Sector

Company Information

Company Name: _____

Contact: _____

Title: _____

Address: _____

City, State, Zip Code: _____

Telephone: _____

Fax: _____

E-mail: _____

Annual Report Summary

- BMP 1: Identify and replace high-bleed pneumatic devices
- BMP 2: Install flash tank separators on glycol dehydrators
- 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.



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



BMP 2: Install Flash Tank Separators on Glycol Dehydrators

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 flash tank separators installed: _____ separators

Percent of dehydrators in system equipped with flash tank separators: _____ %

C. Cost summary:

Estimated cost per flash tank separator installation (including equipment and labor): \$ _____ /installation

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 2 has a sunset period of 10 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 flash tank installation = [TEG circulation rate (in gal/hr) x Methane entrainment rate (in scf/gal) x hours of operation (in hrs/yr) x 0.90] / 1,000*

**If methane entrainment rate is not known, use a default value of 3 scf/gal for energy exchange pumps or 1 scf/gal for electric pumps*

Please specify your data source:

- Field measurement
- Manufacturer specifications

Calculation using default

Methane emissions reduction = [Average gas throughput (in MMcf/yr) x 170 scf/MMcf x 0.90] / 1,000

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 flash tank separators do you plan to install next year? _____ flash tank separators

Optional: Additional details by location

Facility/Location identifier Information	# Flash Tank Separators Installed	Total Cost of Replacements (incl. equipment and labor) (\$)	Estimated Reductions (Mcf/yr)	Value of Gas Saved (\$)

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



Partner Reported Opportunities (PROs)

For more details on PROs, visit 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/# of Installations	Total Cost of Replacements (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.



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:

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



Appendix

Methane Emission Reduction Technologies & Practices— Production Sector

The list below describes a variety of methane emission reduction technologies that Natural Gas STAR partners in the production 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.

Compressors/Engines

- Automate compressor systems operation to reduce venting
- Catalytic converter installation (10 years)
- Convert to low pressure compressor starters (10 years)
- Eliminate unnecessary equipment and/or systems*
- Increase compression capacity to reduce venting/flaring
- 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
- Perform gas recovery using slipstream (10 years)
- Redesign blowdown/alter ESD practices*
- Reduce emissions when taking compressors offline*
- Reduce gas venting with fewer compressor engine startups and improved engine ignition*
- Replace compressor cylinder unloaders (10 years)*
- Replace gas starters with air or nitrogen (10 years)*
- Turbine fuel use optimization

Dehydrators

- Convert pneumatics to mechanical controls (10 years)*
- Install condensers on glycol dehydrators (10 years)
- Install flash tank separators on glycol dehydrators (10 years)*
- Reduce glycol circulation rates in dehydrators*
- Replacing glycol dehydrators with desiccant dehydrators (10 years)*
- Reroute dehydrator/tank vents to flare or station suction (10 years)*
- Reroute glycol skimmer gas*
- Shutdown glycol dehydrator stripping gas in winter
- Use rich glycol in glycol pumps

Directed Inspection and Maintenance

- DI&M at compressor stations*
- DI&M: leak detection using IR camera/optical imaging*

- DI&M: leak detection using lower emission threshold
- DI&M: survey and repair leaks*

Pipelines

- Inject blowdown gas into low pressure mains or fuel gas system*
- Pipeline replacement and repair
- Use hot taps for in-service pipeline connections*
- Use pipeline pump-down techniques to lower gas line pressure before maintenance*

Pneumatics/Controls

- Capture/use gas released from gas-operated pneumatic pumps
- Convert gas pneumatic controls to instrument air (10 years)*
- Convert natural gas-driven chemical pumps (10 years)*
- Convert pneumatics to mechanical controls (10 years)*
- Identify and replace high-bleed pneumatic devices (7 years)*
- Install controllers on gas-assisted methanol pump (10 years)
- Install/convert gas powered separators to solar powered separators (10 years)
- Install no bleed controllers (10 years)
- Install non-venting dump controllers (10 years)
- Reduce gas pressure on pneumatic devices
- Reduce venting from unlit pilot: install electronic safety devices (10 years)*
- Replace bi-directional orifice meter with ultrasonic meters*
- Replace chemical pumps with electronic flow controllers (10 years)
- Use add-on controls to reduce emissions from pneumatics (10 years)

Tanks

- Change out vent pallet (10 years)
- Convert water tank blanket from natural gas to CO₂ (10 years)*
- Eliminate unnecessary equipment and/or systems*

Appendix (continued)

Tanks

- Install evactors (10 years)
- Install flash gas compressors (10 years)
- Install hydrocarbon liquid stabilizer (10 years)
- Install pressurized storage of condensate (10 years)*
- Install vapor recovery units (VRUs) on storage tanks (10 years)*
- Install VRUs on pipeline liquid/condensate tanks (10 years)
- Recover gas during condensate loading*
- Reduce excess blanket gas blow-by to the atmosphere
- Replace leaking above-ground tanks (10 years)
- Route gas to compressor suction/blowcase vessel (10 years)
- Use protective tank coatings to reduce leaks (10 years)

Valves

- Heat tracing to prevent control valves from freezing open
- Install BASO® valves (10 years)*
- Install plugs on valves and open ended lines (10 years)
- Test and repair pressure safety valves*

Wells

- Artificial lift: gas lift (10 years)
- Artificial lift: install plunger lifts (10 years)*
- Artificial lift: install pumpjacks or rod pumps on gas wells (10 years)*
- Artificial lift: install smart lift automated systems on gas wells (10 years)*
- Artificial lift: install velocity tubing strings (10 years)*
- Artificial lift: pressure swabbing
- Artificial lift: use capillary strings (10 years)

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.

- Artificial lift: use compression (10 years)
- Artificial lift: use pumping unit (10 years)
- Artificial lift: use to reduce blowdown in gas wells (10 years)*
- Install automated shut-in cycle units to reduce well venting (10 years)
- Install flash tank separator on water gathering system (10 years)
- Install pumps for separators (10 years)
- Install snubbing unit at wellhead
- Install soap launcher/soap unit (10 years)
- Lower heater-treater temperature
- Optimize gas well unloading times
- Perform reduced emissions completions for hydraulically fractured natural gas wells*
- Route casinghead gas to VRU or compressor (10 years)*
- Use foaming agents to reduce blowdown frequency*

Other

- Capture and use waste heat to reduce gas usage and emissions
- Convert natural gas-fired generator to solar power (10 years)
- Flare reduction program
- Improve system design/operation
- Install flares (10 years)*
- Install pilotless burner controls (10 years)
- Install purge reducer on flare (10 years)
- Nitrogen rejection unit optimization*
- Recover gas from separators
- Re-inject gas for enhanced oil recovery
- Re-inject gas into crude
- Replace aged heaters with new efficient gas fired heaters (10 years)

The public reporting and recordkeeping burden for this collection of information is estimated to average 60 hours for each new response and 87 hours for subsequent responses. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.