Company Reported Opportunities
Technologies

From Natural Gas STAR Partners

EPA’s Natural Gas STAR Program,
Pioneer Natural Resources USA, Inc., and
The Gas Processors Association

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Why Are Company Reported Opportunities Important?

- Simple vehicle for sharing successes and continuing program’s future
  - *BMP’s*: the consensus best practices
  - *PRO’s*: Partner Reported Opportunities
  - *Lessons Learned*: expansion on the most advantageous BMP’s and PRO’s
  - All posted on the Gas STAR website: [http://www.epa.gov/gasstar](http://www.epa.gov/gasstar)
Gathering & Processing Best Management Practices

- BMP 1: Replace Gas Pneumatics with Instrument Air Systems
- BMP 2: Install Flash Tank Separators on Glycol Dehydrators
- BMP 3: Implement Directed Inspection & Maintenance at Gas Plants and Booster Stations
- BMP 4: Partner Reported Opportunities (PRO’s)
Gas STAR PRO Fact Sheets

- PRO Fact Sheets from Annual Reports 1994-2002
  - 54 posted PROs
  - 26 PRO’s applicable to Processing
    - 16 focused on operating practices
    - 10 focused on technology
Lessons Learned

- 14 Lessons Learned posted
- 8 applicable to Processing
  - 3 focused on operating practices
  - 5 focused on technology
- New Lessons Learned in development
  - Composite Wrap
Technology Focused Lessons Learned

- Convert Gas Pneumatic Controls to Instrument Air
- Replacing Wet Seals with Dry Seals in Centrifugal Compressors
- Reduce Methane Emissions from Compressor Rod Packing Systems
- Installation of Flash Tank Separators
- Options for Reducing Methane Emissions from Pneumatic Devices in the Natural Gas Industry
Technology Opportunities

- **Piping/Pipelines**
  - Composite Wrap
    - SAVES... 5400 Mcf/yr
    - PAYOUT... < 1 yr

- **Compressors & Engines**
  - Install Electric Compressors
    - SAVES... 6440 Mcf/yr
    - PAYOUT... > 10 yrs
  - Install Electric Starters
    - SAVES... 1350 Mcf/yr
    - PAYOUT... 1-3 years
More Technology Opportunities

- Dehydrators
  - Reroute Glycol Skimmer Gas
    - SAVES… 7600 Mcf/yr
    - PAYOUT… < 1 yr
  - Reroute Glycol Dehydrator to Vapor Recovery
    - SAVES… 3300 Mcf/yr
    - PAYOUT… < 1 yr
  - Convert Gas Driven Pumps to Air
    - SAVES… 2500 Mcf/yr
    - PAYOUT… < 1 yr
What is the Problem?

Dehydrators present an excellent place to reduce emissions

- How much methane is emitted?
  - A 20 MMcf/day dehydrator with a vent condenser, no flash tank separator and a circulation rate of 5 gpm may produce 7,600 Mcf/yr of losses

- How can these losses be reduced?
  - Install a flash tank separator
  - Pipe vent gases to vapor recovery
  - Adjust circulation rates
More Technology Opportunities

- Tanks
  - Install Pressurized Storage for condensate
    - SAVES… 7,000 Mcf/yr
    - PAYOUT… 1-3 years
More Technology Opportunities

- Pneumatics & Controls
  - Convert Pneumatics to Mechanical Controls
    - SAVES…500 Mcf/yr
    - PAYOUT… < 1 yr
  - Replace Burst Plates with secondary RV’s
    - SAVES…500 Mcf/yr
    - PAYOUT… < 1 yr
More Technology Opportunities

- **Valves**
  - Use YALE® closures for ESD Testing
    - SAVES… 1,800 Mcf/yr
    - PAYOUT… 1-3 years
  - Use Ultrasound to locate leaks
    - SAVES… 2,000 Mcf/yr
    - PAYOUT… < 1 yr
What is the Problem?

Mandated Emergency Shutdown (ESD) Testing

- How much methane is emitted?
  - An 8” ESD valve with a 3’ stack @ 500 psi vents 400 Mcf/min

- How can these losses be reduced?
  - Use of YALE® closure device reduces loss to 40 scf for 8” ESD valve
  - A YALE® closure device is a screwed-on pipe cap with a built-in bleed valve
Partner Experience

Emergency Shutdown (ESD) Testing

- 1,800 Mcf/yr savings based on a station with eight compressors and ten 8” ESD valves
  - Payout is 1-3 years
  - YALE® Closure Devices cost around $800-1,600 for 8” to 12” sizes
  - YALE® Closure Devices require vent stack with threaded end connection
Discussion Questions

- To what extent are you implementing these technologies?
- Do you have other opportunities to suggest?
- How could these opportunities be improved upon or altered for use in your operation?
- What are the barriers (technological, economic, lack of information, regulatory, etc.) that are preventing you from implementing these practices?