

# AIR MANAGEMENT PRACTICES RELATED TO THE DOMESTIC OIL AND GAS E&P INDUSTRY

H. William Hochheiser, ALL Consulting

Lee Moody, ALL Consulting

J. Daniel Arthur, ALL Consulting

*Presented at:*

The 16<sup>th</sup> International Petroleum and BioFuels  
Environmental Conference

November 3, 2009, Houston, TX

*ALL*CONSULTING

# PROJECT SUMMARY

- Funded by DOE/NETL
- Provide information on current practices
- Gather research recommendations
- Product for industry and public education
- Support for design of future research program



*ALL*CONSULTING

# PROJECT METHODOLOGY

- Literature review/BMP resources
  - EPA's Natural Gas STAR program
  - Four Corners Air Quality Task Forces
  - BLM BMP web site
  - Other web-based resources and data bases
- Wide variety of interviews
  - Industry
  - State and federal agencies

# REGULATORY FRAMEWORK

- Air quality is an increasingly important issue affecting domestic oil and gas development
- Clean Air Act
  - Hazardous Air Pollutants
  - Ozone
  - PM
  - Air Quality Related Values
- State regulation



*ALL*CONSULTING

# AIR QUALITY ISSUES AND BARRIERS

- Air permits
  - Changing requirements
  - Permit tracking can be a challenge
- Fugitive emissions
- VOC flashing losses
- Air quality model use
- GHG emissions/inventories



# WHAT IS A BMP?

- Technologies, methods, and procedures that avoid or reduce environmental and community impacts associated with oil and gas activities
- Air BMPs reduce air emissions through general principles and specific practices.
- Generally voluntary
- Site specific, economically feasible
- What is “Best”? (Just say Management Practice)

# MANAGEMENT PRACTICE CATEGORIES

- Internal and external combustion
- Venting
- Fugitive emissions
- Greenhouse gases
- General management practices



*ALL*CONSULTING

# INTERNAL & EXTERNAL COMBUSTION

- Adhere to manufacturer's O&M requirements
- NO<sub>x</sub> control for stationary engines: SCR (lean burn), NSCR (rich burn)
- Air/fuel ratio controller
- Electric compression
- Gas-fired drill rig engines
- Process equipment practices



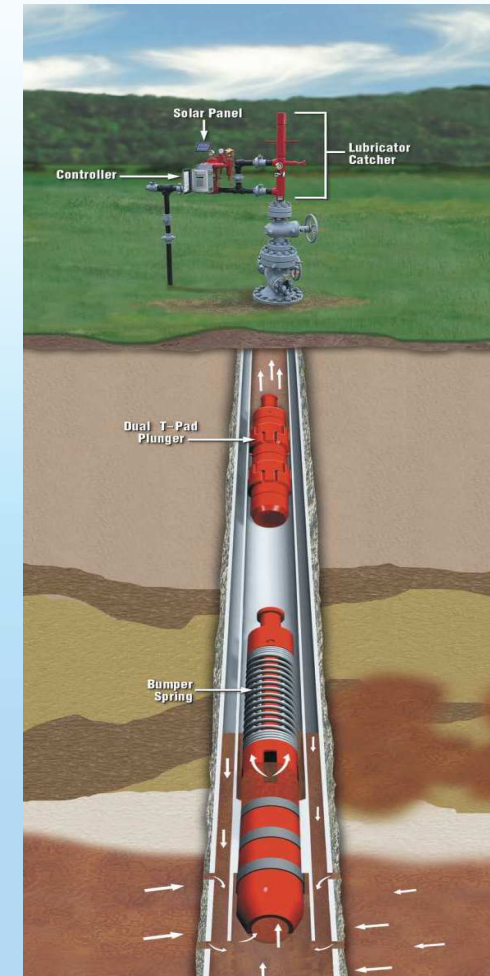
# VENTING SOURCES

- Pneumatic devices: replace with low/no-bleed
- “Green” completions
- Optimize dehydrators
- Flash tank separators
- Vapor recovery units
- Reduce losses from valves and hatches



# FUGITIVE EMISSIONS

- Direct inspection and maintenance
- Plunger lift systems
- Smart automation
- Closed containment systems
- Solar powered equipment
- Road dust suppression



# GREENHOUSE GASES

- EPA preparing to issue regulations
- Bills in Congress
- GHG emissions inventories
- Carbon Sequestration
- CO<sub>2</sub> EOR
- Practices to reduce methane emissions
- Practices to reduce CO<sub>2</sub> emissions



# GENERAL MANAGEMENT PRACTICES

- Permit and compliance tracking
- Ozone reduction plans (WY)
- Micro-turbines to reduce flaring
- Centralization of equipment
- Odor reduction (CO)
- Environmental Projects Fund



# NETL RESEARCH RECOMMENDATIONS

- Grand Challenge: Achieve zero emissions!
- Technology improvements
- Emissions measurement
- Air modeling research
- Air quality monitoring
- GHG emissions factors
- NETL leadership and education

*ALL*CONSULTING

# CONCLUSIONS

- Air quality management practices can be an effective way to reduce emissions.
- Industry is implementing these practices in many situations, but more can and should be done.
- Many practices capture product to be sold and thus are profitable.
- There is a long list of research needs, a selection of which would represent a robust research program that would allow NETL to address priority needs.

# CONTACT INFORMATION

J. Daniel Arthur, P.E., ALL Consulting

[darthur@ALL-LLC.com](mailto:darthur@ALL-LLC.com)

Phone: 918-382-7581

Bill Hochheiser, ALL Consulting

[bhochheiser@ALL-LLC.com](mailto:bhochheiser@ALL-LLC.com)

Phone: 505-918-2958

Lee Moody

[lmoody@ALL-LLC.com](mailto:lmoody@ALL-LLC.com)

Phone: 214-995-3197

*ALL*CONSULTING