

## **Seminar 2: Greenhouse Gas Issues and the Marcellus**

**April 12, 2011**

*Presented by:*

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# **Seminar 2: Greenhouse Gas Issues and the Marcellus**

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Marcellus Shale Clean Air Permits

Presented by:

**Jennifer Smokelin, Esquire**

**Dave Wagner, Esquire**

**ReedSmith**

**Tom Bianca, P.E.**

**Manager, Air Quality Engineering**

**AECOM**

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### **Update from Seminar 1**

- GP-11 & Air Quality Permit Exemptions  
Pa Bulletin February 26, 2011
- GP-5  
Pa Bulletin March 26, 2011

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### **Background**

**Dave Wagner, Reed Smith**

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### Which Greenhouse Gases?

- Our focus: carbon dioxide (CO<sub>2</sub>) and methane (CH<sub>4</sub>)
- Each greenhouse gas has a different capacity to heat the atmosphere - referred to as global warming potential (GWP)
- CO<sub>2</sub> is the standard bearer for GWP and has been assigned a GWP = 1
- Can report greenhouse gas emissions as equivalent to a given volume of CO<sub>2</sub> – known as CO<sub>2</sub>e
- One ton of methane = 25 CO<sub>2</sub>e

### **GHG Emissions from Oil & Gas Operations**

- Three main categories
  1. Vented emissions
  2. Combustion emissions
  3. Fugitive emissions

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### Vented Emissions

- Releases from normal operations
- Vented emissions of CH<sub>4</sub> can result from:
  - Venting of natural gas during drilling operations
  - Flow from flare stack during initial stage of flowback
  - Pneumatic device vented
  - Dehydrator operation
  - Compressor start-ups and blowdowns

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### Combustion Emissions

- Stationary sources such as engines for drilling, hydraulic fracturing and natural gas compression
- Mobile sources
- Flares



- Carbon dioxide, methane and nitrous oxide are produced and/or emitted as a result of hydrocarbon combustion

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### Fugitive Emissions

- Unintentional gas leaks to the atmosphere
- Examples: CH<sub>4</sub> leaks from flanges, tube fittings, valve stem packing, open-ended lines, compressor seals and pressure relief valve seats
- Hard to quantify because they are typically invisible and not audible
- Relative to combustion and process emissions, probably insignificant
- Concern upstream due to high concentration of CH<sub>4</sub> in many gaseous streams

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### **Emissions Throughout the Process**

- Drilling rig mobilization, site prep and demobilization
- Completion of rig mobilization and demobilization
- Well drilling
- Well completion (includes hydraulic fracturing and flowbacks)
- Well production

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### Sources of Emissions Throughout the Process

- Drilling rig mobilization, site prep and demobilization
- Completion of rig mobilization and demobilization
  - Sources: vehicle transport of personnel, materials & equipment
- Well drilling
  - Sources: internal combustion engines to supply power to rotary table, drawworks, air compressors & mud pumps

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### Sources of Emissions Throughout the Process

- Well completion
  - Sources: vehicles engine; stationary engines; flaring
- Well production
  - Sources: vehicles to transport production equipment to site and operating equipment to process and flow natural gas from well to sales line



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### Estimated First Year GHG Emissions from One Well Project\*

- CO<sub>2</sub> (tons)
  - In-state sourcing = 6,604
  - Out-of-state sourcing = 7,175
- CH<sub>4</sub> (tons) = 226
  - Expressed as CO<sub>2</sub> e = 5,650
- Total emissions (tons)
  - In-state sourcing = 12,254
  - Out-of-state sourcing = 12,825

\* American Petroleum Institute, August 2009

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### **Mitigation**

**Dave Wagner, Reed Smith**

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### **Mitigating GHG Emissions**

- USEPA's Natural Gas STAR Program
- Site selection; minimize moves
  - Drill as many wells on a pad with one rig move
  - Hydro-fracture as many wells on a pad with one equipment move
- Transport
  - Source personnel and equipment from within state or region
- Energy efficiency

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### Greenhouse Gas Reporting Tom Bianca, AECOM

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### **Greenhouse Gas Reporting** **40 CFR Part 98 Subpart W**

- Mandatory Greenhouse Gas Reporting
- Eight Industrial Source Categories
  - 2 – Production
  - 2 – Processing
  - 2 – Storage
  - 1 – Distribution
  - 1 – Import/Export

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### **Greenhouse Gas Reporting** **Reporting Threshold**

- 25,000 Metric Tons CO<sub>2</sub> Equivalent
  - Natural Gas Pneumatic Devices
  - Venting
  - Flare Stack Emissions
  - Equipment Leaks
  - Combustion Equipment

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### **Greenhouse Gas Reporting** **Reporting Deadlines**

- April 1, 2011
- April 30, 2011
- June 30, 2011
- September 30, 2011
- December 31, 2011
- March 31, 2012
- Other/changing dates?

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### **Greenhouse Gas Permitting** **Jennifer Smokelin, Reed Smith**

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### Greenhouse Gas Permitting Generally

- Currently, major source threshold is the main concern with GHGs (but NSPS loom)
  - 250/100 tpy thresholds in Clean Air Act
  - GHG emissions orders of magnitude higher
- GHGs subject to regulation beginning **January 2, 2011**
  - PSD/NSR Title V applicability determinations are now necessary

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### **Greenhouse Gas Permitting** **Tailoring Rule (75 Fed. Reg. 31514 (June 3, 2010))**

- PSD
  - Step 1 (“anyway” sources) Step 2 (100,000 CO<sub>2</sub>e)
    - Deviate from (raised) the statutory thresholds
    - In short, the 100 tpy threshold changed to 100,000 tpy CO<sub>2</sub>e
  - Q: Will it apply to your Marcellus facility?
  - A: Aggregation
    - DEP Single Stationary Air Pollution Source Determination Interim Guidance withdrawn, federal definition in play
    - DEP will continue to make single source determinations on a case-by-case basis to determine the applicability of Prevention of Significant Deterioration, Nonattainment New Source Review and Title V permitting requirements consistent with the Clean Air Act and the Air Pollution Control Act
    - Note: not necessarily the definition under GHG reporting
  - BACT for Marcellus *PSD & Title V Permitting Guidance for GHG*, USEPA (March 2011 update)
    - Not subject to challenge
- Title V

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### Single Stationary Source Determinations for the Oil and Gas Industries

- September 22, 2009, McCarthy memo
- The three regulatory criteria to be considered a stationary source for permitting purposes are:
  - (1) Whether the activities are under the control of the same person (or person under common control);
  - (2) Whether the activities are located on one or more contiguous or adjacent properties; **and**
  - (3) Whether the activities belong to the same industrial grouping. See 40 C.F.R. § 52.21 (b) (6)

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### Single Stationary Source Determinations for the Oil and Gas Industries

- EPA Order on Anadarko Petroleum – February 2, 2011  
(web of 24,000 wells do not have a unique or dedicated relationship to each other)
  - but see, EPA Region 5 (Michigan) Single Source Determination on Summit Petroleum – October 18, 2010
- PA DEP had made single source determinations in several regions

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### **Greenhouse Gas Permitting** **General Clean Air Act Issues**

- **New Source Performance Standards (CAA §111)**
  - Technology review
    - NSPS are to be reviewed and revised as necessary at least every 8 years (§111(b)(1)(B))
  - *Wildearth Guardians v. EPA*, Consent Decree (February 4, 2010)
    - Proposed rule; Final rule deadline (November 30, 2011)
    - EPA has indicated that significant changes are likely to be proposed for the NSPS (VOCs)
      - Regulation of previously unregulated sources and changes to exemption thresholds – GHGs?
  - Other settlements NSPS include GHGs: December 23, 2010 NSPSs for EGUs and refineries (July 2011)
- **Challenges**
  - 2 types: Courts and Congress
  - Likelihood of success

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## Speaker Profiles

### **Tom Bianca, P.E., Manager, Air Quality Engineering – AECOM**

Tom Bianca manages AECOM's Air Quality Group in the Mechanicsburg, Pennsylvania office. He has more than 26 years of analytical and environmental engineering experience, specializing in air pollution control services. He has state agency and private industry experience, and has been responsible for air-quality-related projects, including permitting, Prevention of Significant Deterioration (PSD), Best Available Control Technology (BACT), New Source Performance Standards (NSPS), engineering and design, process optimization, facility location determinations, planning and evaluating continuous emission monitoring systems (CEMS), parametric emission monitoring systems (PEMS), Greenhouse Gas (GHG) emissions, and stack testing programs. He has extensive experience in air permitting, source testing, sampling, and analytical development for specific source applications. He also possesses extensive experience in landfill gas management and migration, and has overseen the development of software for air quality applications.

### **Jennifer Smokelin, Esquire, Counsel – Reed Smith LLP**

Jennifer has advised clients in administrative and judicial proceedings under the Clean Air Act and the Pennsylvania Air Pollution Control Act, including challenges to permit decisions. Jennifer has advised clients on sustainability issues surrounding GHG emissions, such as (1) the regulatory compliance aspects of the EPA's recent mandatory GHG Inventory rule and BACT guidance, (2) the Renewable Fuel Standards, or RFS, under the Energy Independence and Security Act of 2007, (3) dealing with climate risks in an acquisition document, and (4) advice to a boiler client re GHG reporting issues. Jennifer was a delegate to the 15th Conference of the Parties (COP15) under the United Nations' Framework Convention on Climate Change in Copenhagen, Denmark, in December 2009. Jennifer is a Professor of Law (adjunct) at the University of Pittsburgh School of Law, where she teaches the course "The Law, Science and Business of Climate Change." She has published extensively on energy and energy policy issues, air issues, and climate change issues. Some recent publications include:

- Co-author, "After Copenhagen, it is clear there will be winners and losers," *The National Law Journal* (Feb. 8, 2010)
- "BACT is the New Black: USEPA issues long-awaited GHG permitting guidance for states," [www.lexology.com](http://www.lexology.com) (Nov. 11, 2010)
- "11 Climate Change Issues For 2011," *Law360* (Jan. 18, 2011)

### **Dave Wagner, Esquire, Associate – Reed Smith LLP**

Dave's practice focuses on domestic and international environmental matters, including selected state and federal litigation and compliance counseling for manufacturing clients under air, waste, chemicals, and pesticides laws and regulations. With respect to climate change matters, his recent focus is on the legal aspects of carbon capture and storage (CCS). Among other matters, he was one of the core contributors to the development and drafting of the *CCS Model Regulatory Framework*, a 130-page publication released by the International Energy Agency that aims at assisting national and regional development of a CCS regulatory framework. Dave is also a Professor of Law (adjunct) at the University of Pittsburgh School of Law, where he teaches the course "Environmental Law, Policy and Politics."