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Greenhouse Gas Reporting, Regulation and Legislation How Will This Affect Gas Processors?

Spirit Environmental, L.L.C
March, 2010



Presentation Outline:

- Background
 - Massachusetts v. EPA
 - Endangerment Finding
- Regulatory Developments
 - Mandatory GHG Reporting – Subparts C, NN, W
 - Clean Air Act GHG Permitting Regulations
- Enforcement
- Legislative Developments
- Questions?



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Background



Massachusetts vs. EPA

- Supreme Court Decision, April 2007:
CO₂ is a “pollutant” under the Clean Air Act;
- Resulting from petition to regulate GHG’s from Motor Vehicles (CAA Section 202(a));
 - EPA Initially Denied Petition;
 - CAA does not give EPA the authority to regulate global climate change;
 - Unwise to do so: Link between GHG and global climate change is not fully established;



Massachusetts vs. EPA

Supreme Court to EPA:

- You do have authority to regulate GHG's;
- Obligation to Protect Public Health and Welfare;
- Must determine if GHG from motor vehicles:
 - Cause or contribute to air pollution that may endanger public health or welfare;
 - Or the science is too uncertain to make a reasoned decision.



EPA Endangerment Finding

- Proposed Rule April 17, 2009, Final Rule December 7, 2009
 - GHGs can “reasonably be anticipated to endanger public health and welfare”;
 - GHGs from vehicles “Cause or Contribute” to air pollution that can “reasonably be anticipated to endanger” public health and welfare;
- Multiple Legal Challenges to the Endangerment Finding.



EPA Endangerment Finding Consequences

- Sets Stage for GHG Regulation Under the CAA:
 - Unless additional litigation stops it;
 - Legislative action preempts CAA approach.
- EPA to Control Regulatory Schedule
 - Vehicle Rule(s) (Proposed September 15, 2009);
 - Once final, GHGs become “Regulated New Source Review Pollutant” based on EPA’s current interpretation of the CAA;
 - Stationary source GHG permitting and regulation;



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**Regulatory Developments
Mandatory Greenhouse Gas Reporting**



GHG Mandatory Reporting Rule - Basis

- **BASIS - 2008 Consolidated Appropriations Act:**
 - Requires development of a mandatory GHG reporting rule;
 - EPA shall “use its existing authority under the Clean Air Act” (*Massachusetts v. EPA* 127 S.Ct.1438 (2007));
 - “The agency is further directed to include in its rule reporting of emissions resulting from upstream production and downstream sources, to the extent that the Administrator deems it appropriate.”

GHG Mandatory Reporting Rule – Purpose

- **PURPOSE – Mandatory Reporting System**
 - Collect GHG data for use in future climate change programs;
 - Balance rule coverage to maximize emissions reported while excluding small emitters;
 - Create reporting requirements consistent with existing GHG reporting programs and methodologies to reduce reporting burden.



1. Who Must Report – “All In” Category

Facilities containing any of 20 source categories
(regardless, for most categories, of amount of GHGs emitted)

- Electricity-Generating Facilities subject to the Acid Rain Program, (Subpart D)
- Adipic Acid Production, (Subpart E)
- Aluminum Production, (Subpart F)
- Ammonia Manufacturing, (Subpart G)
- Cement Production, (Subpart H)
- Electric Power Systems that include electrical equipment with nameplate capacity that exceeds 17,820 pounds of SF₆ or PFCs*
- Electronics Manufacturing Facilities with an annual production capacity that exceeds*:
 - Semiconductors: 1,080 m² silicon
 - Microelectromechanical system: 1,020 m²
 - Liquid crystal display: 235,700 m² LCD
- HCFC-22 Production, (Subpart O)
- HFC-23 Destruction Processes that are not located at an HCFC-22 production facility and that destroy > 2.14 metric tons of HFC-23 per year, (Subpart O)
- Lime Manufacturing, (Subpart S)
- Manure Management Systems that emit, in aggregate, CH₄ and N₂O in amounts equivalent to ≥ 25,000 metric tons of CO₂e per yr, (Subpart JJ)
- MSW Landfills that generate CH₄ in amounts equivalent to ≥ 25,000 metric tons of CO₂e per yr, (Subpart HH)
- Nitric Acid Production, (Subpart V)
- Petrochemical Production, (Subpart X)
- Petroleum Refineries, (Subpart Y)
- Phosphoric Acid Production, (Subpart Z)
- Silicon Carbide Production, (Subpart BB)
- Soda Ash Production, (Subpart CC)
- Titanium Dioxide Production, (Subpart EE)
- Underground Coal Mines that are subject to quarterly or more frequent sampling of ventilation systems by the Mine Safety & Health Administration*

Bottom-up, Facility-Based Reporting System

*EPA has delayed finalization of source category rule. Source category is not required to report at this time. Review applicability to Subpart C General Stationary Fuel Combustion Sources or other potentially applicable subparts.



2. Who Must Report – Specific Threshold Category

Facilities that emit $\geq 25,000$ metric tons of GHG emissions per year through a combination of stationary combustion (Subpart C), miscellaneous carbonate use (Subpart U), and emissions from any of 15 source categories:

- Electronics – Photovoltaic Manufacturing*
- Ethanol Production*
- Ferroalloy Production, (Subpart K)
- Fluorinated Greenhouse Gas Production*
- Food Processing*
- Glass Production, (Subpart N)
- Hydrogen Production, (Subpart P)
- Industrial Landfills*
- Iron and Steel Production, (Subpart Q)
- Lead Production, (Subpart R)
- Magnesium Production*
- **Oil and Natural Gas Systems***
- Pulp and Paper Manufacturing, (Subpart AA)
- Industrial Wastewater*
- Zinc Production, (Subpart GG)

*EPA has delayed finalization of source category rule. Source category is not required to report at this time. Review applicability to Subpart C General Stationary Fuel Combustion Sources or other potentially applicable subparts.

3. Who Must Report – General Threshold Category (Subpart C)*

Facilities that do not contain any of the previously identified source categories identified;

and

Have an aggregate maximum rated heat capacity for the facility's stationary combustion greater than 30 MMBtu/hr;

and

Emit $\geq 25,000$ metric tons of GHG emissions per year through stationary combustion (actual emissions).

*** “Oil and Natural Gas Systems” operators must still evaluate General Stationary Fuel Combustion Sources (Subpart C)**



4. Who Must Report – Suppliers

- Suppliers of coal-based liquid fuels, (Subpart LL);
- Suppliers of petroleum products, (Subpart MM);
- **Suppliers of natural gas and NGLs, (Subpart NN);**
- Suppliers of industrial greenhouse gases, (Subpart OO);
- Suppliers of carbon dioxide, (Subpart PP).



What to Report, (General Requirements, Subpart A):

- Annual facility emissions in metric tons of CO₂e aggregated for all source categories for which emission calculation methods are provided in the rule;
- Annual mass emissions by individual GHG for each source category;

<u>Greenhouse Gas</u>	<u>Global Warming Potential (GWP)</u>
Carbon Dioxide (CO ₂)	1
Methane (CH ₄)	21
Nitrous Oxide (N ₂ O)	310
Sulfur Hexafluoride (SF ₆)	23,900
Hydrofluorocarbons (HFCs)	12-11,700
Perfluorochemicals (PFCs)	6,500-17,340
Other Fluorinated Gases	11-14,900



When and How to Report:

- **Data collection begins January 1, 2010 (Subpart C & NN);**
- First report due to EPA March 31, 2011 for calendar year 2010;
- Facilities to submit reports annually;
- Reports to be certified by designated representative of the owner/operator, and submitted electronically;
- Facilities may cease to report if:
 - After 5 consecutive years actual emissions below 25,000 CO₂e; or
 - After 3 consecutive years actual emissions below 15,000 CO₂e;
- Maintain monitoring plan onsite – complete by April 1, 2010.



Applicability – Stationary Combustion, Subpart C:

Tier 1:

- Fuel usage based on company records;
- Default high heating value (“HHV”);
- Defined emission factor (“EF”) (Table C-1);
- May be used for any fuel listed in Table C-1 combusted in a unit with a maximum rated capacity of less than 250 MMBtu/hr.

Tier 2:

- Use Tier 1 equation with measured HHVs;
- May be used for any fuel listed in Table C-1 combusted in a unit with a maximum rated capacity of <250 MMBtu/hr;
- May be used for natural gas and distillate fuel oil for units with a maximum rated capacity of >250 MMBtu/hr;



Applicability – Stationary Combustion, Subpart C:

Tier 3:

- Uses measured annual average carbon content (“CC”) and fuel usage from direct measurement;
- May be used for units of any size firing fuels in Table C-1;
- Shall be used for units >250 MMBtu/hr firing fuels in Table C-1 other than natural gas and distillate fuel oil.
- Shall be used for units >250 MMBtu/hr firing fuels NOT in Table C-1 if fuel provides 10% or more of the annual heat input to the unit.
- Must use measured flow meter values and meet calibration requirements ($\pm 5\%$) and calibration frequency (annually or other manufacturer specification).



Applicability – Stationary Combustion, Subpart C:

Tier 4:

- Requires measurement using quality assured data from continuous emission monitoring systems (“CEMs”);
- Requires CO₂ concentration monitor and stack gas volumetric flow rate monitor;
- Shall be used if unit meets the following six conditions:
 1. Unit capacity >250 MMBtu/hr;
 2. Unit combusts **solid fossil fuel** as a primary or secondary fuel;
 3. Unit has operated >1,000 hours in any year since 2005;
 4. Unit has installed CEMs required by an applicable regulation or operating permit;
 5. CEMs include a certified gas or flow rate monitor;
 6. The gas or flow rate monitor are required by regulation to undergo periodic quality assurance testing.

Suppliers of Natural Gas and NGLs – Subpart NN

- Applicability:
 - Includes only natural gas fractionators and natural gas distribution companies;
 - Excludes natural gas processing plants that only separate NGLs from natural gas;
- Report: CO₂ emissions from the complete combustion of natural gas fractions produced and delivered to others;
- Calculate: CO₂ emissions using prescribed formulas. Variables include volumes supplied, prescribed emission factors and high heating value (in certain instances).



Suppliers of Natural Gas and NGLs – Subpart NN (cont.)

- Measurement of volume supplied must follow standard method or industry practice (Available methods/practices not limited);
- Initial calibration required (in certain instances) per standard method or manufacturer specifications;
- Recalibration schedule – frequency prescribed in standard method or manufacturer specification.

Applicability – Oil and Natural Gas Systems, Subpart W*

- Source category consists of:
 - Offshore petroleum and natural gas production facilities;
 - Onshore petroleum natural gas processing;
 - Onshore natural gas transmission compression;
 - Underground natural gas storage;
 - Liquefied natural gas (LNG) storage;
 - LNG import and export operations.



**Originally Proposed rule*

Applicability – Oil and Natural Gas Systems, Subpart W

- Quantify CO₂ and CH₄ emissions from the following operations (cont.):
 - General fugitive emissions from the following facilities
 - NG Processing facility;
 - Storage station;
 - Transmission station;
 - LNG import and export;
 - LNG storage;
 - Offshore platform and platform pipeline;
 - Compressor fugitives, Centrifugal compressor wet and dry seals, Compressor wet seal degassing vents;
 - Reciprocating compressor rod packing;

Applicability – Oil and Natural Gas Systems, Subpart W

- Quantify CO₂ and CH₄ emissions from the following operations (cont.):
 - Non-pneumatic pumps, Pump seals, Natural gas driven pneumatic pumps;
 - Manual valve actuator devices, Manual valve bleed devices;
 - Storage wellhead fugitive emissions;
 - Blowdown vent stacks;
 - Open-ended lines;
 - Acid Gas Removal (AGR) vent stacks;
 - Dehydrator vent stacks;
 - Flare stacks;
 - Storage tanks;



Calculating GHG Emissions – Subpart W

- Must conduct annual leak detection of fugitive emissions from each listed category using either:
 - Infrared remote fugitive emissions detection or
 - Organic/Toxic vapor analyzers (Calibrate using Method 21).
- If fugitive emissions are detected, GHG emissions must be measured using the following:
 - Calibrated high volume samplers;
 - Calibrated bags (vent bags) where sampler cannot capture all fugitives;
 - Other Meters.

Calculating GHG Emissions – Subpart W

- Calculate and/or measure emissions as follows:
 - Acid gas removal vent – Simulation software - *ASPENTM, AMINECalcTM*;
 - Dehydrator vent stacks - *Simulation software – GLYCalcTM*;
 - NG driven pneumatic pumps, manual valve actuator, valve bleed devices – *Manufacturer emission rating or one-time measurement*;
 - Blowdown vent stacks – *Use gas volume between isolation valves*;
 - Flare stacks and Compressor wet seal degassing vents– *Measure velocity upstream, sample composition quarterly*;
 - Storage tanks – *Metered emission volume (full tank cycle), sample composition*.



Proposed Rule Comments – Subpart W

- Definition of Natural Gas Processing Unit:

*“**Natural gas processing facilities** are engaged in the extraction of natural gas liquids from produced natural gas; fractionation of mixed natural gas liquids to natural gas products; and removal of carbon dioxide, sulfur compounds, nitrogen, helium, water, and other contaminants. Natural gas processing facilities also encompass gathering and boosting stations that include equipment to phase-separate natural gas liquids from natural gas, dehydrate the natural gas, and transport the natural gas to transmission pipelines or to a processing facility”. (74 FR 68, page 16624)*

*“**Gathering and boosting station** means a station used to gather natural gas from well or field pipelines for delivery to a natural gas processing facility or central point. Stations may also provide compression, dehydration, and/or treating services”. (74 FR 68, page 16621)*

- Confusion of what is applicable. Potential to include equipment at onshore production sites. Distinguish with SIC/NAICS code?



Proposed Rule Comments – Subpart W

- Definition of Fugitive Emissions:
 - Definition not consistent with industry practice or other federal regulation;
 - Includes natural gas combustion in flares;
 - Definition combines general fugitive components (not expected to have emissions) with individual process vent emissions (acid gas vents, dehydrator vent stacks, etc.);
- Reporting of De Minimus Sources:
 - Low and no bleed operated pneumatic controllers;
 - Tanks with very low methane content (condensate/oil tanks downstream of flashing);
 - Fugitive components with Methane less than 10%.



Proposed Rule Comments – Subpart W

- Quantifying Fugitive Emissions:
 - Costly and time consuming relative to quality of data;
 - Must quantify even if only to establish negative applicability;
 - Only a provides a snapshot in time;
 - Assumes leaking components leak all year without repair;
 - Not justified – EPA relies on a single study to justify direct measurement (GRI/EPA Study 1992, published 1996);
 - Utilize fugitive count and emission factor method;
 - Provide additional alternatives for measurement.



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**Regulatory Developments
Clean Air Act Greenhouse Gas Permitting Rule**



Prevention of Significant Deterioration (PSD) and Title V Greenhouse Gas “Tailoring” Rule

- EPA Proposal Published October 27, 2009 under authority of the Clean Air Act (“CAA”);
- Makes new or existing facilities emitting >25,000 metric tons/yr of CO₂e to subject to PSD and Title V permit requirements;
- Implementation of a “major modification” would be required to obtain a PSD permit;
- New or modified facilities with GHG emissions that trigger PSD would be required to incorporate Best Available Control Technology (“BACT”).



Prevention of Significant Deterioration (PSD) and Title V Greenhouse Gas “Tailoring” Rule

- Title V operating permits to incorporate estimates of GHG emitted at renewal;
- EPA to evaluate program after first phase (5 years);
- If feasible, within 1 year, implement PSD and Title V program for lower GHG thresholds, alter significance levels and other streamlining techniques;
- Legal Question - Can EPA change PSD thresholds in the CAA?
 - “Administrative Necessity” or “Absurd Results”



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Enforcement

GHG Gas Control Through Enforcement

- Wildearth Guardians: Lawsuit Filed January 14, 2009
 - EPA Did Not Review NSPS KKK, LLL; MACT HH, HHH, and need for residual risk standards every 8 years as required;
 - Among other things, methane emissions listed as creating potential “harm to plaintiffs”.
- Court: By January 31, 2011, EPA must review, revise, or determine why review or revision is not necessary for:
 - Existing NSPS KKK, LLL and MACT HH, HHH, new residual risk standards.



GHG Gas Control Through Enforcement

- Based on interview statements, Wildearth Guardians intent is to use existing consent decrees to demonstrate basis for development of an NSPS targeting methane control;
- Region VIII - ConocoPhillips, Wind River Consent Decrees – Title V Permit Inspections;
- Requiring Methane Control Outside of Inspection Findings – Replace High Bleed Pneumatic Controllers, Leaking Gaskets, Tubing Fittings, and Seals.



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Legislative Developments



American Clean Energy and Security Act of 2009 (“ACES”)

- Waxman/Markey Bill - Passed the House June 26, 2009;
- Title I - Promotes renewable energy and energy efficiency, Carbon Capture and Sequestration (underground storage), low-carbon transportation fuels, electric vehicles, and electricity transmission (smart grid to reduce utility peak loads);
- Title II - Promotes energy efficiency across all sectors;
- **Title III - Develops a comprehensive, economy-wide cap-and-trade program for GHGs;**
- Title IV - Provides financial assistance during the transition to a “clean energy economy” via direct rebates and job creation.

American Clean Energy and Security Act of 2009 (“ACES”)

Title III Summary

- Cap and Trade Program Reduction Goals:
 - 2005 Baseline;
 - Reduction: 3% by 2012; 20% by 2020; 42% by 2030; 83% by 2050;
- Supplemental Pollution Reductions – reduce international deforestation; (Account for 10% reduction by 2020)
- Use of Offsets – 5 tons offsets for every 4 ton increase above allowable;
- Banking & Borrowing – unlimited banking; may borrow future year allowances without penalty.



American Clean Energy and Security Act of 2009 (“ACES”)

Title III Summary, Cont.

- Strategic Reserve – EPA to hold allowances and auction as necessary to stabilize price increases;
- Some allowances to be given away to certain industries through 2026;
- Carbon Market Assurance and Oversight;
- Additional Greenhouse Gas Standards of Performance;
- Clean Air Act Exemptions:
 - Criteria Pollutant, Hazardous Air Pollutant, New Source Review, Title V



Clean Energy Jobs and American Power Act of 2009

- Kerry/Boxer Senate Bill – September 30, 2009;
- Action deferred for health care legislation;
- Expected action following passage or elimination of health care bill;
- Similar to ACES bill from House. Proposes a cap and trade system with similar reduction goals and strict oversight;
- Currently does not provide for full exemptions from Clean Air Act provisions such as NSR, Title V.



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Contact Information

W. Scott Hyden

shyden@spiritenv.com

(281) 664-2840

 Spirit Environmental, LLC

www.spiritenv.com

17350 SH 249, Suite 249

Houston, TX 77064