Greenhouse Gas Inventory Reporting, Regulation and Legislation: How Will it Affect Gas Processors and Suppliers?

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I. Introduction

The 2008 Consolidated Appropriations Act required Environmental Protection Agency ("EPA") to develop a mandatory, nationwide, greenhouse gas ("GHG") reporting rule ("MRR"). The act requires reporting from a large nationwide contingency of industry including both upstream production and downstream sources. The information gathered will be used in the development of future climate change programs. This is the first sweeping Federal, nationwide, non-voluntary GHG regulation in effect. How did we get here? Where are we going? The purpose of this paper is to outline the chain reaction of events which led to existing GHG regulatory initiatives under the Clean Air Act ("CAA"), the GHG MRR, as it relates to gas processors and suppliers, and the parallel path of proposed GHG legislation.

To begin we will discuss the Supreme Court case, Massachusetts v. EPA, from which the legal precedent for regulation of GHG's was established. Furthermore, we will discuss the EPA's subsequent endangerment finding results, how this initiated the domino effect in regulation of GHGs, what is the significance of setting GHG standards for motor vehicles under the CAA and how might enforcement play a role in GHG regulation?

In addition, this paper outlines the MRR, 40 CFR §98, for gas processors and suppliers. Several subparts of the final MRR were not promulgated in October 2009, including Subpart W, relating to Oil and Natural Gas Systems. We will discuss Subpart W, as it was proposed, by reviewing the proposed requirements and subsequent comments from industry representatives. Furthermore, we will discuss the requirements for relevant subparts of the MRR that were promulgated in October 2009, including General Provisions in Subpart A, General Stationary Fuel Combustion Sources in Subpart C and Suppliers of Natural Gas and Natural Gas Liquids, Subpart NN.

Finally, the paper summarizes the duel path approach of regulation of GHGs through proposed regulations initiated by authority under the CAA as well as draft legislation on the horizon. Discussion includes potential challenges of regulating and permitting GHGs under the CAA using programs such as Prevention of Significant Deterioration ("PSD")

and Title V Operating Permits ("Title V"). The significance of initiatives outlined in this paper will likely lead to first time regulation under the CAA of GHGs from stationary sources as well as motor vehicles.

II. Background of Greenhouse Gas Regulation

Massachusetts v. EPA[1]

A group of private organizations petitioned the EPA to begin regulating the emissions of four GHGs, including carbon dioxide, under section §202(a)(1) of the CAA. Section §202(a)(1) requires that the EPA "shall by regulation prescribe . . . standards applicable to the emission of any air pollutant from any class…of new motor vehicles…which in [the EPA Administrator's] judgment cause[s], or contribute[s] to, air pollution…reasonably…anticipated to endanger public health or welfare," 42 U.S.C. §7521(a)(1).

EPA denied the petition, stating that:

(1) The CAA does not authorize it to issue mandatory regulations to address global climate change;

(2) Even if it had the authority to regulate GHG emissions, it would be unwise to do so because a link between GHGs and the increase in global surface air temperatures was not unequivocally established;

(3) Regulation of motor-vehicle emissions would conflict with the President's approach of non-regulatory programs to spur private sector reductions in GHG emissions and limit the President's ability to pursue emission reductions in key developing nations.

Massachusetts, eleven other states, several local governments and non-governmental organizations, sued the EPA for not regulating the GHGs from the transportation sector. The lawsuit claimed that global climate change, influenced by human activity, was causing a rise in sea-level and adversely affecting the state of Massachusetts. The Supreme Court ruled in favor of Massachusetts, in a 5-4 decision, stating EPA has the authority to regulate carbon dioxide and other GHGs.

To summarize, the Court's opinion may be broken down into three arguments:

[1] Supreme Court Slip Opinion, Massachusetts v. EPA, See Link: http://www.supremecourtus.gov/opinions/06pdf/05-1120.pdf

(1) ***Standing*** - The Court ruled that Massachusetts does in fact have standing in challenging EPA's decision not to regulate CO_2 and other GHGs from the transportation sector. Standing requires injury, causation, and the existence for a remedy. The Court found that EPA's refusal to regulate CO_2 has led to "actual" and "imminent" harm to the state of Massachusetts, mainly in the form of rising sea-levels along the state's coast. The Court also found that "given EPA's failure to dispute the existence of a causal connection between man-made GHG emissions and global warming, its refusal to regulate such emissions, at a minimum, contributes to Massachusetts' injuries."

(2) ***EPA Has Authority to Regulate Greenhouse Gases*** - The EPA argued that it was not given the authority under the CAA to regulate CO_2 or other GHGs. The Court found that CO_2 meets the statute's definition of an air pollutant and that EPA provided nothing to suggest that Congress did not mean to regulate GHGs. EPA also argued that CO_2 would require regulating fuel economy standards under the jurisdiction of the Department of Transportation ("DOT"). The Court countered stating, "The fact that DOT's mandate to promote energy efficiency by setting mileage standards may overlap with EPA's environmental responsibilities in no way licenses EPA to shirk its duty to protect the public health and welfare." Protecting public health and welfare is a duty mandated by the CAA.

(3) ***EPA Must Protect Public Health and Welfare*** - EPA argued that if it had authority to regulate GHGs under the CAA, it would be "unwise to do so at this time," as it would hinder efforts of the administration to negotiate international climate change. The Court stated, "A reduction in domestic emissions would slow the pace of global emissions increases, no matter what happens elsewhere." Further, the Court ruled that "under the Act's clear terms, EPA can avoid promulgating regulations only if it determines that GHGs do not contribute to climate change or if it provides some reasonable explanation as to why it cannot or will not exercise its discretion to determine whether they do." Finally, EPA unsuccessfully argued that regulation of CO_2 in the transportation sector would not make significant reductions in emissions. The Court stated that enforcing regulations may not by itself reverse global warming; however, it is EPA responsibility to take steps to "slow or reduce" global warming.

The Court held that the Administrator must determine whether or not emissions of GHGs from new motor vehicles cause or contribute to air pollution which may be

reasonably anticipated to endanger public health or welfare, or "whether scientific uncertainty is so profound that it precludes EPA from making a reasoned judgment".

Endangerment Finding

Following the Court's decision in Massachusetts v. EPA, as instructed in the Court's decision, EPA made a determination whether GHGs were a danger to public health or welfare following the language of section 202(a) of the CAA[2].

Section 202(a) of the CAA states that "The Administrator shall by regulation prescribe… in accordance with the provisions of this section, standards applicable to the emission of any air pollutant from any class or classes of new motor vehicles or new motor vehicle engines, which in his judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare."

On April 24, 2009[3], EPA published the proposed endangerment and cause or contribute finding for GHGs under Section 202(a) of the CAA. On December 15, 2009[4], EPA published two distinct final findings regarding GHGs under section 202(a) of the CAA:

(1) ***Endangerment Finding:*** "The Administrator finds that six GHGs (carbon dioxide ("CO_2"), methane ("CH_4"), nitrous oxide ("N_2O"), hydrofluorocarbons ("HFCs"), perfluorocarbons ("PFCs"), and sulfur hexafluoride ("SF_6")) taken in combination endanger both the public health and the public welfare of current and future generations."

(2) ***Cause or Contribute Finding:*** "The Administrator also finds that the combined emissions of these GHGs from new motor vehicles and new motor vehicle engines contribute to the GHG air pollution that endangers public health and welfare under CAA section 202(a)."

The publication of findings itself does not impose any requirements on industry or other entities. However, the endangerment finding publication now lays the ground work for EPA to regulate GHG emission standards for vehicles. Furthermore, it sets the stage for GHG regulation of stationary sources as discussed in the following section. The move

[2] Clean Air Act Section 202(a), page 221, February 24, 2004: http://epw.senate.gov/envlaws/cleanair.pdf
[3] Federal Register, 74 FR 18886, April 24, 2009
[4] Federal Register, 74 FR 66496, December 15, 2009

toward regulation under the CAA can only be stopped by successful legal challenges or preempted by legislative action. Although discussion of pending litigation concerning the endangerment finding is beyond the scope of this paper, it should be noted that multiple legal challenges to the finding have been submitted with the likely hood of more to come.

III. Clean Air Act Regulatory Developments

Following both the Supreme Court decision in Massachusetts v. EPA and the subsequent EPA Endangerment Finding, the domino effect towards EPA regulation of GHGs under the existing CAA is set into motion.

The following table summarizes EPA GHG regulatory initiatives recently finalized or currently proposed. This paper does not serve to outline all proposed requirements of each of the listed regulatory initiatives, but rather describe the implications of such regulation on the oil and natural gas industry as well as the broader interactive affect of GHG regulation moving forward.

Table 1
Current Greenhouse Gas Regulatory Initiatives

Rule	Approval Status	Federal Register Publication Date
Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards	Proposed	September 28, 2009
Mandatory Greenhouse Gas Reporting Rule, 40 CFR §98 *(Oil and Gas Systems - Subpart W delayed)*	Final	October 30, 2009
Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule	Proposed	October 27, 2009
Underground injection of carbon dioxide for the purpose of geologic sequestration rule[1]	Proposed	July 25, 2008

[1] This regulation is not discussed as part of this paper.

Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards

As a result of the EPA's endangerment finding, a joint proposal between the EPA and the DOT's National Highway Traffic Safety Administration ("NHTSA") was published in the Federal Register on September 28, 2009[5]. As stated in the endangerment finding, the finding alone does not make GHG's regulated pollutants under the CAA. However, upon promulgation, this regulation will control greenhouse gases from light duty vehicles. The implications of Federal regulatory emission control will now include GHG's, as "Regulated NSR Pollutants" as that term is defined in 40 C.F.R. 52.21(b)(50) and currently interpreted by EPA. Controlling or otherwise limiting emissions of GHG through regulation will trigger CAA permitting requirements under the PSD and Title V Operating Permit programs. This will potentially be the first time GHGs are subject to either of these CAA permitting programs.

In re Deseret Power Electric Cooperative

Some have argued that the definition of "regulated NSR pollutant" should already include GHG's in the permitting process. The interpretation of what constitutes a regulated NSR pollutant has been argued in several cases, one of which was In re Deseret Power Electric Cooperative, PSD Appeal No. 07-03 (EAB 2008)[6]. The decision, issued November 13, 2008, was the result of an appeal of a PSD permit that Region 8 had issued on August 30, 2007, to Deseret Power Electric Cooperative ("Deseret") authorizing it to construct a new waste-coal-fired electric generating unit near its existing Bonanza Power Plant, in Bonanza, Utah. The Petitioner, Sierra Club, argued that the act of promulgating a "regulation" in the Code of Federal Regulations ("CFR") that required power plants to monitor and report, but not control or otherwise limit, constituted CO_2 as a pollutant "subject to regulation" as included in the definition of "regulated NSR pollutants" for purposes of the PSD permitting program. Therefore, if CO_2 is considered a regulated NSR pollutant, a Best Available Control Technology ("BACT") analysis for CO_2 is required as part of the PSD permit process.

Region 8 and the Office of Air and Radiation ("OAR") argued that the statutory phrase "subject to regulation under this Act" is unclear; therefore, open to interpretation by the Agency. In addition, Region 8 and OAR contended that EPA had historically

[5] Federal Register, 74 FR 49454, September 28, 2009

[6] In re Deseret Power Electric Cooperative, PSD Appeal No. 07-03 (EAB 2008) http://yosemite.epa.gov/oa/EAB_Web_Docket.nsf/PSD%20Permit%20Appeals%20(CAA)/C8C5985967D8096E85257500006811A7/$File/Remand...39.pdf

interpreted the phrase "subject to regulation" to include only those pollutants "subject to a statutory or regulatory provision that requires actual control of emissions of that pollutant," thus excluding pollutants like CO_2 for which only monitoring is required. The Region and OAR argued that Region 8 followed this longstanding interpretation and thus properly did not include BACT limits for CO_2 in the PSD permit for Deseret.

The EAB sided with Region 8 and OAR and did not require BACT limits for CO_2 in the case of Deseret; however, in the slip opinion, encouraged EPA offices to consider whether to provide a nationwide interpretation of the phrase "subject to regulation under the Act," which is used in the regulatory definition of "regulated NSR pollutant."

"Johnson Memo"

Based on the Deseret case, EPA issued a memorandum to regional administrators on December 18, 2008 clarifying EPA's interpretation of the phrase "subject to regulation under the Act". This memorandum is better known as the "Johnson Memo" and was intended to assist EPA Regional Offices in resolving a national permitting program issue.

The EPA interpretation followed the EAB decision interpreting a "regulated NSR pollutant" in 40 CFR §52.21(b)(50) to exclude pollutants for which EPA regulations only require monitoring or reporting but to include each pollutant subject to either a provision in the CAA or regulation promulgated by EPA under the CAA that requires actual control of emissions of that pollutant.[7]

It should be noted that on October 7, 2009[8], the EPA formally published in the Federal Register, reconsideration of the "Johnson Memo" opening up possibilities for immediate inclusion of GHG's in the PSD permitting process should EPA reverse its interpretation in this memo without additional supporting regulation or legislation. Current administrator Lisa Jackson's letter to congressman Rockefeller states that the final reconsideration of the "Johnson Memo" will likely "explain that greenhouse gas emissions will become "subject to regulation" under the Clean Air Act, such as to make them a part of the Act's stationary source permitting programs, in January 2011, when Model Year 2012 light-duty vehicles will need to comply with EPA's greenhouse gas

[7] EPA's Interpretation of Regulations that Determine Pollutants Covered By Federal Prevention of Significant Deterioration (PSD) Permit Program, Stephen L. Johnson, EPA, December 18, 2008 http://www.epa.gov/NSR/documents/psd_interpretive_memo_12.18.08.pdf

[8] Federal Register, 74 FR 51535, October 7, 2009

emissions standard."[9] This statement suggests that the metric of controlling GHG's by regulation in order to deem it a "regulated NSR pollutant" will stand as the interpretation moving forward.

Mandatory Greenhouse Gas Reporting Rule

In response to the 2008 Consolidated Appropriations Act and under authority of the CAA, EPA has issued the Final GHG MRR, 40 CFR §98. The rule requires reporting of GHG emissions from large sources and suppliers in the United States. The intended goal of the regulation, as discussed in the proposed rule preamble, was to[10]:

(1) Collect accurate and timely emissions data for future policy decisions;
(2) Balance rule coverage to maximize emissions reported while excluding small emitters; and
(3) Create reporting requirements consistent with existing GHG reporting programs and methodologies to reduce reporting burden.

The rule requires manufacturers of vehicles and engines, suppliers of fossil fuels or industrial GHGs, and facilities that emit 25,000 metric tons or more per year of GHG emissions to submit annual GHG emission inventory reports to EPA. The gases covered by the proposed rule are carbon dioxide ("CO_2"), methane ("CH_4"), nitrous oxide ("N_2O"), hydrofluorocarbons ("HFC"), perfluorocarbons ("PFC"), sulfur hexafluoride ("SF_6"), and other fluorinated gases including nitrogen trifluoride ("NF_3") and hydrofluorinated ethers ("HFE").

The final rule was signed by the Administrator on September 22, 2009 and published in the Federal Register on October 30, 2009[11]. At the time of final publication only 31 of the 42 emission source subparts listed in the proposal were finalized.

This section of the paper will focus on summarizing the relevant regulatory subparts for gas processors and suppliers at it relates to the GHG MRR. Of the 31 subparts promulgated we will touch on the General Provisions – Subpart A, General Stationary Fuel Combustion Sources - Subpart C, and Suppliers of Natural Gas and Natural Gas Liquids - Subpart NN. At this time, EPA has not finalized Oil and Natural Gas Systems –

[9] Lisa Jackson, EPA Administrator letter to The Honorable Jay D. Rockefeller IV, February 22, 2010 http://epa.gov/oar/pdfs/LPJ_letter.pdf
[10] Federal Register, 74 FR 16456, April 10, 2009
[11] Federal Register, 74 FR 56374, October 30, 2009

Subpart W; however, is working to re-propose this subpart by February 2010[12]. For purposes of this paper, the proposed Subpart W requirements and proposed rule comments are discussed.

40 CFR §98 Subpart A – General Provisions

As the introductory section of the regulation, Subpart A provides a summary of general requirements that are cross referenced throughout individual subparts. This section defines who must report, what general monitoring, reporting, recordkeeping and verification requirements are included, how signature authority is defined, how the report is submitted, definitions, and general compliance and enforcement provisions.

For discussion purposes, the applicability to the regulation is broken into four distinct categories as defined below:

(1) All-in category – these facility categories are required to report GHG emissions regardless of actual GHG emissions rates. Oil and gas processing facilities are not included in the all-in category.

(2) Specific threshold category – Fifteen listed source categories, including Oil and Natural Gas Systems, Subpart W, that emit greater than or equal to 25,000 metric tons of GHG emissions per year from Subpart W sources in combination with any sources subject to Subpart C, General Stationary Combustion at the site. An applicability determination requires calculation of actual emissions of all sources subject to Subpart W and Subpart C and any other potentially applicable subpart to demonstrate if the 25,000 metric ton threshold is exceeded.

(3) General threshold category – all other sources not subject to a specific or threshold category and emits greater than or equal to 25,000 metric tons of GHG emissions per year. Those sources at a site with a combined rated capacity of less than 30 MMBtu/hr are not applicable. Oil and gas processing sites fall into the specific threshold category listed in item two.

(4) Suppliers – The following suppliers are required to report emissions as if all supplied materials were combusted or released to the atmosphere.
   a. Suppliers of coal-based liquid fuels, (Subpart LL);
   b. Suppliers of Petroleum Products, (Subpart MM);
   c. Suppliers of natural gas and NGLs, (Subpart NN);

[12] Fall 2009 EPA Regulatory Plan and Semiannual Agenda, pg. 44, See Link http://www.epa.gov/lawsregs/documents/regagendabook-fall09.pdf

d. Suppliers of industrial greenhouse gases, (Subpart OO);
e. Suppliers of carbon dioxide, (Subpart PP).

For purposes of this report, annual facility emissions will be reported electronically by individual GHG as well as metric tons of carbon dioxide equivalents ("CO_2e") aggregated for all source categories for which emission calculation methods are provided in the rule. Use of CO_2e allows emissions from each greenhouse gas to be converted to a common basis through use of the specific global warming potential ("GWP") of the gas. This international standard allows for direct comparison of different GHG impacts, as some gases are more potent (have a higher GWP) than others. A summary of these conversions are defined in Table 3 below.

Table 3
Global Warming Potentials

Greenhouse Gas	Global Warming Potential (GWP)
Carbon Dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous Oxide (N_2O)	310
Sulfur Hexafluoride (SF_6)	23,900
Hydrofluorocarbons (HFCs)	12-11,700
Perfluorochemicals (PFCs)	6,500-17,340
Other Fluorinated Gases	11-14,900

In addition, all activity data used to generate the emissions data (e.g. fuel use, feedstock inputs) as well as missing data calculations will be included in the report.

Data collection began on January 1, 2010 for those subparts that were promulgated; therefore, if an oil and gas processing facility exceeds the 25,000 metric ton CO_2e threshold from only stationary combustion sources and/or is a supplier of a listed product then reporting will be required for 2010 regardless of the final status of Subpart W. No third party verification is required. EPA will verify each report. The following outlines the general process for reporting:

(1) Data collection begins January 1, 2010;

(2) First report due to EPA March 31, 2011 for calendar year 2010;

(3) Facilities to submit reports annually;

(4) Reports to be certified by designated representative of the owner/operator, and submitted electronically;

(5) Facilities may cease to report if:
   a. After 5 consecutive years actual emissions below 25,000 CO_2e; or
   b. After 3 consecutive years actual emissions below 15,000 CO_2e;

(6) Maintain listed records; and

(7) Maintain a monitoring plan onsite.

The monitoring plan is not required to be submitted to the EPA; however, requires the following minimum information be maintained at the facility:

(1) Identification of positions of responsibility (i.e. job titles) for collecting GHG data;

(2) Explanation of the processes and methods used to collect the necessary data for the GHG calculations;

(3) A description of the procedures and methods used for quality assurance, maintenance and repair of all continuous monitoring systems, flow meters, and other instrumentation used to provide data for the GHG emissions reported; and

(4) The GHG monitoring plan may rely on references to existing corporate documents as available;

Ensure revision of the plan is performed as needed to reflect changes in production processes, monitoring instrumentation and quality assurance procedures.

40 CFR §98 Subpart C – Stationary Combustion Sources

Stationary Combustion Sources, Subpart C applies to all facilities with CO_2e greater than 25,000 metric tons per year. In assessment of MRR applicability, Subpart C source CO_2e emissions must be combined with emissions calculated from other applicable subparts. Emissions associated with the "Suppliers" categories (ex. Subpart NN) are not included in this total.

Subpart C is divided into four applicability tiers. Each tier requires increasingly prescriptive measurement equipment and emissions data. A summary of each tier's requirements are included below. Gas processors will generally utilize Tier 1 or Tier 2

stationary combustion calculation methodologies for GHG MRR reporting and applicability assessment.

Tier 1:

(1) Fuel usage may be taken from "company records". Company records are broadly defined and allows for the use of billing records or engineering estimates to estimate fuel use rather than measured fuel flows;

(2) The calculation uses a default high heating value ("HHV") defined by the regulation;

(3) The calculation uses a default emission factor ("EF") (Table C-1) defined by the regulation; and

(4) Tier 1 emission calculations may be used for any fuel listed in Table C-1 if combusted in a unit with a maximum rated capacity of less than 250 MMBtu/hr.

Tier 2:

(1) Tier 2 calculations utilize the same equation used for Tier 1 calculations; however, incorporate measured HHVs rather than the default HHVs defined by the regulation. If measured HHVs are available at the required frequency, Tier 2 must be used;

(2) Tier 2 calculations may be used for any fuel listed in Table C-1 if combusted in a unit with a maximum rated capacity of less than 250 MMBtu/hr; and

(3) Tier 2 calculations may be used for natural gas and distillate fuel oil fired in units with a maximum rated capacity of any size.

Tier 3:

(1) Tier 3 calculations require the use of a measured annual average carbon content ("CC") and measured fuel usage from equipment such as, but not limited to, flow meters and tank level indicators;

(2) Tier 3 calculations may be used for units of any size firing fuels listed in Table C-1;

(3) Tier 3 calculations must be used for units greater than 250 MMBtu/hr firing fuels in Table C-1, with the exception of natural gas and distillate fuel oil;

(4) Tier 3 calculations shall be used for units greater than 250 MMBtu/hr firing fuels NOT in Table C-1 if the fuel provides 10% or more of the annual heat input to the unit; and

(5) Finally, Tier 3 calculations shall use measured fuel usage values and meet equipment calibration tolerances (±5%) and calibration frequency (annually or other manufacturer specification).

Tier 4:

(1) Tier 4 calculations require measurement using quality assured data from continuous emission monitoring systems ("CEMs");

(2) If CEMs are currently used on an existing stationary combustion source, Tier 4 must be used as the calculation methodology in the MRR;

(3) For purposes of Tier 4 calculations, CEMS must be equipped with both a CO_2 concentration monitor and stack gas volumetric flow rate monitor;

(4) Tier 4 shall be used if unit meets all of the following six conditions:

(i) Unit capacity greater than 250 MMBtu/hr;
(ii) Unit combusts **solid fossil fuel** as a primary or secondary fuel;
(iii) Unit has operated greater than 1,000 hours in any year since 2005;
(iv) Unit has installed CEMs required by an applicable regulation or operating permit;
(v) CEMs include a certified gas or flow rate monitor; and
(vi) The gas or flow rate monitor is required by regulation to undergo periodic quality assurance testing.

Although the Oil and Natural Gas Systems, Subpart W was not finalized in the October 30, 2009 Federal Register, gas processors and suppliers are still required to assess applicability to the MRR as a reporter under the general Stationary Combustion Source category, Subpart C. If CO_2e emissions are greater than 25,000 metric tons per year from stationary combustion sources alone, the MRR March 31, 2011 annual inventory reporting date will apply.

40 FR §98 Subpart W* – Oil and Natural Gas Systems

Oil and Natural Gas Systems, Subpart W of the MRR was not finalized in the October 30, 2009 Federal Register due to the number of comments and concerns associated with

the April 10, 2009 proposed regulation[13]. Upon review of comments received during the proposal process, EPA has decided to re-propose Subpart W following evaluation of all comments received. This section of the paper outlines Subpart W as it was proposed, including applicability, calculation methodologies and significant comments of concern submitted to EPA.

This source category, as proposed, consists of the following:

(1) Offshore petroleum and natural gas production facilities;
(2) Onshore petroleum natural gas processing;
(3) Onshore natural gas transmission compression;
(4) Underground natural gas storage;
(5) Liquefied natural gas (LNG) storage; and
(6) LNG import and export operations.

Subpart W, as proposed, requires quantification of CO_2 and CH_4 emissions from two categories of operation. First, fugitive components, as generally defined in other CAA regulations, which are not expected to have emissions unless leaks are identified during monitoring. Second, process vents or other process fugitives, from equipment that is intrinsically designed to release emissions such as acid gas vents and dehydrator vent stacks. The proposed rule combines these two categories of sources into a common "fugitive" grouping for purposes of the proposed subpart. Table 4 includes a summarized list of sources subject to the proposed Subpart W as well as a monitoring and measurement summary statement.

[13] Federal Register, 74 FR 16676, April 10, 2009

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Table 4
Proposed Subpart W Applicable Sources

General Fugitive Emission Categories		Process Vents; Other Fugitives	
Category	**Monitor/Measure**	**Category**	**Monitor/Measure**
Natural gas processing facility	*Monitor:* 1. *Infrared remote fugitive emissions detection* 2. *Organic/toxic vapor analyzers* *Measure:* 1. *High volume samplers* 2. *Calibrated vent bags* 3. *Other meters*	Non-pneumatic pumps, Pump seals, natural gas driven pneumatic pumps	*Manufacturer emission rating or one-time measurement*
Storage station		Manual valve actuator devices, manual valve bleed devices	*Manufacturer emission rating or one-time measurement*;
Transmission station		Blow down vent stacks	*Use gas volume between isolation valves*
LNG import and export		Acid gas removal ("AGR") vent stacks	Simulation software - *ASPEN™, AMINECalc™*
LNG storage		Dehydrator vent stacks	*Simulation software – GLYCalc™*
Offshore platform and platform pipeline		Flare stacks	*Measure velocity upstream, sample composition quarterly*
Compressor fugitives, wet and dry seals		Storage tanks	*Metered vent emissions (full tank cycle), sample composition*
Storage wellhead fugitive emissions			
Open-ended lines		Compressor wet seal degassing vents	*Measure velocity upstream, sample composition quarterly*
Reciprocating compressor rod packing			

For those general fugitive components, not expected to leak, the operator must conduct annual leak detection of fugitive emissions from each listed category using either infrared remote fugitive emissions detection or organic/toxic vapor analyzers.

Furthermore, if fugitive emissions are detected, GHG emissions must be measured using either a calibrated high volume sampler, calibrated bags (vent bags) where a sampler cannot capture all of the fugitives, or other meters.

All other process vent category emissions must follow monitoring and measurement requirements as summarized in Table 4. Additional details for monitoring, measurement and calculation can be found in the proposed regulation.

Proposed Subpart W Significant Comments

EPA received a large number of comments concerning Subpart W. This section of the paper will summarize several issues in the proposed rule subpart receiving a large number of comments.

(1) 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".*[14]

***"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".*[15]

Based on the proposed definition, many comments stated the probability for confusion in what is an applicable facility. By including gathering and boosting stations, as defined above, the definition of a natural gas processing facility differs from definitions in other CAA regulations such as the New Source Performance Standards ("NSPS"). Suggestions include changing the definition to become consistent with existing definitions as well as distinguishing applicable

[14] Federal Register, 74 FR 16624, April 10, 2009
[15] Federal Register, 74 FR 16621, April 10, 2009

facilities with Standard Industry Classifications ("SIC") codes within the proposed regulation.

(2) Definition of Fugitive Emissions:

Comments stated that the definition was not consistent with industry practice or other federal regulation. The rule attempts to combine general fugitive components, not expected to have emissions, with individual process vent emissions such as acid gas vents and dehydrator vent stacks.

(3) Reporting of De Minimus Sources:

Comments noted that there is a need in the proposed rule to identify and exclude de minimus sources. Several examples included low and no bleed operated pneumatic controllers, tanks with very low methane content such as condensate/oil tanks downstream of flashing, and fugitive components with methane less than 10%. Comments noted that regulatory language in other subparts, such as Subpart Y for refiners, includes language that would allow exclusion of a tank, with no expected methane emissions, to be documented as such based on process knowledge. Direct measurement to demonstrate negative applicability is not required.

(4) Comment noted a variety of substantial issues in the quantification of fugitive emissions:

(i) Direct measurement of fugitives is costly and time consuming relative to the quality of data;

(ii) Burdensome emission measurements must be performed and quantified initially, even if only to establish negative applicability;

(iii) Emission calculations, only provides a snapshot in time for fugitive emissions;

(iv) Methodologies assume leaking components leak all year without repair; and

(v) Burdensome methodologies are not justified. EPA relies on a single study to justify direct measurement (GRI/EPA Study 1992, published 1996) without identifying other studies and information;

In general, comments requested EPA to provide less burdensome alternatives for measurement. The current EPA schedule for re-proposal of Subpart W is slated for March 2010.

40 FR §98 Subpart NN – Suppliers of Natural Gas and NGLs

The MRR "Suppliers" categories include suppliers of Natural Gas and Natural Gas Liquids ("NGLs"). In addition to general stationary combustion sources (Subpart C) and oil and gas systems (Subpart W), gas processors must also report as suppliers (Subpart NN). Gas processors may also act, in certain instances, as carbon dioxide suppliers (Subpart PP); however, for purposes of this paper, Subpart PP is not discussed.

Applicability to Subpart NN includes only natural gas fractionators or natural gas distribution companies. A distribution company does not include interstate or intrastate pipelines, but rather those companies that provide natural gas to the end user. Furthermore, those natural gas processing plants that only separate NGLs from natural gas as well as field gathering and boosting stations are excluded from this subpart.

The "Suppliers" categories are required to report CO_2 emissions under the assumption that one hundred percent of natural gas fractions produced and delivered to others are combusted. Emissions are calculated using prescribed formulas within the subpart as outlined below:

(1) CO_2 emissions are calculated using the volume of natural gas and NGLs supplied, the prescribed emission factors listed in Tables NN-1 or NN-2 and the high heating value if measured values are available;

(2) Emissions calculated from any fractioned NGLs received from other NGL fractionators shall be subtracted off the total supplied volumes;

(3) Measurement of volume supplied must follow standard method or industry practice, including any standard method or industry practice calibration requirements or calibration frequency.

Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule

On October 27, 2009[16], under authority of the CAA, EPA published a proposed rulemaking that will require PSD and Title V operating permits for those large facilities emitting greater than 25,000 short tons per year ("tpy") of GHGs. The proposal addresses the six greenhouse gases that are currently included in the GHG MRR and will continue to utilize the international standard of CO_2e as the metric for which total greenhouse gas emission rates and permit applicability will be determined.

Applicability Thresholds:

Under the proposed regulation, EPA is proposing a:

(1) Major stationary source threshold of 25,000 tpy CO_2e. This threshold level would be used to assess if a new facility or a major modification at an existing facility would trigger PSD permitting requirements.

(2) Significance level between 10,000 and 25,000 tpy CO_2e. Existing major sources making modifications that result in an increase of emissions above the significance level would be required to obtain a PSD permit. EPA is requesting comment on an appropriate significance level value and intends to select a single value for the GHG significance level.

(3) Title V major source emissions applicability threshold of 25,000 tpy of CO_2e for existing industrial facilities. Facilities with GHG emissions below this threshold would not be required to obtain an operating permit.

The proposed rule attempts to "tailor" GHG emission thresholds to limit the number of facilities that would become subject to the PSD and Title V Operating Permit program. The proposed threshold is expected to include nearly seventy percent of the national GHG emissions that come from stationary sources. Under the CAA, facilities must obtain a PSD permit in order to construct or modify a "major" stationary source of regulated air pollutants, and a Title V operating permit in order to operate such a facility. A facility is major in relation to PSD if it is in one of 28 categories and has a potential to emit 100 tpy of a regulated pollutant, or 250 tpy for all other facilities. A facility is major under Title V if it has the potential to emit 100 tpy of a regulated pollutant. The objective of tailoring the rule from the existing CAA major source or

[16] Federal Register, 74 FR 55292, October 27, 2009

major modification applicability thresholds is to reduce the projected number of permit applications that would overwhelm State permitting authorities. EPA estimates the projected number of applications that would be received is considered "orders of magnitude greater than the current inventory of permits and would vastly exceed the current administrative resources of the permitting authorities."[16] EPA justifies its proposed regulation using legal doctrines of ''administrative necessity'' and "absurd results" which "authorizes departure from a literal application of statutory provisions if it would produce a result that is inconsistent with other statutory provisions or congressional intent."[16]

Rule Implementation:

Although the proposal looks to initially "tailor" CAA applicability thresholds, the proposal suggests a phased approach for implementation. After an initial phase of 5 years, EPA would conduct a study to evaluate administrative feasibility of adequately implementing the PSD and Title V program at lower GHG thresholds. Within one year, the EPA would leave the existing thresholds unchanged or propose new rulemaking to adjust thresholds to an appropriate level to more accurately reflect the administrative capabilities of permitting authorities to address GHGs. The following list demonstrates how the proposed rule will implement GHG emissions into the respective permitting programs.

(1) For existing sources, a major modification would trigger implementation of PSD permitting for GHGs.

(2) New or modified facilities with GHG emissions that trigger PSD permitting requirements would need to apply for a revision to their operating permits to incorporate PSD case-by-case BACT and energy efficiency measures to minimize GHG emissions.

(3) Existing operating permits, not revised due to PSD case-by-case BACT as outlined in item (2) above, and having GHG emissions greater than 25,000 tpy would not need to immediately revise them. At operating permit renewal, these facilities would be required to include estimates of their GHG emissions in their permit applications. Facilities may use the same data reported to EPA under the GHG MRR.

(4) The final emissions thresholds for GHG emissions under the federal PSD and operating permits programs will take effect immediately upon promulgation of the final rule. State and local agencies will continue to have the option to seek

EPA approval for lower thresholds if they demonstrate that they can adequately implement the PSD program at the lower thresholds.

Moving Forward:

First, in a letter from EPA administrator, Lisa Jackson, to United States Senator Jay D. Rockefeller IV, on February 22, 2010[17], EPA provided a glimpse of the plans for moving forward with the proposed tailoring rule outlined above. Based on review of extensive comments received on the proposed tailoring rule, EPA suggests the following actions moving forward:

(1) The PSD GHG tailoring rule is scheduled to be finalized in April 2010;

(2) No stationary source will be required to permit its greenhouse gas emissions in 2010 in line with the expected January 2011 implementation of the model 2012 light-duty vehicle GHG emission standards.

(3) EPA will phase in permit requirements:
   (i) Large stationary sources beginning in 2011 (>75,000 tpy)[18]. In the first half of 2011, only those facilities who must apply for PSD permits due to non-GHG emissions will be required to incorporate GHGs;
   (ii) Other large sources will be phased in between the second half of 2011 and 2013;
   (iii) The smallest sources would not be phased in until at least 2016.

(4) The major source threshold for GHGs is expected to be substantially higher than 25,000 tpy. The letter does not provide projected thresholds.

Second, EPA also plans to develop supporting information to assist permitting authorities as they begin to implement GHG permits for the first time. The Agency plans to develop sector and source-specific guidance that would help educate applicable source categories about GHG emissions, methods for estimating those emissions, control strategies for GHG emissions, and available GHG measurement and monitoring techniques. This guidance will also include approaches for PSD BACT determinations[19].

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[17] Lisa Jackson, EPA Administrator letter to The Honorable Jay D. Rockefeller IV, February 22, 2010 http://epa.gov/oar/pdfs/LPJ_letter.pdf

[18] *EPA Plan To Delay, Raise GHG Permit Trigger Resolves Key State Concerns*, InsideEPA.com, March 5, 2010

[19] Federal Register, 74 FR 55296, October 27, 2009

Regulating GHGs under the Clean Air Act:

In the prior EPA administration's July 2008 Advanced Notice of Proposed Rule Making ("ANPR") entitled Regulating Greenhouse Gas Emissions under the Clean Air Act, the EPA administrator states, "I believe the ANPR demonstrates the CAA, an outdated law originally enacted to control regional pollutants that cause direct health effects, is ill-suited for the task of regulating global greenhouse gases." Furthermore the administrator states these rules "…would be relatively ineffective at reducing greenhouse gas concentrations give the potentially damaging effect on jobs and the U.S. economy."[20]

This statement underlines the many challenges associated with regulation under the existing CAA. Not only are there legal challenges such as "tailoring" limits established in the CAA, challenges also arise with the GHG regulatory and permitting process under the CAA.

Pollutants currently regulated under the CAA, have been assigned National Ambient Air Quality Standards ("NAAQS") as well as associated State/Federal implementation plans in order to satisfy legislative requirements to protect public health (primary standard) and welfare (secondary standard). EPA states the difficulty in establishing GHG NAAQS levels that would be considered to affect public health and welfare due to the extensive time scale necessary to establish the full effects of elevated GHG atmospheric concentrations and the uncertainties of health and welfare impacts at any given concentration[21]. Furthermore, the effect of GHG atmospheric concentrations extend beyond a localized or regionalized scope within the United States, to a global scale for which it is difficult to apply in the United States alone. Finally, due to the global scale of GHGs, a nation-wide NAAQS would likely be most appropriate, meaning either all of the United States is considered in attainment for GHGs or all is considered nonattainment. Should the entire country fall into nonattainment for any GHGs, State Implementation Plans ("SIPs") would be required across the country triggering, among other things, stationary source control, Nonattainment New Source Review ("NNSR") permitting (GHG offsets) and timelines to reach attainment that are not in line with the long atmospheric lifetime of most GHGs. EPA's reservations concerning implementation of NAAQS also include the sweeping control strategies for a broad group of sources rather

[20] Federal Register, 73 FR 44354, July 30, 2008
[21] Federal Register, 73 FR 44367, July 30, 2008

than focusing upon a limited number of sources whose reductions provided the greatest benefit.

Regardless if EPA determines the necessity of a NAAQS for GHGs, regulation under PSD and NNSR permitting programs may be initiated without establishment of a NAAQS upon implementation of the mobile source standards as described in previous sections. The PSD permitting requirement with significant relevance is implementation of BACT. BACT is a case-by-case evaluation to determine "…the maximum achievable degree of emissions reductions for a given pollutant, taking into account energy, environmental and economic impacts."[22] Furthermore, should the country become designated as nonattainment for GHGs, NNSR permitting requires implementation of the lowest achievable control technology ("LAER"). LAER disregards cost of control and operation and only considers if an emission rate is achievable.

In order to begin defining BACT and potentially LAER for sources of GHG, EPA assembled a Climate Change Workgroup subcommittee to the Clean Air Act Advisory Committee ("CAAAC") Permits, New Source Reviews, and Toxics committee. Initial findings from the committee state that the "top-down" BACT approach can be applied to GHGs; however, questions remain on execution of the process. The CAAAC initial report failed to come to a consensus on two key BACT issues. First, must regulators consider if requiring facilities to switch from burning fuels like coal to using low-GHG fuels like natural gas would unlawfully redefine the source. As a result, the group argues that EPA should provide guidance on how clean fuels should be considered in the BACT process for GHGs. Second, some advisers said the BACT analysis should consider possible efficiency gains in parts of the facility or process outside of the new or modified unit. However, others argued that defining the source as including more than the modified portion is inconsistent with statutory language and unworkable because it would be open to wide interpretation. The lack of consensus shifts these issues to EPA to resolve questions over BACT.[23]

[22] Clean Air Act Section 169(3), page 151, February 24, 2004: http://epw.senate.gov/envlaws/cleanair.pdf
[23] Clean Air Act Advisory Committee, Climate Change Workgroup Report http://www.epa.gov/air/caaac/climatechangewg.html

IV. GHG Regulation through Enforcement

In addition to regulation through the CAA, environmentalist groups have recently commented on their intent to achieve GHG control through the use of Title V inspections and associated enforcement at oil and gas facilities.[24]

The basis for the comments hinges on two legal actions. First, a lawsuit filed on January 14, 2009[25] by Wildearth Guardians. The lawsuit argues that EPA has not routinely reviewed the existing NSPS Subparts LLL or KKK, affecting Natural Gas Processing facilities, or MACT Subparts HH or HHH affecting Natural Gas Production, Transmission and Storage source categories, at an interval of every eight years as required in the CAA. Furthermore, the lawsuit states that initial 1979 EPA priorities for promulgation of new NSPS and MACT regulations listed Crude Oil and Natural Gas Production on its list of source categories which it determined to "cause, or contribute significantly to, air pollution which may reasonably be anticipated to endanger public health and welfare." Finally, the lawsuit takes the opportunity to discuss the adverse affects of methane emissions on climate change and its impact on the plaintiffs. On February 4, 2010 a consent decree was entered requiring EPA to review associated oil and gas NSPS and MACT regulations and either propose revisions by January 31, 2011 (Finalize by November 30, 2011) or return a decision that the regulations do not require change at this time.

Second, two EPA Region VIII consent decrees, have been entered requiring control of methane emissions. Specifically, ConocoPhillips and Wind River Resources have agreed to control methane emissions by replacing pneumatic controllers with low emitting controllers. In addition the decrees require correction of leaking gaskets, tubing fittings and seals[26,27]. The consent decrees are a result of Title V Operating Permit inspection findings unrelated to GHGs.

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[24] *EPA Region VIII Using Enforcement To Drive GHG Limits At Natural Gas Sites*, InsideEPA.com, February 17, 2010

[25] Wildearth Guardians and San Juan Citizens Alliance v. Stephen L. Johnson, U.S. EPA, U.S. District Court for the District of Columbia, 1:09-cv-00089-CKK, Lodged January 14, 2009, Entered February 02, 2010.

[26] U.S. EPA Region 8 - ConocoPhillips Company, Final Order, February 4, 2010, Docket No.: CAA-08-2010-0007

[27] United States of America v. Wind River Resources Corporation & Bill Barrett Corporation, U.S. District Court for the District Utah, Civil No. 2:09-cv-00330-PMW, Lodged – April 17, 2009

The combination of enforcement will position EPA to review existing oil and gas NSPS regulations with respect to allegations that methane emissions endanger public health and welfare. During the public comment period of EPA's NSPS and MACT reviews, environmentalists plan to cite the Region VIII ConocoPhillips Company and Wind River Resources decrees, discussed above, in calling for standardized GHG limits in NSPSs[24].

V. GHG Legislation

Congress has drafted a version of GHG legislation in both the House of Representatives ("House") and Senate as a parallel path to regulation of GHG under the CAA. This section briefly summarizes the contents of the proposed legislation.

The Waxman-Markey House bill is entitled "The American Clean Energy and Security Act of 2009" or the "ACES" Act[28] (H.R. 2454). The legislation includes four titles:

(1) "Clean Energy" – Promoting renewable sources of energy and carbon capture, low carbon fuels, clean electric vehicles and smart grid transmission;
(2) "Energy Efficiency" – Increasing energy efficiency across all sectors of the economy;
(3) "Global Warming" – GHG cap and trade system limiting emissions of heat-trapping pollutants; and
(4) "Transitioning" – Protects U.S. consumers and industry and promotes green jobs during the transition to a clean energy economy.

In the forefront of conversation has been Title III, "Global Warming" which includes provisions for a national GHG cap and trade system for those entities emitting more than 25,000 tpy of GHGs. Under the program, facilities will have tradable permits called "allowances" for each ton of GHG pollutant emitted into the atmosphere. The program will reduce the number allowances issued each year to ensure that total emissions are reduced by the levels described in Table 5.

[28] The American Clean Energy and Security Act of 2009 – Section-by-Section Summary http://energycommerce.house.gov/Press_111/20090720/hr2454_sectionsummary.pdf

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Table 5
GHG Cap and Trade Reductions – ACESA

Year	Percent Reduction Below 2005 Levels (%)
2012	3
2020	20
2030	42
2050	83

Additional reductions are to be achieved by EPA by entering into agreements to prevent international deforestation equivalent to a 10% reduction below 2005 GHG levels.

Additional provisions of the GHG cap and trade system include:

(1) Offsets - Increases of emissions above a facility's allowances are allowed if offsetting from other sources occurs. Entities must submit 5 tons of offsets for every 4 tons of emissions to be offset.

(2) Banking and Borrowing – Unlimited banking of allowances is allowed for use in future years and allows for borrowing of future allowance up to one year in advance without penalty and allowances from two to five years in the future may be borrowed in limited circumstances.

(3) Strategic Reserve – EPA will create a strategic reserve of about 2.5 billion allowances creating a cushion to curb extreme price fluctuation. Reserve allowances may be auctioned to stabilize price swings. Proceed from the auction will be used to purchase additional offsets to replenish the strategic reserve.

(4) Carbon Market Assurance and Oversight – The Federal Energy Regulatory Commission ("FERC") is charged with regulating the cash market in emission allowances and offsets. Strict penalties will be established for fraud and manipulation.

(5) Additional GHG Standards – Directs EPA to establish additional emissions standards on sources that are not covered by the cap and trade system. It also establishes specific targets such hydrofluorocarbons ("HFCs") and black carbon.

(6) Clean Air Act Exemptions – The proposed legislation provides that CO_2 and other GHGs may not be regulated as criteria pollutants or hazardous air pollutants

("HAPs") based on their effect on global warming. Furthermore NSR does not apply to global warming pollutants.

In a similar bill proposed in the Senate on September 30, 2009, Senators John Kerry (D) and Barbara Boxer (D) drafted The Clean Energy Jobs and American Power Act (S.B. 1733)[29]. This proposed bill includes the same reduction goals as the ACESA House counterpart bill requires. In addition, many of the proposed programs are identical or similar in nature. One significant difference or intended omission in the proposed Senate legislation is a specific exemption for regulation of GHGs as criteria pollutants under the CAA. As discussed earlier in this paper, regulation of GHGs under the CAA poses significant challenges. These challenges were considered so significant that EPA requested congress to take action to draft GHG specific legislation in order to avoid the complications of tailoring new regulations to fit within historical clean air legislation not intended for GHGs. Currently GHG legislation is on hold until prioritized issues such as health care reform is addressed.

VI. Summary

There is clear evidence that EPA is focusing attention on GHG regulation and is moving forward at a rapid pace. With a shift in EPA administrations, 2009 hosted many new and advancement of existing GHG regulatory initiatives seemingly to ensure regulation of GHGs through the regulatory domino effect into the CAA or regulation through proposed GHG cap and trade legislation.

Furthermore, there is evidence to support an attempt to accelerate the regulatory focus in the oil and gas industry through use of enforcement initiatives such as consent decrees.

The following is a chronological table summary of regulatory initiatives and significant events relating to the regulation of greenhouse gases at stationary sources. Additional GHG regulatory or program initiatives have been proposed; however, are not part of the scope of this paper.

[29]The Clean Energy Jobs and American Power Act – Section-by-Section Summary
http://kerry.senate.gov/cleanenergyjobsandamericanpower/pdf/SectionbySectionSummary.pdf

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Table 6
GHG Regulatory Initiatives and Significant Events

Initiative/Event	Month/Year	Significance
Supreme Court Case – Massachusetts vs. EPA	April 2007 (Final Decision)	Required determination if GHG from motor vehicles cause or contribute to air pollution.
House of Representative Climate Change Legislation	March 2009 (Proposed Legislation)	Proposes, among other things, cap and trade system for GHG and exempts regulation under CAA.
Endangerment Finding	December 2009 (Final Rule)	Found GHGs endanger both the public health and welfare.
Senate Climate Change Legislation	September 2009 (Proposed Legislation)	Proposes, among other things, cap and trade system for GHG but does not exempt regulation under CAA.
Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards	September 2009 (Proposed Rule)	Sets GHG standards for light-duty vehicles. Finalization makes GHGs "regulated pollutants" under the CAA. GHG from stationary sources may now be regulated under CAA.
Mandatory Greenhouse Gas Reporting Rule	October 2009 (Final Rule)	Used to gather data for future GHG regulation and programs.
Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule	October 2009 (Proposed Rule)	Used to tailor CAA PSD and Title V permitting requirements to achieve workable results.
EPA Administrator Letter to Congress	February 2010 (EPA Letter to Congress)	Major source threshold likely to be "substantially higher" than 25,000 tpy. Acknowledged phase in approach for stationary source permitting.

If you have any questions about this paper, GHG regulation, GHG emissions reporting, or would like copies of any or all of the referenced material, please feel free to contact me directly. My contact information is included below.

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This paper went to press in early March 2010. There may be significant developments between completion of the paper and the GPA Conference. Stayed tuned …