



Primer on GHG Regulation of Stationary Sources under the Clean Air Act: Interaction of Tailoring Rule and Proposed NSPS

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On March 27, 2012, the U.S. Environmental Protection Agency (EPA or Agency) proposed a performance standard to limit greenhouse gas (GHG)¹ emissions from new fossil-fuel-fired power plants. This primer begins with a background summary of Clean Air Act regulations that control GHG emissions. Subsequent sections discuss the regulation of large stationary sources, such as power plants, refineries, and industrial facilities.

Finally, this primer explains the interaction of the proposed new source performance standard (NSPS) with other regulations controlling GHG emissions from large stationary sources.

The Clean Air Act provides distinct programs to control emissions from mobile and stationary sources. These programs traditionally regulated only six pollutants,² but the EPA is in the process of incorporating carbon dioxide (CO₂) and other GHGs into those programs. Regulation of GHG emissions from mobile sources is well under way. For major stationary sources, the EPA has finalized permitting requirements for GHG emissions from new construction and modifications. Taking the next step, the recently proposed NSPS would limit the rate of CO₂ emissions from certain new electricity generating units at power plants.

Timeline of federal regulation of CO ₂		
Apr. 2007	<i>Mass. v. EPA</i>	U.S. Supreme Court holds GHGs are a pollutant covered by the Clean Air Act, requiring EPA to determine whether GHG emissions from vehicles harm public health and, if so, to implement appropriate regulations.
Oct. 2009	GHG Reporting Rule	Requires large GHG emitters to report GHG emissions to the EPA annually, beginning in 2010.
Dec. 2009	EPA issues "Endangerment Finding" and "Cause or Contribute Finding"	Finds that GHGs "endanger the public health and welfare" and that emissions from motor vehicles contribute to that endangerment, triggering regulation of GHGs under the Clean Air Act.
Apr. 2010	Timing Rule	Determines GHG emissions from stationary sources are subject to regulation under the CAA beginning January 2, 2011, the date regulation of GHGs from passenger vehicles took effect.
May 2010	Tailpipe Rule	Limits GHG emissions from light-duty vehicles to approximately 250 grams/mile (equivalent of 35.5 mpg) in 2016.
June 2010	Tailoring Rule	Applies PSD and title V permitting requirements to only the largest stationary sources of GHG emissions.
Dec. 2010	NSPS Settlement Agreements	Requires EPA to set GHG performance standards for fossil-fuel-fired power plants and petroleum refineries.
Mar. 2012	NSPS Proposed Rule	Requires new power plants to meet an emissions rate of 1,000 lbs. CO ₂ /MWh.

Background

In 2007 the United States Supreme Court held in *Massachusetts v. EPA* that GHG emissions from new passenger vehicles are subject to the Clean Air Act.³ This holding set in motion a series of EPA actions

¹ The term "greenhouse gases" generally refers to carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). EPA Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act, 74 Fed. Reg. 66,496, 66,497 (Dec. 15, 2009) [hereinafter GHG Endangerment Finding].

² See *infra*, note 10 and accompanying text.

³ *Mass. v. E.P.A.*, 549 U.S. 497, 528 (2007).

related to GHG emissions. The EPA found that GHG emissions from passenger vehicles contribute to air pollution that “is reasonably anticipated to endanger public health and welfare” (Endangerment Finding),⁴ regulated GHG emissions for light-duty vehicles (Tailpipe Rule)⁵ as well as for medium- and heavy-duty vehicles,⁶ required certain facilities and suppliers to report GHG emissions to the Agency (Greenhouse Gas Reporting Program),⁷ and determined that permitting requirements applied to GHG emissions from large stationary sources starting on January 2, 2011 (Timing Rule and Tailoring Rule).⁸

Regulation of GHGs from Stationary Sources

The EPA currently regulates GHG emissions from certain large stationary sources (new sources and major modifications) under the Clean Air Act’s Prevention of Significant Deterioration (PSD) program. The Agency’s recently proposed new source performance standard would add an additional limitation on GHG emissions from new fossil-fuel-fired power plants.

Tailoring Rule / PSD Program

The Tailoring Rule requires only the largest emitters of GHGs to acquire PSD and title V air quality permits (see side box for a description of these programs).⁹ The PSD program is a part of New Source Review and typically applies to six pollutants regulated under the National Ambient Air Quality Standard (NAAQS) program. These six pollutants, referred to as “criteria pollutants,” include sulfur dioxide (SO₂), nitrogen oxides (NO_x), lead, particulate matter, ozone, and carbon monoxide (CO).¹⁰ PSD permitting requirements limit the increase of criteria pollutants in an “attainment” area (an area in compliance with a NAAQS). In addition, the PSD program applies to certain new construction and modifications that will emit a pollutant that is regulated by the EPA but is not covered under NAAQS (e.g., GHGs).¹¹

PSD permit—An air quality permit required before construction of a large new source or major modification of a large source in order to prevent significant degradation of existing air quality. PSD permits require the installation of best available control technology (BACT).

Title V permit—A comprehensive air permit issued by state and local authorities that consolidates existing state and federal air pollution control requirements applicable to a facility, including monitoring, record-keeping, and reporting requirements.

PSD permitting requirements apply if a facility emits 100 tons per year (tpy) (250 tpy in some cases) of certain air pollutants.¹² Because GHG emissions typically occur in much higher concentrations than other air pollutants, using the 100- and 250-tpy thresholds for GHG emissions would potentially require millions of additional permits.¹³ The EPA issued the Tailoring Rule to target only the largest emitters of GHGs. The Tailoring Rule requires PSD permits for new sources that could emit 100,000 tpy of GHGs. The rule also covers existing sources that undergo a significant modification if (1) the source emits or could emit 100,000 tpy of GHGs prior to the modification and (2) the modification increases net GHG

⁴ GHG Endangerment Finding, 74 Fed. Reg. at 66,499.

⁵ Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards, 75 Fed. Reg. 25,324, 25,326 (May 7, 2010) (defining “light-duty vehicles” as passenger cars, light-duty trucks, and medium-duty passenger vehicles); 2017 and Later Model Year Light-Duty Vehicle Greenhouse Gas Emissions and Corporate Average Fuel Economy Standards, 76 Fed. Reg. 74,854, 74,859 (Dec. 1, 2011).

⁶ Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles, 76 Fed. Reg. 57,106, 57,106 (Sept. 15, 2011).

⁷ Mandatory Greenhouse Gas Reporting, 40 C.F.R. §§ 98.1–.3 (2011).

⁸ EPA Determination of Pollutants Covered by Clean Air Act Permitting Programs, 75 Fed. Reg. 17,004, 17,006–07 (Apr. 2, 2010).

⁹ EPA Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, 75 Fed. Reg. 31,514, 31516 (June 3, 2010) [hereinafter Tailoring Rule].

¹⁰ EPA.gov, What Are the Six Common Air Pollutants?, <http://www.epa.gov/air/urbanair/> (last visited May 8, 2012).

¹¹ EPA.gov, New Source Review Basic Information on PSD, <http://www.epa.gov/nsr/psd.html> (last visited May 8, 2012).

¹² 42 U.S.C. § 7479(1) (2006).

¹³ Tailoring Rule, 75 Fed. Reg. at 31,533 (“To apply the statutory PSD and title V applicability thresholds literally to sources of GHG emissions would bring tens of thousands of small sources and modifications into the PSD program each year, and millions of small sources into the title V program.”).

emissions by at least 75,000 tpy.¹⁴ The EPA recently stated that it has no plans to include smaller sources of GHG emissions into the PSD program by reducing these thresholds.¹⁵

The PSD program requires the installation of the Best Available Control Technology (BACT), which is a source-specific strategy for limiting emissions through equipment or production process. A permitting agency (typically at the state level) considers costs as well as energy, environmental, and economic impacts when determining BACT for a specific facility.¹⁶

New Source Performance Standard (NSPS)

In December 2010 the EPA entered into two settlement agreements to resolve lawsuits filed by a group of states, local governments, and environmental organizations seeking NSPSs to limit GHG emissions from fossil-fuel-fired power plants and refineries. The NSPS section of the Clean Air Act, section 111(b), requires the EPA to identify categories of major polluters (e.g., petroleum refineries, coal-fired power plants, and municipal landfills) and to develop standards of performance for new and modified facilities in each category.¹⁷ These standards must reflect “the best system of emission reduction” that is achievable using available technologies.¹⁸ In determining performance standards, the EPA considers such factors as cost, health and environmental impacts, and energy requirements. An NSPS may take many forms, including emission limits, efficiency standards, and reporting requirements. In contrast to PSD permitting requirements, NSPSs are uniform and apply nationwide, though standards may differ between categories. States may develop and implement a plan for achieving the performance standards, subject to EPA approval.¹⁹

Proposed NSPS for greenhouse gases

In March 2012 the EPA proposed an NSPS to limit CO₂ emissions from large electric-utility steam-generating units (i.e., coal-fired facilities) and combined-cycle units (e.g., natural-gas-fired combined-cycle turbines).²⁰ Unlike the Tailoring Rule, which applies to “sources,” the proposed NSPS applies to individual units. A single power plant may contain multiple units that generate electricity. Within this category of generating facilities, the proposed NSPS covers only *new* fossil-fuel-fired units in the continental United States that supply over 25 megawatts net electrical output for an electric utility company to sell.²¹ The proposed rule does not impact modifications or existing sources. Nor does the rule apply to units with PSD preconstruction permits approved by April 13, 2012, provided that construction begins within 12 months of that date.²²

If finalized, the proposed performance standard will prohibit affected units from emitting more than 1,000 pounds of CO₂ per megawatt hour (lbs. CO₂/MWh).²³ This output-based performance standard is achievable with modern combined-cycle natural gas turbines, but coal-fired units will not achieve this standard without utilizing carbon capture technologies.²⁴ The EPA estimates that even absent this proposed rule, economic factors would establish combined-cycle natural gas as the “predominant choice for new fossil fuel-fired generation” over the next two decades.²⁵

¹⁴ *Id.* at 31,516.

¹⁵ See Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule Step 3, 77 Fed. Reg. 14,226, 14,228 (May 8, 2012), § 7479(3).

¹⁷ 42 U.S.C. § 7411(b)(1)(A), (B) (2006); see also Nicholas Institute, Primer on GHG Regulation under the Clean Air Act: PSD, Title V, and NSPS, at 2 (2011) [hereinafter CAA Primer].

¹⁸ § 7411(a)(1). This system of emission control is often referred to as best demonstrated technology (BDT).

¹⁹ § 7411(c).

²⁰ EPA Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units, 77 Fed. Reg. 22,392, 22,394 (proposed March 27, 2012) (to be codified at 40 C.F.R. pt. 60).

²¹ *Id.* at 22,405.

²² *Id.* at 22,394, 22,421.

²³ *Id.* at 22,392.

²⁴ See *id.* at 22,396, 22,398.

²⁵ *Id.* at 22,392.

To provide flexibility to sources covered by the proposed NSPS, the EPA included a 30-year averaging compliance option for coal- and pet-coke-fired sources. This option permits an immediate emission rate of 1,800 lbs. CO₂/MWh on a 12-month annual average basis, provided that from years 11 through 30, the source meets an emission limit of 600 lbs. CO₂/MWh on a 12-month annual average basis.²⁶ Given the state of current emission-reduction technology, a facility would have to use carbon capture technologies in order to reduce emissions to 600 lbs. CO₂/MWh.

Regulation of GHGs from existing sources

An NSPS generally applies only to new construction or existing facilities undergoing major modifications. If an NSPS covers a pollutant that is not also regulated as a criteria pollutant or a hazardous air pollutant, however, section 111(d) of the Clean Air Act requires states to develop performance standards for *existing* sources of that pollutant, subject to the EPA's guidance and approval.²⁷ Because the EPA does not regulate GHGs as criteria pollutants or hazardous pollutants, the proposed NSPS for GHG emissions, if made final, will trigger the regulation of GHG emissions from existing sources. These performance standards for existing sources may differ from performance standards for new and modified sources. The EPA has indicated it currently does not have plans to develop rules for existing sources.²⁸

Interaction of NSPS and PSD Regulation of GHGs

In some instances, GHG-emitting facilities will be subject to both the proposed NSPS rulemaking and the PSD permitting requirements, as demonstrated by the flow chart in Figure 1 below.

New construction of a large coal- or natural-gas-fired power plant may be subject to both PSD permitting requirements and the proposed NSPS. Under the proposed NSPS, certain new units must not emit more than 1,000 lbs. CO₂/MWh. At the same time, if a new facility could emit at least 100,000 tpy of GHGs, it must secure a PSD permit and utilize the best available control technology to limit emissions. Because regulators determine BACT on a case-by-case basis, the application of BACT may result in emission levels below the proposed NSPS.

The proposed NSPS rule exempts all modifications to existing facilities. Modifications of a source that could emit 100,000 tpy of GHGs, however, would require a PSD permit if the modification could result in additional net GHG emissions of 75,000 tpy.

Neither the PSD program nor the proposed NSPS rule applies to GHG emissions from (nonmodified) existing facilities.

²⁶ *Id.* at 22,398.

²⁷ 42 U.S.C. § 7411(d)(1) (2006).

²⁸ Gina McCarthy, Assistant Administrator of EPA, The Facts about EPA's Carbon Pollution Standard for New Power Plants, <http://blog.epa.gov/administrator/2012/04/05/standard-for-new-power-plants/> (May 8, 2012).

Figure 1. Federal regulation of GHG emissions from stationary sources (as of May 2012)

