Environmental and Energy Study Institute

Issue Brief

Fossil Fuels in the Era of Greenhouse Gas Permits

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The U.S. Environmental Protection Agency's (EPA) authority to regulate greenhouse gases continues to be questioned in the 112th Congress and challenged in the courts, but the first phase of the regulations have been on the books since January, 2011. States have begun to process permits for new fossil fuel power plants and oil refineries that are subject to the regulation. This issue brief looks at the projects that have complied with the greenhouse gas (GHG) permit process, what role the EPA is taking in permit applications, and how it has affected new GHG-emitting projects.

PROJECTS COMPLYING WITH GHG PERMIT PROCESS

There are more than 100 projects in 28 states, two territories and the Outer Continental Shelf that have submitted air permit applications to comply with EPA regulations, although not all of them will require a GHG permit. Under current rules, only new projects or major expansions/renovations that would have to obtain a Prevention of Significant Deterioration permit regardless *(see next section)*, and that emit more than 75,000 tons per year of GHGs, have to apply for a GHG permit. Approximately 30-40 percent of the PSD permit applications mentioned above include a GHG component. The remaining applications could end up not requiring a GHG permit or get canceled before the final determination is made regarding the granting of an air permit.[1]

Numerous projects have already received air permits with GHG limits. They include:

- A natural gas-fired iron foundry in Louisiana;
- A 629 megawatt expansion of an existing natural gas facility in Utah;
- A biomass-fueled co-generation power plant in Wisconsin;
- Modifications to an existing coal-fired power plant in Iowa;
- A 600 megawatt coal- and biomass-fired power plant in Michigan.

STATE CONTROL OVER GHG PERMITTING

Right now, states have discretion in making permitting decisions. There are no national standards on the emission of greenhouse gases from large, so-called stationary sources. Some states, however, have refused to incorporate the rules into their permitting programs. Texas, for example, refused and has challenged the EPA's authority in court. As a consequence, the EPA was forced to take over its GHG air permit program to keep permitting activity moving. To date, two applications have been received for Texas projects and are being processed.[2]

Although the EPA developed and issued the regulations under the **Prevention of Significant Deterioration**[3] (PSD) (*see box*) portion of the Clean Air Act, the job of administering the regulations falls to states, which issue pre-construction air permits on a project-by-project basis. The determinations are highly technical.

Applicants must conduct a **Best Available Control Technology** (BACT) analysis.[4] The five-step process begins by identifying and ranking available technologies to control GHG emissions in descending order of effectiveness. Technically infeasible options are thrown out, the rest of the control options are ranked again, and the best available option or combination is selected.

The BACT analysis considers energy, environmental and economic impacts, which the EPA says are intended to inform the setting of a numeric emissions limitation that reflects the maximum degree of GHG reduction achievable through use of technology or operational practices.

EPA guidelines state that BACT analyses should consider the use of operating conditions, processes or facility designs that enhance energy efficiency. EPA advised state regulators to benchmark a proposed facility or combustion unit against similar operations to determine whether greater energy efficiencies could be achieved. Another consideration at the start of the analysis should be carbon capture and sequestration, though EPA acknowledged the process of pumping carbon dioxide into underground formations likely will be eliminated during the analysis because it is too expensive or technically infeasible.

What is the PSD Program?

The Prevention of Significant Deterioration (PSD) Program was authorized by the 1977 amendments to the Clean Air Act (CAA). The purpose of PSD is to prevent the deterioration of air quality by ensuring that any increases in air pollution added to the atmosphere fall within national air quality standards.

PSD applies to large stationary sources of air pollution, such as factories and industrial plants. It requires pre-construction permits to build new facilities or make major modifications to existing facilities.

Applicants must conduct step-by-step analyses to select the best-available control technology to limit emissions of CAA-regulated pollutants, which include carbon monoxide, sulfur dioxide, and nitrogen dioxide. The analysis considers technical feasibility, cost and other environmental and energy considerations. Permits contain numerical limits on the pollution from the facilities.

Greenhouse gases were added as a pollutant considered in PSD effective January 2, 2011.

- www.epa.gov/air and www.epa.gov/nsr

EPA'S ROLE IN STATE GHG PERMITTING

The EPA has suggested that state regulators set limits on facilities' GHG emissions on a **case-by-case** basis.[5]

The EPA's guidance is contained in letters sent to state regulators who had given preliminary approvals to seven large industrial projects *(see first page)*. They are among the first projects to require a pre-construction permit that regulates their GHG emissions under rules that took effect January 2, 2011. Some of the projects have since received the final go-ahead.

Posted on the EPA's website, the letters show differences in how the EPA and state regulators interpret the rules. They also show **the rules have not prevented states from moving forward with proposals to build new power plants, foundries or refineries, including facilities that burn coal**. A Bloomberg Government study released in June, 2011 said the rules will neither reduce greenhouse gas emissions, nor burden companies with extra costs.[6]

Biomass and GHG Permits

How GHG regulations affect facilities that burn biomass is still an unsettled question. On July 1, 2011, the EPA announced the "Final Deferral for CO2 Emissions from Bioenergy and Other Biogenic Sources under the Prevention of Significant Deterioration (PSD) and Title V Programs." According to the EPA,[7] "this final rule defers, for a period of three years, [GHG] permitting requirements for [CO2] emissions from biomass-fired and other biogenic sources." During the next three years, the EPA will conduct a "detailed examination of the science associated with biogenic CO2 emissions from stationary sources. This study will consider technical issues that the Agency must resolve in order to account for biogenic CO2 emissions in ways that are scientifically sound and also manageable in practice." EPA will also develop "a final rule by the conclusion of the three year deferral period regarding how biogenic CO2 emissions should be treated and accounted for in PSD and Title V permitting based on the feedback from the scientific and technical review."

On May 5, 2011, the Environmental and Energy Study Institute (EESI) submitted comments to the EPA[8] concerning the agency's proposed three-year deferral. EESI supported the EPA's efforts to regulate CO2 and other GHG emissions from the burning of fossil fuels, but also welcomed its decision to delay the regulation of bioenergy facilities in order to further study the life cycle GHG emissions from bioenergy systems. "We do not believe that greenhouse gas emissions from bioenergy producers should be regulated in the same manner as major emitters that use fossil fuels," wrote EESI executive director, Carol Werner, explaining that emissions from sustainable bioenergy production are "part of a continuously renewable, natural carbon cycle."

EESI observed that there are many types of biomass for which the climate benefits are clear and there is little scientific debate. EESI recommended that "major bioenergy producers who use these types of biomass should be exempted from the tailoring rule regulations and thus be released from the threat of future regulatory action under the tailoring rule – a threat which now creates uncertainty for farmers, forest owners, bioenergy producers, investors, workers, and communities."

Several large industrial facilities seeking to burn biomass have received pre-construction permits and conducted BACT analyses to limit GHG pollution since the EPA began regulating GHG emissions through the PSD program in January, 2011.

Any limits on GHG emissions from biomass facilities in already-granted PSD permits remain effective, however. And the EPA will not grandfather any biomass facilities built within the next three years from any future GHG regulations.[9] States do not have to adopt the deferral and may not do so because they do not expect to receive any construction or expansion proposals from biomass facilities.[10] Still, the EPA expects many states will welcome relief from trying to account for biomass GHG emissions in the PSD program,[11] especially those that have implemented Renewable Portfolio Standards (RPS) that include biomass.

How much latitude states ultimately will have remains to be seen. The level of compromise or collaboration thus far has varied from state to state.

Louisiana

Louisiana, for instance, disregarded the EPA's critical comments and issued a final pre-construction permit on January 27, 2011 for the Nucor iron foundry, a $750 million new construction project that will eventually create 250 permanent jobs. In its comments to Louisiana regulators, the EPA did not explicitly state whether the permit should be turned down or approved. Rather, the EPA asked Louisiana to "perform an independent evaluation" of the project and respond to all comments from the public. State regulators stood their ground and preferred to set a limit on the amount of natural gas burned per ton of iron produced, responding to the EPA that such an energy efficiency standard will "remain relevant regardless of the production rate of the facility."[12]

The Sierra Club claims the limit is not stringent enough. It claims the limit should be half the amount of natural gas specified in the permit conditions, judging by the performance of similar facilities. Citing that concern and a host of others, the Sierra Club is appealing the permit to the EPA for review.

Utah

Other states, such as Utah, were more amenable to EPA advice, and set limits on GHG emissions in issuing final air permits. At first, Utah regulators had set an energy efficiency standard in a proposal to approve an expansion of a natural gas-fired power plant. The standard was based on a metric California had developed for baseload power plants. In its letter to Utah regulators, the EPA stated: "This proposal of an undefined design standard as BACT, rather than a numerical emission limit, does not satisfy the definition of BACT … and is not consistent with the Permitting Guidance for GHGs."[13] Utah regulators responded by establishing a limit of 950 pounds of carbon dioxide equivalent (CO_2e) per megawatt-hour of electricity on a rolling 12-month average basis.[14] But they emphasized that the numerical emission limit "adds no value to the permit." The applicant had wanted to expedite the permitting process and was willing to accept such a limit.[15]

Michigan

Michigan regulators, on the other hand, received largely favorable comments in their notice to approve a proposed new coal- and biomass-fired power plant. They had established a limit on the emission of 2.1 pounds of CO_2e per kilowatt-hour of gross power output from each boiler and an annual limit of six million tons of CO_2e emitted from each boiler. "We appreciate the effort that [Michigan Department of Environmental Quality] has put forth in developing this proposed permit record considering greenhouse gases (GHG) are newly regulated pollutants," the EPA commented.[16]

FUTURE ACTIONS

The EPA may begin to remove some of the discretion from state permitting agencies when it proposes greenhouse gas emission standards tailored to power plants and oil refineries later this year.[17] The rules will be issued under the **New Source Performance Standards** provision of the Clean Air Act. They will establish emission limits for new power plants and oil refineries, essentially establishing baseline control efforts that provide more guidance for states when making their case-by-case BACT determinations. States would be free to issue stricter limits on projects. The rules also may apply emission guidelines to existing plants. The EPA plans to finalize the rules by November 2012.[18]

Meanwhile, several Members of Congress have supported bills such as H.R. 910, the *Energy Tax Prevention Act of 2011*, to prevent the EPA from regulating GHGs. Although these Members continue to express criticisms that the GHG regulations will be detrimental to the nation's electricity supply,[19] they have been unsuccessful in moving the bills forward thus far.

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The Environmental and Energy Study Institute (EESI) is a non-profit organization founded in 1984 by a bipartisan Congressional caucus dedicated to finding innovative environmental and energy solutions. EESI works to protect the climate and ensure a healthy, secure, and sustainable future for America through policymaker education, coalition building, and policy development in the areas of energy efficiency, renewable energy, agriculture, forestry, transportation, buildings, and urban planning.

[1] Email correspondence with Environmental Protection Agency. July 13-18, 2011.
[2] Phone conversation with Environmental Protection Agency, Region 6. July 13, 2011.
[3] "Prevention of Significant Deterioration (PSD) Basic Information." 2011. Environmental Protection Agency. http://www.epa.gov/NSR/psd.html (accessed August 12, 2011).
[4] "Clean Air Act Permitting for Greenhouse Gases: Guidance and Technical Information Fact Sheet." 2010. Environmental Protection Agency. http://www.epa.gov/nsr/ghgdocs/ghgpermittingtoolsfs.pdf (accessed August 12, 2011).
[5] Robinson, Jeffrey. 2011. *Letter to Louisiana Department of Environmental Quality*. Environmental Protection Agency. http://www.epa.gov/nsr/ghgdocs/20110107nucoriron.pdf (accessed August 12, 2011).
[6] Buchanan, Marisa and Barnett, Rob. 2011. *Big Bark, Small Bite: An Assessment of EPA's Current Regulations on Greenhouse Gases*. Bloomberg Government.
[7] "Regulations & Standards." Environmental Protection Agency. http://www.epa.gov/nsr/actions.html (accessed August 12, 2011)
[8] "Re: Docket ID No. EPA-HQ-OAR-2011-0083." Environmental and Energy Study Institute. http://files.eesi.org/epa_tailoring_rule_eesi_050511.pdf (accessed August 12, 2011).
[9] U.S. Environmental Protection Agency. Federal Register. 76: 139. "Deferral of CO2 Emissions from Bioenergy and Other Biogenic Sources Under the Prevention of Significant Deterioration (PSD) and Title V Programs." 20 July 2011. p. 43499.
[10] Ibid. p. 124.
[11] U.S. Environmental Protection Agency. Federal Register. 76: 139. "Deferral of CO2 Emissions from Bioenergy and Other Biogenic Sources Under the Prevention of Significant Deterioration (PSD) and Title V Programs." 20 July 2011. p. 43500.
[12] "Public Comments Response Summary: Consolidated Environmental Management, Inc. – Nucor Steel Louisiana." 2011. Louisiana Department of Environmental Quality. http://www.deq.state.la.us/portal/portals/0/news/pdf/nucorresponsetocomments.pdf (accessed August 12, 2011).
[13] Lebow Aal, Deborah. 2011. *Letter to Utah Department of Environmental Quality*. Environmental Protection Agency. http://www.epa.gov/nsr/ghgdocs/20110304pacificorplakeside.pdf (accessed August 12, 2011).
[14] "Approval Order: Installation of Lake Side Block #2 at PacifiCorp's Lake Side Power Plant." 2011. Utah Department of Environmental Quality. http://168.178.6.8/daq_public_pdfs/801737-DAQE-AN0130310010-11.pdf (Accessed August 12, 2011).
[15] "Response to Comment received on PacifiCorp Energy's Lake Side 2 Project." 2011. Utah Department of Environmental Quality.
[16] Blakley, Pamela. 2011. *Letter to Michigan Department of Environmental Quality*. Environmental Protection Agency. http://www.epa.gov/nsr/ghgdocs/20110506wolverine.pdf (accessed August 12, 2011).
[17] Doniger, David. 2010. "Clean Air Standards Coming for America's Biggest Carbon Polluters." Natural Resources Defense Council. http://switchboard.nrdc.org/blogs/ddoniger/clean_air_standards_coming_for.html (accessed August 12, 2011).
[18] "Addressing Greenhouse Gas Emissions." 2011. Environmental Protection Agency. http://www.epa.gov/airquality/ghgsettlement.html (accessed August 12, 2011).
[19] See introductory statements of Rep. Fred Upton (R-MI) and Joe Barton (R-TX). U.S. House. Committee of the Whole. *Energy Tax Prevention Act of 2011* Hearing, April 6, 2011. p.2-3 http://frwebgate3.access.gpo.gov/cgi-bin/PDFgate.cgi?WAISdocID=UP4Roj/0/2/0&WAISaction=retrieve (accessed August 12, 2011).