



# DAILY ENVIRONMENT



## REPORT

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### CLIMATE CHANGE

This article examines EPA's Advance Notice of Proposed Rulemaking for regulating carbon dioxide and the potential impact it may have on commercial property owners. The author of the article suggests the time is ripe for property owners to evaluate the operations of their buildings to identify steps they might take to minimize the effect of any such regulation. In the near future, the author says, it may not be uncommon to see lenders and building owners performing climate impact assessments or including greenhouse gas issues in an environmental site assessment.

## Building Owners Need to Be Concerned About Carbon Dioxide Regulations

By LAWRENCE SCHNAPF

**O**n July 23, the Environmental Protection Agency issued an advance notice of proposed rulemaking (ANPR) soliciting comments on the regulation of greenhouse gas emissions (73 Fed. Reg. 44,354, 7/30/08). The ANPR was issued in response to the U.S. Supreme Court decision in *Massachusetts v. EPA*,<sup>1</sup> where the court ruled that carbon dioxide fell within the definition of air pollutant contained in the federal Clean Air Act and instructed EPA to make an "endangerment" finding to determine whether carbon dioxide should be regulated under the Clean Air Act.

While EPA did not make an endangerment determination in the ANPR, the agency provided a detailed analysis of the various authorities for regulating greenhouse gas emissions. The ANPR should serve as a

wake-up call to property owners and their lenders about the potential significant impact greenhouse gas regulation may have on their buildings.

### Greenhouse Gases and Emission Sources

The principal greenhouse gases of concern are carbon dioxide, methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>). Global emissions of these six greenhouse gases have grown since pre-industrial times and increased by 70 percent between 1970 and 2004. In 2000, U.S. greenhouse gas emissions accounted for approximately 21 percent of the global total.<sup>2</sup> There are other greenhouse gases and aerosols

<sup>1</sup> 549 U.S. 497, 127 S. Ct. 1438, 63 ERC 2057 (2007).

<sup>2</sup> The data provided here come from the Intergovernmental Panel on Climate Change (IPCC).

that have climatic warming effects: water vapor, chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), halons, stratospheric and tropospheric ozone (O<sub>3</sub>), and black carbon.<sup>3</sup>

Pursuant to the United Nations Framework Convention on Climate Change (UNFCCC) the United States ratified in 1992, EPA prepares an annual inventory of greenhouse gas emissions from human activities as well as natural processes that absorb or remove greenhouse gases from the atmosphere (e.g., carbon dioxide uptake by plants through photosynthesis).

The primary greenhouse gas emitted as a result of human activities in the United States is carbon dioxide, representing approximately 85 percent of total greenhouse gas emissions. Carbon dioxide results primarily from fossil fuel combustion to generate electricity, power vehicles and factories, and heat from buildings. Methane emissions comprise approximately 8 percent of total greenhouse gas emissions in the United States. However, methane has 20 times the trapping heat ability than carbon dioxide. The largest sources of methane emissions are enteric fermentation (22.7 percent), landfills (22.6 percent), natural gas systems (18.4 percent), coal mining (10.5 percent), and manure management (7.5 percent). Smaller sources, such as rice cultivation and incomplete fossil fuel combustion, account for the remainder.

Nitrous oxide emissions are just over 5 percent of total greenhouse gas emissions in the United States. However, N<sub>2</sub>O is approximately 300 times more powerful than carbon dioxide. The main anthropogenic activities producing N<sub>2</sub>O in the United States are agricultural soil management (72 percent) and fuel combustion in motor

vehicles (9 percent). A variety of chemical production processes and liquid waste management sources also emit N<sub>2</sub>O.

The three other greenhouse gases (HFCs, PFCs, and SF<sub>6</sub>) often are grouped together because they contain fluorine. The combined emissions from these greenhouse gases made up 2.1 percent of total domestic greenhouse gas emissions in 2006. However, the Intergovernmental Panel on Climate Change has found that SF<sub>6</sub> is the most potent greenhouse gas that it has evaluated, with a global warming potential of 22,200 times that of carbon dioxide. HFCs and some PFCs increasingly are being used as substitutes for the ozone depleting substances controlled under the Montreal Protocol and Title VI of the Clean Air Act. The largest source is the use of HFCs in air conditioning and refrigeration systems. Other sources include HFC-23 emitted during the production of HCFC-22, electrical transmission and distribution systems (SF<sub>6</sub>), and PFC emissions from semiconductor manufacturing and primary aluminum production.

EPA currently does not regulate greenhouse gas emissions from mobile or stationary sources under the Clean Air Act. In 1999, a group of states, local governments, and private organizations filed a rulemaking petition asking EPA to regulate carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons from new motor vehicles under Section 202 of the Clean Air Act (ICTA petition).<sup>4</sup>

The petition alleged that climate change will have serious adverse effects on human health and the environment and that the agency already had confirmed it had the power to regulate carbon dioxide.<sup>5</sup> The petitioners asserted that EPA was required under Section 202 of the Clean Air Act to promulgate emission standards for "any air pollutant" that EPA determines has caused or contributed to air pollution reasonably anticipated to endanger public health or welfare.

In September 2003, EPA denied the request on the basis that the Clean Air Act did not require emission standards and it would be unwise for the agency to regulate greenhouse gas emissions. The agency also concluded that greenhouse gases cannot be "air pollutants" within the meaning of the Clean Air Act because the only feasible method of reducing carbon dioxide tailpipe emissions would be to improve fuel economy, which would interfere with fuel economy standards issued by the Department of Transportation (DOT) under the Energy Policy and Conservation Act.

The U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's denial of the petition in a 2-1 opinion.<sup>6</sup> However, the U.S. Supreme Court reversed and held in a 5-4 decision that EPA improperly had denied ICTA's petition in *Massachusetts v. EPA*.<sup>7</sup>

The court held first that petitioners had standing to challenge EPA's denial of their rulemaking petition since at least one petitioner state properly asserted a

<sup>3</sup> The production and consumption of these substances are being controlled and phased out under the Montreal Protocol on Substances that Deplete the Ozone Layer and Title VI of the Clean Air Act because they deplete stratospheric O<sub>3</sub>, which protects against harmful ultraviolet B (UVB) radiation. Therefore, the climate change research and policy community typically does not focus on these substances.

Black carbon causes a warming effect by absorbing incoming sunlight in the atmosphere (whereas greenhouse gases cause warming by trapping outgoing, infrared heat) and darkening bright surfaces such as snow and ice, which reduces reflectivity and increases absorption of sunlight at the surface. Some recent research published after the Intergovernmental Panel on Climate Change's *Fourth Assessment Report* suggests that black carbon may play a larger role in warming than previously thought. Like other aerosols, black carbon also can alter the reflectivity and lifetime of clouds, which in turn can have an additional climate effect. How black carbon and other aerosols alter cloud properties is a key source of uncertainty in climate change science. Given these reasons, there is considerably more uncertainty associated with black carbon's warming effect compared to the estimated warming effect of the six long-lived greenhouse gases. Black carbon also is co-emitted with organic carbon, which tends to have a cooling effect on climate because it reflects and scatters incoming sunlight. The ratio of black carbon to organic carbon varies by fuel type and combustion efficiency. Black carbon is a subcomponent of particulate matter (PM), which is regulated as a pollutant under the National Ambient Air Quality Standards of the Clean Air Act. Diesel vehicles are estimated to be the largest source of black carbon in the United States, but these emissions are expected to decline substantially over the coming decades due to recently promulgated EPA regulations targeting PM<sub>2.5</sub> emissions from onroad, and offroad diesel vehicles (the Clean Air Nonroad Diesel Rule, the Highway Diesel Rule, and the Locomotive and Marine Compression Ignition Rule).

<sup>4</sup> 42 U.S.C. 7521(a)(1).

<sup>5</sup> In 1998, Jonathan Z. Cannon, then EPA's general counsel, prepared a legal opinion concluding that "carbon dioxide emissions are within the scope of EPA's authority to regulate," even as he recognized that EPA so far had declined to exercise that authority.

<sup>6</sup> *Massachusetts v. EPA*, 415 F.3d 50, 60 ERC 1641 (D.C. Cir. 2005).

<sup>7</sup> 549 U.S. 497, 127 S. Ct. 1438, 63 ERC 2057 (2007).

concrete injury from the potential further loss of its coastal land, much of which was owned by the state, from rising sea levels caused by climate change.

The court also rejected the argument that EPA could not regulate new motor vehicle emissions because of the potential conflict with DOT fuel economy standards, holding that EPA's mandate to protect public health and welfare is "wholly independent of DOT's mandate to promote energy efficiency" even if the authorities may overlap.<sup>8</sup>

Turning to whether carbon dioxide, CH<sub>4</sub>, N<sub>2</sub>O, and HFCs fit the Clean Air Act's definition of "air pollutant," the court noted that the sweeping Clean Air Act definition of "air pollutant" included "any" physical or chemical substance or matter that is emitted into or otherwise enters the ambient air." Since the definition of "air pollutant" encompassed all airborne compounds and stated the four greenhouse gases were "physical or chemical substances that are emitted into the ambient air," the court ruled that greenhouse gases fit well within the Clean Air Act's "capacious definition" of air pollutant and EPA has the statutory authority to regulate the emission of such gases from new motor vehicles.

Because the greenhouse gases fell within the definition of air pollutants, the court said EPA then must determine if the greenhouse gas emissions caused or contributed to air pollution that may reasonably be anticipated to endanger public health or welfare. If EPA finds that new motor vehicle greenhouse gas emissions meet the endangerment test, the agency would be required under Section 202(a)(1) of the Clean Air Act to promulgate motor vehicle standards for greenhouse gas emissions. In remanding the decision back to EPA, the court cautioned that generalized concerns about scientific uncertainty were insufficient unless "the scientific uncertainty is so profound that it precludes EPA from making a reasoned judgment as to whether greenhouse gases contribute to global warming."<sup>10</sup>

While the *Massachusetts* decision related to greenhouse gas emissions from mobile sources, the definition of "air pollutants" also applies to stationary sources. In addition, numerous sections of the Clean Air Act addressing stationary sources have endangerment language similar to that found in Section 202, including Sections 108, 111, 112, and 115. Thus, if EPA determines greenhouse gas emissions from mobile sources contribute or cause air pollution that endangers public health or welfare, it may be required to control greenhouse gas emissions from stationary sources.

Several Clean Air Act provisions require stationary sources that emit traditional air pollutants above specific emission thresholds to comply with certain requirements. Applying the same thresholds to greenhouse gases could result in numerous sources, such as commercial and large residential buildings, becoming newly subject to those requirements. Currently regulated sources could become subject to additional requirements. This would occur in part because most sources typically emit carbon dioxide in much larger quantities than traditional air pollutants. Indeed, EPA

also received public comments seeking to include greenhouse gases to the list of pollutants covered by the new source performance standard (NSPS) for several industrial sectors under Section 111 of the Clean Air Act. In addition, legal challenges have been brought seeking controls for greenhouse gas emissions in pre-construction permits for several coal-fired power plants.

## Potential Clean Air Act Authority

Following is a discussion of the various authorities EPA reviewed in the ANPR and how these authorities could impact owners of commercial and residential buildings.<sup>11</sup>

**National Ambient Air Quality Standards.** Section 108 of the Clean Air Act authorizes EPA to list air pollutants that cause or contribute to air pollution. For every criteria pollutant listed, EPA is required by Section 109 to set National Ambient Air Quality Standards (NAAQS) that are "requisite" to protect public health and welfare. EPA may not consider the costs of meeting the NAAQS in setting the standards. If EPA lists greenhouse gases as a criteria pollutant under Section 108(a), the Clean Air Act generally would preclude listing the same greenhouse gas as a hazardous air pollutant under Section 112(b). Listing an air pollutant under Section 108(a) also precludes regulation of that air pollutant from existing sources under Section 111(d) of the NSPS program.

In its ANPR, EPA said direct exposure to greenhouse gases at current or projected ambient levels did not appear to have known adverse effects on human health. Instead, the agency suggested the direct effects of greenhouse gas emissions appear to be indirect impacts resulting from ecological and meteorological changes (e.g., increased viability or altered geographical range of pests or diseases, increased frequency or severity of severe weather events including heat waves). Because these changes are principally or exclusively welfare-related, EPA speculated it may be more appropriate to address these health effects by setting a secondary NAAQS rather than a primary NAAQS.

One complicating factor in establishing NAAQS for greenhouse gas is whether EPA should list the greenhouse gas individually or as a group. The agency said greenhouse gases vary in their global warming potential so it would be challenging to determine the appropriate indicator for use in measuring ambient air quality in comparison to a greenhouse gas NAAQS. One approach could be to measure the total atmospheric concentration of a group of greenhouse gases on a carbon dioxide equivalent basis.

After determining that NAAQS should be established for greenhouse gases, the next step would be to identify areas of the country that do not meet the primary and secondary NAAQS. In contrast to current NAAQS pollutants that vary regionally, EPA indicated in the ANPR that it likely would have to establish a uniform greenhouse gas NAAQS since atmospheric concentrations of greenhouse gases are relatively uniform. Thus, the entire United States would be designated as either in attainment or nonattainment, depending on the level of

<sup>8</sup> *Id.* at 1462. The court stated "there is no reason to think the two agencies cannot both administer their obligations and yet avoid inconsistency."

<sup>9</sup> *Id.* at 1460.

<sup>10</sup> *Id.* at 1463.

<sup>11</sup> 73 Fed. Reg. 44,354 (7/30/08).

the NAAQS compared to observed greenhouse gas ambient concentrations.

Under Clean Air Act Section 110, states are responsible for developing state implementation plans for attaining, maintaining, and enforcing the NAAQS and visibility protection goals as well as preventing significant deterioration of air quality in areas meeting the NAAQS. If EPA designated the entire country as nonattainment for a primary greenhouse gas NAAQS, each state would be required to develop and submit a state implementation plan that provided for attainment including all imposition of reasonably available control measures that would, at a minimum, impose emission reductions on stationary sources through adoption of reasonably available control technology. In addition, preconstruction permits would be required for major new or modified stationary sources under the nonattainment new source review. EPA suggested that in the absence of substantial cuts in worldwide emissions, worldwide concentrations of greenhouse gases would continue to increase despite active control efforts to meet a NAAQS, meaning that the entire United States would remain in nonattainment for an unknown number of years. This result would be long-term application of sanctions nationwide (e.g., more stringent offset requirements and restrictions on highway funding) as well as restrictions on approvals of transportation projects and programs related to transportation conformity.<sup>12</sup>

On the other hand, if a primary or secondary greenhouse gas NAAQS were set at a level higher than ambient greenhouse gas levels at the time of designations, then the country would be in attainment. In this case, state implementation plans would be required to include prevention of significant deterioration (PSD) programs for greenhouse gases, which would require preconstruction permitting of new major sources and significant modifications to existing major sources. If states needed to adopt measures beyond the PSD/NSR permit programs to maintain attainment, EPA suggested in its ANPR that one available tool might be implementation of a nationwide cap-and-trade program similar to but broader in scope than existing programs such as the more limited NO<sub>x</sub> regional cap-and-trade system.

**New Source Performance Standards.** EPA is authorized to set new source performance standards (NSPSs) for stationary sources under Section 111. Under the NSPS program, EPA has established standards that do not necessarily set emission limits for all pollutants or even all regulated pollutants emitted by sources within the relevant source category. Rather, the NSPS focus generally on specific pollutants of concern for a particular source category.

Section 111 establishes two distinct mechanisms for controlling emissions of air pollutants from stationary sources. Section 111(b) provides authority for EPA to promulgate NSPSs that may be issued if there is a

<sup>12</sup> In addition, all nonattainment areas would have to meet “general conformity” and “transportation conformity” requirements under Clean Air Act Section 176(c). Transportation conformity requires metropolitan planning organizations and the U.S. Department of Transportation only may approve or fund transportation plans, programs, and projects that conform to an approved state implementation plan for a NAAQS.

NAAQS for the pollutant but only for new and modified sources.

EPA previously has made endangerment findings under this section for more than 60 stationary source categories and subcategories that now are subject to NSPS. Air pollutants currently regulated through Section 111(b) include the criteria pollutants listed under Section 108 and certain additional pollutants. EPA would have to make an endangerment finding for listing additional source categories under Section 111(b) but would not be required to regulate greenhouse gases from source categories that already have been listed.

Once EPA has elected to set an NSPS for new and modified sources in a given source category, states are required under Section 111(d) to promulgate a standard for existing sources in the regulated source category for a criteria pollutants or where the source emits listed hazardous air pollutants (HAPs) that are regulated under Section 112. Likewise, listing an air pollutant as a HAP under Section 112(b) generally precludes regulation of that air pollutant from existing sources under Section 111(d). Like NSPS standards, the emission guideline established under Section 111(d) must reflect emission reduction achievable through the application of best demonstrated technology.

The NSPS may take cost into account. EPA also has substantial discretion regarding the types and size of sources regulated. To define the affected facilities, EPA can use size thresholds for regulation and create subcategories based on source type, class, or size. EPA also may determine the pollutants for which standards should be developed and set the level of the NSPS. Emission limits also may be established either for equipment within a facility or an entire facility.

EPA also has significant discretion to determine the appropriate level for the standards. In the ANPR, EPA suggested that the NSPS and emission-reduction guidelines could utilize energy efficiency, process efficiency improvements, recovery and beneficial use of process gases, and certain raw material and product changes that could reduce inputs of carbon or other greenhouse gas-generating materials. In addition, EPA indicated it believes the NSPS program is flexible enough to allow the use of certain market-oriented mechanisms to regulate emissions.

As with most other Clean Air Act authorities, however, establishment of a Section 111 standard for any source category of greenhouse gases would trigger preconstruction permitting requirements for all types of greenhouse gas major sources under the PSD program.

**Emission Standards for Hazardous Air Pollutants.** Along with the NAAQS system and Section 111 standards, Section 112 is one of three main regulatory pathways under the Clean Air Act for stationary sources. Section 112 authorizes EPA to list and issue national emission standards for hazardous air pollutants (NESHAPs) from existing and new major stationary sources that reflect to “maximum achievable control technology” (MACT) standards. EPA also is authorized to list and regulate smaller “area” sources of HAPs. Clean Air Act Section 112(d)(5) provides that for area sources, EPA can establish either MACT or less stringent generally available control technology or management practices (GACT) in lieu of MACT.

HAPs are defined broadly as pollutants that present, or may present, a threat of adverse human or environ-

mental effects. An adverse environmental effect is defined as “any significant and widespread adverse effect, which may reasonably be anticipated, to wildlife, aquatic life, or other natural resources, including adverse impacts on populations of endangered or threatened species or significant degradation of environmental quality over broad areas.”

In its ANPR, EPA indicated that if greenhouse gases were listed as HAPs, EPA would be required to regulate a very large number of new and existing stationary sources, including smaller sources than if alternative Clean Air Act authorities were used to regulate greenhouse gases. Indeed, it estimated that small commercial or institutional establishments and facilities with natural gas-fired furnaces would exceed this major source threshold of 10 tons per year for carbon dioxide. EPA said a large single-family residence could exceed this threshold if all appliances consumed natural gas.

**Prevention of Significant Deterioration.** As noted previously, the PSD program requires new major stationary sources and modified major stationary sources that significantly increase emissions to obtain air pollution permits before commencement of construction and install best available control technology (BACT) for each pollutant (other than a HAP) regulated under the Clean Air Act.<sup>13</sup> The PSD permit must contain emission limitations based on BACT for each pollutant “subject to regulation” under the Clean Air Act.

A “major emitting facility” generally is any source that emits or has the potential to emit 250 tons per year (tpy) of a regulated new source review pollutant or belongs to specifically identified source categories and emits or has the potential to emit 100 tpy of a regulated NSR pollutant.

EPA has defined the phrase “subject to regulation” to include pollutants that are regulated under a NAAQS or NSPS, or a class I or II substance under Title VI of the act. EPA historically has interpreted the phrase “subject to regulation under the Act” to describe air pollutants subject to Clean Air Act statutory provisions or regulations that require actual control of emissions of that pollutant.<sup>14</sup> Since there currently is no NAAQS for greenhouse gases and greenhouse gases otherwise are not subject to regulation under the Clean Air Act, the PSD program currently is not applicable to greenhouse gas. Thus, PSD permits have not been required to contain BACT emission limits for greenhouse gases and carbon dioxide in particular.<sup>15</sup> Currently there is no defined

significance level for greenhouse gases because they are not regulated NSR pollutants. The significance threshold would be zero.

The Supreme Court’s conclusion that greenhouse gases are “air pollutants” under the Clean Air Act did not automatically make these pollutants subject to the PSD program. A substance may be an “air pollutant” without being regulated under the act. The agency first must make an endangerment finding, which EPA believes would not constitute a regulation requiring actual control of emissions. Greenhouse gases would become regulated pollutants under the act if and when EPA subjects greenhouse gases to control requirements under a Clean Air Act provision other than Section 112. Any decision to control emissions of carbon dioxide or other greenhouse gases under other provisions of the Clean Air Act would make parts of the PSD program applicable to these additional air pollutant(s) that EPA regulates modified source subject to PSD.

If greenhouse gas emissions become subject to regulation under any of the stationary or mobile source authorities (except Sections 112 and 211(o)), greenhouse gases could become regulated NSR pollutants. According to the ANPR, many types of new greenhouse gas sources and greenhouse gas-increasing modifications that have not heretofore been subject to PSD would become subject to PSD permitting requirements. This particularly is true for carbon dioxide because the mass carbon dioxide emissions from many source types are orders of magnitude greater than for currently regulated pollutants. Thus, many types of new small fuel-combusting equipment could become newly subject to the PSD program if carbon dioxide becomes a regulated NSR pollutant.

The extent that such equipment would become subject to PSD would depend upon whether, for each type of equipment, its maximum capacity considering its physical and operational design would involve constant year-round operation or some lesser amount of operation. For example, the calculated size of a natural gas-fired furnace that has a potential to emit 250 tpy of carbon dioxide, if year-round operation (8,760 hours per year) were assumed, would be only 0.49 MMBTU/hr, which is comparable to the size of a very small commercial furnace.

In practice, a furnace such as this likely would operate far less than year-round, and its actual emissions would be well below 250 tpy. For example, such a furnace, if used for space heating, might be burning gas only for about 1,000 hours per year, meaning that it would need to be sized at over 4 MMBTU/hr—a size more comparable to a small industrial furnace—to actually emit 250 tons of carbon dioxide. For sources such as these, the interpretation of the term “potential to emit” and the availability of streamlined mechanisms for smaller sources to limit their potential to emit would determine whether they would be considered “major” for greenhouse gas emissions under PSD.

<sup>13</sup> 42 U.S.C. 7475.

<sup>14</sup> 43 Fed. Reg. 26,388, 26,397 (6/19/78); Gerald E. Emison, director, Office of Air Quality Planning and Standards, Implementation of North County Resource Recovery PSD Remand (9/22/87).

<sup>15</sup> See briefs filed before the Environmental Appeals Board on behalf of specific EPA offices in challenges to the PSD permits for Deseret Power Electric Cooperative (PSD Appeal No. 07-03) and Christian County Generation LLC (PSD Appeal No. 07-01) as well as the *Response to Public Comments on Draft Air Pollution Control Prevention of Significant Deterioration Permit to Construct* [for Deseret Power Electric Cooperative], Permit No. PSD-OU-0002-04.00 (8/30/07), at 5-6, available on the Web at <http://www.epa.gov/region8/air/permitting/deseret.html>. EPA previously has not interpreted the BACT requirement to apply to air pollutants that are subject only to requirements to monitor and report emissions. See 67 Fed. Reg. 80,186, 80,240 (12/31/02); 61 Fed. Reg. 38,250, 38,310 (7/31/96); *In Re Kawaihae Cogeneration Project* 7 E.A.D. 107,

132 (EAB 1997); *Inter-power of New York*, 5 E.A.D. 130, 151 (EAB 1994); Memorandum from Jonathan Z. Cannon, general counsel to Carol M. Browner, administrator, *EPA’s Authority to Regulate Pollutants Emitted by Electric Power Generation Sources* (4/10/98); Memorandum from Lydia N. Wegman, deputy director, Office of Air Quality Planning and Standards, *Definition of Regulated Air Pollutant for Purposes of Title V*, at 5 (4/26/93).

Once a source is major for any NSR-regulated pollutant, PSD applies to significant increases of any other regulated pollutant, so significant increases of greenhouse gases would become newly subject to PSD at sources that now are major for other regulated pollutants. Similarly, significant increases of other pollutants would become subject to PSD if they occur at sources previously considered minor but which become classified as major sources for greenhouse gas emissions. Thus, for sources already major for other pollutants, it is likely that many more changes made by the source also would qualify as major modifications and become subject to PSD as well unless potential approaches (including those discussed below) for raising applicability thresholds were implemented. Relatively small changes in energy use that cause criteria pollutant emissions too small to trigger PSD would newly trigger PSD at such facilities because such changes likely would result in greater carbon dioxide increases.

For example, consider a hypothetical 500 MW electric utility boiler firing a bituminous coal that is well-controlled for traditional pollutants. Such a boiler, operating more than 7,000 hours per year (out of a possible 8,760), can emit approximately 4 million tons of carbon dioxide per year, or more than 580 tons per hour. Assuming a 100 tpy significance level (rather than the current zero level for greenhouse gases), any change resulting in just 10 additional minutes of utilization over the course of a year at such a source would be enough to result in an increase of 100 tons and potentially subject the change to PSD. By contrast, for NO<sub>x</sub>, the same change would require approximately 36 additional hours of operation, assuming the hypothetical source had a low-NO<sub>x</sub> burner, and 90 additional hours of operation, assuming that the source also employed a selective catalytic-reduction add-on control device.

Currently, EPA estimates that it, state, and local permitting authorities issue approximately 200-300 PSD permits nationally each year for construction of new major sources and major modifications at existing major sources. Under existing major source thresholds, EPA estimated in the ANPR that if carbon dioxide became a regulated NSR pollutant (either as an individual greenhouse gas or as a group of greenhouse gases), the number of PSD permits required to be issued each year would increase by more than a factor of 10 (i.e., more than 2,000-3,000 permits per year) unless action were taken to limit the scope of the PSD program under one or more of the legal theories described below. The additional permits generally would be issued to smaller industrial sources as well as large office and residential buildings, hotels, large retail establishments, and similar facilities. This is because these facilities consist primarily of equipment that combusts fuels of various kinds and release their exhaust gases through a stack or vent.

EPA cautioned that the estimate was uncertain because emission information on these smaller sources has not been collected and the estimate was based on actual emissions, and thus excluded a potentially very large number of sources that would be major if they operated at their full potential-to-emit (PTE) (i.e., they emitted at a level that reflects the maximum capacity to emit under their physical and operational design). Such sources could be defined as major sources if they did not have enforceable limitations on their PTE. Sources with PTE exceeding the major source threshold can be-

come minor sources by taking legally and practically enforceable limits on their PTE, by, for example, agreeing to operate only part of the year, only so many hours per day, or by employing control devices. In any event, the estimate shows that the PSD program has the potential to dramatically expand the number of sources required to obtain PSD permits unless action is taken to limit the scope of the program.

Since the *Massachusetts v. EPA* decision, a number of challenges to draft PSD permits have been filed, asserting that the permitting agency should have included BACT emissions limits for carbon dioxide in the draft permits. The outcome of these proceedings also could affect several other permits awaiting issuance by EPA and state regulatory agencies, and may have significant implications for the entire PSD program.<sup>16</sup>

In *Friends of the Chattahoochee Inc. and Sierra Club v. Dr. Carol Couch, Director, Environmental Protection Division, Georgia Dept. of Natural Resources*,<sup>17</sup> the petitioners challenged the issuance of a permit for a coal-fired power plant on the grounds that the permit did not contain BACT for carbon dioxide. The petition argued that carbon dioxide was an air pollutant “subject to regulation” because 40 C.F.R. 75 imposed mandatory carbon dioxide emissions monitoring on certain sources. However, an administrative law judge ruled that because EPA has not promulgated a NAAQS for carbon dioxide and carbon dioxide emissions were not “controlled or limited” under the Clean Air Act, carbon dioxide was not a “regulated NSR pollutant.” In June 2008, a state court reversed and remanded the matter to the ALJ. The court found that the ALJ had erred as a matter of law when ruling that BACT was limited to air pollutants for which there were numerical limitations. The court noted that 40 C.F.R. 52.21(b)(50)(i)-(iii) defined a “regulated NSR pollutant” as pollutants for which standards had been promulgated but that the catch-all provision of 40 CFR 52.21(b)(50)(iv) applied to “any pollutant that otherwise is subject to regulation under the Act.” Because carbon dioxide was subject to regulation under the Clean Air Act, the court held that a PSD permit could not be issued with a carbon dioxide emission limitation based on a BACT analysis.<sup>18</sup> The

<sup>16</sup> See briefs filed before the Environmental Appeals Board on behalf of specific EPA offices in challenges to the PSD permits for Deseret Power Electric Cooperative (PSD Appeal No. 07-03) and Christian County Generation LLC (PSD Appeal No. 07-01), as well as the *Response to Public Comments on Draft Air Pollution Control Prevention of Significant Deterioration (PSD) Permit to Construct* [for Deseret Power Electric Cooperative], Permit No. PSD-OU-0002-04.00 (8/30/07), at 5-6, available on the Web at <http://www.epa.gov/region8/air/permitting/deseret.html>. EPA has not previously interpreted the BACT requirement to apply to air pollutants that are subject only to requirements to monitor and report emissions. See 67 Fed. Reg. 80,186, 80,240 (12/31/02); 61 Fed. Reg. 38,250, 38,310 (7/31/96); *In Re Kawaihae Cogeneration Project 7*, E.A.D. 107, 132 (EAB 1997); *Inter-power of New York*, 5 E.A.D. 130, 151 (EAB 1994); Memorandum from Jonathan Z. Cannon, General Counsel to Carol M. Browner, administrator, EPA’s Authority to Regulate Pollutants Emitted by Electric Power Generation Sources (4/10/98); Memorandum from Lydia N. Wegman, deputy director, Office of Air Quality Planning and Standards, *Definition of Regulated Air Pollutant for Purposes of Title V*, at 5 (4/26/93).

<sup>17</sup> 2007 Ga. Env. Lexis 60 (12/18/07).

<sup>18</sup> *Friends of the Chattahoochee Inc. and Sierra Club v. Dr. Carol Couch, Director, Environmental Protection Division*,

Kansas Department of Health and Environment rejected a permit filed by the Sunflower Electric Power Corp. to build two 700-megawatt electrical generators on the basis that the proposed \$3.6 billion dollar plant near Holcomb would emit an additional 10-14 million tons of carbon dioxide each year.

**Nonattainment New Source Review.** The other preconstruction permit program is nonattainment new source review (NNSR). If EPA established a greenhouse gas NAAQS with the country in nonattainment, the NNSR permitting program would be triggered nationally.

Like the PSD program, the NNSR program would apply to new and modified major stationary sources but contains significantly different requirements. The major source threshold begins at 100 tpy but may be significantly lower depending on the nonattainment classification.

A key difference is the requirement that the emission increases from the new or modified source in a nonattainment area must be offset by reductions in existing emissions from the same nonattainment area or a contributing upwind nonattainment area of equal or higher nonattainment classification. The offsetting emission reductions must be at least equal to the proposed increase and consistent with a state implementation plan that ensures the nonattainment area is making reasonable progress toward attainment.

Another key difference is that instead of BACT, sources subject to NNSR must comply with the Lowest Achievable Emission Rate (LAER), which is the most stringent emission limitation contained in any state implementation plan for that type of source or achieved in practice for sources of the same type as the proposed source. LAER does not allow for consideration of costs or other factors that BACT does. While LAER and offsets likely are of greatest significance for greenhouse gas regulation under NNSR, there are additional requirements for NNSR that also would apply, such as an alternatives analysis requirement and the prohibition against permit issuance if the state plan is not being implemented adequately.

**Title V Permit Program.** Title V requires permitting for several types of sources subject to Clean Air Act requirements including all sources required to have PSD permits. Presently there are generally not any applicable requirements for control of greenhouse gases that would be included in Title V permits. However, regulation of greenhouse gases under any of the approaches described above, including PSD, could give rise to applicable requirements that would be included. However, the addition of greenhouse gas sources to the program would trigger permitting requirements for numerous sources that currently are not subject to Title V because their emissions of other pollutants are too small.

The Title V cutoff would bring in even more sources than PSD because the 100 tpy (rather than 250 tpy) cutoff applies to all source categories, not just the ones specified in the PSD provisions. For example, while a 100 tpy carbon dioxide source usually would have relatively small criteria pollutant emissions that would not by themselves have subjected the source to Title V, once subjected to Title V for carbon dioxide emissions, the

source then would need to include any state rules (e.g., generally applicable opacity limitations that exist in several state implementation plans) that apply to the source.

In the ANPR, EPA estimated that more than 550,000 additional sources would require Title V permits if greenhouse gas became regulated as compared to the current universe of about 15,000-16,000 Title V sources.

**Indirect Source Review.** In the early years of the Clean Air Act, EPA contemplated imposing standards on developments that attracted high numbers of vehicles under its "indirect source review" authority.<sup>19</sup> Because this effort was perceived as potentially stifling growth during an economically changed era, Congress prevented EPA from devoting resources to this effort.

Now, though, some states with large components of transportation-related greenhouse gas emissions are dusting off this strategy. A recent example is the indirect source review rule promulgated by the San Joaquin Valley Air Pollution Control District in 2005.<sup>20</sup> The agency's jurisdiction encompasses the southern half of California's Central Valley that suffers some of the highest concentrations of ground-level ozone and particulate matter in the nation.

The goal of the rule is to achieve "emissions reductions from the construction and use of development projects through design features and on-site measures." It requires developers who build 50 houses or more to offset air emissions. The developers either can pay a mitigation fee to the district for the purchase of offsite emission reductions or incorporate into their projects elements that will minimize traffic-related emissions, such as traffic controls to reduce congestion, siting new homes and businesses near public transit, adding bicycle lanes, or building walkable shopping. The California Building Industry Association (CBIA) filed suit challenging the regulation arguing that local air districts do not have authority under the Clean Air Act to regulate "indirect sources" of air pollution such as tailpipe emissions from construction equipment and motor vehicles related to home construction.<sup>21</sup> CBIA also argued that instead of reducing emissions, the rule actually would exacerbate air quality in the San Joaquin Valley because residents would not be able to afford homes close to their jobs and have to commute longer distances. The Superior Court of Fresno County upheld the rule.<sup>22</sup>

<sup>19</sup> *Proposed Amendments to Parking Management Regulations*, 39 Fed. Reg. 30,440 (8/22/74); see also 39 Fed. Reg. 25,292 (7/9/74); 39 Fed. Reg. 7,270 (2/25/74); 39 Fed. Reg. 1,848 (12/15/74); 38 Fed. Reg. 18,985 (7/16/73); 38 Fed. Reg. 6,290 (3/8/73); and 36 Fed. Reg. 15,486 (8/14/71).

<sup>20</sup> SJVUAPCD Rule 9510.

<sup>21</sup> *California Building Industry Association v. San Joaquin Valley Unified Air Pollution Control District*, No. 06 CE CG 02100 (Superior Court of California, County of Fresno, Central Division).

<sup>22</sup> Tentative Decision, 2/25/08. In federal court, the National Association of Homebuilders charged that the rule was preempted by the Clean Air Act. The U.S. District Court for the Eastern District of California rejected that argument Sept. 18. *National Association of Homebuilders v. San Joaquin Valley Unified Air Pollution Control District*, 2008 U.S. Dist. LEXIS 70931.

*Georgia Dept. of Natural Resources*, No. 2008-CV-146398 (Sup. Ct. Fulton Cty 6/30/08).

## Conclusion

It is unlikely that any further action on the ANPR will be taken prior to the end of the Bush administration, and the incoming administration probably will need at least a year to finalize a rule regulating greenhouse gas emissions. With the growing public and private pressure to reduce greenhouse gas emissions, property owners and their lenders should use this time to evaluate the operations of their buildings to identify steps they might be able to take to minimize the impact of any such regulation. Lenders and owners may want to know the anticipated costs of future upgrades so appropriate building reserves may be established. In the near future, it may not be uncommon to see lenders and build-

ing owners performing climate impact assessments or including greenhouse gas issues as a non-scope item in a Phase I environmental site assessment like other environmental issues or perhaps address compliance with greenhouse gas requirements in the property condition assessment reports.

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