THE CLEAN AIR ACT

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I. CLEAN AIR REGULATION IN THE UNITED STATES.[1]

A. Common Law. Until the 1950's, protection of air quality was accomplished somewhat haphazardly through application of private nuisance, trespass and other state common law actions. Although such actions are still brought to deal with air pollution problems, particularly to address odors and dust, the difficulties inherent in proving causation between a specific nuisance and a particular set of health or environmental problems has limited the effectiveness of these remedies.[2] Before 1970, Federal efforts to control air pollution were primarily focused on research and reporting on smoke from coal and oil burning and studies in response to severe pollution episodes in urban areas in the years following World War II. It was left to state courts and local laws and ordinances to deal directly with sources of air pollution.[3]

B. Federal Legislation.

1. Air Pollution Control Act of 1955. The first significant federal air quality control statute was the Air Pollution Control Act of 1955.[4] The statute funded federal research and state training and educational programs.[5]

2. Clean Air Act of 1963. The 1963 Act provided for research and project grants and included a provision to abate interstate pollution through an enforcement conference mechanism.[6] Only one air pollution case ever went to court under the statute.[7]

3. 1965 Amendments. In 1965, Congress amended the Clean Air Act to include the first federal automobile emission control requirements.[8]

4. Air Quality Act of 1967. The 1967 Air Quality Act required the development of air quality criteria by the Air Quality Advisory Board of the Department of

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[1] For a comprehensive overview of the history of air pollution control in the United States since the late 19th century *see* A.W. Reitze, Jr., "Overview and Critique: A Century of Air Pollution Control Law: What's Worked; What's Failed; What Might Work," 21 Envtl. L. 1549 (1991).
[2] *See* A. W. Reitze, Jr., Air Pollution Control Law: Compliance and Enforcement (2001) at 9.
[3] Reitze, *supra* note 2, at 10-12.
[4] Public Law No. 84-159 (July 14, 1955), extended in 1959 as Public Law No. 86-365.
[5] Reitze, *supra* note 2, at 14.
[6] Public Law No. 88-206 (December 17, 1963).
[7] U.S. v. Bishop Processing Co., 423 F.2d 469 (9th Cir.), *cert. denied*, 398 U.S. 904 (1970).
[8] Public Law No. 89-272 (October 20, 1965).

Health, Education and Welfare and established Air Quality Control Regions.[9] The criteria were intended to "accurately reflect the latest scientific knowledge" on the adverse affects on health and welfare of sulfur dioxide ("SO_2") nitrogen oxide ("NOx") and particulate matter ("PM"). Once the criteria were set, the statute left to the states the responsibility for developing source-specific control strategies to achieve the attainment of the criteria.

5. The Clean Air Act of 1970. Due to inconsistencies among state air programs, uncertainties in the scientific bases for the various criteria, and the jurisdictional obstacles to resolving regional and transboundary air quality concerns, Congress strengthened the federal role in air pollution control in the Clean Air Act of 1970.[10] The newly created Environmental Protection Agency ("EPA") was given the responsibility to set national ambient air quality standards ("NAAQS") for the protection of public health and welfare. The NAAQS are the bases for individual source emission limitations to be set by states in state implementation plans ("SIPs"). The 1970 Act gives to EPA the authority to approve or disapprove SIPs pursuant to minimum federal criteria, along with a continuing oversight role. If a particular SIP fails to meet the criteria, EPA is required to step in and enforce the applicable NAAQS in the part of the state covered by the SIP. The statute also requires EPA to develop new source performance standards ("NSPS") for emissions from new sources and initiates the regulation of toxic air emissions. In response to a ruling in a lawsuit brought by the Sierra Club,[11] EPA promulgated the initial prevention of significant deterioration ("PSD") program to regulate new sources in areas complying with the NAAQS.[12]

6. Clean Air Act Amendments of 1977. In response to litigation spawned by the 1970 Amendments and in light of accumulating data with regard to the health and welfare effects of air pollution, Congress enacted the Clean Air Act Amendments of 1977.[13] The 1977 Amendments codified the PSD program, set forth steps to address the degradation of visibility in national parks and wilderness areas, and specified limitations on certain types of long range transport of pollution. In addition, the 1977 amendments refined the guidance for SIPs in nonattainment areas and required EPA to develop standards for hazardous air pollutants. The 1977 Amendments spawned a new taxonomy of acronyms, including best available control technology ("BACT"), reasonably available control technology ("RACT"), lowest achievable emissions rate ("LAER"), and national emission standard for hazardous air pollutants ("NESHAP").

7. Clean Air Act Amendments of 1990. The 1990 Amendments to the Clean Air Act were signed into law by President Bush on November 15, 1990.[14] The 1990 Amendments substantially increased the role of the federal government in clean air regulation, imposed whole new systems of regulation and established new emission limitation requirements. In doing so, the Amendments did not abandon the regulatory structure

[9] Public Law 90-148, 42 U.S.C. §§ 1857 et seq. (1967).
[10] Public Law 91-604, 42 U.S.C. §§ 1857 et seq. (1970).
[11] Sierra Club v Ruckelshaus, 344 F.Supp. 253 (D.D.C.), *aff'd per curiam* 4 ERC 1815 (D.C.Cir. 1972 (no official report), *aff'd per curiam sub nom.* Fri v. Sierra Club, 412 U.S. 541 (1973).
[12] 39 Fed. Reg. 42510 (Dec. 5, 1974).
[13] Public Law No. 95-95, 42 U.S.C. §§ 7401 et seq. (1977).
[14] Public Law No. 101-549, 104 Stat. 239 (1990).

developed under the 1977 Amendments and prior statutory enactments; rather, the SIP program, the regulation of hazardous air pollutants ("HAPs"), and other critical elements of federal clean air regulation were strengthened and expanded. In addition, the 1990 Amendments added new programs, such as the operating permit program, the Acid Rain Program, and requirements for stratospheric ozone protection.

C. State Regulation of Air Pollution. Each of the states have well-developed air pollution control regulatory systems of their own. Although most state air pollution control programs have emerged in response to Clean Air Act mandates, many states are now well ahead of the federal program in their approaches to operating permits, regulation of air toxics, emissions from waste burning and incineration, and permitting of new sources. Although differing federal and state requirements have raised concerns that a regulated entity may be subject to dual or even conflicting regulation, the state regulatory program is often more realistic and better suited to the individual characteristics of the regulated community in the state than is the federal program. In fact, the 1990 Amendments were motivated in part by the desire of Congress to bring certain federal clean air programs on a par with that of the states, particularly with regard to operating permits and air toxics.[15]

II. ATTAINMENT AND MAINTENANCE OF NATIONAL AMBIENT AIR QUALITY STANDARDS.

A. National Ambient Air Quality Standards. The NAAQS are not emission standards for individual sources of pollution, but rather are standards by which overall air quality is measured in an air quality control region or "airshed." The primary NAAQS are designed to protect public health. The secondary NAAQS are designed to protect the public welfare, e.g., esthetics, crops, livestock, etc.[16]

EPA is required to identify and establish criteria for air pollutants which "cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare," and which result from numerous or diverse mobile or stationary sources.[17] Once the pollutant is identified using the criteria (thereby becoming a "criteria pollutant"), EPA is required to promulgate the appropriate NAAQS for the pollutant.[18]

The current criteria pollutants for which NAAQS have been established are sulfur dioxide ("SO_2"),[19] nitrogen oxide ("NOx"),[20] ozone ("O_3"),[21] carbon monoxide

[15] H.Reprt. 101-490, 101st Congress, 2d Session (May 17, 1990) at 34.
[16] 42 U.S.C. § 7409(b).
[17] 42 U.S.C. § 7408(a)(1).
[18] 42 U.S.C. § 7409.
[19] 40 CFR 50.4 and 50.5.
[20] 40 CFR 50.11.
[21] 40 CFR 50.9 and 50.10.

("CO"),[22] lead,[23] and particulate matter, including particulate matter consisting of particles less than 10 microns in diameter ("PM_{10}").[24]

EPA recently promulgated revisions to the PM_{10} NAAQS[25] pursuant to a court order arising from litigation filed by the American Lung Association.[26] EPA established, among other things, a $PM_{2.5}$ standard, i.e., a NAAQS which addresses particles 2.5 microns in diameter and smaller. EPA has also published revisions to the ozone NAAQS.[27] Both the revised PM_{10}/$PM_{2.5}$ and ozone NAAQS were challenged and ultimately upheld in most respects by the U.S. Supreme Court.[28]

An area that does not meet the NAAQS for a specified criteria pollutant is a "nonattainment area" for that pollutant.[29] The state agency or local air quality management district responsible for such an area is required to submit to EPA SIP provisions containing control strategies for bringing the nonattainment area into attainment and for maintaining compliance with the NAAQS thereafter.[30]

B. State Implementation Plans. A SIP is a plan in which the state or local air pollution control agency sets forth the mechanisms by which it will implement certain requirements of the Act. Each state submits its SIP to EPA for approval. If EPA disapproves the SIP, the state must revise it to meet EPA's requirements or EPA will itself promulgate an implementation plan for the state, otherwise known as a federal implementation plan or "FIP."[31] In addition, the 1990 Amendments provide that an Indian tribe may promulgate a tribal implementation plan or "TIP" governing regulation of air pollution within tribal boundaries upon a finding that the tribal government is equipped to administer an air program.[32] EPA has promulgated regulations specifying the circumstances under which an Indian tribe may be treated as a state for purposes of administering programs under the Act.[33]

Nine months after EPA promulgates a NAAQS, the state must submit to EPA for approval a SIP setting forth the plan for attaining and maintaining the applicable NAAQS. Extensions up to 18 months are available for submitting a SIP for a secondary standard.[34]

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[22] 40 CFR 50.8.
[23] 40 CFR 50.12.
[24] 40 CFR 50.6 and 50.7.
[25] 62 Fed. Reg. 38711 (July 18, 1997).
[26] American Lung Association v. Browner, 884 F. Supp. 345 (D. Ariz. 1994).
[27] 62 Fed. Reg. 38894 (July 18, 1997).
[28] Whitman v. American Trucking Associations, Inc., 531 U.S. 457 (2001) reversing American Trucking Associations, Inc. v. United States Environmental Protection Agency, 175 F.3d 1027 (D.C. Cir.1999), *reh. den.* 1999 U.S.App. LEXIS 28109 (Oct. 19, 1999).
[29] 42 U.S.C. § 7407(d).
[30] 42 U.S.C. § 7502.
[31] 42 U.S.C. § 7410(c).
[32] 42 U.S.C. § 7410(d).
[33] 40 CFR Parts 9, 35, 49, 50 and 81; 63 Fed. Reg. 7254 (Feb. 12, 1998). The regulations were upheld in Arizona Public Service Company v. Environmental Protection Agency, 211 F.3d 1280 (D.C. Cir. 2000).
[34] 42 U.S.C. § 7410(b).

The SIP and any revisions thereto must be adopted by the state through a public notice and hearing process.[35]

The SIP must include the following:

- Emission limitations, schedules, and timetables for compliance with primary and secondary NAAQS applicable to individual sources;

- Other necessary measures such as transportation controls, air quality maintenance plans and preconstruction review of new stationary sources;

- New source review and prevention of significant deterioration permit programs as required by the Act;

- Provisions to ensure that data on ambient air quality is monitored, compiled and analyzed and is made available to EPA upon request;

- Provisions prohibiting any source in the state from emitting any air pollutant in amounts that would prevent other states from attaining or maintaining ambient air quality standards;

- Assurances that the state has adequate personnel, funding and authority to carry out the plan;

- Provisions, to the extent necessary and practicable, for periodic inspection and testing of motor vehicles to enforce compliance with emission standards;

- A procedure for revisions of the SIP, after public hearings, as may be necessary to take into account new ambient air quality standards and improved technology;

- A requirement that the owner or operator of a stationary source pay a permit fee to cover the reasonable costs of the state program; and

- Requirements for stationary sources to monitor emissions.[36]

[35] 42 U.S.C. § 7410(a).
[36] 42 U.S.C. § 7410(a).

The mix of emission limits and other measures that the SIP establishes to control a given pollutant is called the "control strategy" for that pollutant.[37] States have broad discretion to determine the control strategies necessary to attain or maintain a NAAQS.[38]

Whatever control strategy the state elects, it must be adequate to attain and maintain compliance with the NAAQS. The states have the freedom to adopt regulations more stringent than the minimum necessary to attain or maintain the NAAQS.[39] The states may elect to include such additional requirements as part of the SIP. Once a requirement is added to the SIP and approved by EPA, it becomes federally enforceable, meaning that EPA has concurrent authority to enforce it and it can be enforced through a citizen's suit.[40] If a SIP is modified by a state so as to ease certain restrictions, EPA may still enforce the more stringent requirements unless and until the SIP revision is approved by EPA.[41] In any event, a SIP revision will not be approved without a demonstration that the revision will not cause or contribute to a violation of an applicable NAAQS.[42]

The statute gives EPA a maximum of six months to determine the completeness of a SIP submission by a state.[43] If EPA fails to make a completeness determination within the prescribed time, the state's SIP application is deemed complete by operation of law.[44] EPA is then required to act on the complete SIP submission within 12 months of the completeness determination.[45]

C. Nonattainment Areas. The 1990 Amendments classify nonattainment areas according to the frequency and severity of violations of the applicable NAAQS. Each ozone nonattainment area is classified as a Marginal Area, a Moderate Area, a Serious Area, a Severe Area, or an Extreme Area, with certain deadlines and SIP requirements applicable to each category.[46] Similarly, each CO nonattainment area is categorized as a Moderate Area or a Serious Area,[47] and each PM10 nonattainment area is classified as a Moderate Area or Serious Area.[48]

SIP control strategies vary as depending on the specific conditions in the nonattainment area. For example, a PM10 SIP control strategy might include restrictions on

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[37] 40 CFR 51.100(n).
[38] Train v. Natural Resources Defense Council, Inc., 421 U.S. 60 (1975).
[39] Reitze, supra note 2, at 83.
[40] *See* Union Electric Co. v. Environmental Protection Agency, 515 F.2d 206 (8th Cir. 1975), *aff'd* 96 S.C.t 2518, 427 U.S. 246, 49 L.Ed.2d 474, *reh. den.* 97 S.Ct. 189, 429 U.S. 873, 50 L.Ed.2d 154 (1976); Commonwealth of Pennsylvania v. Environmental Protection Agency, 500 F.2d 246 (1974); United States v. Ford Motor Co., 736 F.Supp. 1539 (W.D.Mo. 1990).
[41] *See* General Motors v. United States., 110 S.Ct. 2528, 496 U.S. 530, 110 L.Ed.2d 480 (1990).
[42] 42 U.S.C. § 7410(a)(2)(D)(I).
[43] 42 U.S.C. § 7410(k)(1)(B).
[44] *Id*.
[45] 42 U.S.C. § 7410(2). These requirements are a congressional response to t Supreme Court ruling in General Motors v. United States, n. 41 *supra*, that there was no limitation on the time within which EPA can Act on a SIP revision.
[46] 42 U.S.C. §§ 7511-7511f.
[47] 42 U.S.C. §§ 7512-7512a.
[48] 42 U.S.C. §§ 7513-7513a.

the use of wood-burning stoves and fireplaces during inversion periods in the winter.[49] An ozone control strategy might include limits on hydrocarbon and volatile organic compound emissions through vapor recovery systems at gas stations[50] and emission control inspection and maintenance standards for automobiles.[51]

D. Regional Ozone Transport. EPA has published regulations to address regional ozone nonattainment in the eastern half of the United States. In October 1998, EPA issued its call for SIPs in 22 states and the District of Columbia under Sections 110(a)(1), 110(k)(5) and 110(a)(2)(D) of the Act[52] to prohibit ozone precursor emissions from contributing to nonattainment of the ozone NAAQS in a downwind state (the "Ozone SIP Call").[53] EPA has also suggested a "cap and trade" NOx emissions trading program for possible inclusion in the SIPs in the Ozone Transport Region,[54] which consists of 22 eastern states and the District of Columbia. The D.C. Circuit has upheld the Ozone SIP Call.[55]

EPA has also published several notices in connection with its *Findings of Significant Contribution and Rulemaking on Section 126 Petitions for Purposes of Reducing Interstate Ozone Transport*[56] ("Findings") granting certain petitions filed by northeastern states under section 126 of the Act.[57] Section 126 allows a state to petition EPA "for a finding that any group of stationary sources emits or would emit any air pollution" which "may significantly contribute to levels of air pollution in excess of the national ambient air quality standards" outside the state in which the source or sources are located.[58] The Findings are a response to petitions by the states of Connecticut, Massachusetts, New York, and Pennsylvania seeking to reduce ozone resulting from NOx emissions in upwind states.[59] The Findings impose significant NOx reduction requirements on 392 power plants and factories in Delaware, Indiana, Kentucky, Maryland, Michigan, North Carolina, New Jersey, New York, Ohio, Pennsylvania, Virginia, West Virginia, and the District of Columbia. EPA also announced that petitions filed by Maryland, New Jersey, Delaware, and the District of Columbia will be addressed in the near future, although the Findings will reduce emissions from the majority of out-of-state sources targeted by those states.[60] EPA is proposing to withdraw the Section 126 Rule if a State adopts, and EPA approves, a SIP with a May 31,

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[49] *See, e.g.,* Utah SIP, § IX.A.6.d, www.airquality.utah.gov/SIP/SIPPDF/24593.pdf.
[50] Final 1999 Amendment to the 1997 Ozone SIP Revision for the South Coast Air Basin, Appendix B at B-29, www.aqmd.gov/aqmp/Final_Amendment.pdf.
[51] Utah SIP, § X Part A, http://www.airquality.utah.gov/SIP/SIPPDF/XAGeneral.pdf *See also* South Coast Air Quality Management District Rule 2202 - On-Road Motor Vehicle Mitigation Options.
[52] 42 U.S.C. §§ 7410(a)(1), 7410(k)(5) and 7410(a)(2)D).
[53] 63 Fed. Reg. 57356 (Oct. 27, 1998).
[54] *Id.*
[55] State of Michigan v. Environmental Protection Agency, 213 F.3d 663 (D.C. Cir. 2000), *cert. den. sub nom* Ohio v. EPA. 121 S.Ct. 1225 (2001).
[56] 64 Fed. Reg. 28250 (May 25, 1999).
[57] 42 U.S.C. §7426.
[58] *Id.*
[59] 65 Fed. Reg. 2674 (Jan. 18, 2000).
[60] *Id.*

2004 compliance date that meets either the full NO[X] SIP Call or Phase 1 where the State is regulating the Section 126 sources to the same stringency as the Section 126 Rule.[61]

The Findings include a requirement that the 392 sources identified as contributors to downwind ozone in the petitioning states are to achieve dramatic NOx reductions. Power plants with a nameplate capacity in excess of 25 megawatts are to achieve NOx emissions of 0.15 lbs./mmBtu, and other identified sources are to achieve a 60 percent reduction in NOx emissions equivalent to an average of about 0.17 lbs./mmBtu. The Findings also finalize the Federal NOx Budget Trading Program as a control remedy for the sources affected by the Findings. The Federal NOx Budget Trading Program is essentially the same as the Model NOx Budget Program proposed by EPA in October 1998 as part of its NOx SIP Call for the eastern United States.[62]

III. NEW SOURCE REVIEW/PSD REVIEW.

A. New Source Review. The Act requires the review of new stationary sources or modifications to existing stationary sources. The new source review ("NSR") program in the federal Act applies to "major sources" or "major modifications" of existing sources. The term "major source" is defined for NSR purposes to incorporate the definitions of "major stationary source" in 42 U.S.C. § 7602j and Part D of Subchapter I of the Act.[63]

Section 302(j) of the Act[64] defines "major stationary source" as follows:

> [Except as otherwise provided,] any stationary facility or source of air pollutants which directly emits, or has the potential to emit, one hundred tons per year or more of any air pollutant (including any major emitting facility or source of fugitive emissions of any such pollutant, as determined by rule by the Administrator).

Part D of Subpart I of the Act[65] sets different thresholds for determining whether a source is "major" for certain types of non-attainment areas depending upon which pollutant has triggered the nonattainment area designation) and the classification of the area. Where no threshold is specified for a particular nonattainment area classification, the threshold is the 100 tons per year major source threshold specified in 42 U.S.C. § 7602(j). For purposes of Part D of Title I, the thresholds other than 100 tons per year for "major stationary sources" in nonattainment areas are as follows:

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[61] 68 Fed. Reg. 16644 (April 4, 2003).
[62] Notes 56 and 59 *supra*. *See also* 64 Fed. Reg. 33962 (June 24, 1999); 64 Fed. Reg. 50254 (Sept. 16, 1999); 64 Fed. Reg. 67781 (Dec. 3, 1999); 65 Fed. Reg. 2031 (Jan. 13, 2000); 65 Fed. Reg. 56245 (Sept. 18, 2000); 66 Fed. Reg. 48567 (Sept. 21, 2000); 67 Fed. Reg. 8396 (Feb. 22, 2002).
[63] 42 U.S.C. §§ 7501-7515.
[64] 42 U.S.C. § 7602(j).
[65] *Id*.

Pollutant	Classification	Threshold
Ozone	Serious	50 tpy or more of Nitrogen Oxides ("NOx")[66] or volatile organic compounds ("VOC")[67]
Ozone	Severe	25 tpy or more of NOx or VOC[68]
Ozone	Extreme	10 tpy or more of NOx or VOC[69]
Ozone Transport Regions		50 tpy or more of NOx or VOC[70]
Carbon Monoxide ("CO")	Serious	50 tpy or more of CO if stationary sources contribute significantly to CO levels[71]
Particulate Matter ("PM10")	Serious	70 tpy or more of PM10[72]

EPA's definition of "potential to emit" originally excluded emission controls and limitations that are not federally enforceable.[73] However, that definition was vacated and remanded to EPA by the District of Columbia Circuit Court of Appeals[74] in light of a companion decision holding that EPA had not justified requirements that calculations of potential to emit under the Hazardous Air Pollutant Program may only be based on federally enforceable limits.[75] Although EPA announced its intent to develop rules to delineate which state-enforceable limits may be used in the potential to emit calculations,[76] no rules have been promulgated as of yet.

Most states require preconstruction review of all sources or modifications even if they are not "major."[77] Typically, minor new source review does not entail the extensive modeling and monitoring associated with major source review, except that if the minor source is situated in a nonattainment area, the state may require detailed review and modeling under general state authority to regulate sources of air pollution.[78]

B. Prevention of Significant Deterioration. The Act contains provisions for the prevention of significant deterioration of air quality in those areas which attain an applicable NAAQS. Such clean air areas are known as "PSD areas" or "attainment areas."

[66] 42 U.S.C. § 7511a(f).
[67] 42 U.S.C. § 7511a(c).
[68] 42 U.S.C. § 7511a(d).
[69] 42 U.S.C. § 7511a(e).
[70] 42 U.S.C. § 7511c(b)(2).
[71] 42 U.S.C. § 7512a(c)(1).
[72] 42 U.S.C. § 7513a(b)(3).
[73] 40 CFR 51.166(b)(4) and 51.165(a)(1)(iii).
[74] Chemical Manufacturers Association v. EPA, 70 F.3d 637 (D.C. Cir. 1995).
[75] National Mining Association v. EPA, 59 F.3d 1351 (D.C. Cir. 1995).
[76] *See* "Effective Limits on Potential to Emit: Issues and Options," January 31, 1996, (EPA).
[77] *See, e.g.,* Utah Admin. Code R307-401-1.
[78] *See, e.g.,* Colo. Air Quality Control Comm'n Reg. 3.IV.D.1 and 3.IV.D.2.d.

Operators of new major sources and major modifications of existing sources in PSD areas are required to undertake lengthy and detailed pre-construction monitoring and modeling to identify the available increments and to ensure that the available increment will not be consumed if the major source or major modification is constructed and operated.[79] The increment is determined based on a comparison of the actual level of ambient air pollution with the applicable NAAQS.[80]

"Major source" is defined for PSD purposes as any one of specifically enumerated stationary sources which emit, or have the potential to emit, one hundred tons per year or more of any air pollutant, or if the source is not one of the enumerated sources, it is a "major source" if it emits or has the potential to emit two hundred and fifty tons or more of any air pollutant.[81]

PSD areas are divided by statute into three classes.[82] Statutory Class I areas include international parks and national parks in excess of 5,000 acres and wilderness areas in excess of 6,000 acres which were in existence as of August 1977.[83] The air quality in these areas is subject to the highest levels of protection, with emphasis on visibility protection. Class II areas allow for moderate emissions, and Class III areas allow for heavier emissions.[84] All PSD areas were originally classified by statute as either Class I or Class II areas. A state may redesignate a Class II area to a Class I or a Class III area.[85]

C. Visibility. The Clean Air Act establishes as "a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution."[86] EPA's visibility regulations address the impairment of visibility in Class I areas that is

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[79] 40 CFR 52.21(i).
[80] 42 U.S.C. § 7473; 40 CFR 50.6 and 50.11.
[81] 42 U.S.C. § 7479(1). The entire definition reads: "The term ‘major emitting facility' means any of the following stationary sources of air pollutants which emit, or have the potential to emit, one hundred tons per year or more of any air pollutant from the following types of stationary sources; fossil-fuel fired steam electric plants of more than two hundred and fifty million British thermal units per hour heat input, coal cleaning plants (thermal dryers), kraft pulp mills, Portland Cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than fifty tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production facilities, chemical process plants, fossil-fuel boilers of more than two hundred and fifty million British thermal units per hour heat input, petroleum storage and transfer facilities with a capacity exceeding three hundred thousand barrels, taconite ore processing facilities, glass fiber processing plants, charcoal production facilities. Such term also includes any other source with the potential to emit two hundred and fifty tons per year or more of any air pollutant. This term shall not include new or modified facilities which are nonprofit health or education institutions which have been exempted by the State."
[82] 42 U.S.C. §§ 7472 and 7474.
[83] 42 U.S.C. § 7472(a).
[84] 42 U.S.C. § 7473(b).
[85] 42 U.S.C. § 7474.
[86] 42 U.S.C. § 7491(a)(1).

"reasonably attributable" to a single source or small group of sources,[87] as well as impairment of visibility resulting from regional haze.[88] Regional haze is defined as:

> [V]isibility impairment that is caused by the emission of air pollutants from numerous sources located over a wide geographic area. Such sources include, but are not limited to, major and minor stationary sources, mobile sources, and area sources.[89]

Under these regulations, each state is required to do the following:

- Revise its SIP to assure reasonable progress toward the national visibility goal;[90]

- Determine which existing stationary facilities should be required to install Best Available Retrofit Technology ("BART");[91]

- Develop, adopt, implement, and evaluate long-term strategies for making reasonable progress toward remedying existing and preventing future impairment in mandatory Class I Federal areas;[92]

- Adopt measures to assess potential visibility impacts from proposed new sources and modifications of existing sources, including measures to notify federal land managers (i.e., the official charged with managing the Class I area in question) of proposed permit applications, and to consider visibility analyses conducted by FLMs in their new source permitting decisions;[93] and

- Conduct visibility monitoring in mandatory Class I Federal areas.[94]

The 1990 Amendments to the Act provide for the establishment of visibility transport regions and commissions whenever EPA "has reason to believe that the current or projected interstate transport of air pollutants from one or more States contributes significantly to visibility impairment in Class I areas located in the affected States."[95] The 1990 Amendments also require the establishment of the Grand Canyon Visibility Transport Commission (the "GCVTC") to address the visibility degradation within Grand Canyon

[87] 40 CFR 51.300(b)(1)(ii), 51.302(c)(2).
[88] 40 CFR 51.308.
[89] 40 CFR 51.301.
[90] 40 CFR 51.300(a)(1).
[91] 40 CFR 51.302(c)(4).
[92] 40 CFR 51.302(c)(2)(ii).
[93] 40 CFR 51.302(b).
[94] 40 CFR 305(a).
[95] 42 U.S.C. § 7492(c)(1).

National Park.[96] The GCVTC issued its report in June 1996, recommending certain measures for visibility protection within the Grand Canyon National Park and other Class I areas in the Four Corners Region.[97]

On July 1, 1999, EPA published the final Regional Haze Rule.[98] The Regional Haze Rule amends to the 1980 visibility impairment regulations.[99] The Regional Haze Rule requires each state to develop and implement measures to control emissions from sources within the state that "are reasonably anticipated to contribute to regional haze in a Class I area."[100] The Regional Haze Rule addresses visibility degradation caused by haze from many sources, often hundreds of miles from the affected Class I area. The Regional Haze Rule is in part a response to the recommendations of the GCVTC.[101]

The Regional Haze Rule requires each state to develop SIP provisions addressing whether and to what extent controls of emissions from sources are needed to protect visibility in downwind Class I areas. Even states in which there are no Class I areas, such as Illinois and Iowa, are now required to identify sources which may contribute to regional haze in a Class I area in another state. The Regional Haze Rule establishes "an extremely low triggering threshold for requiring a source to control emissions," with the result that "emissions from each of the 48 contiguous states may be reasonably anticipated to cause or contribute to visibility impairment in a Class I area."[102]

Of particular note is the requirement in the Regional Haze Rule that each state identify sources that may be eligible for BART.[103] BART is required for any major stationary source which was constructed between 1962 and 1977 and which "emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility" in any Class I area.[104] The Act provides that in determining BART, the State "shall take into consideration the costs of compliance, the energy and non-air quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology."[105]

The BART provisions of the Regional Haze Rule were struck down by the D.C. Circuit Court of Appeals[106] as inconsistent with the provisions of the Act giving the

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[96] 42 U.S.C. § 7492(f). *See also* 56 Fed. Reg. 57522 (Nov. 21, 1991).
[97] *Cf.* 62 Fed. Reg. 41138, 41141 (July 31, 1997). The "Four Corners Region" refers to the area where the boundaries of Utah, Colorado, Arizona and New Mexico meet.
[98] 64 Fed. Reg. 35713 (July 1, 1999).
[99] 45 Fed. Reg. 80084 (Dec. 2, 1980); 40 CFR 51.300-307.
[100] 64 Fed. Reg. at 35721.
[101] 64 Fed. Reg. at 35748 et seq.
[102] 64 Fed. Reg. at 35721.
[103] 64 Fed. Reg. at 35737-43.
[104] 42 U.S.C. §7491(b)(2)(A).
[105] 42 U.S.C. § 7491(g)(2). *See also* 40 CFR 51.301(c).
[106] American Corn Growers Association v. Environmental Protection Agency, 291 F.3d 1 (2001).

states broad authority over BART determinations.[107] As of July, 2003, EPA had not promulgated amendments to the Regional Haze Rule in response to the court's decision.

The Regional Haze Rule allows a State to adopt alternatives to BART, as long as such alternatives achieve "reasonable progress" toward the national goal of eliminating visibility impairment in Class I areas.[108] EPA makes it clear that its preferred alternative to BART is a regional emission trading program,[109] which would presumably be similar to the proposed model NOx allowance trading system for 22 eastern states and the District of Columbia in the Ozone Transport Region.[110] With BART stricken from the Rule, at least for the time being, it would appear that the trading program is the principal option for a state to use in complying with the Rule.

The deadlines by which the states are to have the required SIP provisions in place depend on the PM2.5 attainment status for the areas within each State.[111] If the area is designated as attainment or unclassifiable, then the SIP revisions are to be submitted to EPA within 12 months after the date of such designation.[112] For areas designated as nonattainment for $PM_{2.5}$, the deadline is three years after such designation but no later than December 31, 2008.[113]

The Regional Haze Rule is intended to achieve the "natural background conditions" for each Class I area by 2064.[114] The Regional Haze Rule requires each state to design and implement measures to achieve that goal.[115]

The Regional Haze Rule allows the western states and tribes which participated in the GCVTC to implement measures recommended by the GCVTC (and its successor organization, the Western Regional Air Partnership ("WRAP") to comply with the Rule.[116] This option is set forth in section 51.309 of the Rule, which is taken from the GCVTC Report

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[107] 42 U.S.C. §§ 7491(b)(2)(A) and 7491(g)(2). The Regional Haze Rule required each state to list "BART-eligible sources" and specify the actual BART for each such source, using the statutory BART factors found in 42 U.S.C. § 7491(g)(2). The Rule had also set an extremely low threshold for triggering BART:
"In implementing today's final rule, a State should find that a BART-eligible source is "reasonably anticipated to cause or contribute" to regional haze if it can be shown that the source emits pollutants within a geographic area from which pollutants can be emitted and transported downwind to a Class I area." 64 Fed. Reg. At 35740. Given EPA's conclusion that emissions from each of the lower 48 states "can reasonably be assumed to cause or contribute to impairment of visibility in a Class I area," virtually every major source in the continental United States constructed between 1962 and 1977 would have been required to implement a BART emission limit.

[108] 64 Fed. Reg. at 35741.

[109] *Id*.

[110] 63 Fed. Reg. 25901 (May 11, 1998).

[111] The PM2.5 ambient air quality standards were promulgated on July 18, 1997. 62 Fed. Reg. 38651. The implementation of the standard has been delayed by litigation culminating in Whitman v. American Trucking Associations , 531 U.S. 457 (2001).

[112] 40 CFR 51.308(b)(1); 64 Fed. Reg. at 35765.

[113] 40 CFR 51.308(b)(2); 64 Fed. Reg. at 35765.

[114] 64 Fed. Reg. at 35730-33.

[115] 64 Fed. Reg. at 35732.

[116] 64 Fed. Reg. at 35748-58; 40 CFR 51.309.

to EPA.[117] The Regional Haze Rule provides that a WRAP state may choose to comply with section 51.309 only if WRAP has submitted to EPA an annex to the GCVTC Report by October 1, 2000.[118] The WRAP Annex was submitted by WRAP in September, 2000.[119] On June 5, 2003, EPA approved the WRAP Annex as meeting the requirements of the Regional Haze Rule.[120]

WRAP states have until December 31, 2003 to submit their SIPs.[121] A WRAP state may opt out of section 51.309, which will change both the geographic scope and total reduction milestone budget for the region.[122] A state opting out of the 309 SIP will be required to comply with Regional Haze Rule requirements applicable to states outside of WRAP.[123]

The WRAP Annex establishes a declining reduction milestone budget or cap on SO_2 emissions from the WRAP area, with reductions in the cap occurring in 2003, 2008, 2013 and 2018.[124] The reductions are more than would be achieved if BART were imposed on major sources of SO_2 in the WRAP states.[125]

D. Modifications. PSD review also applies to major modifications of existing sources.[126] A major modification is defined as any physical change or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant.[127] Although PSD review might arguably be required whenever small increases in the aggregate are more than the significant emissions rate, EPA's policy is not to perform the netting calculation unless a single change by itself will produce an increase above the significant emissions rate. Once such a modification is identified, EPA looks at the past five years of increases and decreases to determine if PSD review is required.[128]

The regulations establish thresholds for each pollutant to determine whether an increase in emissions is a significant net emissions increase, which in turn determines whether a modification is a major modification and is thus subject to PSD review.[129] Routine

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[117] 64 Fed. Reg. at 35748-50.
[118] 40 CFR 51.309(f).
[119] Western Regional Air Partnership, "Voluntary Emissions Reduction Program for Major Industrial Sources of Sulfur Dioxide in Nine Western States and a Backdrop Market Trading Program - An Annex to the Report of the Grand Canyon Visibility Transport Commission" (Sept. 29, 2000) (hereinafter "WRAP Annex).
[120] 68 Fed. Reg. 33763 (June 5, 2003). In subsequent notices, EPA revised the Regional Haze Rule to require that WRAP states incorporate declining mobile source emissions projections into emissions inventories. 68 Fed. Reg. 39842 (July 3, 2003) (Direct Final Rule); *Id*. at 39888 (Proposed Rule).
[121] 40 CFR 51.309(c).
[122] 40 CFR 51.309(e).
[123] *Id.*
[124] WRAP Annex. at 10, 55.
[125] *Id.* at 15; 64 Fed. Reg. At 35773.
[126] 40 CFR 52.21(b)(2).
[127] 40 CFR 52.21(b)(2)(I).
[128] *See* EPA Memorandum from John Calcagni, Director Air Quality Management Division to William B. Hathaway (September 18, 1989).
[129] 40 CFR 52.21(b)(23).

maintenance, repair and replacement,[130] certain uses of alternative fuels, certain increases in hours of operation or production rate, a change in ownership, and utility power plant pollution control equipment additions, replacements or use are not modifications triggering PSD review.[131] EPA, the Department of Justice and a number of states have launched a major litigation offensive against electric power plant owners in eight states in the midwest and the south, alleging a pattern of ignoring PSD requirements for major modifications of existing sources in connection with the installation of new equipment.[132]

The U. S. Court of Appeals for the Seventh Circuit has ruled that like-kind replacements of major components at an electric utility power plant can constitute a modification.[133] For purposes of measuring a net increase in emissions, however, normal operations before the unit deteriorated should be compared to normal operations after the change. The court rejected EPA's argument that the pre-replacement baseline should be based on the deteriorated capacity of the old unit, and that this baseline should be compared to the improved potential production capacity of the replacement (in this case the source had never operated at its full capacity).

On July 21, 1992, EPA adopted regulations that implement the WEPCO ruling by allowing the refurbishing of utility generating units without triggering PSD or new source review.[134] These regulations apply only to electric utility units; however, more recently, the Bush Administration has promulgated extensive revisions to the NSR regulations ("NSR Amendments")[135] and proposed new rules to set objective standards to determine whether a particular activity is routine maintenance, repair or replacement, and thus is exempt from major modification review ("Proposed RMRR Rule").[136]

The promulgation of the NSR Amendments and the Proposed RMRR Rule sparked a firestorm of criticism in the media, environmental groups, some state agencies, and among politicians. A number of entities filed petitions with the District of Columbia Circuit Court of Appeals for review of the NSR Amendments, including a coalition of states primarily in the Northeast, led by New York.[137] The controversy over the NSR Amendments is in large part a symptom of a major conflict in regulatory philosophy, i.e., whether the traditional "command-and-control" regime, with detailed rules and use of enforcement as the principal tool to assure compliance, should be mitigated somewhat by the introduction of incentives for facility operators to achieve a measure of relief from onerous permitting and review requirements so as to allow improvements in plant efficiency, including improvements in environmental protection. This same debate has raged over the last few decades in various other contexts, including whether market-based emissions trading programs aggravate

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[130] A detailed analysis of EPA's interpretation of the "routine maintenance, repair and replacement" exception in the Environmental Appeals Board decision in In re: Tennessee Valley Authority, Docket No. CAA-200-04-008, Environmental Appeals Board (Sept. 15, 2000).
[131] 40 CFR 52.21(b)(23).
[132] *See* 30 BNA Env. Rep. 1269 (Nov. 12, 1999).
[133] Wisconsin Electric Power Company v. Reilly, 893 F.2d 901 (7th Cir. 1990) ("WEPCO").
[134] 57 Fed. Reg. 32315 (July 21, 1992).
[135] 67 Fed. Reg. 80185 (Dec. 31, 2002).
[136] 67 Fed. Reg. 80290 (Dec. 31, 2002).
[137] 10 Air Daily No. 1 at 1 (Jan. 2, 2003).

localized pollution, whether state self-audit privileges improve environmental protection, and whether a regulatory agency's focus on compliance should be to assist non-complying companies or penalize them with heavy fines and other sanctions.

Another major issue underlying the controversy over the rulemaking is whether "grandfathered facilities"[138] are being operated past their anticipated retirement dates without having state-of-the art controls installed because changes to the facility which allow them to extend their useful lives were accomplished without the benefit of major modification NSR review. When the Clean Air Act was amended in 1970 to establish the basic framework for air pollution control, existing facilities were exempt from requirements to install controls, which resulted in old facilities being operated beyond their anticipated useful lives.[139] The disincentives to retire old plants and build new facilities with state-of-the art controls have increased over the years in large part because of the difficulty in securing local approval of sites for new facilities. Thus, any regulatory change which would not reduce the trigger points for requiring installation of new controls on existing facilities is viewed with hostility among environmentalists and many regulators.

1. The NSR Amendments. The NSR Amendments address major modifications of existing major sources. They do not affect the requirements for preconstruction review of new major sources. The NSR Amendments amend 40 CFR 51.165 and 51.166, which set out the requirements for NSR permitting provisions in SIPs for both non-attainment and PSD areas, respectively. The NSR Amendments also amend 40 CFR 52.21, which contains the federal PSD permitting requirements to be implemented by EPA in the event that a SIP is disapproved.[140]

a. Changes to Existing Program. The NSR Amendments significantly change the existing NSR program in five areas:

i. Baseline Actual Emissions Determination. The NSR Amendments codify the guidance in the preamble to the 1992 WEPCO Rule allowing an existing electrical utility unit to calculate its baseline actual emissions by using any two-year period out of the five years immediately preceding the modification.[141] The NSR Amendments also provide that a facility other than an electric generating unit may choose any consecutive 24-month period in the past 10 years to determine the facility's baseline actual emissions for purposes of calculating the emissions increases resulting from a modification to the facility.[142]

ii. Actual-to-Projected-Actual Applicability Test. The WEPCO Rule allows electric generating facilities to use the actual-to-projected-actual applicability test

[138] *I.e.*, sources for which construction commenced prior to the effective date of the Clean Air Act in 1970, thereby exempting them from NSR review unless and until they undertake a "major modification" which results in a "significant increase" in emissions.
[139] *See* A. W. Reitze, Jr., "The Legislative History of U.S. Air Pollution Control," 36 Houston L. Rev. 679, 703 (1999).
[140] As most of the provisions are duplicated in each of the three CFR sections, the footnote references in this memorandum will each generally refer to three sections.
[141] 40 CFR 51.165(a)(1)(xxxv)(A), 166(b)(47)((i) and 52.21(b)(48)(i); 67 Fed. Reg. at 80189.
[142] 40 CFR 51.165(a)(1)(xxxv)(B), 166(b)(47)((ii) and 52.21(b)(48)(ii); 67 Fed. Reg. at 80189.

instead of the actual-to-potential applicability test. The NSR Amendments expand the availability of this test to all sources. As expressed in the preamble to the NSR Amendments:

> "[F]or non-routine physical or operational changes to existing emissions units, rather than basing a unit's post-change emissions on its PTE [potential to emit], you may project an annual rate, in tpy [tons per year] that reflects the maximum annual emissions rate that will occur during any one of the 5 (or 10) years immediately after the physical or operational change. The first year begins on the day the emissions unit resumes regular operation following the change and includes the 12 months after this date.[143]

The NSR Amendments require the source to project its post-change actual emissions at the maximum annual rate that it will emit in any in of the five years following the change.[144]

iii. Plantwide Applicability Limits. The NSR Amendments formally adopt a new compliance option for major stationary sources commonly referred to as a Plantwide Applicability Limit or PAL.[145] As its name suggests, a PAL establishes annual emission limits for pollutants triggering NSR permitting obligations. A facility operating pursuant to a PAL is authorized by the NSR Amendments to make physical and operational changes without triggering major NSR permitting obligations, provided the changes do not cause the facility to exceed applicable PAL levels.[146] The NSR Amendments authorize the use of PALs in all air quality regions except extreme ozone nonattainment areas, in which NOx and VOC PALs are prohibited.[147]

Capping annual emissions to avoid permitting obligations is not a new concept to air-permitting. In fact, sources seeking to maximize operational flexibility and minimize regulatory burdens commonly "cap out" by accepting annual emission limits for NSR pollutants. The major advantage of the PAL compliance option (as compared to traditional annual emission limits) is that it establishes a fixed emission baseline. That is, under the PAL compliance option, the emissions baseline for determining NSR applicability is fixed at the PAL level.[148] Under traditional annual emission limits, a source's emission baseline could "float" depending on utilization. Hence, it was extremely difficult, if not impossible, for a large dynamic source to change its operations to meet market conditions without triggering major source NSR permitting obligations. Moreover, concerns associated with the practical enforceability of these annual emission caps, given EPA's adopted guidance on this issue,

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[143] 67 Fed. Reg. at 80196.
[144] 40 CFR 51.165(a)(xxviii), 51.166(b)(40(i) and 52.21(b)(41)(i); 67 Fed. Reg. at 80196.
[145] *See generally* 40 CFR 51.165(f), 51.166(w) and 52.21(aa); 67 Fed. Reg. at 80206 ff.
[146] 40 CFR 51.165(f)(1)(iii), 51.166(w)(1)(ii) and 52.21(aa)(1)(ii).
[147] 40 CFR 51.165(f)((1)(i); 67 Fed. Reg. at 80217.
[148] 40 CFR 51.165(f)(1)(iii), 51.166(w)(1)(ii) and 52.21(aa)(1)(ii).

raised questions to whether such caps even allowed sources to avoid NSR permitting obligations.[149]

The PAL compliance option sets the emission baselines for large and often dynamic sources at the applicable PAL levels. These sources first must exceed the relevant PAL levels to trigger NSR permitting obligations.[150] Moreover, EPA has recognized that with proper monitoring, PAL levels are enforceable as a practical matter.[151]

One significant shortfall associated with the PAL compliance option is that it is only applicable to major NSR permitting. Sources operating pursuant to a PAL in a state with a minor NSR program still will need to verify compliance with the applicable minor NSR program before implementing physical or operational changes under the PAL levels. As a result, minor NSR permit programs potentially could erode the maximum flexibility represented by the PAL compliance option.

The PAL compliance option set forth in the NSR Rule can be broken down into the following relevant requirements:

- Administrative procedures/minimum PAL requirements;
- Establishing PAL levels;
- Adjusting/Renewal of the PAL; and
- Compliance and monitoring, recordkeeping, reporting and testing ("MRRT") requirements.

Each of these requirements are set forth in more detail below.

(a) Administrative Procedures/Minimum PAL Requirements. In order to take advantage of the PAL compliance option, a major stationary source must submit an application to the state.[152] This application must provide, at a minimum, the following information:

- A list of all emission units at the source, designated as "small, significant, or major and upon their potential to emit;"
- Applicable federal or state requirements, emission limits or work practice standards;
- Calculation of the "baseline actual emissions;" and

[149] *See* Memo from T. Hunt to J. Seitz, *"Guidance of Limiting Potential to Emit in New Source Permitting"* (7/13/89).
[150] 40 CFR 51.165(f)(1)(iii), 51.166(w)(1)(ii) and 52.51(aa)(1)(ii); 67 Fed. Reg. at 80216.
[151] *See* 67 Fed. Reg. at 80221.
[152] 40 CFR 51.165(f)(3), 51.166(w)(3) and 52.51(aa)(3); 67 Fed. Reg. at 80208.

- Procedures and calculations to convert monitoring system data to monthly and annual emissions.[153]

At a minimum, the PAL must impose annual emission in tons per year ("TPY") that also are enforceable as a practical matter.[154] In order to be practically enforceable, the annual emission limits must have a 12-month minimum averaging period, and compliance must be verifiable on at least a monthly basis (i.e., a 12-month average, rolled monthly).[155] Moreover, the effective period of the PAL must be 10 years.[156] Finally, the state must provide a 30-day public notice and comment period for the permit implementing the PAL.[157]

(b) Establishing PAL Levels. The first step in establishing a facility's baseline actual emissions is to select one consecutive 24-month period within the last 10 years (for industrial sources) or 5 years (for electric utilities) preceding the permit application and determine the average rate, in TPY, that the facility emitted the pollutants to be included in the PAL (including quantifiable fugitive emissions).[158] This value then would be adjusted downward to exclude emissions from permanently shutdown or dismantled emission units, to account for any noncompliant emissions during the baseline period, or to account for any emission limits that became applicable to the source after the baseline period, i.e., RACT limits, NSPS, state-specific emission limits, or MACT limits (to the extent that the state relied upon the MACT in its implementation plan).[159] Finally, for "any emission unit (currently classified as existing or new) that is constructed after the [selected] 24-month period, the PAL level is adjusted upward in accordance with the emission unit's potential to emit".[160]

Once the baseline actual emissions are established for the source, the PAL levels then are set by adding the relevant significance thresholds to the source's calculated baseline actual emissions.[161] Since the significance thresholds are fixed (depending upon attainment/nonattainment status of the air quality region), the determination of a source's baseline actual emissions will largely dictate PAL levels.

(c) PAL Adjustment/Renewal. A facility seeking to adjust its PAL levels upward during the effective period of the PAL will have only two options: obtain a major NSR permit for the emission unit(s) causing the PAL level exceedance, or demonstrate that the sum of the baseline actual emissions (assuming BACT equivalent controls are in place) and the allowable emissions of the new or modified equipment exceed the established PAL levels.[162] Given these restrictions, a source contemplating a PAL should carefully assess its

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[153] *Id.*
[154] *See* 40 CFR 51.165(f)(4)(i), 51.166(w)(4)(i) and 52.21(aa)(4)(i); 67 Fed. Reg. at 80208.
[155] *Id.*
[156] 40 CFR 51.165(f)(8)(i), 51.166(w)(8)(i) and 52.21(aa)(8)(i); 67 Fed. Reg. at 80209.
[157] 40 CFR 51.165(f)(5), 51.166(w)(5) and 52.21(aa)(5); 67 Fed. Reg. at 80208.
[158] 40 CFR 51.165(f)(6), 51.166(w)(6) and 52.21(aa)(6); see also 40 CFR 51.165(a)(1)(xxxv), 51.166(b)(31) and 52.21(b)(32). See also 67 Fed. Reg. at 80208-09.
[159] *Id.*
[160] *Id.*
[161] *Id.*
[162] 40 CFR 51.165(f)(11)(i)(B), 51.166(w)(11)(i)(B) and 52.21(aa)(11)(i)(B); 67 Fed. Reg. at 80210.

future needs and ensure that its calculation of the baseline actual emissions reflects, to the extent possible, such needs.

Sources operating pursuant to the PAL compliance option must file a permit renewal at least 6 months prior to the expiration of the PAL.[163] During the renewal process, states (i.e., permitting authorities) have significant discretion to adjust the PAL downward to meet air quality goals.[164] In particular, at the time of renewal, states may "set the PAL at a level that it determines to be more representative of the source's baseline actual emission, or that it determines to be appropriate considering air quality needs, advances in control technology, anticipated economic growth in the area, desire to reward or encourage the source's voluntary emission reductions, or other factors as specifically identified by the reviewing authority in its written rationale."[165] If a source's actual emissions are 80% or greater of its PAL levels, a state has the right to renew the PAL without considering the factors set forth above. States are not obligated, however, to do so. Moreover, under no circumstances can a state set PAL at a level greater than a source's potential to emit.[166] Finally, a state cannot approve renewed PAL levels higher than existing PAL levels unless the source can meet the regulatory requirements discussed above pertaining to the upward adjustment of PALs.[167]

(d) Monitoring, Recordkeeping, Reporting and Testing Requirements. Each permit implementing a PAL is required to "contain enforceable requirements for the monitoring system that accurately determines plantwide emission of the PAL pollutant in terms of mass per unit of time."[168] In particular, the PAL monitoring system must use one or more of the following four monitoring approaches:

- Mass balance calculations (limited to activities using coatings and solvents);
- Continuous emissions monitoring systems ("CEMS");
- Continuous parameter monitoring systems ("CPMS") or predictive emissions monitoring systems ("PEMS"); or
- Emission factors.[169]

Sources using mass balance calculations must assume that all of the PAL pollutants contained in or created by the material used in the process are emitted (unless it can demonstrate otherwise).[170] CEMS must comply with 40 CFR Part 60, Appendix B and

[163] 40 CFR 51.165(f)(10)(ii), 51.165(w)(10)(ii) and 52.21(aa)(10)(ii).
[164] *See* 40 CFR 51.165(f)(10)(iv), 51.166(w)(10)(iv) and 52.21(aa)(10)(iv); 67 Fed. Reg. at 80210.
[165] 40 CFR 51.165(f)(10)(iv)(B), 51.166(w)(10)(iv)(B) and 52.21(aa)(10)(iv)(B).
[166] 40 CFR 51.165(f)(10)(iv)(C)(1), 51.166(w)(10)(iv)(C)(1) and 52.21(aa)(10)(iv)(C)(1); 67 Fed. Reg. at 80209.
[167] 40 CFR 51.165(f)(10)(V), 51.166(w)(10)(v) and 52.21(aa)(10)(v); 67 Fed. Reg. at 80210.
[168] *See* 40 CFR 51.165(f)(12), 51.165(w)(12) and 40 CFR § 52.21(aa)(12).
[169] 40 CFR 51.165(f)(12)(ii), 51.166(w)(12)(ii) and 52.21(aa)(12)(ii); 67 Fed. Reg. at 80211.
[170] 40 CFR 51.165(f)(12)(iii), 51.166(w)(12)(iii) and 52.21(aa)(12)(iii).

sample, analyze and record data at least every 15 minutes.[171] CPMS or PEMS systems must be based upon current, site-specific data, and must be capable of sampling, analyzing and recording at least every 15 minutes.[172] The adjustment of emission factors may occur to account for uncertainty, and if technically practical, the state may require sources relying on emission factors to conduct validation testing.[173]

PAL permits must require the source to retain all "records necessary to determine compliance with any requirement of the NSR Rule related to the PAL compliance option, including a determination of each emission unit's 12-month rolling total emissions for 5 years from the date of such record."[174] The reporting and notification requirements associated with PALs are tied into the state's Title V permit program.[175] In particular, sources subject to a PAL must include the following additional information in their semi-annual monitoring report:

- Total annual emissions;
- Data relied upon in calculating monthly and annual emissions;
- A list of modified or added emission units during the reporting period;
- A description of any deviations or monitoring malfunctions;
- Notification and description of any monitoring system shutdown; and
- The certification of a responsible official.[176]

The source must also promptly submit a report of any deviations or exceedance of the PAL requirements, including periods where no monitoring is available.[177]

iv. Clean Unit Applicability Test. The NSR Amendments establish a new Clean Unit applicability test, which the preamble to the NSR Amendments describes as follows:

> This new applicability test provides that when you meet emission limitations based on installing state-of-the art emissions control

[171] 40 CFR 51.165(f)(12)(iv), 51.166(w)(12)(iv) and 52.21(aa)(12)(iv).
[172] 40 CFR 51.165(f)(12)(v), 51.166(w)(12)(v) and 52.21(aa)(12)(v).
[173] 40 CFR 51.165(f)(12)(vi), 51.166(w)(12)(vi) and 52.21(aa)(12)(vi).
[174] 40 CFR 51.165(f)(13), 51.166(w)(13) and 52.21(aa)(13).
[175] 40 CFR 51.165(f)(14), 51.166(w)(14) and 52.21(aa)(14).
[176] 40 CFR 51.165(f)(14)(i), 51.166(w)(14)(i) and 52.51(aa)(14)(i).
[177] 40 CFR 51.165(f)(14)(ii), 51.166(w)(14)(ii) and 52.51(aa)(14)(ii).

> technologies (add-on-control technology, pollution prevention techniques, or work practices) that are determined to be BACT or LAER, you may make any physical or operational change to the Clean Unit without triggering major NSR, unless the change causes a need for a revision in the emission limitations or work practice requirements in the permit for the unit adopted in conjunction with BACT, LAER, or Clean Unit determinations, or would alter any physical or operational characteristics that formed the basis for the BACT, LAER, or Clean Unit determination for a particular unit.[178]
>
> To qualify for Clean Unit status, a source must satisfy two criteria:
>
> - The control technology (including pollution prevention or work practices) must be comparable to BACT or LAER, and
>
> - The source must demonstrate that the allowable emissions will not cause or contribute to a violation of a NAAQS or PSD increment or adversely affect an air quality-related value, such as visibility, that has been identified by the appropriate federal land manager and for which information is available to the general public.[179]

A source automatically qualifies for Clean Unit status if it has gone through major NSR permitting within the past 10 years resulting in a requirement to install BACT or LAER.[180] If the facility qualifies as a Clean Unit, the source may use the Clean Unit applicability test for up to 10 years.[181]

In a non-attainment area, the emissions reductions resulting from the installation of the controls that are the basis of the Clean Unit status may not be used as offsets, although reductions beyond those necessary to qualify for Clean Unit status may be used as offsets as long they otherwise meet the criteria for offsets (surplus, quantifiable, permanent and enforceable). However, the emissions reductions may be used for offsets, if they occur before the effective date of the Clean Unit status or after the Clean Unit status expires.[182]

v. Pollution Control Project Exclusion. The Pollution Control Project ("PCP") exclusion allows for physical and operational changes to occur at major stationary sources without triggering NSR permitting requirements if such changes result in a net environmental benefit.[183] It was initially adopted for electric utilities in the WEPCO rule, and

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[178] 67 Fed. Reg. at 80222.
[179] 40 CFR 51.165(d)(3)(2), 51.166(u)(3)(ii) and 52.21(y)(3)(ii); 67 Fed. Reg. at 80224.
[180] 40 CFR 51.165(a)(1)(xxix), 51.165(c)(3)(i), 52.21(b)(42); 67 Fed. Reg. 80223-24.
[181] 40 CFR 51.165(c)(5)(i), 51.166(t)(5)(i) and 52.21(x)(5)(i).
[182] 40 CFR 51.165(c)(8), 51.166(t)(8) and 52.21(x)(8); 67 Fed. Reg. at 80228.
[183] 40 CFR 51.165(e), 51.166(v) and 52.21(2); 67 Fed. Reg. at 80232.

was subsequently clarified and extended to industrial sources through a draft 1994 EPA policy memorandum.[184] The initial PCP exclusion, as well as the PCP exclusion in the 1996 proposed NSR rulemaking, incorporated the "primary purpose" test as the initial qualifying barrier.[185] Under the "primary purpose" test, the PCP exclusion was limited to projects whose primary function was to reduce air pollution.[186] As a result, the scope of the PCP exclusion was extremely narrow.

The PCP exclusion in the NSR Amendments supercedes the PCP exclusion previously adopted in the WEPCO rule and the draft 1994 EPA policy memorandum.[187] It also alters what types of projects qualify for the PCP exclusion. The most significant changes are attributable to the NSR Amendments' rejection of the "primary purpose' test, expansion of the list of presumptively environmentally beneficial projects, and authorization of projects resulting in utilization increases to potentially qualify for the exclusion.[188] The NSR Amendments also clarify that the replacement, reconstruction, or modification of existing pollution control equipment could qualify for the PCP exclusion.[189] Finally, the NSR Amendments require the use of the "actual-to-projected actual" test when determining whether emission changes demonstrate a net environmental benefit.[190]

(a) Administrative Procedures/Qualifying Criteria. A PCP includes any activity, set of work practices, or project (including pollution prevention[191]) undertaken at an existing emission unit that reduces emission of air pollutants.[192] The PCP exclusion does not extend to new emission units at existing major stationary sources or new major stationary sources.[193] In order to qualify for the PCP exclusion, the "environmental benefit from the emission reductions of pollutants regulated by the [Clean Air Act]…must outweigh the environmental detriment of emission increases in pollutants regulated by the [Clean Air Act]."[194] The NSR Amendments prohibit the consideration of cross-media impacts during this determination.[195] Moreover, the emission increases associated with the project cannot cause or contribute to a violation of any National Ambient Air Quality Standard ("NAAQS") or adversely impact Air Quality Related Values ("AQRVs") (such as visibility) in national parks.[196] The NSR Amendments presume that the following projects satisfy the environmentally beneficial test:

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[184] 57 Fed. Reg. at 32314 and Draft Memorandum from John S. Seitz, "Pollution Control Projects and New Source Review."
[185] *Id.*; *see also* 61 Fed. Reg. at 80232-33.
[186] *Id.*
[187] 67 Fed. Reg. at 80233.
[188] 40 CFR 51.165(e)(2), 51.166(v)(2) and 52.21(z)(2).
[189] 40 CFR 51.165(e)(2)(ii), 51.166(v)(2)(ii) and 52.21(z)(2)(ii);. 67 Fed. Reg. at 80233.
[190] *Id.*
[191] 40 CFR 51.165(a)(1)(xxxvi), 51.166(b)(32) and 52.21(b)(33).
[192] 40 CFR 51.165(a)(1)(xxxvi), 51.166(b)(31) and 52.21(b)(32); 67 Fed. Reg. at 80232.
[193] *Id.*; 67 Fed. Reg. at 80234.
[194] 40 CFR 51.165(e)(1)(i), 51.166(v)(2)(i) and 52.21(z)(2)(i).
[195] 40 CFR 51.165(e)(5), 51.166(v)(5) and 52.21(z)(5); 67 Fed. Reg. at 80236.
[196] 40 CFR 51.165(a)(1)(xxxvi), 51.166(b)(31) and 52.21(b)(32); 67 Fed. Reg. at 80236.

- Conventional/advanced flue gas sulfurization or sorbent injection;

- Flue gas recirculation, low-NOx burners or combustors, selective non-catalytic reduction, selective catalytic reduction, low emission combustion (for IC engines), and oxidation/absorption catalyst;

- Switching from a heavier grade of fuel oil to a lighter fuel oil, or any grade of oil to 0.05% sulfur diesel;

- Switching from coal to wood (with certain exceptions);

- Switching from high sulfur coal to low sulfur coal (1.2% maximum sulfur content);[197]

- Electrostatic precipitators, baghouses, high efficiency multicyclones, or scrubbers;

- Regenerative thermal oxidizers, catalytic oxidizers, condensers, thermal incinerators, hydrocarbon combustion fares, biofiltration, absorbers, adsorbers, and floating roofs;

- Switching from coal, oil or any solid fuel to natural gas, propane or gasified coal; or

- Switching from coal to #2 fuel oil (0.5% maximum sulfur content).

In order to implement a project pursuant to the PCP exclusion, a source must first either submit a notice to the state (if the project is presumed to be environmentally beneficial) or a permit application requesting approval to use the PCP exclusion (if the project is not presumed to be environmentally beneficial).[198] The notice or permit application must include the following minimum requirements:

- A description of the project;

- Potential emission increases and decreases of any pollutant regulated under the Clean Air Act that will result from the project and its projected emission increases and decreases using the actual to projected-actual applicability test;

[197] 40 CFR 51.165(a)(1)(xxv), 51.166(b)(32) and 52.21(b)(33).
[198] 40 CFR 51.165(c)(5), 51.166(v)(5) and 52.21(z)(5); 67 Fed. Reg. at 80239.

- A copy of the environmentally beneficial analysis;

- An air quality impact analysis for any pollutant experiencing a significant emission increase as a result of the project;

- A description of the monitoring and recordkeeping to demonstrate on an ongoing basis that the project is environmentally beneficial; and

- A certification that the project will be designed and operated in a manner consistent with proper industry and engineering practices and consistent with the environmentally beneficial analysis and, if required, the air quality analysis.[199]

For projects that are assumed to be environmentally beneficial (i.e., listed projects), the source may begin actual construction immediately after sending the notice to the state.[200] For unlisted projects, the state must first approve and incorporate the project into a SIP-approved permit or Title V operating permit before construction occurs.[201] This approval process must be accompanied by a 30-day public notice and comment period.[202]

(b) Generation of Emission Reduction Credits ("ERCs"). The PCP exclusion proposed in 1996 included a specialized "environmentally beneficial" test that would have applied to PCPs generating Emission Reduction Credits ("ERCs").[203] The NSR Amendments depart from the 1996 proposal and expressly prohibit the use of PCPs to generate offsets or netting ERCs.[204] According to the NSR Amendments, "the emission reductions initially achieved by the PCP are integral to the 'environmentally beneficial' demonstration required in order for the PCP to qualify for the exclusion."[205] The NSR Amendments do, however, authorize the continued "use" of the reductions achieved by the PCP and specifically allow Clean Air Act Title IV sulfur dioxide allowances. [206] It is likely that this authorization also would extend to NOx allowances under a NOx Budget Program or ERCs generated under a NOx RACT Program. Moreover, the NSR Amendments authorize the generation of ERCs if the source further reduces emissions after qualifying for the PCP exclusion (e.g., accepting operational limitations) and if such reductions are surplus, quantifiable, permanent and federally enforceable (to generate offsets) or practically enforceable (to determine creditable net emission increases and decreases).[207]

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[199] 40 CFR 51.165(e)(3), 51.166(v)(3) and 52.21(z)(3).
[200] 40 CFR 51.165(c)(5), 51.166(v)(5) and 52.21(z)(5); 67 Fed. Reg. at 80239.
[201] *Id.*
[202] *Id.*
[203] 61 Fed. Reg. at 80237.
[204] 67 Fed. Reg. at 80237-38; 40 CFR §§ 51.165(e)(6)(iv), 51.166(v)(6)(iv), and 52.21(z)(6)(iv)
[205] 67 Fed. Reg. at 80237.
[206] 67 Fed. Reg. at 80237-38; 40 CFR §§ 51.165(e)(6)(iv), 51.166(v)(6)(iv), and 52.21(z)(6)(iv)
[207] *Id.*

2. Proposed Routine Maintenance, Repair and Replacement Rule. Under the current NSR program, certain activities are excluded from the definition of "major modification." One such exclusion is for activities considered to be "Routine Maintenance, Repair, and Replacement." The current regulations do not define RMRR; rather, the RMRR exclusion is applied on a "case-by-case-basis."[208] To determine whether an activity is excluded as RMMR under the current NSR program, EPA makes a determination by weighing the nature, extent, purpose, frequency, and the cost of the work as well as other relevant factors to arrive at a common sense finding.[209] Because the determinations are made on a case-by-case basis, there is little certainty as to whether a particular activity constitutes RMRR.[210] Additionally, states and EPA Regions may apply the criteria differently to determine whether an activity is excluded as RMRR. Finally, in the recent report provided to the President by EPA in June 2002, EPA acknowledged that the current uncertainty regarding the RMMR exclusion has resulted in delay or cancellation of activities that would have maintained and improved the reliability, efficiency, and safety of the existing energy capacity and which has ultimately resulted in lost capacity and lost opportunity to improve energy efficiency and reduce air pollution.[211]

EPA's proposed RMRR Rule identifies specific categories of activities that will be considered to be RMRR. The changes are "intended to provide greater regulatory certainty without sacrificing the current level of environmental protection and benefit derived from the program." [212]

EPA is proposing two categories of activities that will be considered RMRR activities, which are 1) activities within an annual maintenance, repair and replacement allowance, and 2) replacements that meet EPA's equipment replacement provision criteria.[213] Under the proposal, "when an activity falls within either of these categories, it would be considered RMRR, and a source's owners or operators would know that the activity was excluded from NSR without regard to other considerations. When an activity does not fall within one of these categories, then it still could qualify as routine maintenance, repair, and replacement under the case-by-case test."[214]

a. Annual Maintenance, Repair, and Replacement Allowances. The annual maintenance, repair and replacement allowance proposal would allow certain activities to "promote the safe, reliable and efficient operation of a facility - that is, those that involve relatively small capital expenditures compared with the replacement cost of the facility - to be excluded from the NSR provided that total costs did not exceed the annual maintenance,

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[208] 67 Fed. Reg. at 80292
[209] WEPCO, 893 F.2d at 910.
[210] 67 Fed. Reg. at 80293.
[211] *Id.*
[212] Unlike the previously mentioned revisions to the NSR program, the changes to the RMRR exclusion are proposed changes and will be subject to a full and open public rulemaking process. EPA is in the initial stages of rule development and is seeking comment on "all aspects of [the] proposed approaches to specifying categories of RMRR activities under the NSR program." *Id*.
[213] *Id.*
[214] *Id.*

repair and replacement allowance."[215] The annual maintenance, repair and replacement allowance and the rules for calculation and summation of activities would be defined explicitly.[216]

Under EPA's proposed approach, a calendar year maintenance, repair and replacement allowance would be established for each stationary source.[217] Under the 1-year allowance proposal, an owner or operator would sum the costs of the relevant activities performed at the stationary source during the fiscal or calendar year (from the least expensive to the most expensive) to get a yearly cost. For activities taking more than 1 year to complete, costs associated with those activities would be included in the cost calculations for the year that the costs were incurred. If the total costs for all activities undertaken for these purposes are within the annual maintenance, repair, and replacement allowance, these activities would all be considered RMRR activities. Other than documentation of the results of this cost assessment, the owner or operator would not have to do anything further with respect to those activities for purposes of major NSR.

Where total yearly costs for all activities undertaken for these purposes at a source exceed the annual maintenance, repair, and replacement allowance, the activities would be reviewed as follows:

- The owner or operator would subtract activities from the total yearly cost, starting with the most expensive activity, until the remainder is less than or equal to the annual maintenance, repair and replacement allowance.

- The owner or operator would evaluate on a case-by-case basis in accordance with EPA's case-by-case test any activities that did not come within the allowance and that are not otherwise excluded, in order to determine whether they are RMRR. If uncertain about a particular activity the owner or operator could seek an applicability determination.

- If an owner or operator concluded that any such activity was not RMRR, he or she would then have to determine whether it constituted a "major modification" that requires an NSR permit.

- The annual maintenance, repair and replacement allowance would be equal to the product of the replacement cost of the source

[215] Proposed at 40 CFR 51.165 (a)(1)(v)(C)(1), 51.166 (b)(2)(iii)(a), Part 51 Appendix S §(A)(5)(iii)(a), 52.21(b)(2)(iii)(a), and 52.24 (f)(5)(iii)(a).
[216] Proposed 40 CFR 51.165(a)(1)(xxxxii), 51.166(b)(53),. 52.21(b)(55), and 52.24(f)(25).
[217] *Id.* The owner or operator may elect to use a fiscal year period instead of a calendar year. EPA is also considering whether a stationary source should have the option of a multi-year allowance, such as over 5 years.

and a specified maintenance, repair and replacement percentage.[218] EPA intends to set this percentage on an industry-specific basis.[219]

EPA is interested in standardizing practices for estimating this investment, along the lines described in the EPA Air Pollution Control Cost Manual, excluding the costs for installing and maintaining pollution control equipment.[220] Although the manual is geared toward cost calculations for add-on control equipment, EPA believes the basic concepts can be applied to process equipment as well, because such concepts are taken from work done by the American Association of Cost Engineers to define the components of cost calculations for all types of processes, not just emission control equipment.[221]

According to EPA, the recommended approach of the proposed RMRR will contain safeguards to help ensure that activities that should be considered a physical change or change in the method of operation under the regulations are ineligible for exclusion from NSR under the annual maintenance, repair and replacement allowance.[222] The following activities will be excluded from use of the annual allowance:

- The construction of a new "process unit," which is a collection of structures and/or equipment that uses material inputs to produce or store a completed product;

- The replacement of an entire process unit; and

- Any change that would result in an increase in the source's maximum achievable hourly emissions rate of any regulated NSR pollutant, or in the emission of any regulated NSR pollutant not previously emitted by the stationary source.[223]

If an owner or operator uses the annual maintenance, repair, and replacement allowance to determine that certain activities at a stationary source are RMRR, all relevant activities performed at that source must be included in the annual cost calculations unless the owner or operator elects to obtain a major NSR permit for the activity. Owners or operators electing to use the annual maintenance, repair, and replacement allowance to determine

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[218] *See* proposed 40 CFR 51.165(a)(1)(xxxxii), 51.166(b)(53), 52.21(b)(55) and 52.24(f)(25).

[219] 67 Fed. Reg. at 80294. According to EPA, there are several ways in which the percentage could be established. One way is to set the threshold so as to cover the RMRR capital and non-capital costs that an owner or operator incurs to maintain, facilitate, restore, or improve the safety, reliability, availability, or efficiency of the source. EPA is also requesting comment on other approaches. EPA is also asking for comment on how to determine typical costs for particular industries. EPA is considering using the Internal Revenue Service "Annual Asset Guideline Repair Allowance Percentages"), which EPA uses for an exclusion under the New Source Performance Standard program for increases in production. EPA is also considering whether to rely on industry specific data for choosing an appropriate threshold, such as the North American Electric Council Generating Availability Data System (NERC/GADS) database or standard industry reference manuals.

[220] *Id.* The control cost manual is available at http://www.epa.gov/ttn/catc/dirl/c_allchs.pdf.

[221] 67 Fed. Reg. at 80298-99.

[222] 67 Fed. Reg. at 80299.

[223] *Id.*

RMRR activities will be required to submit an annual report to the appropriate reviewing authority within 60 days after the end of the year over which activity costs have been calculated.[224] The report will provide a summary of the estimated replacement value of the stationary source, the annual maintenance, repair and replacement allowance for the stationary source, a brief description of all maintenance, repair and replacement activities undertaken at the stationary source, and the costs associated with those activities.[225] If the costs of activities in question exceed the annual maintenance, repair and replacement allowance for a stationary source, the report must identify the activities included within the allowance and the activities that fell outside the allowance.[226]

In its proposed RMRR program, EPA provides an example of how the annual maintenance repair, and placement process would work. In its example, EPA assumes the source's annual maintenance, repair, and replacement allowance equals $2,000,000. During a given year, the owner or operator spends $1,000,000 on running maintenance activities, and implements five other discrete maintenance activities as follows:

Change	Month	Cost
Activity 1	January	$200,000
Activity 2	March	$600,000
Activity 3	April	$360,000
Activity 4	July	$150,000
Activity 5	November	$250,000[227]

The total costs incurred during the year is $2,560,000, which is $560,000 above the annual maintenance, repair and replacement allowance. The most expensive activity commencing during the year was the $600,000 activity commencing in March. The source must evaluate on a case-by-case basis whether this activity is RMRR. When the cost of Activity 2 is subtracted from the total annual cost, the remainder is $1,960,000, less than the annual maintenance, repair and replacement allowance. The remaining activities (Activities 1, 3, 4, and 5) are considered to be RMRR.

b. Equipment Replacement Provision. In addition to its proposed annual maintenance, repair and replacement allowance, EPA is soliciting comment on whether replacing existing equipment with equipment that serves the same function and that does not alter the basic design parameters of a unit should also qualify for RMRR treatment, provided the cost of the replacement equipment does not exceed a certain percentage of the cost of the process unit to which the equipment belongs.[228] Specifically, EPA is soliciting comment on an

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[224] *Id.*
[225] *Id.*
[226] *Id.*
[227] *Id.* For the purpose of this example, none of the proposed activities involves the construction of a new process unit, replacement of an existing process unit, or an increase in the maximum achievable hourly emissions rate of a regulated NSR pollutant or in the emission of any regulated NSR pollutant not previously emitted by the stationary source.
[228] *Id.*

additional approach to be used for determining whatever certain replacement activities whose costs fall below a specified threshold quantity as RMRR without regard for other considerations. Under this approach, EPA would establish a percentage of the replacement value of a process unit as a threshold for applying the equipment replacement provision. If the replacement component is functionally equivalent to the replaced component, does not change the basic design parameters of the process unit, and does not exceed the cost threshold, it would constitute RMRR.[229] According to EPA, this approach "should enable the owner or operator to streamline the RMRR analysis and make this determination more readily and should further alleviate some of the problems noted above."[230] EPA is also soliciting comment on whether this approach should be adopted along with the annual maintenance, repair and replacement allowance previously described, or whether this approach is preferred over the other such that EPA should only offer the equipment replacement provision in the final rule.[231]

E. Best Available Control Technology. A new source or major modification of an existing source is subject to BACT review before construction can proceed. The Act defines BACT as "an emission limitation based on the maximum degree of reduction of each pollutant . . . emitted from or which results from any major emitting facility, which the permitting authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant."[232] BACT is not to be less stringent than any applicable New Source Performance Standard or National Emission Standard for Hazardous Air Pollutants.[233]

EPA currently requires "top-down" BACT review, meaning that the most stringent control technology is analyzed first. If that control technology is not achievable, then the next most stringent control technology is considered. EPA has proposed to codify this particular BACT methodology in the NSR rules.[234]

In serious PM_{10} nonattainment areas, the SIP is required to contain Best Available Control Measures, which may include retrofitting major stationary sources with BACT.[235] BACT may not be less stringent than the applicable New Source Performance Standard.[236]

F. NSR in Nonattainment Areas. A new source situated in a nonattainment area may be subject to the requirement to control emissions at the "Lowest

[229] 67 Fed. Reg. at 80301-02.
[230] 67 Fed. Reg. at 80296.
[231] Id.
[232] 42 U.S.C. § 7479(3).
[233] *Id.*
[234] 61 Fed. Reg. 38249, at 38272-74.
[235] 42 U.S.C. § 7513a(b)(1)(B).
[236] 42 U.S.C. § 7479(3)

Achievable Emission Rate" ("LAER").[237] LAER is defined as the more stringent of either "the most stringent emission limitation which is contained in the implementation plan of any State for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable," or "the most stringent emission limitation which is achieved in practice by such class or category of source."[238] However, LAER cannot be less stringent than the applicable NSPS.[239]

Existing sources in nonattainment areas are subject to "Reasonably Available Control Technology" or "RACT" determinations, which are designed to achieve the "reasonable further progress" reductions in emissions required under the nonattainment provisions of the Act.[240] RACT may entail retrofitting control equipment, changes in operating practices, restrictions on hours of operation, or changes in fuel composition.

G. New Source Performance Standards. The Act requires the establishment of standards of performance for new stationary sources, otherwise known as "New Source Performance Standards" or "NSPS."[241] The NSPS are designed to limit emissions from a new or modified source in an identified source category if the emissions from the new or modified source cause or contribute significantly to air pollution which may reasonably be anticipated to endanger the public health or welfare.[242] The definitions, exemptions and requirements pertaining to modifications of existing sources and the NSPS trigger for such modifications are essentially the same as those for NSR. As a result, an enforcement action brought by EPA or a state agency against a source for failure to undergo NSR review in connection with a modification will often also allege failure to upgrade the facility to the then applicable NSPS.[243]

The NSPS for a particular source category sets limitations on emissions from individual sources in that category. An NSPS applies if construction begins on a new source or modification of an existing source after the promulgation of the proposed NSPS for that source category.[244] A modification triggers NSPS applicability if it results in an increase in the amount of any pollutant or in the emission of any pollutant not previously regulated.[245] EPA has published NSPS for over seventy source categories.[246]

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[237] 42 U.S.C. § 7503(a)(2).
[238] 42 U.S.C. § 7501(3).
[239] 42 U.S.C. § 7501(3).
[240] 42 U.S.C. § 7502(c).
[241] 42 U.S.C. § 7411.
[242] 42 U.S.C. § 7411(b)(1)(A).
[243] *See, e.g.,* the WEPCO case . Wisconsin Electric Power Company v. Reilly, 893 F.2d 901 (7th Cir. 1990)
[244] 42 U.S.C. § 7411(a)(2).
[245] 42 U.S.C. § 7411(a)(4).
[246] 40 CFR Part 60.

IV. EMISSIONS TRADING.

The Clean Air Act and the clean air laws of the various states in the United States are generally an example of "command and control" at its best and worst.[247] Clean air regulation exemplifies "command and control" at its best to the extent that it has resulted in significant reductions in emissions from factories, power plants, and vehicles, so much so that for the first time in decades, the Los Angeles basin is no longer consistently the most polluted airshed in the country.[248] "Command and control" at its worst, however, is evidenced by the extraordinary resources consumed by companies and agencies in dealing with mind-numbingly complex requirements for controlling emissions, monitoring, reporting, inspecting, enforcing, and defending against enforcement of air pollution control requirements. Too often, that expenditure of resources results in little or no environmental benefit.

The Clean Air Act provides for an alternative to traditional regulation in certain circumstances through the use of market mechanisms to achieve necessary reductions. Emissions trading is one of several market-based approaches to environmental protection, which range from pollution taxes to subsidies to encourage pollution control.[249]

The Clean Air Act and associated regulations both directly and indirectly provide for emissions trading. An example of the direct approach is found in Title IV of the Clean Air Act, which was added in the 1990 Amendments to the statute.[250] Title IV and the rules and guidance promulgated thereunder are known as the Acid Rain Program. As described in more detail below, the Acid Rain Program establishes a "cap-and-trade" program, under which a nationwide cap is established for SO_2 emissions from power plants, and each plant is allocated allowances to emit SO_2. The allowances can be purchased, sold, traded, used or saved, thereby allowing the plant operator to make the most economic choice of how to deal with SO_2 emissions.

The indirect approach arises from the Act's provision that a major source or major modification of an existing source in a nonattainment area cannot be constructed without offsetting emission decreases somewhere else in the airshed.[251] As soon as the proponent of a new source or modification approaches the operator of an existing source to find out whether the existing source has or will reduce its emissions to create offsets, a market is created.

Generally speaking, then, there are two types of emissions markets. One is an allowance-based cap-and-trade system, in which an overall emissions cap is set and sources are allocated a certain number of authorizations or allowances to emit. The sources are

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[247] "Command and control" refers to regulation by commanding compliance with specific requirements and then controlling compliance through inspection and enforcement.

[248] That distinction now is now shared with the Houston area. *See* "Los Angeles Loses Dubious Distinction; Worst Summer Smog Day," New York *Times*, September 5, 1999, Sec. 1 p. 25.

[249] For a good assessment of emissions trading as an effective tool to control pollution, *see* G. Bryner, *New Tools for Improving Government Regulation: An Assessment of Emissions Trading and Other Market-Based Regulatory Tools*, The PricewaterhouseCoopers Endowment for the Business of Government, October 1999.

[250] 42 U.S.C. §§ 7651 to 7651*o*.

[251] *See, e.g.*, 42 U.S.C. § 7563(c).

prohibited from emitting more than the amount of allowances in their possession. The other type of market is based on emission reductions beyond required levels, which can then be transferred to a source which needs to offset increased emissions.

A. Offsets.

1. Emissions Trading Policy. The Clean Air Act lays the foundation for emissions offsets trades by providing that no new source or major modification of an existing source may be approved in a nonattainment area unless and until there is an equivalent or greater decrease in the applicable emissions from another source or sources in that airshed. For example, section 182(b)(5) of the Clean Air Act[252] requires that a new or modified major stationary source of emissions of volatile organic compounds in a moderate ozone nonattainment area must offset each ton per year of additional volatile organic compounds with a reduction of 1.15 tons in the same airshed. In response to proposals to accommodate the offset requirement through trades of emissions rights, EPA promulgated the Emissions Trading Policy ("Policy").[253]

The Policy sets forth general principles EPA uses in evaluating emissions trading programs. The Policy defines emissions trading to include *bubbles, netting, emissions reduction credits* ("ERCs") and *banking* of ERCs.

A *bubble* is an imaginary dome over several individual points or sources of emissions. A bubble allows existing plants or groups of plants to increase emissions at one or more sources or emission points in exchange for compensating decreases in emissions at other sources or emission points. The emissions are treated in the aggregate rather than individually, and thus operators have considerable flexibility in electing which and what types of controls to implement, as long as the aggregate emissions decrease.

Netting is very similar to a bubble and consists of the use of ERCs within a facility to avoid new source review for increases in emissions from an emissions point within the facility. The U.S. Supreme Court upheld the netting concept in 1984.[254]

Banking is the process of identifying, recording and maintaining ERCs for future use. An ERC or emission offset bank typically consists of a registry of offsets maintained by the state air quality agency.

The Policy specifies that ERCs may be created and banked only for emissions reductions that are *surplus*, *enforceable*, *permanent*, and *quantifiable*.[255] Emissions reductions are *surplus* only if they are not required by government mandate.[256] In order to establish whether a reduction is *surplus*, a baseline must be established, which is established by using

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[252] 42 U.S.C. §7511a(b)(5).
[253] 47 Fed. Reg. 15976 (Apr. 7, 1982). Final revisions to the Policy were made in 1986. 51 Fed. Reg. 43814 (Dec. 4, 1986). Elements of the Policy are codified as Appendix S to 40 CFR Part 51, "Emission Offset Interpretive Ruling." ("Offset Ruling").
[254] Chevron U.S.A., Inc. v. NRDC, 467 U.S. 837 (1984).
[255] 51 Fed. Reg. at 43838.
[256] *Id.*

the lower of the source's actual[257] or allowable[258] emission rate,[259] hours of operation, and capacity utilization,[260] although the Offset Ruling specifies that the allowable emissions limit set in the SIP will be the baseline.[261]

An emissions reduction is *enforceable* if it is approved by the state and is enforceable by EPA at the time the ERC is used. Enforceable emission reductions may be in a permit or a SIP.

An emissions reduction is *permanent* if there is no legal mechanism to allow the resumption of emissions from the source in the future.

To be *quantifiable*, the emission reductions which generate the ERCs must be susceptible of direct measurement or calculation.

The Policy lays out the procedures for using ERCs. The emissions trades must involve the same pollutant and satisfy applicable ambient air quality monitoring and other tests. The Policy also provides that trades are subject to subsequent EPA approval as case-by-case SIP revisions, although states may develop generic rules for trades as long as the emissions limits produced under the generic rule will not interfere with timely attainment and maintenance of NAAQS or otherwise jeopardize compliance with the NAAQS. Most states in the United States have ERC trading systems in place.[262]

2. Economic Incentive Program. The 1990 Amendments to the Clean Air Act provide for economic incentive programs ("EIPs") which either must or may be adopted for certain nonattainment areas, depending on the classification of the areas. The term "economic incentive program" is defined in the Act as:

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[257] The Offset Ruling defines "actual emissions" as "the actual rate of emissions of a pollutant from an emissions unit" which generally means "actual emissions as of a particular date . . . equal [to] the average rate, in tons per year, at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation. . . . Actual emissions shall be calculated using the unit's actual operating hours, production rates, and types of materials processed, stored or combusted during the selected time period. . . . The reviewing authority may presume that source-specific allowable emissions for the unit are equivalent to the actual emissions of the unit. For any emissions unit which has not begun normal operations on the particular date, actual emissions shall equal the potential to emit of the unit on that date." 40 CFR Part 51 Appendix S, Section IIA.11.

[258] The Offset Ruling defines "allowable emissions" as "the emissions rate calculated using the maximum rated capacity of the source (unless the source is subject to federally enforceable limits which restrict the operating rate, or hours of operation, or both) and the most stringent of the following: (i) Applicable standards as set forth in 40 CFR parts 60 and 61; (ii) Any applicable State Implementation Plan emissions limitation, including those with a future compliance date; or (iii) The emissions rate specified as a federally enforceable permit condition, including those with a future compliance date. " 40 CFR Part 51 Appendix S, Section II.A.13.

[259] The emissions rate is "usually expressed as emissions per quantity of production or throughput." 51 Fed. Reg. at 43814 at 6 (Lexis/Nexis).

[260] *Id.*

[261] 40 CFR Part 51 Appendix S, Section IV.C.

[262] *See* G. Bryner, *New Tools for Improving Government Regulation: An Assessment of Emissions Trading and Other Market-Based Regulatory Tools*, The PricewaterhouseCoopers Endowment for the Business of Government, October 1999, at 12.

> [A] nondiscriminatory system . . . of State established emissions fees or a system of marketable permits, or a system of State fees on sale or manufacture of products the use of which contributes to ozone formation, or any combination of the foregoing or other similar measures. The program may also include incentives and requirements to reduce motor vehicle emissions and vehicle miles traveled in the area.[263]

The Act requires the use of EIPs for certain nonattainment areas, and identifies EIPs as one of three options for use in certain other nonattainment areas.[264] Specifically, a state is required to develop an EIP if it fails to submit an adequate demonstration of reasonable further progress towards attainment in extreme ozone nonattainment areas or in serious carbon monoxide nonattainment areas. The use of EIPs is an option in the case of such a failure in serious and severe ozone nonattainment areas.[265]

EPA published guidance governing EIPs on April 7, 1994.[266] Under the EIP guidance, the use of credits for emissions reductions for trades, sales or offsets, may qualify as an EIP.[267] On August 3, 1995, the EPA published a proposed model open market trading rule which would establish a model program for state open market emissions trading.[268] State adoption of the model rule into its SIP would allow sources to substitute emissions reductions purchased from other sources for the installation of pollution control equipment.

3. Case Study. To illustrate how an ERC transaction might work, let us suppose that Acme Refining Company plans to build a new refinery in metropolitan Gotham, which is a serious ozone nonattainment area. The proposed refinery has the potential to emit 100 tons per year of volatile organic compounds ("VOCs"), a precursor of ozone, which is in excess of the 50 tons per year threshold for "major source" classification under the Act.[269] It cannot get a permit to construct the facility from the State Air Quality Agency ("SAQA") unless it secures offsets at a ratio of 1.2 to 1,[270] which means that it will need to find 120 tons of VOC reductions within the Gotham Ozone Severe Nonattainment Area.

The SAQA maintains an emissions reduction credit registry or "bank," in which qualified ERCs can be deposited. If a facility reduces emissions more than it otherwise required to do, and those reductions are permanent and enforceable (usually by terminating or modifying a permit or SIP condition to reflect the reductions), the facility owner can request

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[263] 42 U.S.C. § 7511a(g)(4).
[264] 42 U.S.C. §§ 7511a(g)(3), 7511a(g)(5), 7512a(d)(3) and 7512a(g).
[265] 42 U.S.C. §§ 7410(a)(2)(A), 7502(c)(6), 7511a(g)(4), and 7602(y).
[266] 59 Fed. Reg. 16690 (Apr. 7, 1994); 40 CFR Part 51, Appendix X. EPA has published *Draft Economic Incentive Program Guidance* (EPA - 452/D-99-001, September 1999, which, if made final, will supersede the 1994 guidance. *See* 64 Fed. Reg. 61348 (Nov. 10, 1998). The draft incorporates portions of the proposed model open market trading rule published by EPA in 1995. 60 Fed. Reg. 39668 (Aug. 3, 1995); 60 Fed. Reg. 44290 (Aug. 25, 1990).
[267] 40 CFR Part 51, Appendix X.
[268] 60 Fed. Reg. 39668 (Aug. 3, 1995).
[269] 42 U.S.C. § 7511a(c).
[270] 42 U.S.C. §7511a(c)(10).

that SAQA approve the reductions as ERCs and place them in the ERC bank. As it turns out, Intergalactic Chemical Company has recently upgraded several process units at its facility just across the river from downtown Gotham, which has resulted in dramatic decreases in emissions, and has "banked" the resulting 150 ERCs (each of which represents one ton of VOC emissions).

Acme's project manager, Ann Virenment, pulls up SAQA's web site and clicks on the ERC Registry page, where she sees that Intergalactic has 150 VOC ERCs banked. Ms. Virenment calls the Intergalactic environmental vice-president and asks if Intergalactic would be willing to sell 120 ERCs and, if so, what would they cost.

The Intergalactic vice-president responds that the company is holding the ERCs in reserve for future plant expansion; however, he would be willing to let them go at the cost of the additional controls that Intergalactic would have to install if the ERCs were not available. The cost of additional controls is $25,000 per ton of emissions reduced; therefore, Acme could have the ERCs for $25,000 per ton.

Ms. Virenment does the math (120 times $25,000 equals $3,000,000) and decides to explore other options. She remembers reading that Outdated Paint Manufacturing was closing down its Gotham operations. She first checks SAQA files and ascertains that Outdated's permit authorizes 200 tons per year of VOC emissions. She then calls Outdated and inquires whether Outdated intends to bank the reductions resulting from the closure. When Outdated indicates that they are having enough trouble just making payroll, much less worrying about banking any reductions, she offers to take care of the administrative work involved in creating and banking the reductions at Acme's cost if Outdated will then transfer 120 ERCs to Acme for $1,000 per ton. Outdated's general manager does the math (120 times $1,000 equals $120,000) and figures that any cash that can come out of the closure is a good thing and does the deal.

Acme helps Outdated create and bank the ERCs. Outdated then transfers 120 ERCs to Acme, which pulls them out of the bank in order to satisfy the legal requirement for offsetting emission reductions in order to get a permit to construct the refinery. Outdated also ends up with 80 ERCs in the bank which are available for sale to other entities needing offsets or for donation to a public interest group or foundation, which will retire them.

The foregoing case study is typical of how ERC transactions develop in a given airshed. Typically, the pricing is a matter of negotiation between the parties, although in large metropolitan areas with a fair amount of activity, there may be enough trading to establish a market price.[271]

B. Acid Rain Program. Title IV of the 1990 Amendments adds to the Act a comprehensive market-based program for the control of sulfur dioxide emissions from coal-fired electric utility power plants.[272] Title IV and the rules issued thereunder are referred to as

[271] For example, there is a very well-developed market for ERCs in the Bay Area Air Quality Management District, which includes San Francisco, in which market prices are widely published.
[272] 42 U.S.C. §§ 7651-7651o.

the "Acid Rain Program." The Acid Rain Program is the prototypical "cap-and-trade" emissions trading program, in which individual power plants receive allocations of allowances for emissions of SO_2 and can then purchase additional allowances if the SO_2 emissions exceed the amount of allocated allowances. The Act expressly provides for a permanent nationwide cap of 8.9 million tons per year of sulfur dioxide emissions, which represents a decrease of about 10 million tons per year from 1980 levels.[273]

The Acid Rain Program rules cover acid rain permits and compliance plans, allowance trading and tracking, emissions monitoring, and excess emissions penalties and offset requirements.[274] On March 23, 1993, EPA added rules governing early reduction credits, initial allowance allocations, and provisions regarding cogenerators, qualifying facilities, independent power producers, and solid waste incinerators.[275] EPA has also promulgated rules governing the annual auctions of allowances.[276]

1. Allowances. The term "allowance" is defined in Section 402(3) of the Act as "an authorization, allocated to an affected unit by the Administrator [of EPA] under this subchapter, to emit, during or after a specified calendar year, one ton of sulfur dioxide."[277] The Act expressly states that an allowance is not a property right.[278]

2. Affected Sources/Units. An "affected source" includes one or more affected units.[279] An "affected unit" is a unit that is subject to the emission reduction requirements of the Acid Rain Program.[280] Electric utility power plants often consist of more than one boiler, each of which is considered a separate unit. Often, the units at a plant will be owned by multiple owners, although the co-owners will designate an operator, who is typically the overall majority owner of the plant. Even though the units may be contiguous, under common ownership and control, and even emit through a common stack, each unit is treated separately for purposes of allocation of allowances.

3. Allowance Tracking System. The Acid Rain Program establishes an Allowance Tracking System ("ATS") which is administered by the EPA Clean Air Markets Division and which is the official record of account balances and allowance transactions.[281]

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[273] 42 U.S.C. § 7651b(a).
[274] 40 CFR Parts 72, 73, 75, 77, and 78.
[275] 58 Fed. Reg. 151634 (Mar. 23, 1993); 40 CFR 73.2, 73.10, 73.16, and 73.20.
[276] 40 CFR 73.70 through 73.73.
[277] 42 U.S.C. § 7651a(3).
[278] 42 U.S.C. § 7651b(f). The Act does not specify how allowances are to be valued or treated for rate recovery purposes; however, the U.S. Internal Revenue Service has ruled that the allocation of emission allowances by EPA to a utility does not cause a utility to realize gross income for federal tax purposes. Rev. Rul. 92-16, 1992-12 I.R.B. 5. In further guidance, the Internal Revenue Service ruled that the costs associated with acquiring or holding allowances must be capitalized and constitute the tax basis in an emission allowance. In addition, the Service held that an allowance is not subject to depreciation, that the tax basis in an allowance can be recovered under certain circumstances, that withheld allowances will be treated as an involuntary conversion of the withheld allowances, and that the $2,000 per ton penalty for excess emissions is not deductible. Rev. Proc. 92-91.
[279] 42. U.S.C. § 7651A(1).
[280] 42 U.S.C. § 7651A(2).
[281] 40 CFR 73.30 - 73.53(c).

Every allowance has a unique serial number which enables it to be tracked from the initial allocation through each trade to its retirement.[282] Each affected unit has a separate allowance account in the ATS,[283] and a general allowance account may be established by any person to hold allowances not designated for a specific affected unit.[284] The owner or operator of an affected unit is required to designate an authorized account representative, who is responsible for administering the affected unit's allowance account.[285]

4. Phase I. The Act lists by name the affected units and sources subject to Phase I of the Acid Rain Program, along with their allowance allocations.[286] Phase I units are certain large electric utility generating units in the eastern half of the United States, and are generally considered to be major contributors to the acid rain problems in the eastern United States and Canada. Phase I units are subject to the requirements to hold sufficient allowances to cover SO_2 emissions for each year beginning January 1, 1995.[287]

The legislative history of Title IV indicates that Congress anticipated a 2.8 to 4.4 million ton nationwide reduction in sulfur dioxide emissions during Phase I.[288]

5. Phase II. The Act provides that after January 1, 2000, all large fossil fuel electric utility generating units are subject to the requirement to hold sufficient allowances to cover SO_2 emissions each year, with the exceptions noted below.[289] The Phase II units were allocated allowances to authorize SO_2 emissions beginning in calendar year calendar 2000. Electric generation facilities with a capacity of 25 MW or less, certain categories of cogeneration and qualifying small power production facilities, and non-utility sources of sulfur dioxide emissions are not subject to the Acid Rain Program unless they "opt in."[290]

The allocation of allowances to Phase II affected units are made so as to not allow the cap to be exceeded, with specified amounts of allowances set aside for annual auctions, direct sales, and incentives. Newly constructed utility plants or facilities which opt in to the Acid Rain Program will be required to obtain acid rain allowances either through the EPA sales or from facilities with surplus allowances in order to emit SO_2.

6. Allowance Allocations. The allowances are allocated to individual affected units through a formula based on actual emissions in 1985, with adjustments for a wide variety of factors, including average emissions from all affected units within the state, use of clean fuel (including low-sulfur coal and natural gas), size of units, and average

[282] 40 CFR 73.34(d).
[283] 40 CFR 73.31(a) and (b).
[284] 40 CFR 73.31(c).
[285] 40 CFR 73.33.
[286] 42 U.S.C. § 7651c, Table A.
[287] 42 U.S.C. § 7651c(a).
[288] S. Rep. 101-228 at 327 (Dec. 20, 1989).
[289] 42 U.S.C. § 7651d.
[290] 42 U.S.C. §§ 7651a(8) and (17(C). See Section III.I. below.

emission rates.[291] Along with the allowances allocated to affected units, Title IV requires EPA to set aside specified numbers of allowances for auction.[292]

7. Compliance. Each affected unit is required to apply for and obtain a permit from EPA (or a state under an approved state permit program) in order to emit SO_2.[293] The permits are to be issued under the operating permit program established by Title V of the Act,[294] and the permit will contain certain conditions pertaining to the use of allowances. Specifically, the Act requires a permit issued to an affected unit to prohibit (1) annual emissions of SO_2 in excess of the number of allowances held for the unit, (2) exceedances of applicable emissions rates, (3) the use of any allowance prior to the year for which it was allocated, and (4) violation of any other provision of the permit.[295] The affected unit is also required to submit a plan for complying with the requirements of the Acid Rain Program.[296]

8. Designated Representative. The owner/operator of each affected unit is required to appoint a "designated representative" for that unit.[297] The "designated representative" is defined in the Act as "a responsible person or official authorized by the owner or operator of a unit to represent the owner or operator in matters pertaining to the holding, transfer, or disposition of allowances allocated to a unit, and the submission of and compliance with permits, permit applications, and compliance plans for the unit."[298] The owner or operator is required to file a certificate of designation of a designated representative.[299]

9. Opt-In. The Act allows the owner or operator of any unit that emits SO_2 and that is not an affected unit to "opt in" to the Acid Rain Program, thereby becoming eligible for an allocation of allowances.[300] A non-affected unit (i.e., one that is not subject to the Acid Rain Program and, therefore, not allocated allowances) may still emit sulfur dioxide, but only within the emission limitations applicable to the source through its permit or the SIP. The final opt-in rules were published on May 8, 1995.[301]

10. Allowance Trading. The Acid Rain Program allowance market has been very active since 1994. As of the end of 1999 (which marked the end of Phase I of the

[291] 42 U.S.C. §§ 7651e, 7651d(h)(1), 7651d(b) and (d), 7651(b), (c), and (d).
[292] 42 U.S.C. § 7651o.
[293] 42 U.S.C. § 7651g.
[294] 42 U.S.C. §§7661-7661f.
[295] 42 U.S.C. § 7651g(a).
[296] 42 U.S.C. § 7651g(b).
[297] 40 CFR Part 72, Subpart B, 58 Fed. Reg. at 3663-65.
[298] 42 U.S.C. § 7651a(26).
[299] 42 U.S.C. § 7651g(I), 40 CFR 72.24.
[300] 42 U.S.C. § 7651i.
[301] 60 Fed. Reg. 24008 (May 8, 1995).

Acid Rain Program), allowances were trading for about $150 each.[302] Although the market price had risen to highs above $200, the market price as of April, 2003 was back to $165.[303]

Since 1990, SO_2 emissions from coal-fired power plants in the United States has dropped significantly as electric utilities are meeting their compliance obligations by installing flue gas desulfurization, switching to low-sulfur fuels and/or purchasing allowances.[304] In fact, the rate of reductions are well below the nationwide cap on SO_2 emissions established by the Acid Rain Program.[305]

11. *Pataki* Decision. One of the criticisms of the Acid Rain Program is that although it has resulted in a national decrease in electric utility-generated SO_2 emissions, many of the large uncontrolled plants in the midwest and south have acquired sufficient allowances to avoid scrubbing and thus still emit large amounts of SO_2 that continue to cause acid precipitation in the Northeast. In 2000, the New York State Legislature enacted the Air Pollution Mitigation Law[306] which required written reporting to the New York Public Service Commission of all SO_2 allowance transfers and the payment to the Commission of an "air pollution mitigation offset" equal to any sum received by a New York utility for the sale or trade of allowances where such allowances are acquired by a utility unit in an upwind state. Under the law, the mitigation offset is payable even if the allowances are not directly transferred to the upwind state unit, but are merely available for later transfer. The net result of the law was that any amount received for such allowances was forfeited to the Commission. The only way to avoid the offset was to attach a restrictive covenant to the allowances prohibiting the transfer to and usage by an upwind state unit of the allowances.

In 2002, the law was overturned by a federal district court in Clean Air Markets Group v. Pataki.[307] The court held that the law is preempted by the Clean Air Act under the Supremacy Clause of the U.S. Constitution.[308] The court held that even though there is no physical impediment to compliance with both the state and federal laws, the 100 percent penalty on allowance transactions is an impermissible obstacle to the accomplishment of the purpose of Congress in enacting Title IV.[309] In particular, the court found that "New York's restrictions on transferring allowances to units in the Upwind States is contrary to the federal

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[302] 2 Airtrends Issue 24, Dec. 22, 1999, at 3. Airtrends is a publication of the Natsource Emissions Brokerage Desk.
[303] 6 Airtrends,, Issue 4, April 11, 2003, at 2.
[304] "Environmental Defense, "From Obstacle to Opportunity: How Acid Rain Emissions Trading is Delivering Cleaner Air," 2 (Sept. 2000) http://www.environmentaldefense.org/pubs/reports/SO2. *See also* U.S. General Accounting Office, "Acid Rain: Emissions Trends and Effects in the Eastern United States," Letter Report (GAO/RCED-00-47 Mar. 9, 2000).
[305] *The Environmental Impacts of SO_2 Allowance Trading*, United States Environmental Protection Agency, February 1998 (http://www.epa.gov/acidrain/effects/tradefx.htm).
[306] N.Y. Pub. Serv. L. § 66-k (McKinney's Supp. 2001-2002).
[307] 194 F.Supp.2d 147 (N.D.N.Y. 2002).
[308] 194 F.Supp.2d at 157. The Supremacy Clause is found in Article VI, clause 2 of the U.S. Constitution and makes federal law "the supreme Law of the Land," thereby invalidating state laws that interfere with or are contrary to federal law.
[309] *Id*. at 158.

provision that allowances be tradeable to any other person" and that both Congress and EPA "considered geographically restricted allowance transfers and rejected it."[310]

The court also found that the New York law violated the Commerce Clause of the U.S. Constitution.[311] In rejecting New York's argument that the law was "directed to legitimate local concerns, with effects upon interstate commerce that are only incidental,"[312] the court stated:

> Reducing acid deposition and thereby protecting the environment and the public health are legitimate local concerns. However, there is no direct connection between the law's requirements and the purported concerns being addressed. The law, whether by restricting transfers of SO_2 allowances to the Upwind States or requiring forfeiture of sums received for unrestricted transfers, is meant to reduce the number of SO_2 allowances that are available to units in the Upwind States. Theoretically, fewer allowances being available will result in lesser SO_2 emissions. However, this theory is contradicted by actual practice: Midwestern states used 4.67 million fewer SO_2 allowances than they had available in 2000. Additionally, any reduction in SO_2 emissions in the Upwind States must result in less acid deposition in New York State in order to fulfill the goal of the Air Pollution Mitigation Law. There is also no guarantee that the law will reduce the number of allowances available in the Upwind States since the remainder of the states are free to transfer any number of allowances to units in the Upwind States. Moreover, as the defendants [New York State] concede, 97.7% of the allowances purchased by Upwind States were from states other than New York. The substantial disjunct between the law itself and its purpose undermines its legitimacy, particularly in light of the burden imposed upon interstate commerce.[313]

The decision has been appealed to the Federal Court of Appeals for the Second Circuit.

12. Case Study. Clean Energy Electric Company operates several coal-fired power plants in Colorado, Wyoming and Montana. In 1987, Clean Energy dropped its SO_2 emissions from its plants by nearly 80 percent as a result of rule changes in the various states which required the retrofit of several of the units with SO_2 scrubber technology, and the

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[310] *Id*.

[311] *Id*. at 159. The Commerce Clause is found in Article I, section 8, clause 3 of the U.S. Constitution and empowers Congress "[t]o regulate commerce . . . among the several States . . .."

[312] *Id*. at 161, citing City of Philadelphia v. New Jersey, 437 U.S. 617, 624, 98 S.Ct. 2531, 2536 (1970).

[313] *Id*. at 161-62. In a footnote to the quoted passage, the court observed: Defendants also contend that the mitigation offset directly addresses the purpose of the statute by funding environmental and energy research. However, it is incomprehensible that any company would transfer unrestricted SO_2 allowances, resulting in loss of the allowances as well as any profit gained from the sale.

availability of relatively inexpensive lower sulfur coal from new surface mines in the region. Clean Energy's plants ended up with substantial surplus Phase II acid rain allowances, based on the use of the 1985 baseline to establish the allocations.

Soot Edison is a midwestern utility with several Phase II power plants which burn high sulfur underground coal from underground mines in the state in which the plants are located. None of Soot's plants have scrubbers because they were built before 1977 and are thus "grandfathered" from Clean Air Act requirements. Soot's allocation is less than half the number of allowances needed to cover the large amount of SO_2 emitted from the plants.

With January 1, 2000 fast approaching, Soot's management decides that burning low-sulfur coal will reduce SO_2 emissions enough so that its allocation of allowances will cover the emissions of SO_2. The low-sulfur coal is actually cheaper than the high-sulfur coal now being used, even with the costs of transportation from Wyoming, because it is surface-mined at non-union operations. However, the coal mining companies and unions in Soot's state got wind of Soot's plans, and both the governor and the state legislature indicated to Soot that replacing in-state coal with out-of-state coal would be a serious political mistake. (The legislature went so far as to enact legislation to prohibit Soot from burning out-of-state coal. That law was struck down as unconstitutional in federal court, but it took a few years to wind through the appeals process.)[314]

Soot's next choice was to install scrubbers, which would cost several hundred million dollars for each plant. When Soot went to the state public utilities commission, however, the commission indicated that it would not approve a rate increase of the magnitude necessary to cover the costs of the scrubbers, and that if Soot wanted to install them, it would be paid for by its shareholders. Given Soot's lackluster stock performance, the board of directors was not enthusiastic about that option.

Soot looked at taking the plants out of service, but concluded that the expense of replacement power and the cost and impediments to siting new generating facilities rendered that option impractical.

Finally, it decided to turn to the acid rain allowance market. It retained Pollution Brokers to find allowances that might be available for sale. Pollution Brokers used its extensive contacts in the utility industry to identify the surplus allowances held by Clean Energy and put the two utilities in touch with each other. Several million dollars and several tens of thousands of allowances changed hands, and all parties went away satisfied. Soot was able to continue operating its plants, Clean Energy received a windfall from its surplus allowances, and Pollution Brokers got a hefty fee.

As the case study illustrates, the Acid Rain Program operates in a much more sophisticated market than the typical local ERC market. This is primarily a function of the geographic scope of the program, the volume of transactions, and the frequency of trades.

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[314] *See, e.g.,* Alliance for Clean Coal v. Bayh, 72 F.3d 556 (7th Cir. 1995).

C. NOx Trading. The higher humidity and denser industrial activities in the eastern part of the United States have resulted in a regional ozone problem. High ozone levels in New York City, for example, may be in part the result of emissions of NOx from electric utility power plants hundreds of miles away. As a result, the Act establishes an ozone transport region in the eastern United States and requires states within the region to include provisions in their SIPs to reduce the emissions of NOx contributing to the regional transport of ozone.[315]

In 1994, the Ozone Transport Commission ("OTC"), consisting of certain states in the Ozone Transport Region, entered into a Memorandum of Understanding (the "MOU") under which the states in the OTC developed a model rule to allow NOx emission allowance trades between sources in different states.[316] The model rule was approved by the OTC and EPA in 1996,[317] and formed the basis for the model rules for trading of NOx allowances in the Ozone Transport Region published by EPA in October, 1998.[318]

Under the Act, the states in the Ozone Transport Region cannot be forced to adopt the model NOx trading rule; however, if a state incorporates the rule into its SIP, EPA will approve it quickly, and it can be used to meet required reductions in NOx emissions.

The model trading program established by the OTC and the EPA's model rule provides for the allocation of NOx allowances. A "NOx allowance" is defined as an authorization to emit up to one ton of NOx between May 1 and September 30 of the same year.[319] Allowances are issued in vintage years, meaning that an allowance is issued for use in a particular year, although an allowance can be banked for use in a subsequent year.[320] Under the OTC MOU, however, there are limits on the use of banked NOx allowances in future years.

The NOx allowances are to be maintained in an Allowance Tracking System to be administered by EPA.[321] Each allowance will have a serial number to facilitate tracking of its trading history.[322]

The NOx allowance market is relatively new, with prices for 2003 vintage allowances ranging up to $7,700 per allowance.[323]

D. RECLAIM. In 1993, the South Coast Air Quality Management District,[324] which includes the Los Angeles Basin in southern California, adopted the Regional

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[315] 42 U.S.C. §7511c.
[316] 63 Fed. Reg. 25902, 25921 (May 11, 1998).
[317] *Id*.
[318] *Finding of Significant Contribution and Rulemaking for Certain States in the Ozone Transport Assessment Group Region for Purposes of Reducing Regional Transport of Ozone*, 63 Fed. Reg. 57356 (Oct. 27, 1998).
[319] 40 CFR 96.2; 63 Fed. Reg. at 57516.
[320] 40 CFR 96.55; 63 Fed. Reg. at 57529.
[321] 40 CFR 96.50; 63 Fed. Reg. at 57526.
[322] 40 CFR 96.53(c); 63 Fed. Reg. at 57528.
[323] 6 Airtrends, Issue 4, April 11, 2003, at 3.

Clean Air Incentives Market ("RECLAIM"). The Los Angeles Basin has historically experienced the worst air pollution in the United States (although, as noted above, it is now competing with Houston for that distinction), which has resulted in the adoption of the most stringent air pollution control requirements in the country. RECLAIM is intended to further reduce emissions of SO_2 and NOx in the Basin through the capping of emissions and the allocation of allowances to sources of SO_2 and NOx.

Under the RECLAIM program, each stationary source with NOx and SO_2 emissions greater than 4 tons per year receives an annual emissions cap and an annual rate of reduction in emissions. Each facility receives a single permit that encompasses all emission sources for the facility, and each facility receives an annual emissions allocation for NOx or SO_2 or both. Each year, the allocation is reduced.[325]

RECLAIM covers about 65 percent of the NOx emissions and about 85 percent of the SO_2 emissions from permitted stationary sources in the Los Angeles Basin. The goal of RECLAIM is to reduce NOx emissions from stationary sources from 106 tons per day to 26 tons per day and SO_2 emissions from 24 tons per day to 10 tons per day in 2003.[326] Although each source receives a specific allocation which represents its total annual emission reductions requirement, the specific control requirements and timing of the reductions is under the control of the source. The source can shift emissions between various pieces of equipment under its facility cap, and a source which emits more than its allocation may purchase RECLAIM credits from another source.[327]

Thus far, RECLAIM has been successful in achieving annual reductions in NOx and SO_2. In addition, there have been hundreds of transactions worth several tens of millions of dollars since the program took effect in 1994.[328]

Beginning in 2001, however, the sudden demand for RECLAIM credits from power generators caused RECLAIM prices to increase dramatically. The District has responded by publishing amendments to the RECLAIM rules which take electric power generating facilities out of the program and require the installation of controls.[329]

E. WRAP Emissions Budget Trading Program. The WRAP Annex to the Regional Haze Rule establishes the Western Emissions Budget ("WEB") Trading Program, which is triggered within 12 months after either total emissions from applicable sources in participating states exceed the reduction targets or an assessment is made in 2013 that the

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[324] The State of California is divided into a number of air quality management districts, each of which develops its own SIP.
[325] RECLAIM Program Summary at EX-2, South Coast Air Quality Management District, 1994.
[326] *Id.* at EX-4.
[327] *Id*. at EX-5.
[328] South Coast Air Quality Management District News May, 1998 (http://www.aqmd.gov/monthly/may98.html).
[329] Proposed Amendments to South Coast Air Quality Management District Rules 2000, 2001, 2002, 2004, 2006, 2007, 2010, 2011, 2012, and 2015 (South Coast Air Quality Management District Board Agenda No. 35, May 11, 2001).

2018 target will not be achieved.[330] The WEB Trading Program applies to sources that emit in excess of 100 tons per year of SO_2[331] and incorporates elements of the Acid Rain and NOx Budget Allowance Programs.

A WEB Allowance is an authorization to emit one ton per year of SO_2.[332] Current year banked allowances may be used in future years, subject to flow control restrictions to limit the amount of banked allowances that can be used at any given time.[333] Each WEB Allowance has a serial number.[334] Unlike the other emissions trading programs under the Clean Air Act, the Web Trading Program will not be directly administered by a government agency; rather, the WEB Trading Program will be administered by a contractor retained by WRAP.[335]

WEB Allowances will be allocated to existing WEB sources with set-asides for tribal economic development.[336] Non-utility source allocations will be based on specified control levels (i.e., BACT, BART, and LAER).[337] The methodology for the allocation of WEB allowances to utilities is yet to be determined.[338]

When the WRAP Annex was published, it was hoped that the WEB Trading Program would never be triggered because existing state and federal air pollution control programs were resulting in reductions in the amount of SO_2 going into the air in the western United States. However, if economic growth results in a significant increase in the utilization of existing coal-fired generation and the construction of new coal-fired plants, this may make it difficult to avoid exceeding the cap and thereby triggering the WEB Trading Program.[339]

The Regional Haze Rule also contains detailed provisions regarding tracking visibility conditions and emissions reductions,[340] establishment of visibility baselines,[341] monitoring,[342] and implementation of the regional haze program in Indian country.[343]

V. OPERATING PERMITS.

Title V of the 1990 Amendments sets forth a comprehensive operating permit program.[344] EPA has promulgated regulations setting forth guidance to the states for operating

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[330] WRAP Annex at 63, Attachment A at A17. *See* discussion of visibility protection in section III.D. *sputa*.
[331] *Id*. at A16, A18.
[332] *Id*. at A4
[333] *Id*. at 45.
[334] *Id*. at 50.
[335] *Id*.
[336] *Id*. at 30-31.
[337] *Id*. at 35.
[338] *Id*.
[339] *West Hopes to Avoid Coal, Haze Collision*, 8 Air Daily No. 101 at 3 (May 24, 2001).
[340] 64 Fed. Reg. at 35725-27.
[341] 64 Fed. Reg. at 35730-34.
[342] 64 Fed. Reg. at 35743-45.
[343] 64 Fed. Reg. at 35759. "Indian country" is a term of art denoting the various types of lands subject to various forms of tribal jurisdiction.
[344] 42 U.S.C. §§ 7661-7661f.

permit programs,[345] and the states have in turn implemented the necessary legislative and regulatory changes to implement the federal guidelines. An operating permit is intended to incorporate into a single permit the air quality requirements applicable to the source[346] and, as discussed in more detail below, to provide for monitoring and reporting of compliance with those requirements.[347]

Both the statute and the operating permit regulations provide that a state program must require permits for (1) any major source, (2) any source subject to a limitation, requirement, or standard under 42 U.S.C. § 7411 (primarily dealing with nonattainment areas), (3) any source subject to a hazardous air pollutant standard, (4) any affected source under the Acid Rain Program, or (5) any other stationary source in a source category designated under the Act.[348] It is important to note that existing sources, even those with current state permits, will be subject to the operating permit program.

Existing major sources are required to submit permit applications within one year following the date of approval of the state program, after which the state may phase in its permit review over a three-year schedule.[349] Many states, however, require the submittal of applications for existing major sources earlier than one year following state program approval.[350] Permits are to be issued for terms not to exceed five years.[351]

An application for a permit must include certification of compliance by the source with all applicable requirements.[352] If the source is not in compliance with a particular applicable requirement, the application is required to contain a plan for achieving compliance.[353] In addition, the permittee must certify no less frequently than annually that the facility is in compliance with any applicable requirements in the permit.[354]

The term "applicable requirements" is defined by EPA to include:

- Any SIP standard or requirement,

- Any preconstruction permit condition issued under authority of the Clean Air Act,

- Any NSPS standard or requirement,

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[345] 40 CFR Part 70.
[346] 40 CFR 70.6(a); White Paper For Streamlined Development of Part 70 Permit Applications, U.S. Environmental Protection Agency Office of Air Quality Planning and Standards, July 10, 1995, p. 1.
[347] 42 U.S.C. §7661c.
[348] 42 U.S.C. §§ 7661a(a) and 7661b; 40 CFR § 70.3(a). *See also* Section III.A, *supra*.
[349] 42 U.S.C. § 7661b(c).
[350] *See, e.g.,* Utah Admin. Code R307-415-5a(3)(b).
[351] 42 U.S.C. § 7661a(b)(5)(B).
[352] 42 U.S.C. § 7661b(b)(1).
[353] 42 U.S.C. § 7661(c).
[354] 42 U.S.C. § 7661b(b)(2).

- Any standard or requirement under the Hazardous Air Pollutant program, including accident prevention,

- Any standard or requirement under the Acid Rain Program,

- Any monitoring, reporting, record keeping, and compliance certification requirements,

- Any standard or requirement governing solid waste incineration,

- Any standard or requirement for consumer or commercial products which may release volatile organic compounds,

- Any standard or requirement for tank vessels,

- Any standard or requirement to control air pollution from outer continental shelf sources,

- Any standard or requirement to protect stratospheric ozone, and

- Any NAAQS or increment or visibility requirement applicable to temporary sources.[355]

The application is to be signed by a "responsible official,"[356] which is defined to include an officer of a corporation or person with similar responsibility, a general partner of a partnership, the proprietor of a sole proprietorship, or the principal executive officer or ranking elected official of a governmental entity or public agency.[357]

A timely and complete application creates an "application shield," which means that between the date of submittal of a timely and complete application (or the date the application is deemed complete) and the issuance of the permit, the failure of the applicant to have a permit will not be a violation of the operating permit requirements.[358]

The final operating permit regulations provide that a source may undertake "minor modifications" using streamlined permit modification procedures.[359] "Minor modifications" include permit modifications that do not (1) violate any applicable requirement, (2) significantly change monitoring, reporting or record keeping requirements, (3) require or change an individual emission limitation or other standard or modify an

[355] 40 CFR 70.2.
[356] 42 U.S.C. § 7661b(c).
[357] 40 CFR 70.2.
[358] 42 U.S.C. § 7661b(d).
[359] 40 CFR § 70.7(e)(2).

increment or impact analysis, or (4) establish or change a permit term or condition included in the source's permit to avoid the inclusion of an alternative permit requirement.[360] In addition, the regulations allow states to incorporate into their operating permit programs exemptions for insignificant activities which do not trigger the permit requirements because of size, emission levels, or production rate.[361] The statute specifically requires that state operating permit programs include provisions to allow changes at a permitted facility without requiring permit revisions if the changes are not modifications and do not result in an exceedance of allowable emissions under the permit.[362]

The statute and regulations allow a state to provide for a "permit shield," under which compliance with a permit is deemed to be compliance with applicable requirements as of the date of the issuance of the permit, and the permittee is shielded from enforcement for non-compliance with requirements not identified as applicable.[363] The permit shield offers limited protection in the event of a change in applicable requirements, although it does not limit the regulatory agency's authority to reopen the permit and change permit conditions to conform with new regulatory requirements.[364] The list of circumstances under which the agency may reopen the permit is found at 40 CFR § 70.7(f). The permitting agency has the discretion whether to provide for a permit shield in the permit.[365]

States are required to assess emission fees to cover the costs of administering the permitting program.[366]

States were required to submit their operating permit programs to EPA for approval by November 15, 1993.[367] Many states submitted their programs late, in large part due to EPA's failure to issue the final permitting regulations by the statutory deadline of November 15, 1991.[368] In response to litigation, EPA has published proposed amendments to the permitting regulations.[369] As of July, 2003, however, no final amendments to the regulations have been published.[370] In addition, Title V has survived a constitutional challenge brought by the State of Virginia.[371] EPA has also issued two final "White Papers" and proposed another on the Title V program in which various provisions of the Title V and 40 CFR Part 70 are interpreted.[372]

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[360] *Id*.
[361] 40 CFR 70.5(c); 57 Fed. Reg. at 32273; *See* Western States Petroleum Ass'n v. EPA, 87 F.3d 280 (9th Cir. 1996).
[362] 42 U.S.C. § 7661a(b)(10).
[363] 42 U.S.C. § 7661c(f), 40 CFR § 70.6(f).
[364] 40 CFR 70.7(f).
[365] 42 U.S.C. §7661c(f).
[366] 42 U.S.C. § 7661a(b)(3).
[367] 42 U.S.C. § 7661a(d)(1).
[368] 42 U.S.C. § 7661a(b).
[369] *See, e.g*., 60 Fed. Reg. 45530 (Aug. 31, 1995); 59 Fed. Reg. 44460 (Aug. 29, 1994).
[370] *See* 67 Fed. Reg. 75167, 75232 (Dec. 9, 2002).
[371] *See, e.g*., Commonwealth of Virginia v. Browner, 80 F.3d 869 (4th Cir. 1996).
[372] "White Paper for Streamlined Development of Part 70 Permit Applications," July 10, 1995; "White Paper Number 2 For Improved Implementation of The Part 70 Operating Permit Program," March 6, 1996; Draft "White Paper No. 3 - Design of Flexible Air Permit," August 7, 2000.

The statute explicitly requires that operating permits contain "inspection entry, monitoring, compliance certification, and reporting requirements to assure compliance with the permit terms and conditions."[373] EPA has issued the Compliance Assurance Monitoring of CAM rule, which requires the use of current emissions monitoring systems at major sources subject to an operating permit.[374] The CAM rule basically requires each major source to implement the CAM plan, which is a continuous emission monitoring system either through the installation of real-time continuous monitoring or through other means which generate equivalent information.[375] The CAM plan is to be submitted with the original operating permit application or when the permit is renewed or significantly amended.[376]

The statute provides that if EPA determines that an operating permit contains provisions "that are not in compliance with the applicable requirements of this chapter [the Clean Air Act], including the requirements of an applicable implementation plan," EPA is required to object to its issuance.[377] If EPA does not object, any person may petition EPA to object to the permit.[378] If EPA objects to a permit, it may not be issued by the state or other permitting agency until it is revised.[379] In the last few years, this provision has been increasingly invoked to challenge permits.[380]

VI. HAZARDOUS AIR POLLUTANTS.

A. Pre-1990 NESHAPs. Since 1970, the Act has contained provisions for the identification of hazardous air pollutants ("HAPs") and the establishment of emissions standards for such pollutants.[381] However, the program was largely ineffective due to the vagueness of the statute, lackluster implementation by EPA, and major judicial challenges. In fact, in the 20 years prior to the 1990 Amendments, only eight hazardous air pollutants were designated by EPA. EPA only published seven National Emission Standards for Hazardous Air Pollutants ("NESHAPs") for asbestos, beryllium, mercury, benzene, vinyl chloride, radionuclides, and inorganic arsenic.[382]

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[373] 42 U.S.C. § 7661c(c).
[374] 40 CFR Part 64.
[375] 40 CFR 64.4.
[376] 40 CFR 64.5.
[377] 42 U.S.C. § 7661d(b)(1).
[378] 42 U.S.C. § 7661d(b)(2).
[379] 42 U.S.C. § 7661d(b)(3).
[380] *See, e.g.,* LaFleur v. Whitman, 300 F.3d 256 (2d Cir. 2002).
[381] For a comprehensive overview of the Hazardous Air Pollutant Program, *see* A.W. Reitze, Jr. & R. Lowell, Control of Hazardous Air Pollution," 28 Boston Coll. Env. Affairs L. Rev. 229 (2001).
[382] Of the eight pollutants designated as hazardous prior to the 1990 Amendments, all but coke oven emissions are subject to final NESHAPs. The NESHAP for coke oven emissions was proposed, but not issued as a final rule. Before the enactment of the Amendments, EPA also listed 27 other pollutants which it preliminarily identified as HAPs. NESHAPs will ultimately be proposed for these HAPs if EPA determines that the HAPs pose a risk of adverse health effects. 40 CFR 61.01.

The NESHAPs program was extensively overhauled by the 1990 Amendments, which amended section 112 of the Act to provide for a more comprehensive regulation of emissions of HAPs.[383]

B. List of Hazardous Air Pollutants. Section 112(b) lists 189 substances as HAPs.[384] The Act contains provisions for the modification of the list of HAPs.[385] EPA is required to review the list periodically and may add to it any pollutant which may present "a threat of adverse human health effects" or "adverse environmental effects ."[386]

Criteria pollutants subject to NAAQS may not be on the list of HAPs, except that a chemical precursor of a criteria pollutant may be added to the list if it independently meets the listing requirements,[387] which is the case with many volatile organic compound precursors of ozone and particulate matter. In addition, no ozone-depleting substance regulated under Title VI of the Act may be added to the list or otherwise regulated as a HAP solely due to its adverse effect on the environment, meaning that such a substance may be added to the list if it presents a threat of adverse human health effects.[388] Finally, elemental lead may not be added to the list, although lead compounds are on the original list.[389]

Any person may petition EPA to add or delete a substance on the list. A petition to delete a substance from the list must include "a showing that there is adequate data on the health or environmental effects of the pollutant or other evidence adequate to support the petition." EPA is required to act on the petition within 18 months.[390]

C. Source Categories. A "major source" of HAPs is defined to mean any source with the potential to emit 10 tons per year or more of any HAP or 25 tons per year or more of any combination of HAPs.[391] EPA may, however, set lower thresholds for any HAP.[392]

In establishing the potential to emit hazardous air pollutants for purposes of determining whether a source is a major source under the HAPs program, EPA must take into account not only federally enforceable permit limitations, but also limitations enforceable by state or local agencies.[393]

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[383] 42 U.S.C. § 7412.
[384] 42 U.S.C. § 7412(b). The list includes common industrial substances, including chlorine, phenol, asbestos, hydrogen fluoride, methanol, formaldehyde, and hydrochloric acid. Other listed HAPs include benzene, toluene, xylene, cadmium, arsenic, and cyanide compounds.
[385] 42 U.S.C. §§ 7412(b)(2) and (3).
[386] 42 U.S.C. § 7412(b)(2).
[387] 42 U.S.C. § 7412(b)(2).
[388] *Id*.
[389] 42 U.S.C. § 7412(b)(7).
[390] 42 U.S.C. § 7412(b)(3).
[391] 42 U.S.C. § 7412(a).
[392] *Id.*
[393] National Mining Association v. EPA, 59 F.3d 1351, (D.C. Cir. 1995).

The Act requires EPA to publish a list of source categories which are to be used in the development of HAP emission standards.[394] EPA is required to revise the list at least once every eight years.[395] On July 16, 1992, EPA published its initial list of source categories and has updated the list periodically thereafter.[396]

EPA is required to publish a list of area sources of HAPs.[397] The term "area source" is defined to mean any source of HAPs other than a major source or a motor vehicle.[398] The initial list of area sources was promulgated in the same Federal Register notice as the source category listings,[399] and additional area sources were identified in a subsequent notice.[400] This list includes categories of sources that EPA believes present a threat of adverse effects to human health or the environment, such as wood treaters, chrome platers, dry cleaners, and halogenated solvent cleaners, but which do not individually emit sufficient HAPs to be considered major sources. By November 1995, EPA was required to list sufficient area source categories to ensure that area sources representing 90 percent of the emissions of the 30 most hazardous HAPs are regulated.[401] Although EPA did not meet the deadline, it has identified and issued standards for certain area sources.[402]

The Act allows for revisions to the list of source categories. EPA may add a source category at any time.[403] EPA's ability to delist a source category is much more restricted. If a source category was listed solely because of a HAP that is subsequently removed from the list of HAPs, then the source category will also be delisted.[404] For HAPs that may cause human cancer, a source category may not be removed from the list unless it is shown that no source in that category emits carcinogenic HAPs in quantities that may cause a lifetime risk of cancer greater than 1 in 1,000,000 to the most exposed individual. For sources of noncarcinogenic HAPs, a source may be removed from the list only upon a showing that emissions from no source in that category or subcategory will exceed a level "adequate to protect public health with an ample margin of safety" and that "no adverse environmental effect will result from emissions from any source."[405]

The Act singles out the following specific source categories for special treatment:

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[394] 42 U.S.C. § 7412(c)(1).
[395] *Id*.
[396] 57 Fed. Reg. 31576 (July 16, 1992); 61 Fed. Reg. 28197 (June 4, 1996); 63 Fed. Reg. 7155 (February 12, 1998); 64 Fed. Reg. 26743 (May 17, 1999); 64 Fed. Reg. 63025(Nov. 18, 1999); 64 Fed. Reg. 63015 (Nov. 18, 1999); 66 Fed. Reg. 8220 (Jan. 30, 2001); 67 Fed. Reg. 6521 (Feb. 12, 2002).
[397] 42 U.S.C. § 7412(c)(3).
[398] 42 U.S.C. § 74112(a).
[399] 57 Fed. Reg. 31590 (July 16, 1992).
[400] 64 Fed. Reg. 38706 (July 19, 1999).
[401] 42 U.S.C. § 7412(c)(3).
[402] *See, e.g.,* "Final Standards for Hazardous Air Pollutants for Hazardous Waste Combusters," 64 Fed. Reg. 52828 (Sept. 30, 1999).
[403] 42 U.S.C. § 7412(c)(5).
[404] 42 U.S.C. § 7412(c)(9)(A). *See, e.g.*, notice of delisting of Asbestos Processing Area Source Category, 60 Fed. Reg. 61550 (Nov. 30, 1995).
[405] 42 U.S.C. § 7412(c)(9)(B).

1. Oil & Gas Facilities. The Act provides that emissions from oil or gas exploration or production wells (with associated equipment) and emissions from any pipeline compressors or pump stations will not be aggregated with emissions from similar facilities for purposes of determining whether the facilities are "major sources." In addition, emissions from any oil or gas exploration or production well (with associated equipment) will not be aggregated with other emissions for any purpose under the HAP program.[406]

The Act further provides that oil and gas production wells and associated equipment will not be listed as an area source category, except that EPA may establish an area source category for wells within any metropolitan statistical area with a population exceeding one million people if EPA determines that emissions of HAPs from wells present more than a negligible risk of adverse effects to public health.[407]

In the initial source category listing published July 16, 1992, EPA did not list oil and gas wells as an area source. However, EPA indicated that it "had evidence that certain individual [oil and gas] units can exceed the major source threshold. Such units would not be excluded from being a major source under § 112(n)(4)(A)."[408] EPA identified "Oil and Natural Gas Production" as a "major source category" for purposes of a HAP standard.[409]

2. Fossil-Fuel Fired Electric Utility Plants. The Act requires EPA to study the public health hazards resulting from HAP emissions from fossil fuel-fired electric utility steam generating units of over 25 megawatts and to submit a report to Congress including strategies to control utility HAP emissions. The report was due November 15, 1993.[410] The report was finally issued in February, 1998.[411] In 2001, EPA published a Notice of Regulatory Finding, in which it stated:

> Based on the available information, the Administrator finds that regulation of HAP emissions from coal- and oil-fired electric utility steam generating units under section 112 of the CAA is appropriate and necessary. As a result, this notice adds coal- and oil-fired electric utility steam generating units to the list of source categories under section 112(c) of the CAA. Also in the utility RTC, the EPA indicated that the impacts due to HAP emissions from natural gas-fired electric utility steam generating units were negligible based on the results of the study. The Administrator finds that regulation of HAP emissions from natural gas-fired electric utility steam generating units is not appropriate or necessary. The EPA does not believe that the definition of electric utility steam generating unit found in section 112(a)(8) of the CAA encompasses stationary combustion turbines. Therefore, the

[406] 42 U.S.C. § 7412(n)(4)(A).
[407] 42 U.S.C. § 7412(n)(4)(B).
[408] 57 Fed. Reg. at 31586.
[409] 57 Fed. Reg. at 31591.
[410] 42 U.S.C. § 7412(n)(1).
[411] 63 Fed. Reg. 10378 (Mar. 3, 1998).

finding concerning natural gas-fired electric utility steam generating units does not apply to stationary combustion turbines.[412]

In that Notice of Regulatory Finding, EPA formally added Coal- and Oil-Fired Electric Utility Steam Generating Units to the list of source categories under section 112(c).[413]

In addition, EPA has entered into a settlement agreement in which it has agreed to publish an analysis of emission reductions of SO_2, NOx, CO_2 and mercury through an array of strategies to control such emissions.[414]

3. Coke Oven Batteries. The Act contains very detailed requirements for the control of emissions from coke oven batteries, including specific emission standards and compliance deadlines.[415] The EPA listed several categories of coke oven operations in the initial list under the industry group "ferrous metals processing."[416] The EPA published the coke oven battery NESHAP in 1993.[417]

4. Radionuclide Sources. EPA is not required to issue an emission standard for radionuclides from sources licensed by the Nuclear Regulatory Commission or an Agreement State if EPA determines by rule that the restrictions set by NRC for such sources adequately protect public health.[418] EPA has published final rules rescinding EPA standards as applied to NRC-licensed uranium mill tailings disposal sites,[419] nuclear power reactors,[420] and NRC or state-licensed facilities other than nuclear power reactors.[421] In each of these rulemakings, EPA determined that the NRC program protects public health to the same level as the EPA rules.

The Act prohibits EPA from issuing radionuclide emissions standards for certain elemental phosphate plants and phosphogypsum stacks.[422] The statutory requirements in effect prior to the Amendments will remain in effect for those sources.[423] Similarly, the Act provides that the pre-Amendment requirements still apply to radionuclide emissions from coal-fired utility and industrial boilers, surface and underground uranium mines, disposal of uranium mill tailings, and federal facilities that are neither operated by the Department of Energy nor licensed by the NRC, unless EPA elects to promulgate and apply the new

[412] 65 Red. Reg. 79825 (Dec. 20, 2000).
[413] 65 Fed. Reg. at 79830.
[414] 63 Fed. Reg. 29991 (June 2, 1998).
[415] 42 U.S.C. § 7412(d)(8).
[416] 57 Fed. Reg. at 31585 and 31591.
[417] 40 CFR Part 63, Subpart L; 57 Fed. Reg. 57898 (Oct. 27, 1993).
[418] 42 U.S.C. § 7412(d)(9).
[419] 59 Fed. Reg. 36280 (July 15, 1994).
[420] 60 Fed. Reg. 46206 (Sept. 5, 1995).
[421] 61 Fed. Reg. 68972 (Dec. 30, 1996).
[422] 42 U.S.C. § 7412(q)(2).
[423] *Id.*

requirements.[424] These sources are already subject to a NESHAP under the pre-Amendments Act.[425]

EPA did not list source categories for these emissions because it determined that no source of radionuclide emissions meets the definition of "major source" for purposes of the HAP program. In addition, EPA is still trying to figure out how to distinguish between major and area sources for radionuclide emitters using criteria different than the mass-based thresholds used in other source category determinations.[426]

5. Publicly Owned Treatment Works. EPA is authorized to set emission standards not only for the HAPs from a publicly owned treatment works ("POTW"), but also for the HAPs from the pretreatment of discharges into the POTW.[427] The pretreatment HAP standards would apply to individual facilities which discharge into a POTW and which are required to pretreat their discharges under requirements of the Federal Clean Water Act. EPA indicated in its initial source category listing that it will conduct studies to characterize the emissions from industrial dischargers to POTWs.[428] The NESHAP for POTWs was published in 1999.[429]

6. Research and Development Facilities and Boat Manufacturers. The Act requires EPA to designate specific categories for research and development facilities[430] and styrene-emitting boat manufacturers.[431] However, citing the proviso in 42 U.S.C. § 7412(c)(7) that research or laboratory facilities are to be listed "as necessary to assure the equitable treatment of such facilities," EPA announced that it had not yet received sufficient emissions data to support the inclusion of a source category for laboratories or research facilities.[432]

7. Solid Waste Incineration Units. The Act prohibits EPA from setting standards under 42 U.S.C. § 7412(d) for solid waste incineration units which are subject to performance standards under 42 U.S.C. §§ 7429 or 7411.[433] Solid waste incineration units are defined in 42 U.S.C. § 7429(g)(1) to mean "a distinct operating unit of any facility which combusts solid waste material from commercial or industrial establishments or the general public (including single and multiple residences, hotels, and motels)." Excluded from the definition are hazardous waste incinerators, materials recovery facilities (including primary and secondary smelters) which burn waste for the primary purpose of recovering metals, waste-burning cogeneration or qualifying generating facilities, and air curtain incinerators. EPA elected to include several categories of hazardous waste incinerators and smelters in its

[424] 42 U.S.C. § 7412(q)(3).
[425] 40 CFR Part 61, Subparts B, K, R. T and W.
[426] 57 Fed. Reg. at 31585.
[427] 42 U.S.C. § 7412(n)(3).
[428] 57 Fed. Reg. at 31585.
[429] 40 CFR Part 63, Subpart VVV; 64 Fed. Reg. 57572 (Oct. 26, 1999).
[430] 42 U.S.C. § 7412(c)(7).
[431] 42 U.S.C. § 7412(c)(8).
[432] 57 Fed. Reg. at 31584.
[433] 42 U.S.C. § 7429(h)(2).

source category listing, although it expressly declined to list solid waste incineration units as defined in 42 U.S.C. § 7429(g)(1).[434]

D. Emissions Standards. Once source categories have been specified, EPA is required to establish Maximum Achievable Control Technology ("MACT") standards for each source category.[435] MACT is defined as:

> [T]he maximum degree of reduction in emissions of the hazardous air pollutants subject to this section [112] (including a prohibition on such emissions, where achievable) that the Administrator, taking into consideration the cost of achieving such emission reduction, and non-air environmental impacts and energy requirements, determines is achievable for new or existing sources in the category or subcategory to which such emissions standard applies. . . .[436]

A MACT standard is a technology standard and may require measures, processes, methods, systems or techniques which include, but are not limited to:

- measures to reduce or eliminate emissions through process changes,
- Substitution of materials or other modifications,
- Enclosure of systems or processes to eliminate emissions,
- Collection of emissions at the point of release, or
- Design, work practice, or operational changes.[437]

For new sources, MACT can be "no less stringent than the emission control that is achieved in practice by the best controlled similar source" in the category or subcategory.[438] For existing sources, MACT can be no less stringent than the best performing 12 percent of existing sources (excluding certain sources which comply with lowest achievable emission rate ("LAER") within a certain period before the MACT standard is proposed or promulgated) if the applicable category or subcategory has 30 or more sources, or the average emission limitation achieved by the best performing five sources if the category or subcategory has fewer than 30 sources.[439]

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[434] 57 Fed. Reg. at 32584.
[435] 42 U.S.C. § 7412(d).
[436] 42 U.S.C. § 7412(d)(2).
[437] *Id*. *See also* 58 Fed. Reg. 42760 (Aug. 11, 1993).
[438] 42 U.S.C. § 7412(d)(3).
[439] 42 U.S.C. § 7412(d)(3).

EPA was required to publish MACT standards for at least 40 sources by November 15, 1992 (EPA failed to meet this deadline); 25 percent of listed categories by November 15, 1994; 50 percent of listed categories by November 15, 1997; and all categories by November 15, 2000.[440] On December 3, 1993, EPA published its initial schedule for promulgation of emission standards for sources of HAPs.[441] EPA's latest schedule for promulgation of MACT standards was published in 1998 in response to a citizen's suit.[442] EPA admitted that it would not meet the November 15, 2000 deadline for promulgation of the remaining 59 MACT standards, although the agency anticipated that it would do so within the 18 months following November 15, 2000, thereby avoiding the "permit hammer" described below.[443] EPA continues to struggle to meet the statutory deadlines for publication of NESHAPs,[444] and has recently entered into a further consent decree establishing deadlines for promulgating NESHAPs for 16 source categories.[445]

By November 15, 1996, EPA was to have reported to Congress on "residual risks" to public health remaining from HAPs after the application of MACT standards.[446] In 1998, EPA published a notice of the draft availability of the draft Residual Risk Report to Congress.[447] If Congress fails to act within eight years after the receipt of the final report, EPA is required to promulgate residual risk standards for listed categories if required to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect.[448] In addition, if MACT standards for a source category covering emissions of a HAP which is classified as a "known, probable or possible human carcinogen" fail to "reduce lifetime excess cancer risks to the individual most exposed to emissions from a source in the category or subcategory to less than one in one million," EPA must promulgate residual risk standards for such category.[449] EPA has not yet conducted a full residual risk analysis in the absence of sufficient exposure data.[450]

For listed categories and subcategories of area sources, EPA may issue Generally Achievable Control Technology or "GACT" standards or operating practices requirements to reduce HAP emissions.[451] GACT standards are generally intended to be less stringent than MACT, BACT, and LAER.

E. Early Reduction Credits. If a source achieves a 90 percent reduction in HAP emissions (95 percent for particulate HAPs) compared to a 1987 baseline before

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[440] 42 U.S.C. § 7412(e)(1).
[441] *See, e.g.,* 58 Fed. Reg. 63940 (Dec. 3, 1993). *See also* the listing for specific pollutants under 42 U.S.C. § 7412(c)(6) at 63 Fed. Reg. 17838 (April 10, 1998).
[442] 63 Fed. Reg. 17838 (Apr. 10, 1998).
[443] "Status of Implementation of the Clean Air Act Amendments of 1990, " General Accounting Office GAO/RCED-00-72 (April 2000) at 34.
[444] *See, e.g.,* 67 Fed. Reg. 72875 (Dec. 9, 2002).
[445] 68 Fed. Reg. 14976 (2003).
[446] 42 U.S.C. § 7412(f)(1).
[447] 63 Fed. Reg. 19914 (April 22, 1998).
[448] 42 U.S.C. § 7412(f)(2).
[449] *Id. See also* 63 Fed. Reg. 19914 (Apr. 22, 1998).
[450] Reitze & Lowell, *supra* n. 267 at 271.
[451] 42 U.S.C. § 7412(d)(5).

proposal of a MACT standard for the source's category, EPA can set an alternative standard for that source and extend by six years the time within which the source will be required to comply with MACT.[452] A source which complies with BACT or LAER within 5 years before proposal of the applicable MACT standard may be granted a five-year extension of time within which to comply with MACT. The rules governing early reductions were promulgated by EPA on December 29, 1992.[453]

F. MACT Applicability. No modification, construction, or reconstruction of a source of HAPs will be allowed after the effective date of an operating permit program unless the source achieves MACT.[454] If no applicable standard for the source has been promulgated, the MACT determination will be made on a case-by-case basis.[455] The regulations to implement MACT requirements for constructed, reconstructed or modified major sources are sometimes referred to as the "112(g) rule."[456]

G. Permit Hammer. After a state operating permit program is approved, the "permit hammer" provisions of the MACT program take effect.[457] Under the "permit hammer," if EPA fails to promulgate a MACT standard for a category or subcategory of major sources by the statutory deadlines, all major sources in the category will be required to file operating permit applications within 18 months after the missed deadline. The operating permit must contain conditions which the EPA or the state, as the case may be, determines to be MACT for that source category. If a MACT standard is issued in the interim or after permit approval, then the permit must be revised to incorporate the MACT standard.[458] EPA's regulations for determining MACT when EPA misses a MACT deadline were published on May 20, 1994.[459]

H. Accident Prevention. Owners and operators of facilities that handle extremely hazardous substances are required to conduct hazard assessments and to design and maintain the facilities so as to minimize the risk and consequences of releases of such substances and to prepare and submit a risk management plan to EPA.[460]

EPA is required to publish a list of at least 100 extremely hazardous substances and threshold quantities to which the accident prevention requirements will apply.[461] The basis for the list is the list of extremely hazardous substances published under the Emergency

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[452] 42 U.S.C. § 7412(I)(5).
[453] 57 Fed. Reg. 61970 (Dec. 29, 1992).
[454] 42 U.S.C. § 7412(g)(1).
[455] 42 U.S.C. § 7412(g)(2).
[456] 40 CFR 63.40 through 63.44; 61 Fed. Reg. 68384 (Dec. 27 1996).
[457] 42 U.S.C. § 7412(j).
[458] *Id*.
[459] 40 CFR Part 63, Subpart B; 59 Fed. Reg. 26429 (May 20, 1994); 67 Fed. Reg. 16582 (April 5, 2002); 67 Fed. Reg. 72875 (Dec. 9, 2002).
[460] 42 U.S.C. § 7412(r); 40 CFR Part 68; *See* 61 Fed. Reg. 31668 (June 20, 1996).
[461] 40 CFR Part 68; *See* 59 Fed. Reg. 4478 (Jan. 31, 1994) and 65 Fed. Reg. 13243 (Mar. 13, 2000).

Planning and Community Right to Know Act of 1986, although EPA may list additional substances as well.[462]

The Act establishes a Chemical Safety and Hazard Investigation Board to investigate releases of HAPs and to issue regulations governing reporting of releases.[463]

VII. MOBILE SOURCES.

The Act requires a number of significant measures to be taken to control the ever-increasing mobile source emissions in the United States.[464] Among other things, the Act requires that new cars meet stringent tailpipe standards on a phased basis.[465] The Act requires onboard vapor recovery systems for new vehicles, evaporative emissions control, and vehicle testing and certification.[466] In addition, the Act provides that if EPA determines that a class or category of engines do not conform with the mobile source regulations, the manufacturer will be required "to submit a plan for remedying the nonconformity."[467] Basically, this means that if a class of vehicles does not meet the tailpipe emissions standards, EPA can force a recall. The Act also preempts any state other than California from adopting motor vehicle emissions standards unless they are identical to the California standards.[468]

The Act prohibits the manufacture, sale, supplying, offer for sale or supply, dispensing, transporting, or introducing into commerce of gasoline or diesel fuel containing in excess of 0.05 percent sulfur after October 1, 1993.[469] EPA recently finalized regulations further restricting the sulfur content of gasoline[470] and diesel fuel.[471] In addition, the Act requires the EPA to restrict the sale or use of gasoline with a Reid Vapor Pressure in excess of 9.0 psi in the high ozone season.[472] Oxygenated fuels are also required for certain carbon monoxide nonattainment areas.[473]

The Act requires EPA to study and develop standards applicable to nonroad vehicles and engines.[474] Several rules have been promulgated covering emissions from nonroad engines.[475]

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[462] 42 U.S.C. § 7412(r)(3).
[463] 42 U.S.C. § 7412(r)(6).
[464] For a comprehensive overview of mobile source emissions controls and the requirements of the Act and state laws pertaining to mobile source emissions, *see* A.W. Reitze, Jr., Air Pollution Control Law: Compliance & Enforcement, 267- 381 (ELI 2001); *See also* A.W. Reitze, Jr., "Control of Air Pollution From Motor Vehicle Transportation by the Federal and State Governments," 2000 Mineral Law Series No. 1, 11-1 (Rocky Mtn. Min. L. Fn. 2000).
[465] 42 U.S.C. § 7521.
[466] 42 U.S.C. §§ 7521(a)(6), 7521(k), and 7525.
[467] 42 U.S.C. § 7541(c).
[468] 42 U.S.C. § 7543.
[469] 42 U.S.C. §§ 7545(g)(2) and 7545(i)(1).
[470] 65 Fed. Reg. 6698 (Feb. 10, 2000).
[471] 66 Fed. Reg. 5002 (Jan. 18, 2001).
[472] 42 U.S.C. § 7545(h).
[473] 42 U.S.C. § 7545(m).
[474] 42 U.S.C. § 7547.

VIII. STRATOSPHERIC OZONE.

The Amendments require the phasing out of production and use of certain ozone-depleting chemicals. The Amendments divide ozone-depleting chemicals into classes. Class I includes chlorofluorocarbons, carbon tetrachlorides, halons, and methyl chloroform. Class II includes hydrochlorofluorocarbons.[476]

The Amendments require EPA to impose restrictions on the service, repair, and disposal of refrigerating equipment and other facilities using ozone-depleting substances. In particular, automobile air conditioner servicing requires capturing and recycling of Freon and other refrigerants.[477]

The Amendments impose a construction ban on Class I substances by 2000.[478] There is a freeze on Class II substances by 2015 and a ban by 2030.[479] Nonessential products that release Class I substances were banned as of November 15, 1992 (thus heralding the demise of propelled party streamers and aerosol can horns).[480] Nonessential aerosol uses of Class II substances were banned as of January 1, 1994.[481]

IX. ENFORCEMENT.

The enforcement tools available to EPA to deal with Clean Air Act violations include civil injunctions, civil penalties, incarceration, and criminal fines.

The Act enables EPA to bring civil actions against violators of the Act and states which fail to enforce the Act.[482] EPA may issue an order requiring compliance, assess administrative civil penalties, or bring a civil action to require enforcement or assess penalties.[483]

EPA may seek in a civil proceeding in federal court both injunctive relief and the assessment of civil penalties of not more than $25,000 per day for each violation, adjusted to $27,500 per day for each violation occurring after January 30, 1997.[484] EPA recently

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[475] *See, e.g.,* 68 Fed. Reg. 28328 (May 23, 2003) (Notice of Proposed Rulemaking – Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel); 68 Fed. Reg. 9746 (Feb. 28, 2003) (Control of Emissions from New Marine Compression-Ignition Engines at or Above 30 Liters Per Cylinder); 67 Fed. Reg. 68242 (Nov. 8, 2002) (Control of Emissions from Large Nonroad Spark-Ignition Engines, and Recreational Engines (Marine and Land-Based).

[476] 42 U.S.C. § 7671a.

[477] 42 U.S.C. § 7671h.

[478] 42 U.S.C. § 7671c.

[479] 42 U.S.C. § 7671d.

[480] 42 U.S.C. § 7671i(c); 40 CFR Part 82, Subpart C.

[481] 42 U.S.C. § 7671i(d); 40 CFR Part 82, Subpart C.

[482] 42 U.S.C. § 7413(a).

[483] *Id*. The Eleventh Circuit recently ruled that an "Administrative Compliance Order" issued by EPA cannot trigger civil penalties or injunctive relief without a fair and impartial hearing in federal district court. Tennessee Valley Authority v. Whitman, ___ F.3d _____, 2003 U.S. App. LEXIS 12830 (11th Cir. 2003).

[484] 42 U.S.C. § 7413(b); 40 CFR 19.4 contains the adjustments, which are authorized by the Federal Civil Penalties Adjustment Act of 1990, 28 U.S.C. §2461, as amended by 31 U.S.C. §3701.

proposed increasing the civil penalty per day for each violation to $32,500.[485] In addition, EPA may administratively assess civil penalties up to a total of $220,000.[486] EPA is also authorized to issue field citations for up to $5,500.[487] An EPA inspector can thus fine an operator on the spot for perceived violations.

Along with the proposed increase in civil penalties, EPA is proposing an increase in the maximum total administratively assessed civil penalties to $245,000 and the maximum fine assessed under a field citation of $6,500.[488]

Criminal penalties include fines and/or imprisonment of up to five years for knowing violations of a SIP, an EPA order, a regulation, or a statutory provision.[489] In addition, any person who knowingly falsifies, alters, conceals or otherwise fails to file or disclose information or documents required under the Act are subject to fines and/or imprisonment of up to two years.[490]

The Act criminalizes certain negligent acts or omissions. Specifically, section 113(c)(4) of the Act[491] imposes a fine and/or imprisonment for up to one year on "[a]ny person who negligently releases into the air any hazardous air pollutant . . . , and who at the time negligently places another person in imminent danger of death or serious bodily injury." A knowing release of a hazardous air pollutant which places another person at risk of serious injury or death is punishable by a fine and/or imprisonment of up to 15 years.[492]

The Act prohibits a federal agency from entering into any contract with any person convicted of criminal violations of the Clean Air Act at any facility at which the violation resulting in the conviction occurred if the facility is owned, leased, or supervised by such person.[493] The prohibition will be lifted only after certification by EPA that the condition giving rise to the conviction has been corrected.[494] EPA has the discretion to extend the prohibition to other facilities owned or operated by the convicted person.[495] The President may exempt any contract from the prohibition upon a determination that it is in the paramount interest of the United States to do so and upon notification to Congress of the exemption.[496]

In 1997, EPA promulgated the "Any Credible Evidence" or "ACE" Rule,[497] which allows the use of any credible evidence to establish a violation of Clean Air Act

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[485] 68 Fed. Reg. 39882 (July 3, 2003).
[486] The Act provides for a maximum of $200,000. 42 U.S.C. § 7413(d)(1). However, in 1997, the amount was adjusted upward to $220,000. 40 CFR 19.4.
[487] The Act provides for a maximum of $5,000. 42 U.S.C. § 7413(d)(3). However, in 1997, the amount was adjusted upward to $220,000. 40 CFR 19.4.
[488] 68 Fed. Reg. 39882 (July 3, 2003).
[489] 42 U.S.C. § 7413(c).
[490] 42 U.S.C. § 7413(c)(2).
[491] 42 U.S.C. § 7413(c)(4).
[492] 42 U.S.C. § 7413(c)(5).
[493] 42 U.S.C. § 7606.
[494] 42 U.S.C. 7606(a).
[495] *Id.*
[496] 42 U.S.C. § 7606(d).
[497] 62 Fed. Reg. 8314 (Feb. 24, 1997).

requirements notwithstanding the promulgation of specific reference test methods by which compliance is otherwise required to be measured. The ACE Rule was challenged in the D.C. Circuit Court of Appeals on the basis that it effectively modified the various standards without going through rulemaking; however, the court held that the challenge was not ripe, and that the validity of the ACE Rule would have to be contested in a specific enforcement action.[498] Even before the promulgation of the ACE Rule, two courts had allowed the use of any credible evidence in a citizen's suit under the Clean Air Act.[499]

X. CITIZEN SUITS.

The Clean Air Act allows private parties to bring "citizen's suits" in federal court to force an agency to enforce the Act or to extract fines or injunctive relief from a regulated source which is not in compliance.[500] A prerequisite to filing a citizen's suit complaint is a written notice to the prospective defendant at least sixty days prior to filing the complaint setting forth the matters which should be addressed in order to come into compliance.[501] Citizen's suits, however, are not permitted in situations where the EPA or state agency is actively pursuing an enforcement action.[502]

The implications of the citizen' suit provision of the Act are far-reaching. If a state air agency fails to enforce a SIP provision or a rule or permit issued under the SIP, a third party can bring an action under the citizen's suit provision against the violator to force compliance and payment of civil penalties.[503]

XI. GLOBAL CLIMATE CHANGE.

Some air emissions have relatively local effects; others can have effects that are remote from their point of emission. Prominent among the latter type of emissions are the "greenhouse gases," primarily carbon dioxide ("CO_2"), which are largely the result of the combustion of fossil fuels. Other greenhouse gases include methane, nitrous oxide, and certain synthetic substitutes for ozone-depleting CFCs.

The International Panel on Climate Control ("IPCC"), consisting of several hundred government representatives and scientists, has been working since 1988 to assess global climate change. In 1995, the IPCC reported:

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[498] Clean Air Implementation Project v. EPA, 1998 U.S.App. LEXIS 18789, Nos. 97-1117, et al., August 14, 1998 (D.C. Cir.).
[499] Sierra Club v. Public Service Co., 894 F.Supp. 1455 (D.Colo. 1995); Unitek Environmental Services v. Hawaiian Cement, 27 ELR 20483, No. 95-00723 (D. Hawaii 1997).
[500] 42 U.S.C. § 7604.
[501] 42 U.S.C. § 7604(b).
[502] 42 U.S.C. § 7604(b)(1)(B).
[503] *See, e.g.,* Clean Air Council v. Mallory, 226 F.Supp.2d 705 (E.D.Pa. 2002) (I&M deadline in EPA-approved SIP enforceable via citizen's suit); *but see* Ogden Projects, Inc. v. New Morgan Landfill Co., Inc., 911 F.Supp. 863 (E.D.Pa. 1996) (Federally approved SIP provision grounded in state law only is not enforceable in citizen's suit).

> During the past few decades, two important factors regarding the relationship between humans and the earth's climate have become apparent.
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> First, human activities, including the burning of fossil fuels, land-use change and agriculture, are increasing the atmospheric concentrations of greenhouse gases (which tend to warm the atmosphere) and, in some regions, aerosols (microscopic airborne particles, which tend to cool the atmosphere). These changes in greenhouse gases and aerosols, taken together, are projected to change regional and global climate and climate-related parameters, such as temperature, precipitation, soil moisture and sea level.
>
> Second, human communities have become more vulnerable to hazards such as storms, floods and droughts as a result of increasing population density in sensitive areas such as river basins and coastal plains. Potentially serious changes have been identified, including an increase in some regions in the incidence of extreme high-temperature events, floods and droughts, with the resultant consequences for fires, pest outbreaks, and ecosystem composition, structure and functioning, including primary productivity.[504]

The IPCC issued a report in 2001 which, among other things, concluded that significant increases in global average temperatures are likely as a result of increases in atmospheric greenhouse gas concentrations.[505]

In 1992, 165 nations signed the United Nations Framework Convention on Climate Change (the "Convention"), negotiated at the Earth Summit in Rio de Janeiro. The Convention committed the signatory nations to the goal of "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[506] The Convention established as an interim goal the reduction of greenhouse gas emissions to 1990 levels by 2000.[507]

The governing body of the Convention is the "Conference of the Parties" ("COP").[508] The First Conference of the Parties ("COP1") was held in Berlin in 1995, at which the COP determined that the establishment of greenhouse gas emissions limits was of

[504] IPCC Second Assessment Synthesis of Scientific-Technical Information Relevant on Interpreting Article 2 of the UN Framework Convention on Climate Change (1995), § 1-2.
[505] Climate Change 2001: Synthesis Report (2001) § 3.6.
[506] United Nations Framework Convention on Climate Change, (1992) Article 2.
[507] *Id*. at Article 4.2.
[508] *Id*. at Article 7.

primary importance in implementing the Convention.[509] The statement of policy of COP1 is known as the "Berlin Mandate."

COP2 was held in Geneva in 1996, and issued a declaration (the "Geneva Declaration") accepting the findings of the IPCC as the necessary science on which future agreements under the Convention would be based.[510]

COP3 was held in Kyoto, Japan, in December, 1997, and resulted in the "Kyoto Protocol."[511] The Kyoto Protocol commits developed countries ("Annex 1 countries")[512] to an overall reduction in greenhouse gas emissions of 5 percent by 2010 as compared to 1990 levels.[513] Each Annex 1 country is assigned a specific percentage, with the United States was assigned a 7 percent reduction.

COP4 and COP5 were held in Buenos Aires in November 1998 and in Bonn in November 1999, respectively. Neither meeting resulted in agreement on implementation of the Kyoto Protocol,[514] although incremental progress continued to be made in establishing a global greenhouse gas emissions trading market and in nudging developing countries closer to participation in the overall goal of reducing the global rate of greenhouse gas emissions.[515] COP6 was held in The Hague in November 2000, and ended inconclusively.[516] The COP6 meetings were continued until July 2001 in Bonn. After the November 2000 meetings, but before the Bonn meetings, the Bush Administration announced its intention to pull out of the Kyoto Protocol. Nonetheless, the continued COP6 meetings in Bonn in July 2001 resulted in significant agreements on key implementation issues.[517] COP7 in Marrakesh, Morocco, in November 2001, generated a framework for detailed implementation of the Protocol provisions.[518] COP8 in Delhi, India, in November, 2002, adopted rules for implementation of a Clean Development Mechanism and issued the Delhi Declaration, a general pronouncement of support for sustainable climate change policy.[519]

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[509] Report of the Conference of the Parties on its First Session, Held at Berlin from 28 March to 7 April, 1995, Article II.

[510] Report of the Conference of the Parties on its Second Session, Held at Geneva from 8 to 19 July 1996, Part Two: Action Taken by the Conference of the Parties at Its Second Session, UNFCCC, 2d Sess., Annex, at 71, U.N. Doc. FCCC/CP/1996/15/Add.1 (1996) (http://www.unfccc.de/fccc/docs/cop.htp).

[511] Kyoto Protocol to the United Nations Framework Convention on Climate Change.

[512] Convention, Annex 1.

[513] Kyoto Protocol, Article 3.1.

[514] *See* Decisions Adopted by the Conference of the Parties (Nov. 14, 1998), (www.weathervane.rff.org/negtable/cop4_decisions.html).

[515] *See* United Nations Framework Convention on Climate Change Website, www.unfccc.de\index.html.

[516] *See* "Meeting ends without agreement – formal Plenary decides to suspend COP-6, reconvene in 2001," IISD Linkages Journal, (Aug. 25, 2000), http://www.iisd.ca/climate/cop6/.

[517] *See* "Review and Analysis COP-6 Part II - Climate Agreement Reached in Bonn Without US," Airtrends, Vol. 4, Issue 7, Special Supplement (Aug. 6, 2001). Airtrends is published by Natsource, an emissions brokering firm.

[518] *See* "Delegates Seal Deal," IISD Linkages Journal (Nov. 10, 2001), www.iisd.ca/climate/cop7/.

[519] *See* "U.S. Expresses Support of 'Delhi Declaration" on Climate Change," The Washington File (Nov. 1, 2002), (www.useu.be/Categories/ClimateChange/Nov0102ClimateChangePOP.html).

Certain of the so-called "developing countries" that are signatories to the Kyoto Protocol, most notably China and India, have refused to commit to any greenhouse gas emission reductions, citing heavy reliance on fossil fuel generation of energy in order to achieve economic growth. The U.S. Senate enacted a resolution prior to COP3 which declared that the Kyoto Protocol would not be ratified unless and until 1) the developing countries agreed to shoulder a proportionate share of the reductions, and 2) a transparent global greenhouse gas emission reduction market is established.[520] Accordingly, the Clinton Administration indicated that it would not submit the Kyoto Protocol to the Senate for ratification.[521] The Bush Administration went further by rejecting the Kyoto Protocol outright on the basis that it was fatally flawed and would harm the U.S. economy if implemented.[522]

The Kyoto Protocol contemplates achieving the goals of reductions in greenhouse gas emissions through a variety of mechanisms. The Protocol provides for a variety of means by which the reductions may be achieved by the parties to the Protocol, including a directive that each party:

> a) Implement and/or further elaborate policies and measures in accordance with its national circumstances, such as:
>
> (i) Enhancement of energy efficiency in relevant sectors of the national economy; (ii) Protection and enhancement of sinks and reservoirs of greenhouse gases not controlled by the Montreal Protocol, taking into account its commitments under relevant international environmental agreements; promotion of sustainable forest management practices, afforestation and reforestation; (iii) Promotion of sustainable forms of agriculture in light of climate change considerations; (iv) Promotion, research, development and increased use of new and renewable forms of energy, of carbon dioxide sequestration technologies and of advanced and innovative environmentally sound technologies; . . .(v) Progressive reduction or phasing out of market imperfections, fiscal incentives, tax and duty exemptions and subsidies in all greenhouse gas emitting sectors that run counter to the objective of the Convention and apply market instruments; (vi) Encouragement of appropriate reforms in relevant sectors aimed at promoting policies and measures which limit or reduce emissions of greenhouse gases not controlled by the Montreal Protocol; (vii) Measures to limit and/or reduce emissions of greenhouse gases not controlled by the Montreal Protocol in the transport sector; (viii) Limitation and/or reduction of methane through recovery and use in waste

[520] S. Ref. 98, 105th Congress, 1st Session (April 30, 1998).
[521] BNA Environ. Reporter No. 41 at 2152 (Feb. 20, 1998).
[522] *See* "Bush Climate Plan, While Short on Details, Faces Political Tests," Inside EPA Clean Air Rep., Vol. XII, No. 13 (June 21, 2001), at 9.

> management, as well as in the production, transport and distribution of energy . . ..[523]

Other approaches under the Protocol include a global greenhouse gas emissions trading system,[524] "joint implementation" projects,[525] and clean development mechanisms.[526]

There is an emerging system for trading in "greenhouse gas reductions" or "carbon credits." Thus far, there have been relatively few trades of greenhouse gas reductions, primarily because there are few mechanisms in place to record and enforce reductions, although a number of companies and governments have made trades in anticipation of getting credits if and when the Kyoto Protocol is implemented or some other international trading regime is implemented.[527] Various national systems for trading greenhouse gases are emerging, particularly in Europe.[528] The most notable of these are the United Kingdom's Emissions Trading Scheme[529] and the European Union's Greenhouse Gas Emissions Trading Scheme.[530] An increasing number of states in the United States are promulgating climate change mitigation programs.[531]

The practical future of the Kyoto Protocol itself is problematic, given the strong opposition by the U.S., and the equally strong opposition of developing countries to mandated reductions. Nonetheless, the political pressure is mounting to address greenhouse gases, and most observers believe that there will be continuing efforts to reduce greenhouse gas emissions on a global basis.

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[523] Kyoto Protocol, Article 2(a).
[524] Kyoto Protocol, Article 6.
[525] *Id*. at Articles 10 and 11. The joint implementation process entails the creation of credits for reduction of greenhouse gases through a joint effort by two or more countries. For example, Japan and Russia entered into a modest undertaking under which Japan will finance modifications to certain Russian fossil-fuel-fired generating plants, and both countries will be able to share in the credit for the reductions. *Reuters News Service*, April 19, 1998.
[526] *Id*. at Article 12.
[527] *See, e.g.,* Jantzi & Coates, *CASE STUDY: Three GHG Emission Trades as Reviewed by the Three North American GHG Trading Pilot Projects*, Ontario Power Generation Inc., May 1999; Nordhaus, Fotis & Feldman, *Early Action & Global Climate Change: An Analysis of Early Action Crediting Proposals*, Pew Center on Global Climate Change, October 1, 1998. *See also*, The Energy Daily, (Mar. 6, 1998) for a report on the Niagara Mohawk sale of CO_2 reductions to Suncor across the Canadian Border.
[528] *See* R. Rosenzweig, M. Varilek & J. Jansen, "The Emerging International Greenhouse Gas Market," Pew Center For Global Climate Change (2001).
[529] The UK Emissions Trading Group Website is at http://www.uketg.com.
[530] Proposal for a Directive of the European Parliament and of the Council establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC [COD/2001/0245] (July 2, 2003).
[531] *See* B.G. Rabe, "Greenhouse & Statehouse: The Evolving State Government Role in Climate Change," Pew Center on Global Climate Change (Nov. 2002).