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Clean Air and New Source Review: Defining Routine Maintenance

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Summary

The Environmental Protection Agency (EPA) final rule on clarifying the definition of routine maintenance under its New Source Review (NSR) process exempts industrial facilities from undergoing NSR if they are replacing safety, reliability, and efficiency rated components with new, functionally equivalent equipment and if the cost of the replacement components is under 20%25 of the replacement value of the process unit. Essentially, the rule permits owners of existing units to maintain and operate their units at their original design specifications without having to undergo NSR, a process that could require a source to meet potentially expensive pollution control requirements. The rule is controversial and being litigated. In December 2003, a three-judge panel of the D.C. Circuit Court of Appeals blocked implementation of the rule until it can make a final determination about the case. Legislation being considered in the 109th Congress would permit the rule to go into effect. This paper will be updated as events warrant.

The controversy over New Source Review (NSR) with respect to power generation focuses on existing facilities and the conditions under which facility modifications trigger NSR requirements to install pollution control equipment. Retrofitting and operating equipment designed to meet NSR requirements for existing facilities can be expensive, and utilities have opposed recent efforts by the Environmental Protection Agency (EPA) to enforce NSR on existing powerplants. In particular, utilities have argued that modifications to their facilities reflect current maintenance practices, and, therefore, are not modifications under the meaning of the Clean Air Act (CAA).

On August 27, 2003, the EPA issued a final rule[1] on clarifying the definition of routine maintenance under NSR. Focused on existing sources, the final rule exempts industrial facilities such as refineries and powerplants from undergoing NSR for replacing safety, reliability, and efficiency rated components with new, functionally equivalent equipment if the cost of the replacement components is under 20% of the replacement

[1] 68 *Federal Register* 61247-61280 (October 27, 2003). The equipment replacement provision is codified at 40 *CFR* 51.166(y) for the PSD-NSR program and at 40 CFR 51.165(h) for the non-attainment-NSR program (stayed indefinitely by court order, December 24, 2004).

value of the facility's process unit.[2] If the replacement activity exceeds this threshold, a case-by-case determination will be made as to whether the plant undergoes NSR. Basically, the final rule permits owners of existing facilities to maintain and operate their units at their basic design parameters (defined in terms of maximum heat input and fuel consumption specifications) without having to undergo NSR. As stated in the rule: "By not imposing a time limitation [on permissible replacement activities], the ERP [Equipment Replacement Provision] allows replacement activities to be driven by consideration of economic efficiency rather than artificial regulatory constraints."[3]

The decision is highly controversial. Critics see the new regulation as permanently "grandfathering" older, more polluting facilities from ever having to meet the clean air standards required of newer plants. In October 2003, 12 states and several major cities petitioned the D.C. Circuit Court of Appeals to review the rule.[4] In December 2003, a three-judge panel of the D.C. Circuit Court of Appeals issued a summary order blocking implementation of the rule until it can make a final determination. The Court accepted the states' argument that they would suffer irreparable harm if the rule was implemented and that the states also showed a "likelihood of success" when the case is heard.[5]

The controversy has also led to congressional initiatives. On September 28, 2005, the House Energy and Commerce Committee approved H.R. 3893, which would, among other things, amend the Clean Air Act to codify by reference the new definition. However, the provision was removed from the bill before House passage October 9, 2005[6]

Background to New Source Review

The CAA requires a preconstruction review of, and a permit for, almost any modification of an air polluting source or any major new source. This preconstruction review process, called NSR, is triggered for any new source that potentially could emit 100 tons annually (less in some areas) of any criteria air pollutant, and by any modification of an existing source that will cause a significant increase in annual emissions. The specific NSR requirements for affected sources depend on whether the sources are subject to Prevention of Significant Deterioration (PSD) or non-attainment provisions.[7] If covered by PSD, the source is required to install Best Available Control Technology (BACT), which is determined on a case-by-case basis, and which cannot be

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[2] A process unit is basically everything from the coal-handling equipment to the smokestack, with the exception of pollution control equipment.

[3] 68 *Federal Register* 61255 (October 27, 2003).

[4] The 12 states were: Connecticut, Maine, Maryland, Massachusetts, New Hampshire, New Mexico, New Jersey, New York, Pennsylvania, Rhode Island, Vermont and Wisconsin. Major cities include New York City, Washington D.C., and San Francisco. Docket No. 03-1380, filed October 27, 2003 (D.C. Circuit Court of Appeals).

[5] *New York v. EPA*, No. 03-1380 (D.C. Cir. December 24, 2003).

[6] H.R. 3893, Section 106(b). The bill refers to the new NSR-PSD definition as being a regulation "in effect on December 31, 2004." Whether a stayed regulation meets that criterion is unclear.

[7] See *Clean Air Act, Part C — Prevention of Significant Deterioration of Air Quality,* sections 160-169*; and, Part D — Plan Requirements for Nonattainment Areas,* sections 171-178.

less stringent than the federally determined New Source Performance Standard (NSPS) for that pollutant. If covered by non-attainment provisions, the source is required to install Lowest Achievable Emission Rate (LAER) and obtain applicable offsets for that particular area. LAER must not be less stringent than the federal NSPS.

As defined under the 1970 CAA, a modification is "any physical change in, or change in the method of operation of, a stationary source which increases the amount of any air pollutant emitted by such source or which results in the emission of any air pollutant not previously emitted"(Section 111(a)(4)). In subsequent regulations issued in 1975 with respect to NSPS, EPA defined modification as any physical or operational change that resulted in any increase in the maximum hourly emission rate of any controlled air pollutant.[8] EPA regulations also stated that any replacement of existing components that exceeded 50% of the fixed capital costs of building a new facility placed the plant under NSPS, regardless of any change in emissions.[9] With the advent of National Ambient Air Quality Standards non-attainment provisions (Part D), PSD provisions (Part C), and NSR in 1977, a different approach to defining modification was appropriate as the focus was shifted from enforcing NSPS emission rates to achieving attainment and compliance with PSD. In promulgating regulations for the PSD and non-attainment programs, EPA defined "significant" increase in emissions in terms of tons per year emitted by a major source. For sulfur dioxide and nitrogen oxides, the threshold is 40 tons per year.[10] Facilities exceeding that threshold are subject to NSR.

Fundamental to the debate on NSR enforcement with respect to existing facilities is the notion of "routine maintenance." In promulgating implementing regulations, EPA exempted certain activities from the definition of physical or operational change. Among those activities exempted was: "maintenance, repair, and replacement which the Administrator determines to be routine for a source category...."[11] In addition, increases in production rates that do not involve capital expenditures do not constitute a modification. Responding to this situation, utilities began to spread out their life extension efforts in an attempt to make them fit into their routine maintenance schedules.[12] The term "life extension" has fallen out of the professional literature.[13] The

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[8] 40 CFR 60.14(a) (1975).

[9] 40 CFR 60.15 (1975).

[10] For PSD, see 40 CFR 52.21(b)(23)(i); for nonattainment, see 40 CFR 52.24(f)(10)

[11] 40 CFR 60.14(e)(1)

[12] As observed by Robert Smock, Editor, "Power Plant Life Extension Trend Takes New Directions," *Power Engineering* (February 1989): "There are signs that many utilities will not use the term "life extension" to describe their spending on old power plants, even though extended life is one of the major goals of the spending program. The reason for the aversion to the term lies in the 1970 Clean Air Act. That federal law requires all power plants constructed after August, 1971 to restrict emissions of air pollutants such as sulfur dioxide. Plants built prior to 1971 are exempt, which includes most of the early candidates for life extensions. The problem is that the law also says that grandfathered plants can lose their exemption if they are "modified" or "reconstructed" in a major way and emission of proscribed pollutants are increased." (p. 21)

[13] Robert G. Presnak and Bock H. Yee, "Life Extension: The Benefits Are Real," *Power Engineering* (December 1993), pp. 25-27

commonly used term currently is rehabilitation program.[14] By spreading out the life extension efforts and integrating them into facilities' operation and maintenance schedules, the distinction between "modification" and "routine maintenance" is effectively blurred and, arguably, eliminated.

Rehabilitation programs utilities initiated in the 1980s and continuing to the present have dramatically reduced the aging process of coal-fired facilities. The issue is whether this activity violates the modification definition of NSR. If "routine maintenance" is defined in terms of "average industry maintenance practice" at the time of the 1970 or 1977 Clean Air Act Amendments, then a strong case can be made that it is — major components are being replaced or upgraded that would not have been under average industry maintenance practices of that time. Yet, if "routine maintenance" is interpreted to mean industry practices currently, then one can argue that rehabilitation has become routine over the past 20 years, and thus does not represent a modification.

This is fundamental to the way one views EPA's new definition of routine maintenance. If one believes that EPA's routine maintenance exemption as enunciated in the 1970s was delimited and not a license to rehabilitate existing facilities, then one would conclude that many of the industry's "maintenance" activities of the last 20 years go beyond what NSR allows. This perspective challenges the Administration's argument that its NSR revision will reduce emissions beyond that required under current law. The viewpoint that applying the NSR requirement to rehabilitation projects would reduce emissions is consistent with the enforcement initiative of the Clinton Administration, for which the Bush Administration has stated support.

In contrast, if one believes that an exemption for routine maintenance is appropriate and should be defined in terms of current industry practices, then one would conclude that the potential threat of NSR (and the installation of BACT or LAER) prevents owners from making cost-effective improvements in the overall performance and efficiency of their existing facilities, thereby foregoing opportunities to conserve energy. This perspective that NSR discourages energy efficiency is reflected in the Bush Administration's revisions to routine maintenance proposed in December 2002,[15] and promulgated in August 2003.

Discussion

As finalized, EPA's definition of routine maintenance will permit current utility rehabilitation practices to continue without the threat of triggering NSR. The changes to the definition of routine maintenance are focused on energy policy considerations, not environmental considerations. EPA contends the changes will have no significant impact on emissions. EPA's logic for the new definition contains three parts:

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[14] For a current view of managing existing facilities, see Jason Makansi, "Rehab: Get the Most from the Existing Asset Base," *Power* (June 1999), pp. 30-40.

[15] 67 *Federal Register* 80290-80314 (December 31, 2002). See CRS Report RL31757, *Clean Air: New Source Review Policies and Proposals*, by (name redacted).

First, EPA believes NSR should apply when activities involve the total replacement of an existing entire process.[16] However, the final rule with its 20% cost trigger with no time constraints would, in effect, permit activities that would replace the entire process over time, at least for power plants. As stated in the final rule: "data indicate that most typical replacement activities will fall within the 20-percent threshold."[17]

Second, EPA believes a "modification" includes any activity that upgrades a facility beyond its original maximum fuel use design parameters. But upgrading an existing unit to its original specifications, even if actual emissions increase, is allowed: "...an equipment replacement that improves a process unit's efficiency and thereby enables the unit to return to its design parameters can quality as RMRR [Routine Maintenance, Repair, and Replacement] even if current actual emissions increase as a result."[18]

Third, while EPA believes that complete reconstruction should not be allowed, it also believes that the breadth of exclusion permitted by any definition of routine maintenance is irrelevant in terms of reducing powerplant emissions. In a qualitative discussion of utility behavior and the potential emissions impact of a "narrow" definition of routine maintenance, EPA states:

> ...a narrow RMRR exclusion that is clearly established is not expected to achieve significant reduction in historic emission levels, and might even lead to area wide emissions increases. Most facilities would take lawful steps to avoid having to obtain an NSR permit that would impose strict limitations, even when replacements would be found under this narrow exclusion to be non-routine.[19]

If the breadth of definition does not affect emissions, it is not clear why it matters whether a utility can completely reconstruct a facility, or why a 20% threshold is better than a 50% threshold. If EPA's concerns are primarily energy policy driven and focused on providing industry with clear parameters, a simple cost trigger without any functional restraint is well within the rationales presented in EPA's final rule.

These perceptions of NSR contrast strongly with those held during the Clinton Administration. In announcing a series of NSR suits in 1999, the EPA Administrator stated that "controlling the sulfur dioxide and nitrogen oxides from these plants could lead to an 85 to 95 percent reduction respectively in these pollutants."[20] Based on her statement, this would reduce SO_2 emissions by 1.87 million tons and NOx emissions by 0.63 million tons. Also, given the widespread nature of life extension efforts, it is reasonable to assume that further reductions would be achieved as other utilities either installed BACT or retired their offending facilities. It would appear that very substantial

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[16] 68 *Federal Register* 61256 (October 27, 2003).

[17] 68 *Federal Register* 61257 (October 27, 2003).

[18] 68 *Federal Register* 61259 (October 27, 2003).

[19] 67 *Federal Register* 80302 (December 31, 2002). Argument restated in *Final Rule*, pp. 61264-5 (October 27, 2003).

[20] Carol M. Browner, Administrator, Remarks Prepared for Delivery, Clean Air Enforcement Press Conference, Washington, D.C. (November 3, 1999).

emissions reductions could be achieved by rigorous enforcement of NSR using the previous definition of "routine maintenance" rather than EPA's new one.

The best analysis of future possibilities under previous NSR regulations is by the Energy Information Administration (EIA).[21] The three relevant scenarios are: (1) reference: no enforcement (including halting current lawsuits); (2) NSR 32: enforcement limited to the current lawsuits; and (3) NSR All: enforcement expanded to include all coal-fired plants over 25 megawatts. The projected 2010 SO_2 and NOx results under these three scenarios are presented in **Table 1**. As indicated, depending on one's expectation with respect to NSR enforcement in lieu of the EPA final rule on routine maintenance, the difference in emissions could be on the order of a factor of five.

Table 1. EIA's 2010 NSR Reference Cases: Emissions from Coal-Fired Electric Generating Facilities

Scenario	NOx Emissions (million tons)	SO2 Emissions (million tons)
Reference	4.20	9.70
NSR 32	3.78	9.10
NSR All	1.56	1.94

Source: EIA, *Strategies for Reducing Multiple Emissions from Power Plants*, table 20.

In its final rule, EPA dismisses this scenario using the argument identified above. EPA also notes that there are other Clean Air Act programs, particularly Title IV, that control sulfur dioxide emissions from powerplants. Indeed, the current EPA argues that Title IV results in no net reductions in emission from NSR actions because any reductions achieved could be sold under the Title IV allowance program to other facilities. In fact, however, EPA has resolved this problem in all of its settlements under its enforcement by requiring the utility to retire the SO_2 allowances freed up.[22]

The rule's issuance and subsequent stay by the court has engendered debate. H.R. 3893, as introduced by Representative Barton, contained a provision that would have amended the Clean Air Act to codify the new regulations for all industrial sources. In addition, H.R. 3893 would also have extended to all industrial categories the NSR provisions exempting existing power plant modifications that do not increase the maximum hourly emissions of any regulated pollutant. However, these provisions were removed from the bill before the House passed it on October 9, 2005. Potential Senate action on such provisions is uncertain.

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[21] Energy Information Administration, *Strategies for Reducing Multiple Emissions from Electric Power Plants with Advanced Technology Scenarios*, chapter 5, "Potential Impacts of New Source Review Actions" (October 2001), pp. 57-63.

[22] For example, see U.S. EPA, "United States and New Jersey Announce Clean Air Act Coal-fired Power Plant Settlement With PSEG Fossil LLC Effect Will Cut New Jersey Industrial Sulfur Dioxide Emissions by 32%," EPA Press Release, January 23, 2002.