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GRANDFATHERING AND ENVIRONMENTAL REGULATION: THE LAW AND ECONOMICS OF NEW SOURCE REVIEW

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Introduction

How should a new, more stringent regulation that governs behavior that predates the new regulation be introduced? Should the existing actors that have been engaging in the behavior before the new regulation be afforded relief from the new regulation? If so, in what form? And for how long?

More than thirty years ago, under the 1970 amendments to the Clean Air Act, Congress decided to subject new sources of air pollution to stringent pollution control standards. It “grandfathered” preexisting sources, leaving them free of federal regulation.¹ In the ensuing decade, statutory and regulatory development made clear that a “modification” of a grandfathered plant that increased pollution emissions at the plant would subject the plant to the federal “new source” standard. The Environmental Protection Agency treated on a case-by-case basis the question of what constituted a “modification,” which triggers the new source standards—as opposed to “routine maintenance, repair, and replacement,” which does not.

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¹ For a discussion of the history of “grandfather clauses” and “grandfathering”, from its origins in the context of voting rights through its current usage in broad areas of law including environmental regulation, see Heidi Gorovitz Robertson, *If Your Grandfather Could Pollute, So Can You: Environmental “Grandfather Clauses” and Their Role in Environmental Equity*, 45 CATH. U. L. REV. 131, 131-35 (1995).

In December 2002 and October 2003, the Bush Administration adopted regulatory revisions that significantly extended the grandfathering of old plants. One of the regulations allows plant owners more flexibility in determining the baseline against which changes in pollution emissions levels are measured. The effect of this change is to decrease the number of modifications that are deemed to result in increases in pollution emission levels and, thus, that are subject to new source review. The other regulation provides a safe harbor for modifications and renovations of grandfathered plants that cost less than twenty percent of the replacement cost of a grandfathered unit. The Administration's justified these regulations by noting that the preexisting case-by-case standard was too uncertain and discouraged owners from undertaking desirable renovations of plants, and that environmental quality would not be impaired.

Environmentalists, and some states, challenged the new regulations, arguing that they extend the lives of obsolescent plants, which from an environmental perspective, should be taken out of service. Most of the provisions of the regulations have survived judicial scrutiny. However, the United States Court of Appeals for the District of Columbia Circuit recently invalidated the twenty percent safe harbor on grounds of statutory interpretation. Even with respect to this invalidated regulation, however, the story is not necessarily at an end. There is speculation that the Administration may file a certiorari petition. Moreover, the Environmental Protection Agency (EPA) has indicated that it may apply the safe harbor in its case-by-case analysis of when to bring enforcement actions, thus giving it de facto effect.² And, on September 14, 2006, the EPA proposed a further set of regulations making it easier for plants to modernize without meeting the New Source standards.³ (FR on Sept. 8).

In this Article, we present an economic analysis of the transition relief issue raised by the new regulations. We demonstrate that the new regulations are in fact inefficient and would, contrary to the Administration's contention, lead to a worsening of environmental quality. We argue that, while certain limited transition relief may be appropriate in the context of environmental regulation, the relief should be limited in time. Moreover, because providing time-limited transition relief itself introduces the risk that recipients of the relief will seek to have that relief extended, we further advocate that an appropriate system of time-limited relief include disincentives against extensions of the transition relief.

The issues and analysis here apply beyond the particular setting of the new source review regulatory revisions. In *United States v. Duke Energy Corp.*, the Fourth Circuit upheld a pollution source's argument that a modification of a plant that allows the plant to operate more hours per day does not trigger new source review provided that the plant's hourly emission rate does not increase.⁴ The Fourth Circuit's decision is at odds

² See infra note __.

³ 71 Federal Register 54235-01 (September 14, 2006).

⁴ 411 F.3d 539 (4th Cir. 2005), *cert. granted sub nom.* *Envtl. Defense v. Duke Energy Corp.*, 126 S. Ct. 2019 (2006).

with the holding of the District of Columbia Circuit in *New York v. U.S. Environmental Protection Agency*,⁵ and the Supreme Court granted certiorari to resolve the conflict. In the wake of the Court's grant of certiorari, the Seventh Circuit aligned itself with the District of Columbia Circuit in *United States v. Cinergy Corp.*⁶. While this question of regulatory interpretation predates the proposed revisions (indeed, the EPA has argued in favor of interpreting the regulations to trigger new source review based upon the additional hours of operation), the policy questions raised in the cases are analogous to those raised by the proposed revisions to the regulations. As Judge Posner, writing for the court in *Cinergy Corp.*, observed, "Cinergy's interpretation would give the company an artificial incentive to renovate a plant and by so doing increase the plant's hours of operation, rather than to replace the plant."⁷

Further, our general analysis and argument here apply more broadly than simply to the case of air pollution regulation. The problem of extensions of favorable treatment to existing sources is a recurring issue in environmental law. Our discussion applies wherever a new regulation will preclude new entrants from engaging in a particular activity that existing actors are already engaging in. Thus, our analysis and argument have application to the treatment of so-called "non-conforming uses" under zoning law, i.e., land uses that predate zoning regulation that now prohibit anyone from engaging in those uses.

This Article proceeds as follows. In Part I, we discuss the history of Clean Air Act's regulation of sources when existing sources that modernize their operations must meet the new source standards. Our detailed account highlights an important distinction. Until the beginning of the current administration, EPA invoked its regulatory authority to define as clearly as possible the nature of the grandfathering prescribed by Congress in 1970 and 1977. In contrast, the Bush Administration has significantly expanded the scope of the grandfathering.

In Part II, we examine the likely effects of the new regulations on new investment in plants and on air quality. We show the serious flaws in the Administration's argument that the expanded grandfathering will promote modernization and lead to better environmental quality. Both the theoretical analysis and the empirical evidence point in the opposite direction.

Part III considers the interactions between the new regulations and other regulatory standards under the Clean Air Act. We show that the laxer regulation of dirty, existing sources necessarily leads to more stringent regulation of cleaner sources, thereby increasing the overall cost of meeting a given level of environmental quality.

⁵ 413 F.3d 3, 19-20 (D.C. Cir. 2006).

⁶ __ F.3d __, 2006 WL 2371358 (7th Cir. Aug. 17, 2006).

⁷ *Id.* at *2.

In Part IV, we analyze expanded grandfathering of existing sources as forms of transition relief. The literature governing legal transitions suggests that transition relief is generally undesirable. The new regulations are unwarranted under the general presumption against transition relief. Moreover, we argue that, to whatever extent transition relief may have been warranted under the original Clean Air Act, the new regulations exceed appropriate measures of transition relief.

I. Statutory and Regulatory Background

For more than three decades, EPA sought to give meaning to the congressionally defined scope of grandfathering. These efforts came to an abrupt end in 2002, when the Bush Administration used its regulatory authority to significantly expand this scope, making it possible for existing sources to undertake significant modernization without meeting the new source standards.

A. The 1970 Act and 1977 Amendments

The 1970 Amendments to the Clean Air Act divide regulatory authority over stationary sources between state and federal governments. The federal government sets “standards of performance” for new stationary sources and modified existing sources and the state governments regulate existing, unmodified stationary sources.⁸ States must also ensure that the siting of new sources does not lead to the violation of the federally set national ambient air quality standards (NAAQS).⁹

Under the Clean Air Act, the EPA issues standards of performance for categories of stationary sources “the construction or modification of which is commenced after the publication of regulations.”¹⁰ Modification, in turn, is defined as “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.”¹¹ Under a literal reading, any increase in emissions, however miniscule, would trigger the application of new source performance standards.

⁸ See generally Clean Air Act Amendments of 1970 § 111, Pub. L. No. 91-604, 84 Stat. 1683 (1970). The Act in its current form is codified at 42 U.S.C. §§ 7410-7671q (2004).

⁹ CAA § 110(a), 42 U.S.C. § 7410(a) (2004) (requiring states to provide for all control measures necessary to achieve NAAQS); CAA § 109(b), 42 U.S.C. § 7409(b) (defining primary NAAQS as standards “requisite to protect the public health” that incorporate “an adequate margin of safety,” and secondary NAAQS as “requisite to protect the public welfare”).

¹⁰ CAA § 111(a)(2), 42 U.S.C. § 7411(a)(2). Stationary source is defined as “any building structure, facility, or installation which emits or may emit any air pollutant.” § 111(a)(3), 42 U.S.C. § 7411(a)(3).

¹¹ CAA § 111(a)(4), 42 U.S.C. § 7411(a)(4).

Commentators regularly note that Congress expected most existing sources to gradually phase out over the course of their ordinary economic lives or to upgrade and trigger the new source performance standards, leaving most major stationary sources subject to federal control.¹² Although legislative history from 1970 does not make explicit the assumption that old sources would gradually, inevitably phase-out or upgrade, the legislative history of the Clean Air Act's 1977 and 1990 amendments strongly suggests that Congress in 1970 expected "grandfathering" of these sources to be only temporary.¹³ In particular, legislators were aware that the expected useful economic life of power plants was thirty to forty years.¹⁴

¹² See, e.g., BRUCE BIEWALD, DAVID WHITE, TIM WOOLF, FRANK ACKERMAN & WILLIAM MOOMAW, GRANDFATHERING AND ENVIRONMENTAL COMPARABILITY: AN ECONOMIC ANALYSIS OF AIR EMISSION REGULATIONS AND ELECTRICITY MARKET DISTORTIONS 2 (1998), available at <http://www.synapse-energy.com/publications.htm> ("Participants in the original Congressional debates and official reports from the 1970s and 1980s make it clear that lower overall emissions were expected to result from gradual phase-in of new plants and new energy technologies. Unfortunately, it turns out that many old plants are remaining in service far longer than expected, causing an indefinite delay in the anticipated emissions reductions from facility retirement"); Deepa Varadarajan, Note, *Billboards and Big Utilities: Borrowing Land Use Concepts to Regulate "Nonconforming" Sources Under the Clean Air Act*, 112 YALE L.J. 2553, 2564 (2003) ("[L]egislators assumed that the natural turnover of power plants obviated the need for extensive old source regulation."); Shi-Ling Hsu, *Reducing Emissions from the Electricity Generation Industry: Can We Finally Do It?* 14 TUL. ENVTL. L.J. 427, 434 (2001) ("[P]olicy has been developed with the assumption that thirty-year-old plants would be soon phased out of production."); see also Larry Morandi, *Winds of Change: Controlling Emissions of Pollutants by Power generators can be done, but there's lots of disagreement on the best way*, 29 STATE LEGISLATURES 26, May 1, 2003 ("Why the exemption for old facilities? The thinking at the time was that the older power plants would soon become obsolete and be replaced by newer, cleaner facilities."). Generally, however, scholars cite one another for this proposition, rather than contemporaneous legislative documents. But see BIEWALD ET AL., *supra*, § 3.2, at 11 (1998) ("Thomas Jorling, Minority Counsel to the Public Works Committee that drafted the Clean Air Act stated in interviews that the replacement of existing plants within normal operating lifetimes with newer ones that were subject to NSPS was implicit. David Hawkins, who was an influential attorney with the Natural Resources Defense Council who helped to shape the 1977 CAA Amendments agreed that it was assumed that older plants would eventually be replaced.").

¹³ Most of the expressly supportive legislative history is recent, as legislators proposing amendments to the CAA in the 1990s looked back to the Act's passage. See, e.g., Senate Debate on the CAA Amendments of 1990 and Conference Report, 103d Cong. (Comm. Print 1993), at 791-792, reprinted in 1990 CRS LEGISLATIVE HISTORY, VOL. IV, 6948-78 (Statement of George J. Mitchell) ("In 1970, the CAA required that new sources meet tight emissions standards. At that time, it was assumed that electrical utility units had an average lifetime of 30 years. But many utilities are now choosing to extend the life of their plants rather than meet the new source performance standards mandated under current law"); *id.* at 6970 (Statement of John H. Chafee) ("The rationale that is behind permitting these old plants to emit [at grandfathered emission capacity] is, first of all, they are inefficient, and at some point they are so inefficient they are going to be replaced."). Legislative history regarding the NSR Program, established in 1977, contains an express reference to "older plants with relatively short-remaining useful lives." H.R.REP. NO. 95-294, at 185-86 (1977); see *supra* note ___ and accompanying text. Note that a 1970 Senate Report contains a parallel but more circumscribed acknowledgement that at least some existing sources may have "short life expectancies." S. REP. NO. 91-1146 (1970); see *supra* note ___.

¹⁴ See BIEWALD et. al., *supra* note ___, at 24; Hsu, *supra* note ___, at 435; Varadarajan, *supra* note ___, at 2564. Legislators were at least aware of such turnover. In the context of waivers for existing stationary sources emitting hazardous pollutants, the Senate Report states that "the Secretary would be authorized therefore to waive the application of standards established under this section to such stationary sources which have short life expectancies after requiring the application of the maximum technology which could

In 1977, Congress further entrenched this two-tiered approach to the regulation of new and existing sources through passage of the Clean Air Act Amendments, which expanded the scope and stringency of the 1970 Act.¹⁵ The amendments established two programs, the Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (nonattainment), collectively called “the NSR program.”¹⁶ The NSR program requires new or modified sources to obtain preconstruction permits from the EPA or from a qualified state agency. The NSR permitting requirements vary by region: new facilities in areas that have not yet achieved the NAAQS must meet the nonattainment requirements, whereas new facilities in areas that have achieved the NAAQS (or for which there is insufficient air-quality data) must meet the PSD requirements.¹⁷

Under the PSD program, new or modified sources in areas with better ambient air quality than the NAAQS must meet a performance standard at least as stringent as the new source performance standards (NSPS): the best available control technology (BACT).¹⁸ As under NSPS, the federal performance standards for PSD apply only to new or modified sources, with “modified” defined in the same fashion as under NSPS.¹⁹ Existing sources remain under state control and must be regulated only to the extent necessary for states to achieve their applicable ambient air quality standards.²⁰

For areas that have not yet attained the NAAQS, the 1977 Amendments imposed a preconstruction review process parallel to PSD.²¹ New or modified sources in these areas—with “modified” meaning the same as under NSPS—must meet a federal performance standard that is at least as stringent as any performance standard under the Act: the lowest achievable emission rate (LAER).²² Additionally, to obtain permits, new

be applied to such facilities.” S. REP. No. 91-1196, at 19. Legislators thus expected at least some existing sources to naturally “die out.”

¹⁵ Pub. L. No. 95-95, 91 Stat. 685 (1977).

¹⁶ *See* *New York v. EPA*, 413 F.3d 3, ___ (D.C. Cir. 2005).

¹⁷ *See generally* 42 U.S.C. §§ 7501-7515 (nonattainment), §§ 7470-7492 (PSD).

¹⁸ 39 Fed. Reg. 42510 (Dec. 5, 1974).

¹⁹ CAA § 165(a)(4), 42 U.S.C. § 7475(a)(4) (BACT); CAA § 169(2)(C), 42 U.S.C. § 7479(2)(c) (“modification” for PSD). Congress initially applied the PSD portion of the 1977 Amendments to new sources only, but quickly passed technical and conforming amendments to incorporate the NSPS definition of “modified” into the PSD program. Pub. L. No. 95-190 (Nov. 16, 1977).

²⁰ For PSD, this standard is the allowable NAAQS increment and visibility standards where applicable. 42 U.S.C. § 7475; *see also* 42 U.S.C. § 7410(a)(2)(D) (state implementation plans in NSR regions).

²¹ *See generally* 42 U.S.C. §§ 7501-7515 (2004).

²² CAA § 173(a)(2), § 7503(a)(2) (LAER) (2004); CAA § 171(4), 42 U.S.C. § 7501(4) (“modification” for nonattainment). For a comparison of the federal performance standards: NSPS takes into account cost

or modified sources in these regions must procure offsets from existing sources in the region to ensure that the region's total emissions do not increase and that the region can still achieve "reasonable further progress" toward the NAAQS.²³

With the exception that it imposes some federal standards on old, unmodified sources in nonattainment areas,²⁴ the 1977 Amendments thus extended the old-new, state-federal divide that so defined the original Act. Legislative history and scholarly commentary lends support to the view that Congress expected old plants to be gradually phased-out and replaced by lower-emitting facilities.²⁵

B. Early NSPS and PSD Regulation, 1970-1977

Regulators soon realized that the statutory definition of "new source" was not self-evident. The EPA first proposed clarifying regulations in August 1971²⁶ and promulgated final rules in December of that year.²⁷ The rules clarified that "new source" included construction effected through contractors or internally,²⁸ and defined

considerations and energy requirements, 42 U.S.C. § 7411(a)(1); BACT reflects "energy, environmental, and economic impacts" and emissions achievable through alternative fuel techniques, and can never exceed the level of emissions allowable under NSPS, 42 U.S.C. § 7479(3); LAER represents the "most stringent emission limitation" contained in a state implementation plan or achievable in practice, 42 U.S.C. § 7501(3).

²³ 42 U.S.C. § 7503(a)(1)(A), (c)(1).

²⁴ Under the NSR program, old, unmodified sources in nonattainment areas must meet emission limits based on "reasonably available control technology" (RACT), the least stringent performance standard in the Act. 42 U.S.C. § 7502(c)(1) (2004).

²⁵ See H.R.REP. NO. 95-294, at 185-86 (1977) (discussing some employment and economic benefits of exempting "older plants with relatively short-remaining useful lives," including that it would be more cost-effective and efficient for old plants to incorporate cleaner technologies when they upgrade, rather than forcing them to retrofit immediately). The emphasis that NSR places on proliferating cleaner technologies—on providing a "guaranteed market" for green vendors—supports the view that Congress assumed the gradual phase-out or modernization of old plants. See S. REP. NO. 95-127, at 31 (1977); see also NAT'L ACAD. OF PUB. ADMIN. (NAPA), A BREATH OF FRESH AIR: REVIVING THE NEW SOURCE REVIEW PROGRAM, 14 (April 2003) [hereinafter NAPA] ("A vital aspect of this grandfather provision was the clear assumption of Congress that older, high-emitting sources would gradually be upgraded or phased out"). The discussion in *supra* notes ___ is equally applicable to the 1977 Amendments, since Congress incorporated the same core legislative scheme. Indeed, the case for assumed turn-over is stronger in 1977 than in 1970, given that the 1977 Amendments were passed, in part, to correct the evident failing of the 1970 Act to improve the nation's air quality and promote clean technologies. Gradual phase-out of old, high-emitting sources would seem essential to the successive cleaning of generations of sources and more rapid progress toward the NAAQS. See NAPA, at 11-14.

²⁶ See generally 36 Fed. Reg. 15704. (Aug. 17, 1971).

²⁷ See generally 36 Fed. Reg. 24876 (Dec. 23, 1971).

²⁸ 36 Fed. Reg. 24876. The August proposal had unhelpfully defined "new source" exactly as it appeared in the statute. 36 Fed. Reg. 15704.

“modification” in much the same way as it was in the statute—as “any physical change in, or change in the method of operation of, an affected facility which increases the amount of any air pollutant emitted by such facility or which results in the emission of any air pollutant not previously emitted”—a case-by-case determination to be made by the Administrator.²⁹ Several key activities, however, were exempted from the definition of modification: routine maintenance, repair, and replacement; an increase in production rate, if the increase did not exceed the “operating design capacity of the affected facility”; an increase in hours of operation; and use of alternative fuel or raw material if the affected facility could accommodate such use.³⁰

All of these exceptions could be seen as inconsistent with the clear language of section 111, which triggers new source requirements with any increase in emissions, no matter how miniscule.³¹ Nonetheless, EPA viewed the routine maintenance exception as a “common-sense exclusion” from the requirements of pre-construction review; certainly the agency did not want to discourage basic maintenance.³²

Noting that confusion existed “as to what changes can be made to an existing source without the Administrator considering the source to have been modified,” the EPA proposed major changes to these regulations in October of 1974 and promulgated final rules in December of 1975.³³ First, the rules distinguished the term “affected facility” from “stationary source” because the standards apply to individual processes and pieces of equipment rather than to entire sources.³⁴ Construction of a new “affected facility” at an existing source would not cause the entire source to become subject to NSPS, only the new facility.

Second, the rules established the predecessor to the “bubble concept,” whereby new emissions can be offset by control technology at the same source without triggering NSPS.³⁵ Existing sources could qualify for a “bubble” exception if, in undergoing a physical or operational change, “the total emission rate of any pollutant [did] not

²⁹ 36 Fed. Reg. 24877 (final rule); 36 Fed. Reg. 15705 (proposed rule).

³⁰ 36 Fed. Reg. 24877.

³¹ 42 U.S.C. § 7411(a)(4) (2004).

³² EPA described the routine maintenance exclusion as “common sense” in 57 Fed. Reg. 32314, 32326 (July 21, 1992). Without the exclusion, the term “modification” could “encompass the most mundane activities at an industrial facility (even the repair or replacement of a single leaky pipe, or a change in the way the pipe is utilized).” *Id.*

³³ 40 Fed. Reg. 58416 (Dec. 16, 1975) (final rules); 39 Fed. Reg. 36946 (Oct. 15, 1974) (proposed rules).

³⁴ 40 C.F.R. § 60.2(aa) (1976).

³⁵ The EPA later expanded this “bubble concept” to NSR and PSD programs, 46 Fed. Reg. 50766 (Oct. 14, 1981). The “bubble concept” came to national prominence in *Chevron, U.S.A., Inc. v. NRDC*, 467 U.S. 837 (1984) (upholding EPA’s plantwide definition of stationary source).

increase[] from all facilities within the stationary source,” for example if the owner closed down another source within the plant.³⁶ New construction, including new construction at existing sources, was ineligible for this “bubble” exception, however, because otherwise “large sources of air pollution could avoid the application of new source performance standards indefinitely” by continually replacing outdated facilities.³⁷

Third, the rules defined an emissions increase as an increase in kilograms per hour and provided a factor-based test (with the factors being published from time to time by the EPA), or alternatively a specific statistical method, for the Administrator to apply in determining whether a physical or operational change results in an emissions increase.³⁸

Fourth, the rules expanded the list of activities exempt from the definition of “modification.” While tracking (with slightly altered wording) the exceptions listed in 1971, the 1975 regulations also excluded: an increase in production rate at existing facilities if that increase can be accomplished without a capital expenditure; the addition of a system “whose primary function is the reduction of air pollutants”; and relocation or change in ownership.³⁹

Finally, the rules declared that existing facilities undergoing reconstruction may become affected facilities—that is, trigger NSPS requirements—irrespective of any change in emissions rates. The stated purpose of this rule was to “discourage the perpetuation of a facility, instead of replacing it at the end of its useful life with a newly constructed affected facility.”⁴⁰ The regulation set a very high bar, however, for when “reconstruction” occurs: only if the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and even then only if it is technologically and economically feasible for the post-replacement facility to comply with the applicable standard of performance.⁴¹ As with modification, the determination of reconstruction is made by the Administrator on a case-by-case basis.⁴²

These 1975 rules represented the first detailed attempt to define “modification” for NSPS. Yet even on their face, despite all their elaborations, these regulations were

³⁶ 40 Fed. Reg. 58419; 40 C.F.R. § 60.14(d) (1976).

³⁷ 40 Fed. Reg. 58417.

³⁸ *Id.* at 58416, 58418-19; 40 C.F.R. § 60.14 (1979).

³⁹ 40 Fed. Reg. at 58419-20; 40 C.F.R. § 60.14(e)(2) (1976). Capital expenditure was defined by reference to IRS rules. *Id.* at 58416.

⁴⁰ 39 Fed. Reg. 36948.

⁴¹ 40 Fed. Reg. 58420; 40 C.F.R. § 60.15 (1976). The “reconstruction” exception applies to PSD but not to NSR, see 40 C.F.R. § 60.15 (1988).

⁴² 40 Fed. Reg. 58420.

unclear. Indeed, the basic articulation of “modification” varied, without explanation, in consecutive pages of the 1975 Federal Register detailing these rules: on one page, it was defined as a physical or operational change that increases the amount of air pollutant emitted, whereas on the next it was defined as an increase in the emission rate.⁴³ Regulations the EPA had issued the year before, for PSD, compounded this confusion by defining “modification” as a physical or operational change increasing the emission rate of a pollutant—and simultaneously declaring that the definition is meant “to be consistent with the definition used in [NSPS.]”⁴⁴

C. The NSR Program and its Regulatory Off-Shoots, 1977-2001

Since the passage of the NSR program in 1977, which incorporated the NSPS statutory definition of “modification,”⁴⁵ the EPA has promulgated various regulations and undertaken enforcement activities regarding the exceptions available to existing facilities undergoing physical or operational changes. Most of the relevant changes have occurred within the last ten years.

Pursuant to the 1977 Amendments, the EPA issued a new PSD rule in 1978 and a new nonattainment rule in 1979.⁴⁶ In its PSD rule, the EPA defined “modification” as a physical or operational change that increases a source’s “potential to emit”—the first appearance of that phrase in CAA regulations.⁴⁷ In addition, the EPA limited pre-construction review only to those modifications deemed “major,” which the EPA defined as changes increasing emissions rates by either 100 or 250 tons per year (depending on the category of stationary source).⁴⁸ As under NSPS, the EPA exempted “routine maintenance, repair, and replacement”⁴⁹ and allowed for “netting” to offset emissions increases.⁵⁰ The 1979 Nonattainment rule largely paralleled this PSD rule.⁵¹

⁴³ Compare 40 Fed. Reg. 58418 (Dec. 16, 1975) (amount of pollutant) and 36 Fed. Reg. 24877 (Dec. 23, 1971) with 40 Fed. Reg. 58,419 (Dec. 16, 1975) (emissions rate). In a recent case, the D.C. Circuit characterized these 1975 regulations as confused. See *New York v. EPA*, 413 F.3d 3, 12 (D.C. Cir. 2005) (“[N]either the 1975 regulation nor its preamble explained why EPA found it necessary to offer these two separate glosses on ‘modification.’”)

⁴⁴ 39 Fed. Reg. 42510, 42513-514 (Dec. 5, 1974).

⁴⁵ 42 U.S.C. § 7501(4) (“modification” for NSR tracking “modification” for NSPS, 42 U.S.C. § 7411(a)(4)); 40 C.F.R. § 60.2.

⁴⁶ 44 Fed. Reg. 3282 (Jan 16, 1979); 43 Fed. Reg. 26380, 26388 (June 19, 1978).

⁴⁷ 43 Fed. Reg. 26380, 26403-404 (June 17, 1978).

⁴⁸ 40 C.F.R. §§ 51.24(b)(2), 52.21(b)(2) (1978).

⁴⁹ The EPA first promulgated the “routine maintenance” exception for NSPS in 1975, 40 Fed. Reg. 58416 (Dec. 16, 1975), and for NSR in 1978, 403 Fed. Reg. 26380, 388 (June 19, 1978). See 40 C.F.R. §§ 52.21(b)(2)(iii) (PSD), 52.24(f)(5) (nonattainment).

⁵⁰ 43 Fed. Reg. 26388.

Industry and environmental groups brought immediate challenges to the PSD rule, which culminated in a lengthy D.C. Circuit opinion, *Alabama Power Co. v. Costle*.⁵² (While the case concerned PSD, many of its rulings were equally applicable to nonattainment given the regulatory overlap.) The court in *Alabama Power* upheld many key provisions of PSD, including the use of “substantially contemporaneous” offsets.⁵³ The court, however, invalidated the EPA’s limiting of major “modification” to only those sources emitting 100- or 250-tons per year on the ground that the statutory definition of modification is “nowhere limited to physical changes exceeding a certain magnitude”; any such limit would contravene statutory intent to make grandfathering of old sources only temporary by giving old sources “a perpetual immunity” from PSD.⁵⁴ While invalidating the EPA’s threshold limit of modification, the court found that the EPA did have discretion to exempt activities “on grounds of de minimis or administrative necessity.”⁵⁵ Finally, the court ruled that “potential to emit” cannot mean uncontrolled emissions if pollution controls are installed and operative; the calculation must include reductions attributable to pollution control technology.⁵⁶

After the *Alabama Power* decision, the EPA issued revised PSD and nonattainment rules—final NSR rules that remained in effect for over twenty years despite many court challenges and proposed revisions. In these 1980 rules, the EPA retained the phrase “major modification” from its 1978 rule, but defined “major” differently: as any physical or operational change “that would result in a significant net emissions increase,” taking into account “substantially contemporaneous” offsets.⁵⁷ For the purposes of determining whether a source has undergone a “modification” EPA determined that the source’s “potential to emit” should be determined by reference to applicable pollution controls and any federally enforceable limits on hours, materials, and production.⁵⁸

⁵¹ 44 Fed. Reg. 3282.

⁵² 636 F.2d 323 (D.C. Cir. 1979).

⁵³ *Id.* at 401-03. The court differentiated its upholding of the PSD “bubble” rule from an earlier D.C. Circuit ruling that invalidated the NSPS “bubble” rule, *ASARCO Inc. v. EPA*, 578 F.2d 319 (D.C. Cir. 1978). *See supra* note __. One significant difference between the two programs was the definition of “source”: The NSPS rule allowed offsets from “any combination of facilities”—a “defect on which the ASARCO decision turned”—whereas the PSD rule did not. *Alabama Power*, 636 F.2d at 402.

⁵⁴ *Alabama Power*, 636 F.2d at 400.

⁵⁵ *Id.* The court made clear, however, that EPA’s discretion in this regard did not extend to exempting as de minimis all physical changes falling below a particular threshold. *See id.*

⁵⁶ *Id.* at 353.

⁵⁷ 45 Fed. Reg. 52676, 52735 (Aug. 7, 1980).

⁵⁸ *Id.*

As under NSPS, the NSR rules exempted an increase in hours of operation or in production rate from the definition of physical or operational change.⁵⁹ Finally, the EPA retained the routine maintenance exclusion, an exclusion that had appeared in every iteration of the NSPS and NSR rules to date.⁶⁰

There was surprisingly little discussion about the routine maintenance exception in those early years.⁶¹ Even after the *Alabama Power* court ruled that the EPA could only limit the definition of modification on grounds of de minimis increases or administrative necessity, the routine maintenance exclusion generated little comment. Indeed, the final NSR rules in 1980 adopted the routine maintenance exclusion exactly as it had been proposed, without discussion, because the EPA had received no significant comments on the proposal during the notice-and-comment period.⁶² Thus, in the final rules, the EPA did not elaborate on what the term meant; the regulations did not explicitly define what activities would be deemed routine or minor and therefore avoid NSR requirements.⁶³ Instead, the EPA began, not long after the establishment of the NSR program, to make case-by-case determinations of whether changes mandated NSR review.⁶⁴ The agency typically weighed multiple factors, such as the “nature, extent, purpose, frequency and cost of the work,” in order to arrive “at a common-sense finding” about the appropriateness of applying NSR.⁶⁵

This ad hoc method of applying NSR to repair or facility maintenance projects frustrated both industry representatives and regulators, as did the EPA’s lack of clear

⁵⁹ *Id.* at 52735-36.

⁶⁰ 44 Fed. Reg. 3282 (Jan. 16, 1979) (nonattainment); 43 Fed. Reg. 26388 (June 19, 1978) (PSD); 40 Fed. Reg. 58416 (Dec. 16, 1975) (NSPS); 39 Fed. Reg. 42410 (Dec. 5, 1974) (PSD); 36 Fed. Reg. 24376 (Dec. 23, 1971) (NSPS).

⁶¹ NAPA, *supra* note ___, at 40.

⁶² *Id.* at 39.

⁶³ Matthew C. Stephenson, *A Tale of Two Theories: The Legal Basis for EPA’s Proposed Revision to the Routine Maintenance, Repair, and Replacement Exception, and the Implications for Administrative Law*, 33 ENVTL. L. REP. 10789, 10789 (2003) (“[T]he *scope* of the [routine maintenance] exception is relatively narrow, its *form* is that of an open-ended, multi-factor standard, and its *legal justification* is not entirely clear.”).

⁶⁴ *Wisconsin Elec. Power Co. (WEPCO) v. Reilly*, 893 F.2d 901, 910 (7th Cir. 1990) (quoting memorandum from Don R. Clay, Acting Assistant Administrator for Air and Radiation, U.S. EPA, to David A. Kee, Director of Air and Radiation Division, U.S. EPA Region V (Sept. 9, 1988)). *See also* Varadarajan, *supra* note ___, at 2560-61.

⁶⁵ *WEPCO*, 893 F.2d at 910 (quoting memorandum from Don R. Clay, Acting Assistant Administrator for Air and Radiation, U.S. EPA, to David A. Kee, Director of Air and Radiation Division, U.S. EPA Region V (Sept. 9, 1988)).

definitions and standards on all issues involving major versus minor modifications.⁶⁶ In response to these complaints, the EPA began an NSR reform effort in August 1992 with the creation of an advisory committee, comprised of representatives from EPA, state environmental regulators, environmental groups, and industry.⁶⁷ From 1993 to 1996, the EPA held various “NSR Simplification Workshops,” initiated pilot programs, and received numerous comments from interested parties.⁶⁸ A 1994 draft reform defined routine maintenance as “minor maintenance or repair of parts or components and the replacement of minor parts or components with identical or functionally equivalent items.”⁶⁹ Industry, however, strongly opposed this proposed definition as being too limiting and discouraging of “routine” change. In 1996, the EPA formulated an NSR Simplification, proposing a new determination of baseline emissions (actual and projected emissions), exclusions for “Clean Units”⁷⁰ and “Pollution Control Projects” (PCPs),⁷¹ and other changes to NSR applicability determinations.⁷² The proposed rule,

⁶⁶ See, e.g., Lisa A. Binder, *An industrial plant that shuts down temporarily may be considered new when it reopens*, 25-JUN L.A. LAW 11 (June 2002); Christopher W. Armstrong, *EPA’s New Source Review Enforcement Initiatives*, 14-WTR NAT. RESOURCES & ENV’T 203 (2000).

⁶⁷ David A. Golden, *The need for reform NSR reform*, 12-WTR NAT. RESOURCES & ENV’T 170, 171 (1998).

⁶⁸ *Id.* See also EPA, Press Release, *EPA announces steps to increase energy efficiency, encourage emissions reductions*, June 13, 2002, at www.epa.gov/nsr/bkgrnd/release.html.

⁶⁹ EPA, *New Source Review Reform (Preliminary Staff Draft, 1994)*, 106-109; NAPA, *supra* note ___, at 40.

⁷⁰ The EPA explained:

In general, the] new “clean unit” exclusion will allow States to exclude from major NSR, proposed changes to existing emissions units that have installed major BACT or LAER within the last 10 years Under this exclusion, sources can make any change to a qualifying unit so long as the change will not increase the unit’s emissions rate (measured in terms of the unit’s maximum hourly emissions . . .). Specifically, changes which do not increase the unit’s hourly potential emissions would not be considered a physical or operational change and thus would not trigger major NSR.

EPA, Notice of Proposed Rulemaking, Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR), 61 Fed. Reg. 38250, 38255 (July 23, 1996) (footnote omitted). See generally *id.* at 38255-58.

⁷¹ The EPA explained:

The EPA proposes to adopt for all source categories a pollution control project exclusion from the definition of “physical or operational change” within the definition of major modification. This proposed exclusion will shield these projects from being considered “major modifications” and subject to major NSR. As proposed, the exclusion encompasses add-on controls, switches to less polluting fuels and pollution prevention projects and is subject to one overarching safeguard first applied in *WEPCO*: that the proposed pollution control project cannot result in an emissions increase that will cause or contribute to a violation of a NAAQS or PSD increment. . . . [F]or pollution prevention projects, the permitting authority must find that the project is environmentally beneficial before such projects may qualify as a pollution control project.

which did not seek to clarify the meaning of the “routine maintenance” exception, was stalled for years.

In 1998, the agency renewed its reform efforts by again soliciting comments on its proposed reforms.⁷³ That same year, legislators in both the House and Senate introduced reformed NSR standards, which subsequently failed in the face of industry opposition.⁷⁴ After collecting and preparing responses to numerous comments, the EPA rewrote the entire NSR reform proposal and presented it to stakeholders in February of 1999.⁷⁵ Failing to develop a consensus, however, the EPA again solicited comments from stakeholders on potential NSR modifications that included an “opt-out” of NSR for the power generating industry.⁷⁶ By May 2001, however, these reform efforts—lasting almost a decade—were still incomplete.

Despite these failed reform efforts and the persistently ad hoc definition of “major modification,” the EPA did not shy away from NSR enforcement cases. Large-scale and coordinated enforcement actions began in earnest in the late 1980s, when the EPA brought actions against the wood products industry for that industry’s suspected failures to comply with NSR requirements after making significant changes in their operations.⁷⁷ Throughout the 1990s, the EPA launched vigorous and successful enforcement initiatives against coal-fired power plants, petroleum refineries, chemical manufacturers, pulp and paper industry, and the utility industry.⁷⁸

One of the EPA’s early proceedings, begun in the late 1980s, culminated in a court decision that remains to date the most extensive judicial articulation of “major modification” for NSR: *Wisconsin Power Company (WEPCO) v. Reilly*, in which WEPCO challenged EPA’s determination that WEPCO had undertaken a “major

Id. at 38261 (citations omitted). *See generally id.* at 38260-63.

⁷² *See generally id.* at 38250.

⁷³ EPA, Notice of Availability, Alternatives for New Source Review (NSR) Applicability for Major Modifications; Solicitation of Comment, 63 Fed. Reg. 39857 (July 24, 1998).

⁷⁴ Hsu, *supra* note __, at 436 (referring to S.2636, introduced in Oct. 1998 by Sen. Leahy (D-VT), H.R.> 2980, introduced in Oct. 1999 by Rep. Allen (D-ME) and S.2610, introduced in October 1998 by Sen. Lieberman). *See also* Varadarajan, *supra* note __, at 2554.

⁷⁵ EPA, Announcement of Public Meeting, New Source Review (NSR), 64 Fed. Reg. 3890 (Jan. 26, 1999).

⁷⁶ Michael Settineri, *Reforming the New Source Review Program*, 13 *FORDHAM ENVTL. L.J.* 107, 111-112 (2001). *See also* Letter to Participants, from John S. Seitz, Director, Office of Air Quality Planning and Standards (Dec. 20, 1999), at www.epa.gov/ttn/nsr/gen/invite1.pdf.

⁷⁷ Thaddeus R. Lightfoot, *Sand through the Hourglass: PSD Enforcement and the Statute of Limitations*, 32 *ENVTL. L. REP.* 11342 (2002).

⁷⁸ NAPA, *supra* note __, at 42-43.

modification” without NSR approval.⁷⁹ WEPCO claimed its renovations, including large-scale replacement of steel drums and air heaters, were exempt from NSR because they fit under the “routine maintenance, repair and replacement” umbrella of activities.⁸⁰ The EPA countered that the project was too costly and extensive—an unprecedented “life extension” project—to qualify for the routine maintenance exemption.⁸¹ The Seventh Circuit ultimately upheld the legitimacy of EPA’s narrower interpretation of “routine maintenance,” under which the EPA principally weighs four factors: the nature and extent, purpose, frequency, and cost of the project—to determine eligibility for the exception on a case-by-case basis.⁸² The court reasoned that any broader definition of routine maintenance—one that would include such costly and sizeable “life-extension” projects—would “open vistas of indefinite immunity from the provisions of NSPS and PSD” for existing plants; such a ruling “might upset the economic-environmental balance [of the Clean Air Act] in unintended ways.”⁸³ This decision bolstered the EPA in its enforcement efforts against industries undergoing “major modifications” without obtaining NSR preconstruction permits.⁸⁴

⁷⁹ 893 F.2d 901 (7th Cir. 1990). *See also* NAPA, *supra* note ___, at 41.

⁸⁰ *WEPCO*, 893 F.2d at 908.

⁸¹ *Id.* at 908-09, 911-12. The project cost at least \$70.5 million, had never before occurred at the facility, and was of the sort that “would normally occur only once or twice during a unit’s expected life cycle.” *WEPCO*, 893 F.2d at 911-12. *See also* Inho Choi, *Is the U.S. Environmental Protection Agency’s Revised New Source Review Rule Moving in the Right Direction?: A Deepened New Source Bias, and the Need for Pursuing Sustainable Energy Development in Air Pollution Control Law*, 35 ELR NEWS & ANALYSIS 10316, 10321 (2005).

⁸² *WEPCO*, 893 F. 2d at 910, 912. *See* *United States v. Duke Energy Corp.*, 278 F. Supp. 2d 619 (M.D.N.C. 2003) (identifying the “*WEPCO* factors” as “nature and extent, purpose, frequency, and cost”), *aff’d on other grounds*, 411 F.3d 539 (4th Cir. 2005), *cert. granted sub nom.* *Env’tl. Defense v. Duke Energy Corp.*, 126 S. Ct. 2019 (2006); *United States v. Ohio Edison Co.*, 276 F. Supp. 2d 829, 852-53 (S.D. Ohio 2003) (same); *United States v. So. Ind. Gas & Elec. Co.*, 245 F. Supp. 2d 994, 1015 (S.D. Ind. 2003) (highlighting the *WEPCO* factors of “the cost, magnitude, nature, and frequency of the proposed repairs and renovations”). *But cf.* *United States v. Ala. Power Co.*, 372 F. Supp. 2d 1283, 1290 (N.D. Ala. 2005) (identifying the four *WEPCO* factors as “the nature, extent, purpose, and frequency of the work”).

⁸³ *WEPCO*, 893 F.2d at 910. The *WEPCO* case also addressed EPA’s determination of whether a plant’s potential or projected emissions levels should be used in determining whether a physical or operational change produces significant increases in net emissions, a prerequisite to triggering NSR. Whereas actual-to-potential estimates assume maximum or continuous operation of the plant except as limited by permit, actual-to-projected actual estimates assume ordinary operation—that the plant will operate at “present hours and conditions.” *Id.* at 918. The *WEPCO* court rejected the EPA’s actual-to-potential test in favor of an actual-to-projected actual test for “like-kind equipment replacements” of the sort that *WEPCO* had performed. The EPA formalized the court’s ruling in its 1992 rulemaking by allowing electric utility steam generating units to employ this actual-to-projected-actual test. 57 Fed. Reg. 32314 (July 21, 1992). *See also* NAPA, *supra* note ___, at 38.

⁸⁴ David Mallery, *Clean Energy and the Kyoto Protocol: Applying Environmental Controls to Grandfathered Power Facilities*, 10 COLO. J. INT’L ENVTL. L & POL’Y 469, 489 (1999).

After the EPA's early successes in proceedings against WEPCO and against the wood products industry,⁸⁵ the EPA began evaluating entire industry sectors and issuing "Sector Notebooks" to provide officials with comprehensive environmental profiles of industrial operations and emissions.⁸⁶ Armed with this new information, the agency began a three-pronged attack in 1997 on the pulp and paper industry, the petroleum refining industry, and electric utilities.⁸⁷ Data collected from these industries indicated that numerous facilities had probably been making major modifications to increase production without first undergoing NSR review; local and state environmental agencies had received surprisingly few NSR applications despite industry growth and surges in production.⁸⁸ The EPA's coordinated enforcement effort has been called "the new enforcement initiative."⁸⁹

This initiative employed a narrow interpretation of the term "major modification," as delineated in part in the EPA's 1998 NSR guidance.⁹⁰ The EPA applied the four-factor WEPCO test strictly to find that many projects industry had labeled as "routine maintenance" were far from routine; they were often too extensive, too costly (and charged as capital expenditures, not as part of the maintenance budget), and too infrequently performed at the specific unit to qualify for the exclusion.⁹¹ Many such

⁸⁵ See, e.g., *United States v. La.-Pacific Corp*, 682 F. Supp. 1141 (D. Colo. 1988) (holding that defendant corporation should have obtained PSD permits before constructing two new wood products plants).

⁸⁶ NAPA, *supra* note __, at 42.

⁸⁷ *Armstrong*, *supra* note __, at 203-04.

⁸⁸ *Id.* at 204. See U.S. GEN. ACCOUNTING OFFICE (GAO), CLEAN AIR ACT: NEW SOURCE REVIEW REVISIONS COULD AFFECT UTILITY ENFORCEMENT CASES AND PUBLIC ACCESS TO EMISSIONS DATA 10 (Oct. 2003) [hereinafter GAO, UTILITY]; NAPA, *supra* note __, at 42.

⁸⁹ *Armstrong*, *supra* note __, at 204.

⁹⁰ Memorandum from Eric V. Schaeffer, Director, Office of Regulatory Enforcement, Guidance on Appropriate Injunctive Relief for Violations of Major Source Review Requirements (Nov. 17, 1998), available at <http://www.epa.gov/Region7/programs/artd/air/nsr/nsrmemos/nsrguida.pdf> (last visited July 5, 2005); see also *Choi*, *supra* note __, at 10326. The memorandum listed two situations in which NSR requirements were triggered, both involving emissions in excess of major source threshold or permit levels. *Id.*

⁹¹ See David M. Friedland & Laura K. McAfee, *U.S. v. Ohio Edison and U.S. v. Duke Energy: Conflicting Interpretations of "Routine Repair" Defense*, 4-7 (Sept. 5, 2003), available at www.bdlaw.com/media/news/news.306.pdf; NAPA, *supra* note __, at 43. In addition to narrowing the "routine maintenance" exemption, the EPA also seemed to be narrowing the alternative fuels exemption. See *Armstrong*, *supra* note __, at 204. Regarding the cost factor of the "routine maintenance" analysis, the EPA typically examines the relative costs of improvements, not the absolute costs. *Id.*, at 6. Other factors the EPA considers include whether the work is performed by outside contractors or by in-house maintenance staff and whether the expense are charged to as capital expenses or as part of the maintenance O&M budget. *United States v. Ohio Edison*, 276 F. Supp. 2d 829, 858-59 (S.D. Ohio 2003); Friedland & McAfee, at 5. The scope of the "frequency" factor—whether "routine" should be defined relative to the particular unit or to all sources within the relevant industry—is under debate. Compare WEPCO Rule, 57 Fed. Reg. 32,314, 32,326 (July 21, 1992) (seemingly favoring industry-wide approach for electrical steam generating units) and *United States v. Duke Energy Corp*, 278 F. Supp. 2d 619, 630 n.8 (M.D.N.C. 2003)

projects were large-scale “life-extension” projects similar to WEPCO’s project; others were de novo construction of entire units; still others were “reliability projects,” which the EPA treated as “major modifications” even if the increase in emissions was caused by increasing hours of operation rather than by increasing emitting emission rates.⁹²

Apparently frustrated by its own inability to produce the much-sought-after NSR reform through notice-and-comment rulemaking, the agency began to clarify the meaning of “major modification” through the exercise of its enforcement authority.⁹³ The initiative was successful for the EPA because it led to “unprecedented settlements in terms of scope and penalties.”⁹⁴ The EPA secured large settlements from a number of different industries, beginning with over \$15 million in civil penalties and \$90 million in pollution-control installation costs from Georgia-Pacific and Louisiana-Pacific, respectively, for violations by their pulp and paper production facilities.⁹⁵ Between 2000 and 2001, the EPA reached settlements with four petroleum companies involving twenty-seven

(rejecting EPA’s unit-specific approach as inconsistent with congressional intent and prior EPA interpretations), *aff’d*, 411 F.3d 539 (4th Cir. 2005), with *Ohio Edison*, 276 F. Supp. 2d at 861 (upholding the EPA’s unit-specific approach) and *United States v. So. Ind. Gas & Elec. Co. (“SIGECO”)*, 245 F. Supp. 2d 994, 1007-10 (S.D. Ind. 2003) (same) and *Detroit Edison Applicability Determination* (May 23, 2000) (defining “routine” relative to the particular unit) and *In re Tenn. Valley Auth.*, CAA Docket No. 00-6, 2000 WL 1358648 (Env’tl. Appeals Bd., U.S. EPA, Sept 15, 2000) (adopting unit-specific definition of “routine”; this decision, however, was later voided by the Eleventh Circuit for lack of jurisdiction, *Tennessee Valley Authority v. Whitman*, 336 F.3d 1236 (11th Cir. 2003)).

⁹² See U.S. ENVTL. PROTECTION AGENCY (EPA), NSR 90-DAY REVIEW BACKGROUND PAPER 10 (June 22, 2001) [hereinafter EPA, 90-DAY]; Friedland & McAfee, *supra* note __, at 6. For more on reliability projects, see Makram B. Jaber, *Utility Settlements in New Source Review Lawsuits*, 18-WTR NATURAL RES. & ENV’T 22, 24 (2004); U.S. ENVTL. PROTECTION AGENCY (EPA), NEW SOURCE REVIEW: REPORT TO THE PRESIDENT 10 (June 2002), available at www.epa.gov/air/nsr-review/bkgnd/nsr_report_to_president.pdf [hereinafter EPA, REPORT]. Note, however, that a district court in Indiana recently struck down the EPA’s characterization of increases in actual emissions from averted shutdowns as a “significant net emissions increase” for purposes of NSR. *U.S. v. Duke Energy*, 278 F. Supp. 2d 619 (M.D.N.C. 2003), *aff’d*, 411 F.3d 539 (4th Cir. 2005). See *supra* note __ and accompanying text.

⁹³ Armstrong, *supra* note __, at 205 (“The NSR enforcement initiative has taken on the look of a surrogate for those regulatory initiatives that have stalled and may ultimately fail.”); Kevin A. Gaynor & Benjamin S. Lippard, *Environmental Enforcement: Industry Should Not be Complacent*, 32 ENVTL. L. REP. 10488 (2002) (“It is a fair statement that under EPA’s legal theories, every utility in the country has been violating the new source review requirements since their inception in 1978.”); Varadarajan, *supra* note __, at 2581.

⁹⁴ Rolf R. von Oppenfeld et al., *A Primer on New Source Review and Strategies for Success*, 32 ENVTL. L. REP. 11091 (2002).

⁹⁵ See Armstrong, *supra* note __, at 203. In 1993, Louisiana-Pacific agreed to pay \$11 million in civil penalties and install \$70 million in new pollution control equipment; in 1996, Georgia Pacific agreed to pay \$6 million in penalties and install \$25 million in control equipment. In 2000 and 2002, the EPA settled with two other wood products companies, Wilamette and Boise Cascade, for a total of \$15 million in civil penalties and \$99 million in control costs. See NAPA, *supra* note __, at 170-71, 179.

refineries.⁹⁶ One settlement in 2004 cost the settling refinery an estimated \$323 million in installation and mitigation costs and civil penalties.⁹⁷ Within the power-generating utility industry, the EPA has reached a number of sizeable settlements after the federal government commenced actions against nine electric utility companies in November 1999.⁹⁸ EPA has already reached final agreements with six utility companies and “agreements in principle” with two others.⁹⁹

The targeted industries viewed EPA’s actions “as a frontal assault on selected utilities in order to advance a radical and retroactive interpretation of the New Source Review (NSR) program of the Clean Air Act.”¹⁰⁰ In 2002, however, the Bush

⁹⁶ The four companies are Koch, BP-Amoco, Motiva/Equilon/Shell, and Marathon Ashland Petroleum. EPA, 90-DAY, *supra* note __, at 30. For details on the civil penalties and control costs imposed, see NAPA, *supra* note __, at 179.

⁹⁷ This settlement was with Citgo Petroleum. *See Choi, supra* note __, at 10327 n.103.

⁹⁸ E. Donald Elliott et al., *Recent Clean Air Act Development*, SH-58 ALI-ABA 1, 4-5 (2003); Choi, *supra* note __, at 10321.

⁹⁹ The EPA reached final settlements with Tampa Electric in 2000 (\$3.5 million in civil penalties and \$85 million in control costs), PSEG Fossil LLC in 2002 (\$1.4 million in penalties and an estimated \$337 million in installation costs), and Alcoa, Dominion Energy, WEPCO, and SIGECO in 2003; the EPA reached “agreements in principle” with Cinergy, Inc. and Virginia Power. NAPA, *supra* note __, at 43, 179; Elliott et al., *supra* note __, at 5, 10; Jaber, *supra* note __, at 25. Regarding SIGECO, a district court ruled on a preliminary motion that EPA’s enforcement action was not barred by virtue of the state agency’s prior approval of the challenged plant modifications as “routine maintenance.” *United States v. So. Ind. Gas & Elec. Co.*, 2002 WL 1760699 (S.D. Ind. Jul. 26, 2002) (holding that § 113 of CAA authorizes EPA to bring action for any violation of an applicable performance standard, and that EPA would only be barred by state authorization of industry conduct if EPA “knew the facts” of the state agency’s ruling and engaged in “affirmative misconduct”). *See Elliot et al., supra* note __, at 5; Choi, *supra* note __, at 10321. The ninth electrical utility targeted in 1999 was the Tennessee Valley Authority. Instead of bringing a federal lawsuit against the TVA, the EPA filed an administrative compliance order. The Eleventh Circuit, however, has since voided the order on the ground that that the EPA’s Environmental Appeals Board (EAB) lacked jurisdiction, leaving the TVA free to ignore the provisions of the administrative compliance order without risking additional penalties. *Tennessee Valley Authority v. Whitman*, 336 F.3d 1236, 1260 (11th Cir. 2003) (holding that EAB lacked jurisdiction because EPA had not first taken TVA to district court to allege violations before filing administrative order). *See also*. Molly McDonough, *Appeals Court Says Right to Due Process Requires Court Proceedings*, 2 ANA J. E-Report 2 (July 11, 2003).

In August 2003, district courts reached conflicting decisions in two of the active lawsuits against utility industries. A court in the Southern District of Ohio upheld the EPA’s interpretation of the “major modification” provision under NSR on the ground that it is based on clear and unambiguous guidance from the CAA. *United States v. Ohio Edison Co.*, 276 F. Supp. 2d 829 (S.D. Ohio 2003). *See also* Friedland & McAfee, *supra* note __, at 1-2. Only a few weeks later, however, a court in the middle district of North Carolina court reached the opposite conclusion in a very similar case on the ground that the EPA’s standard for “routine maintenance” was too strict, violating congressional intent and impermissibly deviating from previous agency policy. *United States v. Duke Energy Corp.*, 278 F. Supp. 2d 619 (M.D.N.C. 2003), *aff’d*, 411 F.3d 539 (4th Cir. 2005).

¹⁰⁰ Elliot Elder & Robin L. Juni, *Has EPA Fired up Utilities to Clear the Air?*, 15-SUM NAT. RESOURCES & ENV’T 8, 9 (2002) (“In industry’s view, EPA is suddenly reinterpreting its regulations through selective enforcement but is not using the rulemaking process to place all coal-fired power generators in a uniform

Administration's Department of Justice published an NSR Report characterizing EPA's enforcement initiative, in particular its interpretation of the routine maintenance exception, as legally sound and "reasonable" in light of the CAA and implementing regulations.¹⁰¹

D. Recent Regulation, 2001-Present

By May 2001, the NSR reform attempts had lasted almost a decade yet were still incomplete when the Vice President's National Energy Policy Development Group issued its proposed national energy policy.¹⁰² This proposal included a recommendation that the EPA report to the President on the NSR and NSPS programs' effects on investment, energy efficiency and pollution reduction.¹⁰³ In response, EPA released an "NSR 90-Day Background Paper" in June 2001 and solicited public input.¹⁰⁴

A year later, EPA released its final report, "New Source Review: Report to the President," which summarized the information it had received from the public and concluded that, while NSR did not significantly hinder investment in new power plants and industrial facilities,¹⁰⁵ it did discourage energy efficiency projects at already-existing facilities.¹⁰⁶ In its Report, the EPA recommended adding "clarity and certainty" to the

position. Thus targeted utilities (and their host state regulators) face tremendous uncertainty as to what constitutes compliance with preconstruction permit requirements for all sorts of ... projects."). *See also* Electric Reliability Coordinating Council, *ERCC White Paper on New Source Review*, available at www.electricreliability.org/Statements/NSR-wp.htm ("EPA's NSR rules, which for thirty years have been consistently applied ... are now being reinterpreted without any rulemaking change ... causing major disruption in routine maintenance schedules, curtailing power output, and dismembering whole Titles of the Clean Air Act.").

¹⁰¹ OFFICE OF LEGAL POLICY, U.S. DEPARTMENT OF JUSTICE (DOJ), *NEW SOURCE REVIEW: AN ANALYSIS OF THE CONSISTENCY OF ENFORCEMENT ACTIONS WITH THE CLEAN AIR ACT AND IMPLEMENTING REGULATIONS* (2002), available at <http://www.usdoj.gov/olp/nsrreport.pdf> (last visited July 5, 2005); *see also* Choi, *supra* note __, at 10327.

¹⁰² NAT'L ENERGY POLICY DEV. GROUP (NDEP), *NATIONAL ENERGY POLICY REPORT* (May 2001).

¹⁰³ *Id.* at 7-14; General Accounting Office, *supra* note __, at 7.

¹⁰⁴ EPA, *90-DAY*, *supra* note __. The EPA followed through by holding four public hearings, hosting individual meetings, and reviewing over 130,000 comments from private citizens, environmental groups, state officials and industry representatives. *Id.*

¹⁰⁵ EPA, *REPORT*, *supra* note __, at 5-8 ("[A]s a general matter, available information indicates that NSR typically does not represent a significant barrier to the construction of new electricity plants" or of new refinery plants). The EPA cites substantial investment in new plants and refineries as evidence that NSR does not obstruct investment. The recent decline in investment in new greenfield refineries is not attributable to NSR, the EPA concludes, but rather to economic and environmental restrictions wholly unrelated to NSR. *Id.* at 1, 6, 8.

¹⁰⁶ *Id.* The EPA based its conclusions solely on the large volume of anecdotal evidence it received from industry sources, *id.* at 11, because the agency had no comprehensive data on projects that failed to go through on account of NSR. *See* GAO, *EPA SHOULD USE AVAILABLE DATA TO MONITOR THE EFFECTS OF*

scope of the routine maintenance exclusion so as to “reduc[e] the unintended consequences of discouraging worthwhile projects that are in fact outside the scope of NSR”—namely, projects that increase reliability, safety, and/or efficiency without actually increasing net emissions.¹⁰⁷

Shortly after completing this Report, the EPA issued its first of two final rules, aimed at “provid[ing] regulatory flexibility to industrial facilities.”¹⁰⁸ This rule, published in December 2002, modifies the NSR program in four basic areas: determination of baselines, plantwide applicability limits (PALs), standards for “Clean Units,” and pollution control projects (PCPs).¹⁰⁹ These various changes are intended to “reduce burden, maximize operating flexibility, improve environmental quality, provide additional certainty and promote administrative efficiency.”¹¹⁰ The second rule, published in October 2003, significantly revises the “routine maintenance, repair and replacement” regulatory provision by essentially exempting from new source review changes that cost 20 percent or less of the replacement value of the unit being maintained, repaired, or replaced, even if they result in a significant net increase in emissions.¹¹¹ With this second rule, the EPA explained that it aimed to add the “clarity and certainty”

ITS REVISIONS TO THE NEW SOURCE REVIEW PROGRAM 4 (Aug. 2003) [hereinafter GAO, DATA]; *see also* EPA, Press Release, *EPA announces steps to increase energy efficiency, encourage emissions reductions*, June 13, 2002, at www.epa.gov/nsr/bkgrnd/release.html (“The improvements that EPA is recommending today are the culmination of a 10-year process.”). For more background on these investment conclusions, *see* EPA, 90-DAY, *supra* note __, at 18 (discussing difference between retrofitting old plants, which can be technically problematic and expensive, and incorporating new pollution technology into new plants, an easier and cheaper process occurring during design phase). In this 90-Day Review Report, the EPA suggested that most declines in new construction could be explained by non-NSR factors, for example the high cost of natural gas and investment uncertainty in the electrical utilities market stemming from “deregulation and the emergence of non-utilities . . . in electric generation.” *Id.* at 14, 24.

¹⁰⁷ EPA, REPORT, *supra* note __, at 11, 21, 32.

¹⁰⁸ GAO, DATA, *supra* note __, at 8.

¹⁰⁹ EPA, Final Rule, Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Baseline Emissions Determination, Actual-to-Future-Actual Methodology, Plantwide Applicability Limitations, Clean Units, Pollution Control Projects, 67 Fed. Reg. 80186 (Dec. 31, 2002). *See also* John Boyd, Note, *The New New Source Review: Teaching Old Sources New Tricks?* 11 SOUTHEASTERN ENVTL. L.J. 401 (2003).

¹¹⁰ 67 Fed. Reg. 80189. The changes were first proposed, in a slightly different form, in the 1996 NSR Simplification Proposal. *See* 61 Fed. Reg. 38249 (July 23, 1996). The 2002 rules differ from the 1996 proposals in several ways, including: an expanded list of eligible pollution control projects (PCPs); elimination of the “primary purpose” test for PCPs, by which a project could only qualify as a PCP if its primary function was to reduce pollution; a slight change in Clean Unit eligibility criteria; and an extension of Clean Unit Status from five to ten years for all Clean Units, including those that qualify through functional equivalence to BACT or LAER standards. *Compare* 67 Fed. Reg. 10232-33 with 61 Fed. Reg. 38260-61; *see also* Choi, *supra* note __, at 10332-33.

¹¹¹ EPA, Final Rule, Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Equipment Replacement Provision of the Routine Maintenance, Repair and Replacement Exclusion, 68 Fed. Reg. 61248, 61249-50 (Oct. 27, 2003).

evidently lacking from its case-by-case, four-factor approach to routine maintenance exclusions.¹¹² With both rules, the EPA claimed that it was attempting to turn a thirty-year record of case-by-case determinations and vague legislative guidance into clear regulations.

i. First Rule: NSR Improvement

The first rule changes the baselines for both actual and future emissions. These baselines are used to determine if a physical or operational change “result[s] in a significant net emissions increase”¹¹³ and therefore mandates NSR review. For determining baseline actual emissions, the regulation now allows stationary sources to choose any consecutive twenty-four month period from the ten years immediately preceding the proposed modification.¹¹⁴ Under the previous rule, sources were required to base their pre-change actual emissions on their actual emissions from the consecutive 24 months immediately preceding the proposed modification.¹¹⁵ EPA claimed that the ten-year as opposed to two-year look-back was meant to be more representative of a plant’s business cycle.¹¹⁶

For determining future emissions, the new rule allows a source to estimate its emissions based on projected capacity and usage, historic trends and emissions from the unit prior to the modification, and other factors—an “actual-to-projected-actual” test.¹¹⁷ Sources can exclude from this calculus increased emissions owing to growth in market

¹¹² *Id.*

¹¹³ 45 Fed. Reg. 52676; 40 C.F.R. §52.21(b)(2)(i).

¹¹⁴ 67 Fed. Reg. at 80198. Note, however, that electrical utility steam-generating units will still use their current method of calculating baseline actual emissions, which is based on average annual emissions from any consecutive twenty-four month period from the five years immediately preceding the proposed modification. *Id.* at 80198-99; *see also* 57 Fed. Reg. 32314 (July 21, 1992).

¹¹⁵ 40 C.F.R. §§ 52.21(b)(21)(ii), 51.165(a)(1)(xii), 51.166(b)(21). Note, however, that under the old rule sources could base their actual emissions on a different 24-month time period if they could show that it was more representative of normal operations. *Id.* at §51.21(b)(21)(ii). *See also* Choi, *supra* note __, at 10322.

¹¹⁶ 45 Fed. Reg. 52676.

¹¹⁷ 67 Fed. Reg. 80196-99. This “actual-to-projected actual” calculation has applied to electrical utility steam-generating units since the WEPCO rulemaking, 57 Fed. Reg. 32314 (July 21, 1992). *See supra* note __. With its December 2002 rule, the EPA has simply extended this method to non-utility units. *See* Robert J. Martineau, Jr., & Michael K. Stagg, *New Source Review Reform: A New Year’s Eve to Remember*, 18-WTR NAT. RESOURCES & ENV’T 3,4 (2004). Some commentators suggest that this expansion of coverage will have little real effect given the current industry-wide use of PTE limits; in effect, most states already use some form of the actual-to-actual test in assessing whether emissions increases will be significant. *See* David A. Golden, *The Need to Reform NSR Reform*, 12-WTR NAT. RESOURCES & ENV’T 170, 173-74 (1998); *see also* EPA, 90-DAY, *supra* note __, at 6-7 (discussing PTE limits, whereby a modified source agrees in its NSR or PSD permit or through incorporation into the EPA-approved SIP to limit its potential to emit, for example by installing pollution controls or by restricting hours of operation, *see* 45 Federal Register 52676 (Aug. 7, 1980)).

demand (the demand growth exclusion).¹¹⁸ Under the previous rule, which had applied to all but electrical utility steam-generating units, sources estimated future emissions using an “actual-to-potential” test that assumed continuous operation of the source except as limited by permit; sources could not include any limiting factors that were not federally enforceable, such as historic and usage trends, nor could they exclude growth in market demand.¹¹⁹

These new baselines rules allow sources to choose an actual emissions figure that is relatively high—the highest of the previous ten years, even if it is aberrational—and to project a future emissions that is relatively low, incorporating all sorts of voluntary emissions limits and excluding market growth. This calculation makes it less likely that a plant’s modernization will be found to result in an increase in emissions. Furthermore, a source that believes its calculation yields “no reasonable probability” of a significant net emissions increase need not produce or maintain any records for the EPA—not even the very records on which it bases its determination of “no reasonable probability.”¹²⁰

In addition to these baseline changes, the regulation institutes PALs, PCPs, and Clean Units. Plant wide applicability limitations (PALs) are a voluntary option for stationary sources by which sources adopt ceilings or caps on emission levels on a plant-wide basis.¹²¹ PALs allow for a stationary source to then make modifications and changes without triggering NSR regulations so long as the emissions remain below the established PAL for each pollutant.¹²² To calculate the PAL, a source selects its actual

¹¹⁸ 67 Fed. Reg. 80202-03. This demand growth exclusion has applied to electrical steam-generating units since the 1992 WEPCO rulemaking. Note that in 1998 EPA had considered abolishing the exclusion, which then only applied to electrical steam-generating units, given the difficulty of differentiating increases owing to demand growth and increases owing to the physical or operational change. EPA Notice of Availability, 63 Fed. Reg. 39857, 39860 (July 24, 1998). The EPA has not only retained the exclusion for electric-generation units, but has extended the exclusion to all other industries. See Choi, *supra* note __, at 10322-23. The D.C. Circuit found the EPA’s change in position—from expressing “provisional dissatisfaction” in 1998 to fully embracing and extending the exclusion in 2002—to be legally irrelevant, and upheld the exclusion as consistent with the CAA and administrative law principles. *New York v. EPA*, 413 F.3d 3, 31-33 (D.C. Cir. 2005). See *supra* notes __ and accompanying text.

¹¹⁹ 45 Fed. Reg. 52676 (Aug. 7, 1980). Federal courts had upheld the EPA’s use of the actual-to-potential test as it applied to all but electrical utility steam-generating units. See, e.g., *Puerto Rican Cement Co. v. EPA*, 889 F.2d 292 (1st Cir. 1989) (upholding EPA’s determination that factory renovations lowering hourly emissions rate nonetheless caused an “increase” in emissions because of significantly higher production levels). The regulatory exclusion for increases in hours of operation or production rate still applied—but only when unaccompanied by construction or modification. See 40 C.F.R. § 60.14(e) (1988) (NSPS); *id.* § 52.21(b)(2)(iii) (1988) (PSD).

¹²⁰ 67 Fed. Reg. 80279 (codified at 40 C.F.R. § 52.21(r)(6)). See also *supra* note __ and accompanying text.

¹²¹ 67 Fed. Reg. 80189. To the extent that PALs operate on a plant-wide basis, they are analogous to the EPA’s “bubble” program, under which EPA determines compliance with emissions requirements on a plant-wide, and not an individual source, basis. See Nathaniel Lord Martin, Note, *The Reform of New Source Review: Toward a More Balanced Approach*, 23 STAN. ENVTL. L.J. 351, 369 (2004).

¹²² *Id.* at 80189, 80206-09.

emissions from any consecutive twenty-four month period from the prior ten years—including when emissions were highest—and adds to that level any de minimis increase.¹²³ In effect, then, a source may use comparatively old emissions reductions to offset emissions increases in the near term.¹²⁴ Thus, for example, a source that had high emissions levels a decade ago and then reduced emissions could use the higher levels to establish a high PAL, and then undergo modifications that significantly increase emissions for that pollutant without triggering NSR.¹²⁵ The cap lasts ten years and can be automatically renewed at the same level if the source is emitting at 80 percent or higher of its PAL, in effect rewarding sources that have not much reduced their emissions over their ten-year grace period.¹²⁶

Pollution Control Projects (PCPs) are similarly voluntary programs that allow for NSR-avoidance. A PCP is any project or set of practices that results in “net overall environmental benefits,” including projects that reduce the emissions rate of one pollutant while increasing, but to a lesser extent, the emissions rate of a different “collateral” pollutant.¹²⁷ Existing sources can install approved PCPs without triggering NSR review, even if the installation would otherwise constitute a “major modification” because of an increase in emissions of a pollutant.

“Clean Units,” in turn, may undergo certain modifications or changes without triggering further NSR review so long as their Clean Unit technology is maintained.¹²⁸ The regulations define “Clean Units” as any unit that uses state-of-the-art pollution controls, meaning it has obtained a BACT or LAER permit within the last ten years or has achieved emissions levels demonstrably comparable to BACT or LAER.¹²⁹

The rule generated a quick response. Nine northeastern states immediately filed suit against the EPA, claiming that the EPA’s rule-making (in particular exemptions for Clean Units and the new method of baseline emissions calculations) exceeded the EPA’s

¹²³ *Id.* at 80208.

¹²⁴ See Dennis D. Hirsch, *Lean and Green? Environmental Law and Policy and the Flexible Production Economy*, 79 IND. L.J. 611, 657 (2004).

¹²⁵ See *id.* at 657-58.

¹²⁶ The PAL may be renewed at a lower level if the source is emitting below 80 percent of its cap. *Id.* at 80209-10, 80216, 80219-20. See also Hirsch, *supra* note ___, 649-52 n.353 (“This [renewal] arrangement . . . give[s] participating facilities a perverse incentive not to reduce their actual emissions by more than 20% below the original PAL level” or, “stated differently, will dissuades sources from reducing their emissions by more than 2% per year (on average) over the ten years of their permit term.”).

¹²⁷ 67 Fed. Reg. 80232. Note that non-air pollution impacts will not be included in the “environmentally beneficial” calculation. *Id.* at 80234.

¹²⁸ 67 Fed. Reg. 80189.

¹²⁹ *Id.* at 80190, 80223-29.

authority under the Clean Air Act.¹³⁰ As a press release from the Attorney General of New York noted, “The Clean Air Act was initially adopted by Congress to improve air quality. There is no evidence from the EPA that air quality will improve as a result of the NSR changes and significant reason to believe that air quality will worsen.”¹³¹ In addition, Senators John Edwards (D-NC), John Kerry (D-MA) and Joseph Lieberman (D-CT) attached a rider to a 2003 spending bill that would delay the implementation of the new rule for six months; the Senate, however, defeated this effort on January 22, 2003.¹³² Congress also requested that the General Accounting Office review the EPA’s foundation for promulgating the new rules; the GAO promptly investigated and released a report in August of 2003 stating that “because EPA relied primarily on anecdotal information from industry rather than a statistically valid sample or industrywide survey, the agency’s findings do not necessarily represent NSR’s effect on energy efficiency projects throughout the industries subject to the program.”¹³³

Just before the release of the GAO report, in July 2003, the EPA announced that it would reconsider parts of the December NSR rule and requested comment on six limited areas of the rule, including the designation of Clean Units, the method of assessing air emissions from a 24-month baseline period and the method of measuring emissions increases.¹³⁴ In late October 2003, the EPA responded to these comments and preserved most of the rule as is, with only two minor adjustments.¹³⁵

In a per curiam opinion delivered in June 2005, the D.C. Circuit upheld key provisions of the regulation as permissible interpretations of the Clean Air Act entitled to

¹³⁰ Boyd, *supra* note __ (citing Katherine Q. Seeye, *Nine Northeastern States File Suit over New Rules on Pollution*, N.Y. TIMES, Jan. 1, 2003, at A1.); Pianin, *supra* note __, at A-01; Office of New York State Attorney General Eliot Spitzer, Press Release: *Nine states sue Bush Administration for Gutting Key Component of Clean Air Act* (Dec. 21, 2002), available at http://www.oag.state.ny.us/press/2002/dec/dec31b_02.html (“The Attorneys General believe that these changes are so sweeping and damaging that the Environmental Protection Agency can not make them without Congressional approval. The rollbacks violate both the Clean Air Act itself and the Administrative Procedure Act, which sets forth the process government agencies must follow to promulgate regulations.”).

¹³¹ Office of New York State Attorney General Eliot Spitzer, Press Release: *Ten states seek to put new dirty air rules on hold* (Feb. 6, 2003), available at www.oag.state.ny.us/press/2003/feb/feb06a_03.html.

¹³² Steven D. Cook, *Air Pollution: Senate narrowly rejects effort to delay EPA New Source Review regulation changes*, 15 DAILY ENV’T REP. A-1 (Jan. 23, 2003).

¹³³ GAO, DATA, *supra* note __, at 16-17. See also GAO faults EPA on air standards; Agency lacked data to ease rules, CHICAGO TRIBUNE at 11 (Aug. 26, 2003).

¹³⁴ EPA, *New Source Review Reconsideration Fact Sheet*, available at www.epa.gov/air/nsr-review/factsheet.pdf.

¹³⁵ Prevention of Significant Deterioration (PSD) and Non-Attainment New Source Review (NSR): Reconsideration, 68 Fed. Reg. 63,021 (Oct. 30, 2003). EPA refined the technical definition of “replacement unit” and clarified that the PAL-baseline calculation for newly constructed units does not apply to modified units. See also Nathaniel Lord Martin, *The Reform of New Source Review: Toward a More Balanced Approach*, 23 STAN. ENVTL. L.J. 351, 366 (2004).

Chevron deference and as not otherwise arbitrary or capricious under administrative law principles.¹³⁶ The court rested much of its decision on the statutory ambiguity of “increases” and the wide range of discretion owed agency decisions and predictive judgments, especially in highly technical areas.¹³⁷ The provisions upheld include: the actual-to-projected actual baseline test; the ten-year look-back period (as well as the five-year look-back for electrical utilities); the growth demand exclusion; and the PAL program.¹³⁸ The court did, however, vacate two provisions as clearly contradictory to statutory language: the Clean Unit applicability test, by which the EPA measured only emissions limitations and not actual emissions, and the PCP exception as it applied to projects causing collateral increases in pollution.¹³⁹ In addition, the court remanded to the EPA for adequate explanation the EPA’s decision to exempt a sources from the recordkeeping requirements if it believes that its proposed modification shows “no reasonable possibility” of a significant emissions increase.¹⁴⁰

ii. Second Rule: Equipment Replacement

While the agency continued to receive comments regarding its December 31 rule, it promulgated a second final rule regarding NSR. This rule, published in the Federal Register on October 27, 2003 and meant to take effect on December 26, 2003, rewrites the “routine maintenance, repair and replacement” provision of the regulations for both attainment and nonattainment areas.¹⁴¹ EPA asserts that the revision is meant to add certainty and clarity to the EPA’s previous case-by-case determination, and to “remove disincentives to undertaking [routine maintenance] activities . . . [that] enhance[e] . . . efficiency, safety, reliability, and environmental performance.”¹⁴² Under the new rule, an activity qualifies as “routine” and therefore escapes NSR scrutiny, if

- (1) it involves replacement of any existing component(s) of a process unit with component(s) that are identical or that serve the same purpose as the replaced component(s);¹⁴³
- (2) the fixed capital cost of the replaced

¹³⁶ *New York v. EPA*, 413 F.3d 3 (D.C. Cir. 2005). The panel consisted of Judges Rogers, Tatel, and Williams.

¹³⁷ *Id.* at 18, 23, 39-40.

¹³⁸ *Id.* at 10.

¹³⁹ *Id.* at 10, 36-39.

¹⁴⁰ *Id.* at 10-11, 33-36. *See* 67 Fed. Reg. 80279 (codified at 40 C.F.R. § 52.21(r)(6)).

¹⁴¹ EPA, Final Rule, Prevention of Significant Deterioration (PSD) and Nonattainment New Source Review (NSR): Equipment Replacement Provision of the Routine Maintenance, Repair and Replacement Exclusion; 68 Fed. Reg. 61248, 61249-50, 61252, Oct. 27, 2003. This rule was first released to the public in August 2003 via the EPA’s website.

¹⁴² *Id.* at 61251.

¹⁴³ A “process unit” is defined as a “collection of structures and/or equipment that processes, assembles, applies, blends, or otherwise uses material inputs to produce or store an intermediate or completed

component, plus costs of any activities that are part of the replacement activity, does not exceed 20 percent of the current replacement value of the process unit;¹⁴⁴ and (3) the replacement(s) does not alter the basic design parameters of the process unit or cause the process unit to exceed any emission limitation or operational limitation (that has the effect of constraining emissions) that applies to any component of the process unit and that is legally enforceable.¹⁴⁵

Projects that qualify for the proposed rule's "safe harbor" would be automatically exempted from new source review. Projects that do not qualify for the new automatic exclusion could nonetheless qualify for the exclusion under the *WEPCO* test.¹⁴⁶ The new rule thus expands the scope of grandfathering relief by providing an independent avenue for relief.

With its broad swathe of exclusions, this new rule will exempt thousands of facilities from NSR requirements.¹⁴⁷ Old sources will be able to "run harder and longer" without having to install new pollution controls, effectively gaining "perpetual

product." *Id.* at 61259-60. Excluded from this definition are non-emitting facilities that are distinct from the source's emitting components, such as administrative buildings and storage warehouses. *Id.* at 61262. Also excluded is pollution control equipment that does not serve a "dual purpose" as process equipment; examples of such non-excludable "dual purpose" technology are condensers, recovery devices, and oxidizers. *Id.* at 61260-61. Note that the installation of identical or functionally equivalent pollution control may also qualify for exclusion from NSR as a PCP (pollution control project), see *supra* note ___ and accompanying text.

¹⁴⁴ In estimating costs, a source operator can choose among various measurements, including appraisal value, insurance value, and investment value as adjusted for inflation. 68 Fed. Reg. 61262. Replacement activities that are "related" must be aggregated in this cost-threshold calculation, though merely contemporaneous activities are not necessarily sufficiently related to require aggregation. *Id.* at 61258. Note that the EPA maintains that this 20 percent cut-off is consistent with the *WEPCO* case, 893 F.2d 901 (7th Cir. 1990), in which the court deemed *WEPCO*'s activities ineligible for the "routine maintenance" exception, see *supra* notes ___ and accompanying text. Using 1991 dollars, the EPA estimated that *WEPCO*'s replacement of steam drums and air heaters cost between 22 and 29 percent of the units' total replacement value. 68 Fed. Reg. 61257. Some commentators, however, have challenged EPA's calculations of *WEPCO*'s costs. See Adrian P. Castro, *Far From Routine: Exempting Existing Sources from New Source Review under the Equipment Replacement Provision*, 33 *HOFSTRA L. REV.* 711, 746 (2004).

¹⁴⁵ 68 Fed. Reg. 61252. Examples of basic design parameters are maximum heat input and fuel input specifications, as well as output-based measurements. *Id.* at 61258-59. Source owners and operators can propose whatever design parameters of their choosing to the reviewing authority. *Id.* at 61259.

¹⁴⁶ *Id.* at 61251-52, 61257.

¹⁴⁷ Catherine Cash & Gerald Karey, *EPA issues final rule 'clarifying' NSR restriction*, *INSIDE ENERGY W/ FEDERAL LANDS* 1 (2003); Castro, *supra* note ___, at 743. NRDC estimates that the rule will allow more air pollution from 17,000 industrial sources across the country. See NRDC, Press Release, *Bush Administration to Gut Clean Air Act* (Aug. 22, 2003), available at <http://www.nrdc.org/media/pressreleases/030822.asp>.

immunity” from NSR requirements.¹⁴⁸ Representatives from environmental groups and legislative opponents have claimed the rule ““eviscerates”” the NSR program” and “flatly contradicts the clear language of the Clean Air Act.”¹⁴⁹

As did the earlier rule, the October 2003 rule generated a quick response. Twelve states, local governments, and a coalition of environmental and public health advocacy groups filed suit against the EPA, claiming violation of the Clean Air Act.¹⁵⁰ They argued that only Congress has the authority to enact such significant changes to the Clean Air Act, and that the EPA through its rulemaking powers cannot simply ignore the purpose and intent of Congress.¹⁵¹ The D.C. Circuit stayed implementation of the rule on December 24, 2003, two days before the rule was to take effect.¹⁵²

In July 2004, the EPA issued an administrative stay and announced it would reconsider the rule; the legal proceedings were stayed pending the EPA’s decision.¹⁵³ In September 2004, the EPA Office of Inspector General issued a report solicited by the Senate that sharply criticized the rule, in particular the 20 percent threshold and the EPA’s conclusion that the rule will not result in increased emissions; the EPA, however, strongly disputed these findings.¹⁵⁴ In early June 2005, the EPA, having finished reconsideration, announced that it would preserve the routine maintenance rule as adopted in October 2003.¹⁵⁵ Legal proceedings resumed and, in March 2006, the D.C.

¹⁴⁸ Cash & Karey, *supra* note ___ (citing Conrad Schneider, official with Clean Air Task Force). The courts have long ruled that the “grandfathering” provisions of NSR were not intended to provide “perpetual immunity” to existing sources. *See, e.g.,* Alabama Power Co. v. Costle, 636 F.2d 323, 400 (D.C. Cir. 1979) (“The statutory scheme intends to ‘grandfather’ existing industries; but the provisions concerning modifications indicate that this does not constitute a perpetual immunity from all standards under the PSD program.”).

¹⁴⁹ Cash & Karey, *supra* note ___. The first quotation is from Bill Becker, head of a state and local air pollution control association; the second is from Senator Joseph Lieberman, D-Conn.

¹⁵⁰ See J.R. Pegg, “States Sue to Block Bush’s Clean Air Act Revisions,” *Env’t News Service* (Oct 28, 2003), available at <http://www.climateark.org/articles/readers.asp?linkid=26622>; Dan Fagin, *Clean-Air rewrite finalized, finally; dozen states, environmentalists sue*, *NEWSDAY* A16, Oct. 28, 2003.

¹⁵¹ Fagin, *supra* note ___, at A-16. *See also* Petition for Review, State of New York et al. v. U.S. EPA, U.S. Court of Appeals for D.C. Circuit (Oct. 27, 2003), available at www.oag.state.ny.us/press/2003/oct/rmrr_rule_petition_for_review.pdf.

¹⁵² *New York v. EPA*, No. 03-1380, 2003 U.S. App. LEXIS 26520 (D.C. Cir. Dec. 24, 2003) (granting motion to stay enforcement of routine maintenance rule).

¹⁵³ *See EPA Sends Decision on Reconsideration of Equipment Replacement Rule to OMB*, *Chemical Regulation Daily* (June 1, 2005), at <http://pubs.bna.com/ip/BNA/crd.nsf/is/A0B0X7H4X5>.

¹⁵⁴ OFFICE OF INSPECTOR GENERAL, EPA, *EVALUATION REPORT, NEW SOURCE REVIEW RULE CHANGE HARMS EPA’S ABILITY TO ENFORCE AGAINST COAL-FIRED ELECTRIC UTILITIES* (Sept. 2004).

¹⁵⁵ EPA News Release, *New Source Review Response Stresses Improvements to Permitting Programs* (June 6, 2005).

Circuit invalidated the rule,¹⁵⁶ holding unanimously that the rule was inconsistent with the statutory definition of “modification” as “*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.”¹⁵⁷ In July 2006, the D.C. Circuit denied requests for rehearing and rehearing en banc.¹⁵⁸ At least one industry source has speculated that EPA would appeal the decision to the Supreme Court.¹⁵⁹ Moreover, even if the courts’ invalidation of the proposed “safe harbor” stands, there are indications that EPA will effectively implement it through its enforcement discretion.¹⁶⁰ Thus, even the one aspect of the EPA’s revisions to the new source review regulations that has thus far met with judicial resistance may yet be implemented, whether with judicial imprimatur or otherwise.

In summary, in 2002 the Bush Administration undertook a clear break with a practice over more than two decades, by Democratic and Republican Administrations alike, to try to give meaning to the term “modification” as used in the Clean Air Act. Instead, the Bush Administration undertook to significantly expand the scope of the grandfathering of existing plants, so that they get the benefits of modernization without having to expend the cost of meeting the requirements of the Clean Air Act.

II. Effects on New Investment and Air Quality

In this Part and the succeeding two Parts, we critically examine the EPA’s revisions to the new source review regulations. In this Part, we discuss how the new regulations would prolong the existence of older, dirtier facilities, and the undesirable investment decisions for which the new regulations would create incentives.

A. *Prolonged Existence of Older Plants*

Before we turn to a specific examination of how the new regulations would prolong the existence of older plants, we explain in general terms how the stringent new source regulations for new plants, coupled with the virtual lack of regulation of existing sources, create a disincentive to modernization. We also explain how the existing statutory and regulatory framework in particular creates such a disincentive.

i. The “Old Plant Effect” in General

Different standards for old and new plants distort the economic analysis that existing plant owners undertake when deciding whether to modernize—or to replace—a

¹⁵⁶ 443 F.3d 880 (D.C. Cir. 2006).

¹⁵⁷ *Id.* at 883 (quoting 42 U.S.C. § 7411(a)(4) (emphasis supplied by the court)).

¹⁵⁸ See *Effect of New Source Review Decision Limited by EPA Policy, Proposed Rule*, *Toxics Law Daily* (BNA), Apr. 7, 2006, at [check].

¹⁵⁹ See *Court Will Not Reconsider Decision to Cancel New Source Review Changes*, *Env’t. Rep.* (BNA), July 6, 2006, at A-5.

¹⁶⁰ See *Effect of New Source Review Decision Limited by EPA Policy, Proposed Rule*, *supra* note [check], at [check].

plant. Stricter standards for new and substantially modified plants make building a new plant and substantially modifying an old plant more expensive propositions than they otherwise would be. In contrast, laxer standards for existing plants make retaining unmodified, older plants in operation a less expensive option. The academic literature refers to this phenomenon as the “old plant effect.”¹⁶¹

The old plant effect manifests itself in two ways. First, older plants are maintained in operation longer than economically efficient, as empirical evidence indeed bears out.¹⁶² For example, Randy Nelson, Tom Tietenberg, and Michael Donihue present empirical evidence that differential environmental regulations lengthen the time period before plants are retired.¹⁶³ Michael Maloney and Gordon Brady reach the same conclusion,¹⁶⁴ and also find that increased environmental regulation to be negatively correlated with the construction of new plants, and conclude that environmental regulations produced an average four-year increase in plant retention.¹⁶⁵ Randy Becker and Vernon Henderson conclude that grandfathering of plants outside the electricity-

¹⁶¹ See Nathaniel O. Keohane, Richard L. Revesz & Robert N. Stavins, *The Choice of Regulatory Instruments in Environmental Policy*, 22 HARV. ENVTL. L. REV. 313, 315 n.10 (1998) (“When new source standards are sufficiently more stringent, . . . they can give rise to an ‘old-plant’ effect, precluding plant replacements that would otherwise take place.”); Matthew D. McCubbins, Roger G. Noll & Barry R. Weingast, *Structure and Process, Politics and Policy: Administrative Arrangements and the Political Control of Agencies*, 75 VA. L. REV. 431, 467 (1989) (“A clear implication of [grandfathering existing sources] was that existing facilities would be protected against the possibility that stringent air pollution regulation would hasten their obsolescence,” thus avoiding “a ‘least cost’ strategy for achieving a given air quality target that . . . involve[s] replacing older facilities with newer ones.”); BRUCE A. ACKERMAN & WILLIAM T. HASSLER, CLEAN COAL/DIRTY AIR 67-68 (1981) (discussing the “old plant effect” resulting from the Clean Air Act); Robert W. Crandall, *The Political Economy of Clean Air: Practical Constraints on White House Review*, in ENVIRONMENTAL POLICY UNDER REAGAN’S EXECUTIVE ORDER: THE ROLE OF BENEFIT-COST ANALYSIS 205, 212 (V. Kerry Smith ed., 1984) (noting that, while “[r]etrofitting to get a given discharge rate is likely to be much more expensive than designing the plant and equipment to meet the same standard[,] [t]his does not mean . . . that the new source standards should be pressed so tightly that the incremental cost of control (per unit of pollution) is even higher than incremental costs at existing plants”). Cf. Richard B. Stewart, *Regulation, Innovation, and Administrative Law: A Conceptual Framework*, 69 CAL. L. REV. 1256, 1270 (1981) (“Imposing [comparatively] stringent controls on existing plants may lead to plant closings and job losses . . .”).

¹⁶² Beyond the studies discussed in the text, see, for example, Crendall, *supra* note __, at 212-13 (presenting empirical evidence of new source bias); Byron Swift, *How Environmental Law Works*, 14 TUL. ENVTL. L.J. 309, 406-09 (2001) (regulatory standards for both sulfur dioxide and nitrogen oxides created no incentive for the retirement of old facilities or the construction of new, more efficient facilities); Timothy J. Stanton, *Capacity Utilization and New Source Bias: Evidence from the US Electric Power Industry*, 15 ENERGY ECON. 57 (1993) (case study of electrical plants before and after the 1970 Clean Air Act, finding that least degree of regulation to be positively correlated with a higher capacity utilization, even though newer facilities were more efficient energy producers); Randy A. Nelson, *The Effects of Regulation on Capacity Utilization: Evidence from the Electric Power Industry*, 29 Q. REV. ECON. & BUS. 37, 42 (1989) (finding a statistically significant decrease in the relationship of capital investment and capacity utilization after regulation, comparing samples from 1961-69 to samples from 1976-83).

¹⁶³ See Randy Nelson, Tom Tietenberg & Michael R. Donihue, *Differential Environmental Regulation: Effects on Electric Utility Capital Turnover and Emissions*, 75 REV. ECON. & STAT. 368, 373 (1993)

¹⁶⁴ See Michael T. Maloney & Gordon L. Brady, *Capital Turnover and Marketable Pollution Rights*, 31 J.L. & ECON. 203, 206 (1988).

¹⁶⁵ See *id.* at 215-22.

generating industry had the effects of “raising survival rates of plants, reducing plant turnover rates, and keeping otherwise unprofitable operations in business.”¹⁶⁶ Robert Stavins recently canvassed empirical examinations of the effects of vintage-differentiated environmental regulation in the context of motor vehicle emissions and new source review. He notes that more stringent regulation of new motor vehicles had depressed new car sales “by between 2% and 4% over the first five years after the regulation came into force.”¹⁶⁷ Stavins’s survey of the empirical studies in the context of new source review similarly confirms the general notion that application of more stringent standards to new sources tends to lengthen the lives of older plants, both inside and outside the electricity-generating industry.¹⁶⁸

Second, more stringent standards on new sources may result, perversely, in worse environmental quality because actors will be discouraged from introducing new sources, thus rendering the stringent new source standard largely irrelevant.¹⁶⁹ Once again, empirical evidence bears out this prediction. Stavins explains that, as a result of the incentive to keep older motor vehicles in operation, motor vehicle pollution emissions actually rose for several years following the introduction of stricter pollution control standards for new vehicles.¹⁷⁰

An example (summarized in Table 1) illustrates the point. Consider *A*, the owner of a power-generating plant. *A* is contemplating upgrading or even replacing the plant. In making this decision, *A* will take into account the costs and benefits of any action. Presumably, *A* will factor into her economic analysis the costs necessary to comply with applicable environmental requirements.¹⁷¹ To the extent that environmental compliance costs are identical as between the two options, the environmental regulation will not influence *A*’s decision. If, however, the environmental compliance costs differ depending upon *A*’s action, then the differential compliance costs well may distort *A*’s decision.

¹⁶⁶ Randy Becker & Vernon Henderson, *Effects of Air Quality Regulation on Polluting Industries*, 108 J. POL. ECON. 379, 407 (2000)

¹⁶⁷ Robert N. Stavins, *Vintage-Differentiated Environmental Regulation*, 25 STAN. ENVTL. L.J. 29, 46 (2006) (citing Howard K. Gruenspecht, *Differentiated Regulation: The Case of Auto Emissions Standards*, 72 AM. ECON. REV. 328, 330 (1982)).

¹⁶⁸ *See id.* at 50-56.

¹⁶⁹ For empirical support beyond that discussed in the text, see, for example, Maloney & Brady, *supra* note __, at 222 (finding that a 1% increase in the age of a plant results in a 1% increase in emissions and that, at the time of the study, regulations had caused a 27% increase in total emissions); BIEWALD ET AL., *supra* note __, at 3 (finding that the complete elimination of grandfathering of old plants would reduce sulfur dioxide emissions by 7.3 million tons and nitrous oxide emissions by 3.3 million tons, amounting to a 75% reduction in the emissions of these pollutants by old plants, and that the elimination of the “old plant effect” would result in approximately a 40% reduction in total sulfur dioxide emissions and a 15% reduction in total nitrous oxide emissions).

¹⁷⁰ *See* Stavins, *supra* note [check], at 46.

¹⁷¹ We assume that plant owners will act in their economic self-interest. That need not be entirely the case; for example, plant owners might choose to reduce pollution for altruistic reasons. *Cf.* Timothy F. Malloy, *Regulating by Incentives: Myths, Models, and Micromarkets*, 80 TEX. L. REV. 531 (2002) (questioning the notion that corporations are monolithic actors that seek always and only to maximize profits). But even if other motivations may drive owners to some extent, it is reasonable to expect that economic self-interest will remain a substantial consideration.

Say that the annual operating cost (absent environmental compliance costs) of an existing facility is \$100, while—as one might expect because of the greater efficiencies generally offered by newer plants—the annual operating cost of a new facility (with the same production capacity) is \$90 (including annualized capital cost). Assuming that A acts economically, A will choose to construct a new facility. This result will not change if the applicable environmental regulation imposes uniform compliance costs.

But now say that the applicable environmental regulation imposes costs of \$20 if A constructs a new facility but no cost if A retains her existing facility. The modified annual operating cost of a new facility is \$110, while the annual operating cost of the existing facility remains \$100. Accordingly, A will now opt to retain her existing facility in operation.

TABLE 1 – Example of the “Old Plant Effect”

A, the owner of a power-generating plant, is contemplating upgrading or replacing the plant.

Situation 1: Absent Environmental Regulation

Annual Operating Cost of the Existing Facility (including annualized capital cost) = \$100

Annual Operating Cost of a Comparable New Facility = \$90 (including annualized capital cost)

Assuming that A acts economically, A will choose to construct a new facility.

Situation 2: With Environmental Regulation

Cost of Environmental Regulation for a New Facility = \$20

Cost of Environmental Regulation for an Existing Facility = \$0

Annual Operating Cost of the Existing Facility = \$100

Annual Operating Cost of a New Facility = \$110

A will now opt to retain her existing facility in operation.

The environmental regulation thus distorts A’s behavior. In effect, the law creates a barrier against new plant construction.¹⁷² Firms will be less likely to construct new

¹⁷² Cf. Jonathan Remy Nash, *Too Much Market? Conflict Between Tradable Pollution Allowances and the “Polluter Pays” Principle*, 24 HARV. ENVTL. L. REV. 465, 505-06 (2000) (arguing that tradable pollution permit regimes that “grandfather” permits to existing polluters give rise to a barrier against exit, i.e., an incentive “not to *exit* the industry by shielding them from new competition”). The environmental regulation described in the text would probably not give rise to a barrier against exit since the issue is not one of competition from new market entrants: Electricity generating utilities will either retain existing plants in existence (modernized or otherwise) or construct new plants. Nonetheless, the barriers against exit and new plant construction arise out of similar incentive effects.

plants than they would be in the absence of regulation.¹⁷³ And the incentive to retain older plants in operation may give rise to a perverse result: Environmental conditions may be worse with more stringent regulation than they would be under less stringent regulation. An extension of the example just above makes this clear. Assume that the old plant emits 5 units of pollution per ton of output; that a new, unregulated plant would emit 3 units because of its greater efficiency; and that a new plant subject to regulation would emit 1 unit. To the extent that, as in the example, the plant owner opts to retain her existing facility in operation, the old plant effect combined with stringent regulation for new plants will result in the continuing emission of 5 units, insofar as the existing plant will not be replaced by a new, heavily regulated plant. In contrast, if new plants were unregulated, the facility owner would opt to erect a new facility in place of the old plant, with a resulting pollution level of only 3 units. Thus, less stringent environmental regulation may increase environmental quality.

But more stringent environmental regulation for new sources will not *always* lead to better environmental quality. In some variations on the example—for example, if the annualized cost of complying with new source regulation is \$8 instead of \$20—the old plant will close down and be replaced by a new, regulated plant. In general, the question of whether grandfathering and more stringent regulation for new sources will lead to more pollution is an empirical one. Grandfathering and more stringent regulation could lead to more or less pollution. It also might lead to more pollution in the short run (while the lives of existing sources are extended) but less pollution in the long run (once existing sources are eventually retired), as in the case of motor vehicles.¹⁷⁴

Where in fact the drawbacks that result from grandfathering preexisting sources by imposing less stringent (or no) controls outweigh the benefits of regulating new sources more stringently, the question arises as to how those effects can be reduced or eliminated. Insofar as the old plant effect is the result of differential environmental obligations being imposed on old and new sources, it is not surprising that the old plant effect can be mitigated by decreasing the difference between the two standards. This can be achieved in one of two ways: The lower standards imposed on older sources can be raised, or the higher sources imposed on newer sources can be lowered. Since the latter option would essentially entail not implementing a new legal regime—i.e., effectively freezing the then-current regulatory regime in place—that option is not likely to be attractive. (However, the new regulations are in fact an implementation of this option, as we discuss below.¹⁷⁵) This means that the old plant effect is better solved by limiting, or eliminating altogether, the more lenient treatment of existing plants.

¹⁷³ See Randy Becker & Vernon Henderson, *Effects of Air Quality Regulations on Polluting Industries*, 108 J. POL. ECON. 379, 415 (2000) (concluding, based upon empirical data, that “[g]randfathering of preregulation plants raises [plant] survival rates, limiting ‘natural’ plant turnover and keeping otherwise unprofitable operations in business”).

¹⁷⁴ See *supra* ____.

¹⁷⁵ See *infra* ____.

ii. The Old Plant Effect Under the Previous Statutory and Regulatory Regime

Congress decided under the Clean Air Act to treat existing plants more leniently than new plants.¹⁷⁶ The Act's grandfathering could have been interpreted narrowly were it seen to extend only to plants that remain unmodified, i.e., if any plant modification triggered application of the more stringent new source requirements. However, since the early days of the regime, the regulatory system has provided an exception for modifications to plants that constitute "routine maintenance, repair, and replacement."¹⁷⁷

Before the current regulations were promulgated, regulatory regime used a case-by-case approach to decide whether any given modification or renovation of a plant is simply routine maintenance, repair, and replacement, or goes beyond that and therefore triggers new source review.¹⁷⁸ This case-by-case approach allowed the government to ensure that the policies underlying the routine maintenance exception are borne out in practice. While a case-by-case approach may be costly for government to administer and create planning difficulties for societal actors, it does allow government to keep a tight and reasoned constraint on grandfathering relief.

iii. The Old Plant Effect Under the New Regulations

The new regulations effectively subject some existing plants to more stringent regulation than others. Accordingly, along lines similar to ones we have just discussed, it can give rise to perverse incentives: Specifically, the new regulations may give rise to an old plant effect.

At the outset, we note an important difference between our general discussion of the old plant effect, above, and the applicability of the old plant effect in the context of the new regulations. Under the general discussion, we considered that the plant owner had to choose between two options: building a new plant or retaining the existing plant in operation as-is. To evaluate the new regulations, by contrast, we need to consider the plant owner as having a third option, in addition to the other two: conducting substantial but not extensive improvements to the existing plant—such that, under the new regulations, new source review would not be triggered—an option to which we will refer as "significant improvements".

¹⁷⁶ See *supra* ____.

¹⁷⁷ See *supra* _____. It is arguable that this regulatory exception extends transition relief beyond the scope contemplated by the statute; to that extent, it would be undesirable (and an illegal exercise of regulatory authority, besides). Still, as we have noted above, the routine maintenance exception has around almost as long as the Clean Air Act itself and is usually seen as a logical implementation of the statutory grandfathering.

¹⁷⁸ See *supra* ____.

Environmental regulation that applied equally in all three cases would introduce no distortion. However, to this point, the existing regulatory structure has applied a stringent standard to both new plant construction and to significant improvements (i.e., the first two options), and a less stringent standard to unmodified existing plants. Such a structure will introduce an old plant effect.¹⁷⁹

Assuming that new plants are subject to regulation while old plants are not, the treatment of plants that undergo modifications can have an effect on plant owners' decisions as to whether to leave their existing plants in operation. Remaining with the example from the previous Section, say that the annualized cost to *A* of a new plant (including annualized capital costs) is \$90, of an existing plant subject to significant improvements is \$95, and of an unmodified existing plant is \$100. Further assume that environmental regulations will impose an additional \$15 annual cost on a new plant but no cost on the unmodified existing plant. In that case, *A*'s ultimate decision as to how to proceed will depend upon whether or not the environmental regulations apply to a plant that has undergone significant improvements. If the regulations apply, then *A*'s best option is leave the existing plant in operation unmodified.¹⁸⁰ If, however, the regulations do not apply, then *A*'s best option is instead to undertake the renovations.¹⁸¹ Thus, under this scenario, the new regulations can be seen to remove at least part of the barrier against modernization (by encouraging at least some renovations) and also to vindicate the old plant effect's notion of a less stringent environment regulation achieving greater environmental protection.

There are, however, other possible scenarios, under which the new regulations have environmentally undesirable effects. Consider a modification of the example under which the cost of compliance with environmental regulations is \$8 instead of \$15. Now if the environmental regulations apply to a plant that has undergone significant

¹⁷⁹ Extending the example above, say that the annual operating cost of a new plant is \$90, the annualized cost of an existing plant subject to relatively minor improvements (under 20%) is \$95 (including annualized capital costs), and the annualized operating cost of the existing plant in operation as-is is \$100. In the absence of environmental compliance costs, then, *A* will choose to construct a new plant.

Now say that environmental regulations apply to both newly constructed, and renovated, plants, and that compliance with the regulations will impose an additional \$15 annual cost on these plants. The regulations do not distinguish minor improvements and major reconstructions; in both situations an additional \$15 annual cost applies. The structure of environmental regulation will induce *A* to retain her existing plant in operation as-is (\$100 annual operating cost versus a \$105 annual cost for a new plant and \$110 for a renovated plant). This is the general "barrier against new construction" we discussed above, now more generalized as a "barrier against modernization".

¹⁸⁰ The \$100 annualized cost of that option is less than both the \$105 annualized cost of a new plant and the \$110 annualized cost of the renovated plant.

¹⁸¹ The \$95 annualized cost of that option is less than both the \$110 annualized cost of a new plant and the \$100 annualized cost of the existing unmodified plant.

modifications, then A's preferred option will be to construct a new plant.¹⁸² However, if the regulations do not apply, then A will choose instead to modify the existing plant.¹⁸³

Under this scenario and others like it, the new regulations will impede new construction and artificially encourage modifications that retain existing plants in operation. Under the original example—summarized as Situation 1 in Table 1—the new regulations were seen potentially to reduce a barrier against modernization. But under the revised example—summarized as Situation 2 in Table 1—the new regulations *erect* such a barrier. First, the regulations will encourage owners to renovate existing plants rather than constructing new ones. Second, in general, the regulations would tend to encourage plant owners to invest comparatively smaller amounts in their plants. Indeed, by tying application of the stringent new source standard to expenditures on renovations that exceed 20% of the current replacement value of a facility, the new regulations will tend to discourage plant owners from investing amounts greater than 20% that will trigger the more stringent standard.¹⁸⁴

Tables 2A, 2B, 3A and 3B help to elucidate the point. To the extent that the new regulations mitigate the old plant effect, the solution that the proposed regulatory revisions invokes is the latter of the two possible solutions that we outlined above:¹⁸⁵ By shifting some renovations from the “trigger” to the “do not trigger” side of the ledger, the proposed regulations provide for more lax new source review. As such, the new regulations “solve” the old plant effect problem by simply lowering the comparatively higher standard; this is reflected in Tables 2A and 2B.¹⁸⁶

¹⁸² The \$98 annualized cost of that option is less than both the \$100 annualized cost of the existing, unmodified plant and the \$103 cost of the renovated plant.

¹⁸³ The \$95 cost of that option is less than both the \$100 annualized cost of the existing, unmodified plant and the \$98 cost of the new plant.

¹⁸⁴ Say, for example, that A is committed to undertake a renovation of a facility that would cost 19% of the facility's value. Undertaking at the same time renovations costing another 6% of facility value would make sense insofar as the renovations would result in a uniform technological standard being installed at the facility; in other words, a 25% (by value) total investment would be economically efficient because of economies of scope. *Cf.* Becker & Henderson, *supra* note __, at 383 (arguing, based upon empirical data, that, “in setting up new plants or engaging in expansion of existing plants, relative to phased-in investments of the past, now plants in nonattainment areas make investments in bigger lumps (i.e., ‘all at once,’ relatively speaking), to avoid repeated negotiations and to ensure consistency of equipment specifications across what would have been different investment phases in the past”). The new regulations might, nonetheless, induce A to choose to undertake only the 19% investment if the cost of complying with the stringent new source standard exceeded the benefits offered by the economies of scope.

¹⁸⁵ *See supra* __.

¹⁸⁶ To the extent that the new regulations mitigate the old plant effect, they do so in an undesirable way. The new regulations “solve” the old plant effect problem by simply lowering the comparatively higher standard and, as we have discussed above, this is generally not an advisable solution to the problem. *See supra* __. There may be reasons to accept some degree of grandfathering and the accompanying effects, including the old plant effect. But, to the extent that the government seeks to reduce the old plant effect, the answer should be to limit grandfathering, not to repeal in part or whole the new legal regime.

TABLE 2A: Renovations and the Trigger of New Source Review under the Previous Regulatory Scheme, i.e., Before Enactment of the New Regulations

Does Not Trigger New Source Review	Does Trigger New Source Review
- No renovation - Routine maintenance	- Significant renovation - Construction of a new source

TABLE 2B: Renovations and the Trigger of New Source Review after the Enactment of the New Regulations

Does Not Trigger New Source Review	Does Trigger New Source Review
- No renovation - Routine maintenance - Significant renovation	- Construction of a new source

The Administration effectively justifies the new regulations by supposing that the predominant choice faced by plant owners is between undertaking a significant renovation and undertaking no renovation. This is reflected in Table 3A, with the relevant choices presented in bold type. The Administration argues that, because the previous regulatory regime applied new source review to significant renovations, the previous regime encouraged plant owners to opt to undertake no renovations. The proposed revisions remove the disincentive against undertaking significant renovations.¹⁸⁷

But the Administration may misstate the problem: Given the age of the grandfathered plants, plant owners may not be choosing between undertaking significant renovations and undertaking no renovations; rather, they may be choosing between undertaking significant renovations and constructing new plants, as reflected in Table 3B. Given *that* choice, the shift of significant renovations to the “does not trigger new source review” side of the ledger serves only to *encourage* plant owners to undertake significant renovations *instead* of constructing new plants.

TABLE 3A: The Administration’s Framing of the Choice Faced by Plant Owners (Relevant Options in Bold)

No Renovations (not subject to new source review either before or after the new regulations’ enactment)	Significant Renovations (subject to new source review before the new regulations’ enactment, but not after)	Construction of a New Plant (subject to new source review both before the new regulations’ enactment and after)
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¹⁸⁷ See.e.g., Brief for Respondent, State of N.Y. v. U.S. EPA, D.C. Cir., No. 02-1387, at 78-81, 121-25 (arguing that environmental benefits will result from increased modification that the current new source review regime discourages).

TABLE 3B: Another Possible Choice Faced by Plant Owners (Relevant Options in Bold)

No Renovations (not subject to new source review either before or after the new regulations' enactment)	Significant Renovations (subject to new source review before the new regulations' enactment, but not after)	Construction of a New Plant (subject to new source review both before the new regulations' enactment and after)
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Whether, in fact, the new regulations will act to “solve” the old plant effect or act as a barrier against new construction that otherwise would and should take place depends upon which of the two scenarios we presented is closer to reality. In other words, it is an empirical question. Support for the Administration’s contention—that a change to the RMRR rule is needed to remove a great disincentive against modifications—is practically nonexistent.¹⁸⁸

The Administration would argue that, to whatever extent they may have deleterious effects, the new regulations are on balance desirable, i.e., that the efficiency benefits of having many plants upgrade outweigh the drawback of having plants remain in service longer. The Administration’s focus thus remains on the question efficient energy production. Missing from the Administration’s account, however, is the possibility that new plants might not only be preferable from an environmental perspective, but also be able to produce energy more cheaply. In fact, there are indications that the trend in construction of new electricity-generating plants is in the

¹⁸⁸ No empirical studies to date have specifically validated the hypothesis that the EPA’s 2003 Equipment Replacement Rule standard reduces plant investment in routine upgrades or modifications at existing plants. Interim Report of the Committee on Changes in New Source Review Programs for Stationary Sources of Air Pollutants 130 (National Research Council of the National Academies 2005). Perhaps surprisingly, there is scant empirical literature on the NSR standards even prior to the 2003 rule. The EPA and industry experts have asserted that NSR requirements have in effect made certain improvements too costly to be undertaken, though there is no empirical data available to substantiate this contention.

In the EPA’s 2002 Report to the President regarding New Source Review, [Report to the President] [check], industry experts are cited for the proposition that the pre-Equipment Replacement Rule NSR standard made routine maintenance and repair “cost prohibitive to undertake, which, in turn, can adversely affect the availability and reliability of plant operations and discourage such projects.” [Report to the President 9 [check]]. In promulgating the 2003 rule, the EPA relied on anecdotal information about plant maintenance and repair projects that did not go forward due to the NSR standard, since there was an absence of hard data from which once could conclude NSR disincentivized RMRR projects. Office of Inspector General of the Environmental Protection Agency: New Source Rule Change Harms EPA’s Ability to Enforce Against Coal-fired Electric Utilities 15 (Report No. 2004-P-00034, September 30, 2004) (available at <http://www.epa.gov/oigearth/reports/2004/20040930-2004-P-00034.pdf>) citing General Accounting Office: *Clean Air Act: EPA Should Use Available Data to Monitor the Effects of Its Revision to the New Source Review Program*, U.S. GAO (Rpt. No. GAO-03-947, August 2003). . A lack of empirical data on point may suggest an intrinsic difficulty in determining why specific RMRR projects did not move forward, since NSR is one of several variables affecting a plant’s choice to invest in maintenance and repair projects. Interim Report, *supra*, at 144 (“Firm and industries indicate instances when the potential to trigger NSR requirements made or might have made plant upgrades too costly to move forward. However, there is no way to independently corroborate such reports and rigorous statistical studies of this phenomenon do not exist, partly because the lack of data and the difficulty in identifying the effects of NSR given all the varied influences of investment decisions.”).

direction of facilities that are both environmentally friendlier and more efficient than old plants.¹⁸⁹ If that is so, then a focus on efficiency broader than that taken by the Administration suggests that the new regulations are undesirable.¹⁹⁰

The new regulations also pay insufficient attention to the history of regulation up to this point. To whatever extent that the new regulations might have made some sense at an earlier juncture (for example, at the initial regulatory stage), that regulatory history renders the new regulations a potentially poor option at this point in time.

One can understand the early Clean Air Act legislative history to reflect a compromise to accept an extension of existing plants' lives in return for the application of very strict standards to the replacement plants that one day would be built.¹⁹¹ Now, more than a third of a century after that compromise was struck, many of the plants that were in existence at the time of that compromise remain in service—far beyond the date that most people at the time expected them all to have been retired (even taking into account the augmentation of their lives wrought by the introduction of differential regulatory standards).¹⁹² In effect, we are now at the stage—indeed, some might say beyond the stage—at which one reasonably might expect the grandfathered plants to be retired. Economically speaking, one would expect that the annualized cost of a newly constructed plant to be less than the annualized cost of a grandfathered plant, *even taking into account the far more stringent environmental standard imposed on new plants*.¹⁹³

The incentive to retain older power plants in operation is especially problematic. Old coal-burning electricity-generating power plants—located predominantly in the midwestern United States—generate a disproportionately large amount of pollution.¹⁹⁴

¹⁸⁹ See Byron Swift, *Grandfathering, New Source Review, and NOx—Making Sense of a Flawed System*, 31 ENV'T. REP. (BNA) 1538, [check] (July 21, 2000).

¹⁹⁰ See *infra* ____ (discussing the flawed, yet typical, government approach of emphasizing the ancillary costs of additional regulation over the ancillary benefits).

¹⁹¹ See *supra* ____.

¹⁹² See *supra* ____.

¹⁹³ Put another way, the new regulations are inefficient because they draw a bright regulatory line between two options—renovating an existing facility and constructing a new one—that are at this juncture economically close substitutes. As David Weisbach has elucidated in the context of anti-tax-avoidance legislation, regulatory line drawing between close substitutes is inefficient since the bright regulatory line is more likely to induce changes in behavior that are undesirable. In particular, given a choice between two closely substitutable options only of which is subject to regulation, societal actors are likely to choose the option that is free of regulation. See David A. Weisbach, *An Economic Analysis of Anti-Tax-Avoidance Doctrines*, 4 AM. L. & ECON. REV. 88, 95-99 (2002); see also David A. Weisbach, *An Efficiency Analysis of Line Drawing in the Tax Law*, 29 J. LEG. STUD. 71 (2000). In the context of applying environmental regulation, modifying an existing facility is (today) likely to be a close substitute for constructing a new facility. Thus, drawing a line between modification and new construction will encourage actors to avoid the regulated option—new construction—in favor of modification.

¹⁹⁴ See, e.g., David R. Wooley, *Environmental Comparability*, 12 NAT. RESOURCES & ENV'T. 276, 276 (1998) (“The pollution problems of electricity in the United States arise from the emissions of a few

In particular, these plants are largely responsible for the problem of acid precipitation in the northeastern United States and eastern Canada.¹⁹⁵ Thus, the environmental impact of keeping those plants in operation over a longer period of time will be especially dramatic.

The incentive to keep older plants in operation is not the only poor incentive that the new regulations generate. The next Section explores other undesirable investment incentives to which the new regulations might be expected to give rise.

B. The New Regulations' Effects on Investment Decisions

One portion of the revisions to the new source review regulations—the 20 percent regulatory safe harbor—would have predictable, and undesirable, effects on plant owners' investment decisions by erecting a barrier against modernization. We briefly survey these effects in this Section. First, as we discuss above, the new regulations may encourage plant owners not to invest funds in renovation that would cross the threshold and trigger the stringent new source standards.¹⁹⁶

Second, the regulations may encourage plant owners to structure larger investments as a series of smaller-scale investments, even though one large-scale renovation would be economically preferable, simply to avoid the more stringent new source standards. By way of example, say that *A* has decided to undertake renovations to a plant that will cost 30% of the value of the plant. *A* could structure the renovations in two stages, but this would add the cost of the renovations—for example, because workers must come to the plant twice and perhaps in the course of the renovations duplicate some work that otherwise would have to be done only once—such that the cost of each stage of the bifurcated renovations would cost 19% of the value of the facility. The one-time renovation is clearly the more efficient option. But the new regulations might induce *A* to undertake the two-stage approach if the cost of complying with the stringent new source standard exceeded the additional 8% total cost that bifurcation would impose.¹⁹⁷

hundred antiquated power plants.”); *id.* at 278 (“Metals and CO₂ emissions are dramatically higher from older, inefficient power stations. Older plants often have poor heat-to-electricity conversion efficiencies, resulting in much larger fuel consumption and pollution emitted per unit of power generated.”).

¹⁹⁵ See Jonathan Remy Nash & Richard L. Revesz, *Markets and Geography: Designing Marketable Permit Schemes to Control Local and Regional Pollutants*, 28 *ECOLOGY L.Q.* 569, 587 (2001).

¹⁹⁶ See *supra* ____.

¹⁹⁷ Empirical data support the hypothesis that the structure of environmental regulation might affect the structuring, over time, of plant investment decisions. Cf. Becker & Henderson, *supra* note ____, at 415-16 (“Investment or growth patterns of plants appear to be affected by regulation. In particular, relative to attainment areas, new plants subject to strong regulation in nonattainment areas start off significantly larger (more up-front investment), but over time (within 10 years) their sizes converge to those of plants in attainment areas (with more phased-in investments).”).

The Administration could attempt to treat related renovations as a single renovation for purposes of the safe harbor rule.¹⁹⁸ Thus, two related 15% renovations would count as a single 30% renovation that would trigger new source review. But such standards are notoriously difficult to administer because obvious questions arise as to what constitutes “related.” And a great deal of the benefits of certainty that the Administration attributes to its regulations would be lost.¹⁹⁹

Even beyond the immediate economically inefficient effects we have described, a proper evaluation of the new regulations should include as well the new regulations’ ancillary benefits²⁰⁰ and costs.²⁰¹ And, indeed, these incentives on plant owners—to conduct smaller renovations (i.e., less than 20% in scope) than they otherwise would, and to break large renovations into series of smaller renovations—may impose an ancillary cost (i.e., the current additional regulatory layer may prevent that cost, thus providing an ancillary benefit): It may make sense, once one has decided to undertake a large renovation, to take advantage of economies of scope and replace even more plant elements than the basic renovation requires.²⁰² Consider the possibility that a part in an

¹⁹⁸ See *supra* ____.

¹⁹⁹ We further note that, even if the aggregation standard is effectively enforced, the question arises as to whether the cost of enforcement—in terms both of monitoring and litigation costs—would outweigh the purported benefits of the rule (which include greater certainty for societal actors). The Administration advances the notion that one cost that the current regulatory system imposes—and, accordingly, one cost that its safe harbor would eliminate—is the uncertainty inherent in the case-by-case approach. See *supra* ____.

Indeed, the application of a case-by-case standard may, as a general matter, make it easier for societal actors to predict how the law will be applied in the future. See Louis Kaplow, *Rules Versus Standards*, *supra* note __, at 575-76 (describing the paradigmatic situation—one among three possibilities—where individual actors become informed of the law under a rule but not a standard). This may provide a benefit in that actors who fear uncertainty may be more likely to take desirable actions under a rule than a standard.

But, even assuming that the uncertainty imposes substantial costs, the Administration fails to take notice of uncertainty that the new regulations would introduce. From the description in the new regulation, the question as to whether to aggregate multiple modifications would be governed by a standard, not a rule. As such, it seems likely to generate substantial enforcement, monitoring, and litigation costs. Compare the somewhat analogous step transaction doctrine under the tax law. See, e.g., Cliff Gross, *An Overview of U.S. Federal Tax Considerations Regarding Taxable and Tax-Free Corporate Acquisition Structures*, 584 PLI/Tax 1337, 1354 (2003) (noting that application of the step transaction doctrine “is often difficult to predict reliably”).

²⁰⁰ To the extent that it does identify benefits of the new regulations, the Administration includes indirect non-environmental benefits, such as more efficient satisfaction of the nation’s energy needs. See *supra* ____.

²⁰¹ See generally Samuel J. Rascoff & Richard L. Revesz, *The Biases of Risk Tradeoff Analysis: Towards Parity in Environmental and Health-and-Safety Regulation*, 69 U. CHI. L. REV. 1763, 1769-80 (2002) (discussing various forms of risk tradeoff analysis). See *id.* at 1790-95 (describing the familiar, but flawed, pattern of the government considering ancillary costs but not ancillary benefits of additional regulation); see also Nash, *supra* note __, at 511-15.

²⁰² Telephone interview with Professor Ross Baldick (Oct. 13, 2003).

old, grandfathered power-generating plant dates from the original construction of the plant. The part is responsible for shutting down the plant and taking it off the regional power grid in the event of a plant overload. A modern version of the part (perhaps it is electronic whereas the original part is mechanical) might help to avoid local or even large-scale blackouts. It may be that, in the context of a large-scale renovation, the plant owner may decide to replace the part even though the part is functioning well at the moment, simply because the large renovation of the entire unit provides an opportune time to replace the part. In contrast, the part might not be changed as part of a smaller renovation. Thus, the application of the additional layer of regulatory protection now in effect would provide the benefit of the replacement of the part—as well as the accompanying ancillary benefits of avoiding power outages.

III. Impact on Other Provisions of the Clean Air Act

The new regulations effectively reduce the stringency of the environmental standards to which existing plants are subject. The Administration justifies this strategy on grounds of economic efficiency. But the Administration fails to recognize the ways in which the new regulations will interact with other portions of Clean Air Act regulation. Because of these interconnections, the new regulations will impose more stringent regulation on sources other than those that undertake renovations. This effect will increase the cost of the new regulations, and also impose costs in a way that is distributionally undesirable.

The Clean Air Act establishes national primary and secondary ambient air quality standards (NAAQS), which are designed to guard against adverse effects on public health and public welfare, respectively.²⁰³ The NAAQS themselves are, as their name indicates, simply ambient standards; they do not, by themselves, regulate the pollution emissions at any one source (or group of sources). Still, the promulgation of NAAQS constrains the emissions of pollutants.²⁰⁴

It stands to reason that, for the NAAQS to hold, a reduction of the stringency in the standard applied to one set of sources will require the imposition of a comparatively stricter standard on another set of sources. And, indeed, the Clean Air Act designates counties that air quality that does not equal or surpass the NAAQS standards as “nonattainment areas,”²⁰⁵ and imposes tight constraints on the construction and operation

²⁰³ See generally Clean Air Act § 109(b), 42 U.S.C. § 7409(b).

²⁰⁴ The Clean Air Act vests the states with authority to develop state implementation plans (SIPs) that are designed to achieve the NAAQS. See *id.* § 110(a). While the Act grants states the discretion to decide *how* the NAAQS are to be achieved, see, e.g., *Union Elec. Co. v. EPA*, 427 U.S. 246 (1976), at some point compliance with NAAQS for a pollutant must involve some limit on the total amount of pollutant that can be released over some period of time. In other words, there is some amount of the pollutant such that, if that much of the pollutant is released over a period of time, the NAAQS cannot be met.

²⁰⁵ See 42 U.S.C. § 7407(d)(1).

of new sources in such areas.²⁰⁶ Among the requirements that a new source must satisfy is the requirement that the new source obtain offsetting reductions in emissions such that, in total, reasonable further progress is made toward attainment of the NAAQS.²⁰⁷ Nonattainment thus constrains the ability of new sources to locate in an area. Indeed, to the extent that offsets are prohibitively expensive, the constraint may be absolute.

This notion—that, because of the constraints imposed by the NAAQS, grandfathering requires that comparatively stricter standards be applied to other sources—plays itself out in the context of two pairs of sets of sources. Consider first the effect of grandfathering existing sources on new sources in the same area. By imposing less stringent standards on existing sources, the Act (as it is currently constituted) makes it likely that comparatively more stringent standards will be imposed on new sources.²⁰⁸ The new regulations would further reduce the stringency of the existing source standard. That additional marginal reduction likely would have to be made up, at least in substantial part, by the imposition of even stricter standards on new sources.²⁰⁹

It may well be that new sources will not be subjected to stricter regulation by virtue of NAAQS nonattainment. Instead, the likely effect of grandfathering will be seen in the siting of new sources. The existence of grandfathered plants that contributes to an area’s nonattainment²¹⁰ may preclude the location of new plants, when in fact it would be more efficient to allow the new sources to begin operation and either to discontinue or scale back the old plants’ operation or otherwise to reduce the old plants’ pollution output.

Second, the imposition of a less stringent standard on existing sources in one state may require the imposition of a comparatively more stringent standard on—or, more

²⁰⁶ See 42 U.S.C. §§ 7501-7509a.

²⁰⁷ See *id.* §§ 7502(c)(5), 7503(a)(1).

²⁰⁸ It is conceivable that a state might, on its own, choose to regulate existing sources quite stringently under a SIP. But it would seem likely that greater lobbying access and power would be wielded by existing sources, with the likely result being that existing sources would enjoy the grandfathering the federal Act affords and in fact be regulated less stringently. See Keohane, Revesz & Stavins, *supra* note __, at [check].

²⁰⁹ That is not to say that there is a zero-sum game. Pollution concentration will depend upon the characteristics and locations of pollutions emissions; in particular, the location and extent of harm ultimately caused by pollution emissions will depend, inter alia, upon location, wind patterns, topography, smokestack height, emission velocity, and emission temperature. See Nash & Revesz, *supra* note __, at 577-78. Nonetheless, it remains the case generally to expect the increased pollutant concentrations that will result from a less stringent standard being imposed on some sources to be offset by decreased pollution concentrations resulting from a more stringent standard imposed on other sources, if overall pollutant concentrations are not to worsen.

²¹⁰ We say “existence” and not “presence” of grandfathered plants in the area, since emissions from a grandfathered plant in a location geographically far from the nonattainment area may travel to the area and contribute to the area’s nonattainment status. See Nash & Revesz, *supra* note __, at 576 (discussing “regional pollutants”).

likely, impede the siting of—sources in another, downwind state. The presence of polluting facilities in one state may have considerable adverse effects on the ambient pollution levels in another, downwind state.²¹¹ But the influx of pollution from sources in an upwind state may compel the downwind state,²¹² in designing a state implementation plan that will result in NAAQS compliance,²¹³ to impose more stringent and additional constraints on the sources within its borders.²¹⁴

In both cases, then, some sources—new in-state sources and sources in downwind states—will be regulated more heavily while existing in-state sources substantially escape regulation. But it is generally the case that the marginal costs of pollution reduction rise steeply as the level of pollution control at a source increases.²¹⁵ It is therefore likely to be highly economically inefficient to regulate some sources highly stringently while allowing others substantially to escape regulation: Regulating a source more stringently imposes higher and higher marginal costs. Thus, the allocation of the burden of pollution reduction achieved by the new regulations is likely to be very economically inefficient. It would be more efficient to spread the burden more evenly across sources.

Moreover, there are likely to be cross-industry siting effects. The NAAQS apply uniformly on the basis of geography. Thus, to the extent that the existence of grandfathered plants contributes to an area's nonattainment status, the effect of that classification is not restricted to the siting of new plants in the same industry as the

²¹¹ See *supra* __; Nash & Revesz, *supra* note __, at 576 (discussing the reach of regional pollutants); *id.* at 587 (discussing the regional impact of sulfur dioxide emissions in the United States).

²¹² The Act, by its terms, requires upwind states to include in their state implementation plans provisions proscriptions against emitting pollutants in amounts will either “contribute significantly to nonattainment in, or interfere with maintenance by, any other State with respect to any such national primary or secondary ambient air quality standard, or . . . interfere with measures required to be included in the applicable implementation plan for any other State . . . to prevent significant deterioration of air quality or to protect visibility . . .” 42 U.S.C. § 7410(a)(2)(D)(i). It also authorizes downwind states to petition EPA for relief where emissions from a source, or group of sources, in an upwind state are causing such results. *Id.* § 7426(b). However, even if such relief is ultimately forthcoming, it can take considerable time to arrive. See, e.g., *Michigan v. U.S. EPA*, 213 F.3d 663 (D.C. Cir. 2000) (upholding SIP call issued in 1998); *Appalachian Power Co. v. EPA*, 249 F.3d 1032 (D.C. Cir. 2001) (upholding relief for a petition filed in 1997). Thus, in practice, the upwind pollution may have a constraining effect on downwind sources over an extended time horizon.

²¹³ The Act leaves it to states to develop and implement state implementation plans that will achieve NAAQS compliance. See *supra* note __.

²¹⁴ Indeed, this conflict of interest over new source review between upwind and downwind states is evidenced by the fact that 15 states, mostly from the northeastern United States, have filed suit against the EPA, challenging the new rule, while 11 midwestern and western states have intervened on EPA's behalf. See *supra* __.

²¹⁵ See, e.g., Daniel H. Cole & Peter Z. Grossman, *When is Command-and-Control Efficient? Institutions, Technology, and the Comparative Efficiency of Alternative Regulatory Regimes for Environmental Protection*, 1999 WIS. L. REV. 887, 916-17 (noting the academic prediction that, and noting empirical evidence tending to confirm that, marginal pollution control costs rise steeply as the levels of control rise).

grandfathered plants. Rather, the effect may extend to plants used in other industries that emit the same pollutant. Thus, the inefficiencies that result may be quite extensive and pernicious.²¹⁶

²¹⁶ In addition to the inefficiencies with existing law discussed in the text, much of the benefit that the Administration attributes to the new regulations is already available under the EPA's existing bubble policy. Moreover, to the extent the new regulations extend relief beyond the bubble policy, it does so in an undesirable way.

The bubble policy interprets the term "stationary source" in the statutory definition of "modification," 42 U.S.C. § 7411(a)(4), and allows plant owners to treat multiple point sources of pollution as a single source. See EPA Emissions Trading Policy Statement, 51 Fed. Reg. 43,814 (1986); for discussion of the history of the bubble program, see Michael C. Naughton, Note, *Establishing Interstate Markets for Emissions Trading of Ozone Precursors: The Case of the Northeast Ozone Transport Commission and the Northeast States for Coordinated Air Use Management Emissions Trading Proposals*, 3 N.Y.U. ENVTL. L.J. 195, 210-13 (1994). The bubble policy is of great value to plant owners who renovate sources, since the statutory definition of "modification" extends only to a physical change or change in the method of operation of a "stationary source" that either "increases the amount of any air pollutant emitted by such source or [that] results in the emission of any air pollutant not previously emitted." 42 U.S.C. § 7411(a)(4).

The bubble policy effectively allows a plant owner to renovate a facility and increase the amount of pollution emitted without triggering new source review, provided that the group of sources that lie "under the bubble" do not overall exhibit a net increase in emissions. In other words, an increase in emissions at a renovated source can be offset by a reduction at another source under the bubble, such that the renovation will not trigger new source review.

The bubble policy is especially valuable for owners of sources located in nonattainment areas and areas subject to the "prevention of significant deterioration" (PSD) program. (The PSD program seeks to avoid decreases in air quality in areas in which existing air quality is already, or should be, pristine, i.e., in excess of the NAAQS. See 42 U.S.C. §§ 7471-7479.)

Both programs impose strict requirements on new sources located in the areas they govern. The nonattainment program requires, for example, offsetting emission reductions and that the new source comply with the lowest achievable emissions rate. See 42 U.S.C. §§ 7502(c)(5), 7503(a)(1), (2). The PSD program requires that new sources receive a permit and employ the best available control technology for pollution reduction. See *id.* § 7475(a)(1), (4).

Because these programs adopt the same definition of modification for purposes of their new source review provisions, see *id.* § 7501(4) ("For the purpose of th[e] [nonattainment program] . . . [t]he terms 'modifications' and 'modified' mean the same as the term 'modification' as used in section 7411(a)(4) of this title."); *id.* § 7479(2)(C) ("For the purpose of th[e] [PSD program] . . . [t]he term 'construction' when used in connection with any source or facility, includes the modification (as defined in section 7411(a) of this title) of any source or facility."), the benefit of the bubble policy to owners of plants located in nonattainment and PSD areas is even greater, see, e.g., *Chevron U.S.A., Inc. v. NRDC*, 467 U.S. 837 (1984) (upholding the use of the bubble policy to avoid nonattainment new source review); *Alabama Power Co. v. Costle*, 626 F.2d 323 (D.C. Cir. 1979) (upholding the use of the bubble policy to avoid PSD new source review).

In light of the bubble policy, a modification that results in an increase in emissions does not trigger new source review if it is bubbled with another source that undergoes an offsetting decrease in emissions. Thus, the only additional benefit that the new regulations seem to provide is for renovations that *would* result in increased pollution output and that are not offset by pollution reductions at other sources. While the quantity of this benefit is unclear, it is in any event substantially less than it would be in the absence of the bubble policy.

IV. The New Rules as Transition Relief

Grandfathering of existing sources is a form of relief from a new, more stringent legal regime. As such, the propriety of grandfathering is a subpart of the more general question of how best to effect a transition from one legal regime to another. In this Section, we locate the debate over new source review in the academic literature that addresses the legal and economic aspects of legal transitions. We explain the literature's general presumption against transition relief. In particular, we explore two aspects of the new regulations as transition relief: incentive effects and fairness. Considerations of incentive effects warrant generally against legal transition relief. Moreover, even if incentive effects here might justify some limited transition relief, the new regulations far exceed any appropriate transition relief. And, similarly, to whatever extent concerns of fairness might justify limited transition relief, the new regulations go beyond what fairness demands.

A. Grandfathering and the New Regulations as Transition Relief

Grandfathering is a form of transition relief. Not applying a new legal rule to existing actors shields those actors from the new legal regime.²¹⁷

Transition policy can provide different degrees of relief from the new legal regime. At one extreme is a transition policy that offers no special treatment whatsoever. The other extreme is a policy that offers full relief—for example, a policy of permanent grandfathering or a policy of full compensation for the cost of complying with the new regulatory standards. In between the two extremes are policies, like limited grandfathering, that offer partial relief.²¹⁸ The existing form of grandfathering under the Clean Air Act is a form of partial relief, insofar as it applies only to existing sources until they undertake modifications.

The new regulations would first give firms more flexibility in determining the baseline against which emissions increases are measured, thus shielding additional sources from new source review. The new regulations would also graft a safe harbor onto the existing case-by-case examination of modifications of pollution sources. The proposed safe harbor thus would extend greater transition beyond the scope already authorized by the existing regime.²¹⁹ Thus, the new regulations would extend greater transition relief than is currently available.

²¹⁷ See Louis Kaplow, *An Economic Analysis of Legal Transitions*, 99 HARV. L. REV. 509, 584-87 (1986) [Kaplow, *Legal Transitions*] (discussing grandfather provisions as an example of legal transition relief).

²¹⁸ For a detailed examination of different types of partial transition relief, see Kaplow, *Legal Transitions*, *supra* note __, at 584-92; Louis Kaplow, *Transition Policy: A Conceptual Framework*, 13 J. CONTEMP. LEGAL ISSUES 161, 186-87 (2003) [Kaplow, *Transition Policy*].

²¹⁹ To see this, note first that the set of renovations that will not trigger new source review under the new regulations cannot be smaller than the set without it. In terms of set theory, let A = the set of renovations that can be undertaken without triggering new source review under the existing regulatory scheme, and let

B. Incentive Effects

Given that grandfathering in general, and the proposed revisions to the regulations in particular, are examples of transition relief, it is appropriate to consider the extent to which legal transition relief is ever justified. As we discuss in this Section, in general, rules of legal transition relief are inadvisable because they give rise to poor incentives: They discourage actors from anticipating changes in legal rules, and they encourage actors to seek economic rents from transition relief regimes. Moreover, to whatever extent either of these incentive effects may justify limited transition relief, the new regulations far exceed whatever the justifiable level of transition relief might be.

First, relief from a transition in legal regimes is ordinarily inadvisable insofar as it creates an incentive for societal actors not to anticipate actively changes in the governing law. As a general matter, societal actors are not afforded public relief from change.²²⁰ For example, a business that uses a particular technology in its production process runs the risk that the technology will change. If that happens, the business runs the risk of losing profit and perhaps going out of business altogether if it does not modernize its production process; there is no relief from the change to which the business is entitled.

But the possibility of a change in legal regime is simply a subclass of the large set of risks to which societal actors are subject. As such, absent special justification, the possibility of a change in legal regime should be treated similarly to other types of changes to which societal actors are potentially subject.²²¹ Thus, as a general rule, legal transition relief is undesirable.²²² The prospect of transition relief inefficiently

B = the set of renovations that can be undertaken without triggering new source review under the safe harbor. Because the Administration would have its safe harbor function in addition to the existing regulations, the complete set of renovations that could be undertaken without triggering new source review under the regulatory scheme after the addition of the new regulations would be represented by $A \cup B$. And, necessarily, $A \subseteq A \cup B$.

There is reason, moreover, to expect the latter set to be larger. First, the 20% limit in the regulation seems, at first blush at least, rather high. Further, the addition of a safe harbor—even a safe harbor with a comparatively low percentage limit—would be expected to augment, if marginally, the set of renovations that will not trigger new source review. Adhering to set theory, the only way that it can be that $A = A \cup B$ is if $B \subseteq A$, i.e., if every renovation that is shielded from new source review under the safe harbor was already shielded from new source review under the existing regulatory structure.

Indeed, it would be surprising if the safe harbor proposal did *not* allow for more renovations to be undertaken insofar as that was one of the Administration's justifications for proposing the rule in the first place. *See supra* __.

²²⁰ Private relief in the form of insurance may be available.

²²¹ *See* Kaplow, *Legal Transitions*, *supra* note __, at 522-36.

²²² *See* Kaplow, *Legal Transitions*, *supra* note __, at 520-21; *see generally id.*; Louis Kaplow, *Transition Policy: A Conceptual Framework*, 13 J. CONTEMP. LEGAL ISSUES 161 (2003) [Kaplow, *Transition Policy*]. In reaching this conclusion, Kaplow relies upon two basic assumptions: that “the transition policy to be

discourages actors from anticipating legal change. In contrast, placing the risk of legal change on societal actors encourages societal actors to anticipate legal change and to comply voluntarily and in advance.²²³ Societal actors who are governed by one legal regime and who foresee a coming change in that regime will be less likely voluntarily to conform to that change if they also foresee a likelihood that the government will afford transition relief. Moreover, the government sends a signal to society at large when it enacts a new legal regime with transition relief. Societal actors who lie beyond the scope of the particular regime will be less likely to try to anticipate, and to comply voluntarily with, new legal standards.

Considered in light of the general presumption against transition relief, the broader the transition relief, the less desirable it is. Narrower transition relief gives rise to undesirable incentives in a smaller set of societal actors than does broader transition relief. The grandfathering currently in effect is a form of partial transition relief. The proposed regulations would expand the scope of partial transition relief and would therefore be even less desirable under this analysis.

This incentives-based justification for the general presumption against transition relief—that the absence of transition relief creates an incentive to anticipate changes in the legal regime—is applicable in the context of environmental regulation. It is beneficial as a general matter to have societal actors anticipate, and voluntarily comply with, coming changes in the legal landscape. And it hardly seems unreasonable to expect industrial sources, such as those subject to new source review, to anticipate legal change.²²⁴

employed in a given context is well-known in advance and will be followed consistently in the future,” Kaplow, *Legal Transitions*, *supra* note __, at 520, and that the legal reforms in question are “desirable at the time they are made,” *id.* at 521.

²²³ See Saul Levmore, *Changes, Anticipations, and Reparations*, 99 COLUM. L. REV. 1657, 1662-63 (1999).

²²⁴ To the extent that the justification not to grant transition relief is to create an incentive for societal actors to anticipate changes in the law, one must assume that those actors in fact reasonably can anticipate such changes. In effect, the rule against transition relief assumes that actors will have the capacity to anticipate, and act rationally in the face of, changes in legal regimes. See generally Kyle D. Logue, *Legal Transitions, Rational Expectations, and Legal Process*, 13 J. CONTEMP. LEGAL ISSUES 211 (2003). While that assumption is not universally valid, it seems most likely to be true for sophisticated actors, especially corporations. See *id.* at [check]. For better or worse, environmental regulation tends to focus on industrial polluters. Cf. Nash, *supra* note __, at 476 n.31 (arguing that it is often debatable who the actual “polluter” is); Dale B. Thompson, *Political Obstacles to the Implementation of Emissions Markets: Lessons from RECLAIM*, 40 NAT. RESOURCES J. 645, 686-87 (2000) (discussing the practical difficulties of subjecting individuals to environmental regulation); Ann E. Carlson, *Recycling Norms*, 89 CAL. L. REV. 1231 (2001) (to similar effect); but see Michael P. Vandenbergh, *Order Without Social Norms: How Personal Norm Activation Can Protect the Environment*, 99 NW. U. L. REV. 1101 (2005). And, as a general matter, industrial polluters tend to be corporations, often sizable corporations, and often of considerable sophistication—in other words, precisely the type of societal actors one would expect to be best able to anticipate changes in the legal regime.

One might argue that, in some cases, the incentive to anticipate legal change can be excessive. The problem might arise that an actor who foresees a change in technology and installs that technology soon might find that technology was about to advance again.²²⁵ Depending upon the cost of replacing old equipment with new and the rate at which technology is advancing, plant owners might decide that it is too costly to comply with all technological changes, even ones that they anticipate.²²⁶ Grandfathering may be desirable where precautionary investments are “durable” for some period of time, and especially where the cost of including pollution control technology in new plants is far less than the cost of installing such technology in existing plants. Thus, for example, assuming that statutes and regulations mandate particular technologies, it may make sense to protect societal actors who comply with a particular technology level that then is current against changes in the technology level *for some reasonable period of time*. In other words, the statute or regulation might provide for delayed implementation (or phase-in) of the new technology level, based presumably upon the actors’ reasonable investment expectations. This would retain at least some incentive for actors to anticipate changes in legal regime, since an actor who voluntarily installed an advanced control system that the actor anticipated would soon be required by law would also be protected against further changes in the law for a reasonable period of time into the future. Such a system of time-limited transition relief would be superior to full grandfathering; the effects of the transition relief would be time-limited, with all sources eventually falling under the new standards.

The Clean Water Act to some extent implements this idea. The Act provides that, if new standards for point sources are adopted within a ten-year “protection period,” the source can attain an NPDES permit which will exempt the source from complying with the newer standards.²²⁷

²²⁵ The general analytic framework that frowns upon transition relief assumes that, once the legal standard (whether the new rule or the rule that offers transition relief) is set, societal actors comply with the standard once and then a fortiori remain in compliance until the standard is changed. In other words, the framework assumes that compliance with the standard is not a constantly moving target, but is instead also aptly characterized as subject to punctuated equilibrium.

But this need not be the case and, in fact, is often not the case in environmental regulation. The dominant form of environmental regulation is command-and-control regulation that requires compliance with particular technological standards in order to satisfy the statutory and regulatory commands. Thus, the Clean Water Act requires that sources employ the “best available technology economically achievable” for toxic pollutants. *See* Clean Water Act § 301(b)(2)(A), 33 U.S.C. § 1311(b)(2)(A). But while federal environmental laws often set a technological standard that remains constant over an extended period of time, the level of technology that constitutes the best available technology varies much more frequently, as technology evolves. For example, the Clean Air Act’s mandate that the “best available technology” be used may be clear and may remain unchanged over an extended time horizon, but the level of technology that satisfies that standard is likely to, and indeed does, vary even while the legal standard remains constant.

²²⁶ One also might argue that it is unfair to require actors who have just completed complying with the then-current standard once again to undertake costly compliance with a new standard. We elucidate this point in the next Section, *see infra* ___.

²²⁷ *See* 33 U.S.C. § 1316(d); 40 C.F.R. § 122.29(d)(1).

Even if such limited transition relief might be warranted under appropriate circumstances, the new regulations do not pass muster. First, existing grandfathering provides protection even in the absence of new investment: Relief might have been limited to those plants that had had then-state-of-the-art pollution control equipment installed relatively shortly before the enactment of the 1970 Clean Air Act amendments. But, instead, the grandfathering applies across the board to all preexisting plants. In other words, the existing form of grandfathering provides no incentive to anticipate legal change at all.

The new regulations in fact do provide protection to investments in plant modifications. The problem remains, however, that the plants that will enjoy the benefit of the new regulations have already enjoyed the benefits of grandfathering without the need to make any investment in anticipation of legal change. Moreover, the investments in modifications will not be undertaken because of anticipation of a shift in the legal regime, but rather because of certainty that the legal regime (here, the new proposed regulatory regime) will *not* change. Unlike the safe harbor in the Clean Water Act, the new regulations provide protection even in the absence of new investment to comply with the new source standards. As such, the new regulations do not promote desirable incentive effects.

Second, the new regulations extend indefinite relief. Once again, even the *existing* grandfathering of preexisting sources as structured under the Clean Air Act is not reasonable by this measure. The extent to which transition relief would be available into the future might have been limited. But the existing grandfathering is not time-limited; in theory at least, it can continue indefinitely.

The new regulations exacerbate this problem by expanding the set of renovations and modifications that can be undertaken without triggering new source review.²²⁸ Thus, the new regulations increase the ability of sources that have already enjoyed grandfathering to enjoy the benefits of grandfathering over an even longer period of time.

In short, then, the new regulations create an indefinite incentive for industry actors not to anticipate changes in the governing legal regime. As such the new regulations are a poor approach.

Transition relief is also inadvisable to the extent that it generally gives rise to another type of undesirable incentive: an incentive to keep transition relief in place so as to be able to continue to extract economic rents, and indeed to extend it so as to expand upon the take. Rent-seeking occurs when societal actors invest time and effort to create regulation that generates economic rents for them.²²⁹ Because it involves private actors

²²⁸ See *supra* ____.

²²⁹ See generally Gordon Tullock, *The Welfare Costs of Tariffs, Monopolies, and Theft*, 5 WEST. ECON. J. 224 (1967).

using public authority to generate private gains, rent-seeking is generally seen as undesirable.²³⁰ Not only will groups inefficiently devote resources to obtain rent-generating regulations, but, once such regulations are in place, groups have the incentive to lobby to keep the regulations in place, to expand them, and to extend their lives.

Environmental grandfathering legislation and regulations produce rent for existing market participants. Grandfathering generates rent in the form of barriers against entry that protect existing industry actors against prospective competitors.²³¹ These barriers to entry impose higher costs on prospective market entrants, thus allowing existing actors access to greater profits.²³² Insofar as the new regulations would expand the grandfathering regime already in place, industry support for the new regulations is evidence of the incentive for existing industry actors to act to keep that competitive advantage intact and indeed to expand it.²³³

From a political economy perspective, it may be that the attainment of sufficient legislative and executive support to implement any change to the existing legal regime necessitates or will often necessitate, as a compromise, the inclusion of some form of transition relief.²³⁴ As Saul Levmore puts it, the compromise entails the compensation, in the form of rents generated by transition relief, of politically powerful losers by winners under the new policy.²³⁵ And, indeed, to the extent that no change to the existing regime is possible otherwise, it may be that change to the legal regime in combination with transition relief is the best attainable outcome.²³⁶

²³⁰ See *id.* at [check].

²³¹ See Nathaniel O. Keohane, Richard L. Revesz & Robert N. Stavins, *The Choice of Regulatory Instruments in Environmental Policy*, 22 HARV. ENVTL. L. REV. 313, 348-51 (1998).

²³² See Keohane et al., *supra* note __, at 349-50 (“[F]irms regulated by a rentgenerating instrument, such as command-and-control standards, will benefit if that instrument is linked to a mechanism that imposes barriers to entry. In theory, such a mechanism might prohibit new entry outright; a more politically feasible approach would impose higher costs on new entrants.”); Robert D. Tollison, *Public Choice and Legislation*, 74 VA. L. REV. 339, 367 (1988) (“[O]ne of the more interesting examples of the interest-group theory in the literature pits high-cost firms against low-cost firms in an industry. The latter firms seek cost-increasing regulations that drive some of the former firms out of the industry, raise industry price, and increase the quasi-rents accruing to the low-cost firms.”).

²³³ Cf. Keohane et al., *supra* note __, at 350 (“Although the theoretical arguments are strong, there are no conclusive empirical validations of these demand-side propositions. Direct empirical tests of firm demand for regulatory instruments (such as analyses of resources devoted to lobbying for such instruments as a function of firms’ stakes in an issue) are virtually nonexistent. Instead, most empirical work in this area simply seeks to measure the benefits an industry receives under regulation. Thus, the work examines not instrument demand itself, but rather the presumed product of such demand.”).

²³⁴ See Kaplow, *Legal Transitions*, *supra* note __, at 571.

²³⁵ See Levmore, *supra* note __, at 1665-66.

²³⁶ See *id.*

Even accepting this premise, however, there is no justification for the new regulations. They are merely an extension of existing transition relief, not coupled with the enactment of more stringent prospective regulations. In Levmore's terms, there is no reason (other than pure lobbying power) to compensate the politically powerful in this setting. Society gains no benefit in return for the extension of additional grandfathering.

C. Fairness

In the previous Section, we discussed the deleterious incentive effects to which the new regulations would give rise. In this Section, we consider concerns of fairness. We conclude that, even if fairness might justify limited transition relief in certain situations, fairness provides no basis for the new regulations' extension of transition relief.²³⁷

Consider that, in addition to the notion that incentive effects might warrant extending limited transition relief to actors who voluntarily comply with impending legal change,²³⁸ one might argue that it is *unfair* to require actors who have invested in an upgrade before a new regulation takes effect once again to undertake costly compliance with a new standard. Thus, concerns of fairness, like considerations involving incentive effects, may justify extending protection to societal actors who invest before a regulation takes effect *for some reasonable period of time*.

Such an approach generally accords with the concept of allowing investors a reasonable return on their investments before subjecting them to the broadly applicable new legal regime. Called amortization, this approach is not uncommon in the law of nonconforming uses.²³⁹ Nonconforming uses arise under zoning law when land uses that a new zoning ordinance now prohibits predate the ordinance. The question arises as to how to deal with these now nonconforming uses. The continuation of the nonconforming uses might be outlawed, but the general view is that such an action might constitute a compensable taking under the Fifth Amendment (unless, that is, the uses themselves were regulable nuisances²⁴⁰). Some states permit the discontinuation of nonconforming uses

²³⁷ Cf. Kaplow, *Legal Transitions*, *supra* note __, at 576-81 (surveying fairness-based justifications for transition relief, and questioning whether those justifications are truly distinct from economic justifications).

²³⁸ See *supra* __.

²³⁹ See generally PATRICK ROHAN, ZONING AND LAND USE CONTROLS § 41.04 (2003). For early treatments, see C. McKim Norton, *Elimination of Incompatible Uses and Structures*, 20 LAW & CONTEMP. PROBS. 305 (1955); Note, *Elimination of Nonconforming Uses*, 35 VA. L. REV. 348 (1949). See also Allan T. Fell, *Amortization of Non-Conforming Uses*, 24 MD. L. REV. 323, 324-25 (1964) ("Non-conforming uses are usually continued with the expectation that they will eventually disappear' through abandonment, destruction and other normal changes. Non-conforming uses, however, still abound, with the result that one of the primary zoning problems today is the elimination of non-conforming uses." (quoting *Schiff v. Bd. of Zoning Appeals*, 114 A.2d 644, 645 (Md. 1955)).

²⁴⁰ See, e.g., *Hadacheck v. Sebastian*, 239 U.S. 394 (1915).

without compensation, however, after the owners of the uses have had a reasonable time to enjoy the fruits of the uses and in effect a reasonable opportunity to recoup their investments.²⁴¹ Amortization constitutes a form of transition relief; it is a form of delayed implementation of a new legal regime.

Along similar lines (although without the specter of takings law in the near background), one might think to grant pollution sources that are in compliance with a preexisting legal standard a reasonable period of time before obligating them to upgrade their pollution control system to the newly applicable standard.²⁴² The reasonable period of time should be set by reference to the anticipated useful life of the technology, without reference (since fairness requires only that the investor receive a reasonable return on the investment) to extensions in useful life that arise from the grandfathering itself. This would retain at least some incentive for actors to anticipate changes in legal regime, since an actor who voluntarily installed an advanced control system that the actor anticipated would soon be required by law would also be protected against further changes in the law for a reasonable period of time into the future. Such a system of time-limited transition relief would be superior to full grandfathering; the effects of the transition relief would be time-limited, with all sources eventually falling under the new standards.

The Clean Water Act to some extent implements this idea. As we noted above, the Act provide that, if new standards for point sources are adopted within a ten-year “protection period,” the source can attain an NPDES permit which will exempt the source from complying with the newer standards.²⁴³ The ten-year period can be seen as a proxy for the amortization of actors’ investments in the then-current technology.

Once again, even if a case can be made for limited transition relief on the basis of fairness, the new regulations are not reasonable. Indeed, even the *existing* grandfathering

²⁴¹ See *Bd. of Zoning Appeals v. Leisz*, 702 N.E.2d 1026, 1032 (Ind. 1998) (“Most states allow local zoning authorities to phase out nonconforming uses with amortization provisions that require the owner to discontinue the nonconforming use after a certain period of time.”). See, e.g., *id.* (overruling prior precedent that amortization statutes violated the state constitution); CAL. BUS. & PROF. CODE § 5410 (providing for a five-year amortization period for signs that do not conform to zoning restrictions); *Livingston Rock & Gravel Co. v. Los Angeles County*, 272 P.2d 4, 8-9 (Cal. 1954) (“[Z]oning legislation looks to the future in regulating district development and the ** eventual liquidation of nonconforming uses within a prescribed period commensurate with the investment involved.”); *City of Los Angeles v. Gage*, 274 P.2d 34, 44 (Cal. App. 2d Dist. 1954) (Court upheld five-year amortization for non-residential uses in residential area, and explained: “Use of a reasonable amortization scheme provides an equitable means of reconciliation of the conflicting interests in satisfaction of due process requirements.”); KAN. STAT. § 12-771 (“Nothing in this act is intended to prevent cities or counties from enforcing local laws, enacted under other legal authority, for the gradual elimination of nonconforming uses.”); *Spurgeon v. Bd. of Com’rs of Shawnee County*, 317 P.2d 798 (Kan. 1957) (upholding as reasonable elimination of nonconforming uses without compensation within two years); cf. IND. REV. STAT. § 36-7-4-616 (protecting agricultural nonconforming uses in perpetuity).

²⁴² See Robertson, *supra* note __, at 173-76 (discussing the possibility of using amortization and other land-use devices in the environmental context); Varadarajan, Note, *supra* note __ (same).

²⁴³ See 33 U.S.C. § 1316(d); 40 C.F.R. § 122.29(d)(1).

of preexisting sources as structured under the Clean Air Act is not reasonable: The existing grandfathering standard is not time-limited; in theory at least, it can continue indefinitely. Thus, its duration is no way linked to the amortization of societal actors' investments.

The new regulations exacerbate this problem. As we explained above, the new regulations would expand the set of renovations and modifications that can be undertaken without triggering new source review.²⁴⁴ Thus, the new regulations increase the ability of sources that have already enjoyed grandfathering to enjoy the benefits of grandfathering over an even longer period of time.

Given the fact that the anticipated useful life of plants in operation in 1970 extended at most 30 years into the future,²⁴⁵ any argument that the owners of such plants should have the ability to amortize their investments is moot: They already have enjoyed the benefits of amortization. The only question now is whether those benefits should be extended even further. Since any reasonable form of transition relief has already been granted and exhausted, the presumption against transition relief strongly rejects a further extension of grandfathering such as the new regulations would effect.

Conclusion

In this Article, we have argued that EPA's regulations making it easier for polluters to modernize without meeting the requirements of the Clean Air Act are misguided. This extension of the original grandfathering contemplated in 1970 cannot be justified by reference in the economic terms adduced by the Bush Administration. Quite to the contrary, the new regulations will retard the introduction of new, clean plants and keep inefficient plants operating longer than they otherwise would. Moreover, grandfathering will make it more expensive for parts of the country to meet the national ambient air quality standards, which are the Clean Air Act's centerpiece, and give rise to perverse investment incentives.

While grandfathering may be appropriate in certain circumstances, there is little justification for expanding preexisting grandfathering, as the EPA regulations do. The plants that will be the major beneficiaries of the policy have already exceeded their anticipated useful lives; their owners, therefore, have more than reaped the return they could reasonably have anticipated on their investments. The original grandfathering in fact had already led for them to operate longer than they would have if the Clean Air Act had never been enacted.

²⁴⁴ See *supra* ____.

²⁴⁵ See *supra* ____.

More generally, we have argued that grandfathering may be appropriate in environmental regulation to the extent that installing and upgrading pollution control equipment in existing plants may be both difficult logistically and expensive. A reasonable amortization period might be offered to plants that invest so as to comply with then-governing environmental standards. In contrast, it makes little sense to offer grandfathering in perpetuity, to offer extensions of preexisting grandfathering benefits, and to offer grandfathering benefits without receiving some concession in return.