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New Source Review An Evaluation of EPA's Reform Recommendations

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On June 13, 2002, the Environmental Protection Agency (EPA) released its *Report to the President* on New Source Review (NSR), a program created by the Clean Air Act Amendments of 1977 to regulate emissions from new or substantially modified factories and power plants. We have been asked whether the recommendations for NSR reform contained in EPA's 2002 *Report to the President* are justified by the record and consistent with the need for continued protection and improvement of air quality, Congressional intent, and benefit-cost analysis.

This report considers whether the recommendations for NSR reform contained in EPA's 2002 *Report to the President* are justified by the record and consistent with the need for continued protection and improvement of air quality, Congressional intent, and benefit-cost analysis.

Summary of findings

- ▶ Congress's intent in adopting NSR in 1977 was to protect air quality by requiring major emitters of air pollutants to install state-of-the-art emission control technology when building

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new plants and when making major modifications to existing facilities that would result in significantly increased emissions.

- ▶ Air quality in the U.S. has improved considerably since NSR was adopted. The NSR program probably had little to do with this improvement.
- ▶ Recent EPA interpretations have extended NSR to physical and operational changes that neither Congress nor EPA itself in past rulings intended to be subject to NSR's permitting requirements.

The NSR program attempts to achieve its mission by requiring best available control technology (BACT) or lowest achievable emissions rate (LAER) technology be installed when new units are built or when major modifications are made to existing plants.

- ▶ Enforcement of EPA's reinterpretation of NSR has discouraged modifications that, had they been allowed to proceed, would have been economically and/or environmentally beneficial and would not have increased emissions.
- ▶ There are better, more cost-effective ways to improve and protect the nation's air quality.
- ▶ EPA's 2002 reform recommendations promise to restore common sense to the New

Source Review program, thereby avoiding the excessive costs, uncertainties, and counterproductive incentives resulting from recent enforcement deviations. The reforms do not put at risk recent gains in air quality.

- ▶ EPA's recommendations are justified by the facts and ought to be implemented as quickly as possible.

What is New Source Review?

“New Source Review” (NSR) refers to a permitting program whose basic requirements were established in 1977 as Parts C and D of Title 1 of the Clean Air Act.² The purpose of the program “is to ensure that when new sources are built or existing sources undergo major modifications: (1) air quality improves if the change occurs where the air currently does not meet federal air quality standards; and (2) air quality is not significantly degraded where the air currently meets federal standards.”³ The NSR program attempts to achieve its mission by

² 42 U.S.C. §§ 7470-7479 and 42 U.S.C. §§ 7501-7515. Part C is the “Prevention of Significant Deterioration” or PSD program and Part D is the “Nonattainment New Source Review” or NSR program. This memo uses a layman's convention of referring simply to NSR, even though it might sometimes be more accurate to speak of PSD, NSR, or PSD/NSR.

³ EPA, *New Source Review: Report to the President*, June 2002, p. 3.

requiring best available control technology (BACT) or lowest achievable emissions rate (LAER) technology be installed when new units are built or when major modifications are made to existing plants that would lead to a significant increase in emissions.

Going through the NSR permitting process can cost more than \$1 million and add a year or more to the time needed to preview proposed plant modifications.⁴ Installing BACT or LAER technology can cost tens or even hundreds of millions of dollars for a single plant. A typical turbine efficiency improvement project at a power plant that would cost less than \$1 million for a 250 MW unit and generate additional revenues of \$21.5 million (present value) would cost an additional \$68.4 million (capital cost only) if subject to the BACT or LAER requirements imposed by NSR, making such projects financial losers.⁵

The NSR law was written to apply to *new* sources only if they exceed threshold levels established in the NSR regulations, and to *existing* major sources only if they are undergoing modifications that result in significant net increases in emissions.⁶ The expectation was that older plants would eventually be phased out and newer, cleaner, plants would take their place. This “grandfathering” of existing sources of emissions was driven partly by politics, to be sure, but also by economics and common sense.

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Congress recognized that requiring all existing sources of emissions to install BACT or LAER equipment would be prohibitively expensive and disrupt supplies of energy and manufactured products. Moreover, retrofitting existing plants is often more expensive than incorporating BACT or LAER in new plants. For these reasons, Congress did not expect NSR to carry the huge burden of protecting the nation’s air quality *by itself*. Sources not covered by the NSR program would still be subject to controls under other air quality protection programs. As EPA says:

The NSR program is by no means the primary regulatory tool to address air pollution from existing sources. The Clean Air Act provides for several other public health-driven and visibility-related control efforts: for example, the National Ambient Air Quality Standards Program implemented through enforceable State Implementation Plans, the NO_x SIP Call, the Acid Rain Program, the Regional Haze Program, etc. . . . [T]he national cap on SO₂ emissions established under the Acid Rain Program applies to all existing

⁴ EPA, *Fact Sheet: New Source Review (NSR) Report and Improvements*, p. 4.

⁵ EPA, *New Source Review: Report to the President*, p. 15.

⁶ There are approximately 22,000 existing major emitters.

electricity generating units, without regard to the date of construction or whether a given source has been modified.⁷

Conclusion #1: Congress's intent in adopting NSR in 1977 was to protect air quality by requiring major emitters of air pollutants to install state-of-the-art emission control technology when building new plants and when making major modifications to existing facilities that would result in significantly increased emissions.

Role of NSR in improving air quality

Air quality has been gradually improving in most of the U.S., a trend that began in the 1950s.

Air quality has been gradually improving in most of the U.S., a trend that began in the 1950s when states began passing air pollution laws targeting mostly smoke and particulate emissions (commonly known as soot).⁸ As Indur M. Goklany writes:

By the time the Clean Air Amendments of 1970 had federalized air pollution control, smoke had been conquered in most urban areas, and air quality was improving substantially in the most polluted areas -- particularly for the very pollutants perceived to be causing the worst problems.⁹

According to Goklany's careful empirical analysis, had the Clean Air Act of 1970 not been adopted and emission trends from 1950 to 1970 been allowed to continue through 1990, "NO_x emissions would have been 60 percent higher than 'actual' 1990 emissions; more importantly, PM-10 emissions would have been lower and SO₂ emissions would have been only 5 percent higher."¹⁰ Even this gives the CCA too much credit, Goklany concludes, since "if anything, the underlying forces driving those improvements -- greater knowledge, greater wealth, and less economic dependence upon traditional polluting sectors -- were only gathering strength."¹¹

⁷ EPA, *New Source Review: Report to the President*, pp. 3-4.

⁸ Hugh Ellsaesser, "The Misuse of Science in Environmental Management," *Heartland Policy Study* No. 70 (December 8, 1995).

⁹ Indur M. Goklany, *Cleaning the Air: The Real Story of the War on Air Pollution* (Washington, DC: Cato Institute, 1999), p. 4.

¹⁰ *Ibid.*, p. 153.

¹¹ *Ibid.*

EPA statistics regarding the six principal sources of air pollution in 1998¹² show:

- ▶ Nitrogen oxide (NO_x) emissions are lower than they were 25 years ago, despite significant increases in population and industrial activity.
- ▶ Carbon monoxide (CO) emissions are roughly 20 percent lower than 1970 levels.
- ▶ Sulfur dioxide (SO₂) emissions are down roughly 37 percent from 1970 levels, and are lower today than at any time since the Great Depression.
- ▶ Volatile organic compounds (VOCs) are down roughly 40 percent from 1970 levels, and have also returned to Great Depression levels.
- ▶ Particulate matter (PM, or soot) is down roughly 67 percent from 1970 levels, and is lower now than at any time since measurements began in the 1930s.
- ▶ Lead emissions are down more than 90 percent from 1970 levels.

The result of falling emissions has been a general improvement in air quality in nearly all major urban areas of the country.

Total emissions of air pollutants tracked by EPA are forecast to fall by 22 percent between 1997 and 2015, assuming no new air quality regulations, thanks to reductions in tailpipe emissions for most types of vehicles (already down 96 percent or more since 1978) and cleaner fuels.¹³

The result of falling emissions has been a general improvement in air quality in nearly all major urban areas of the country. Between 1987-1992 and 1994-1999, for example, the number of “bad air days” (when air quality failed to meet federal standards) fell 82 percent in Newark, 54 percent in Los Angeles, 78 percent in Chicago, and 69 percent in Milwaukee.¹⁴

These reductions in airborne pollutants and improvements in air quality are especially impressive in that U.S. Gross Domestic Product increased roughly 150 percent since 1970, and energy consumption increased by roughly 40 percent since 1970. Even holding the line on air

¹² EPA, *National Air Pollutant Trends, 1900-1998*, Executive Summary.

¹³ Tech Environmental, Inc., “Progress in Reducing National Air Pollutant Emissions, 1970-2015,” June 1999, report produced for the Foundation for Clean Air Progress, Washington, DC, p. 3.

¹⁴ Tech Environmental, Inc., “Progress in Reducing Ozone Exceedance Days in Ten Major U.S. Cities (1987-1999),” October 1999, report produced for the Foundation for Clean Air Progress, Washington, D.C.

pollution at 1970 levels would have been quite impressive given the substantial increase in U.S. population and economic and industrial activity.

How much of this improvement can be attributed to the NSR program? Obviously not emission reductions or air quality improvements prior to 1977 or for continuing trends that began before NSR was adopted. Factors that may be more important than regulation include electrification and other technological changes, a shift of economic activity from manufacturing to service industries, rising wealth, social and demographic changes, and political decisions whose unintended consequences include emission reductions.

Other air quality programs, in particular the National Ambient Air Quality Standards Program and the Title IV Acid Rain Program, have had far greater impacts on emissions.

EPA asserts “NSR does result in significant environmental and public health benefits,” but admits “there is no tracking by any government agency of the reductions in emissions that sources make due to the NSR program.”¹⁵ The largest documented reductions in emissions attributable to the

program come from requiring BACT and LAER technology on new natural gas-fired electric generating units. With regard to *existing* sources, foregone emission reductions from new investments and modifications discouraged by NSR (discussed in detail below) may offset whatever reductions the program requires.

There is general agreement that other air quality programs, in particular the National Ambient Air Quality Standards Program and the Title IV Acid Rain Program, have had far greater impacts on emissions. As EPA says:

Altogether, these and other similar programs achieve emissions reductions that far exceed those attributable to the NSR program. Moreover, most of these other programs are much more efficient, streamlined, and simple than NSR because they do not entail the same resource-intensive, case-by-case review that is required under NSR.¹⁶

Looking ahead, the “Clear Skies Initiative” announced by the Bush administration would require cuts in power plant emissions of what EPA calls “the three worst air pollutants” by roughly 70 percent.¹⁷ According to EPA, the Clear Skies Initiative would:

- ▶ Cut allowable SO₂ emissions by 73 percent, from 11 million tons currently to 4.5 million tons in 2010, and 3 million tons in 2018.

¹⁵ EPA, *New Source Review: Report to the President*, p. 26, and again at p. 28.

¹⁶ *Ibid.*, p. 26.

¹⁷ EPA, *Fact Sheet On Clear Skies Initiative*.

- ▶ Cut allowable NO_x emissions by 67 percent, from current emissions of 5 million tons to 2.1 million tons in 2008, and to 1.7 million tons in 2018.
- ▶ Cut allowable mercury emissions by 69 percent - the first-ever national cap on mercury emissions. Emissions will be cut from current emissions of 48 tons to a cap of 26 tons in 2010, and 15 tons in 2018.

The Clear Skies Initiative presumably would achieve these goals by using caps and emission trading, ending the costly and unpredictable permitting route required by the NSR program. For nonutility regulated emitters, not included in the Clear Skies Initiative, and for utilities pending adoption of the Initiative, the Bush administration proposes to adopt EPA's recommended NSR reforms. Note that Clear Skies would not cover particulate matter (soot), which would continue to be covered by the National Ambient Air Quality Standards Program.

Given the positive trends in air quality, the much larger role played by other air quality regulations, and the failure of NSR to significantly reduce net emissions from existing sources, one might ask: Is NSR for existing sources even necessary any longer?

Given the positive trends in air quality, the much larger role played by other air quality regulations, and the failure of NSR to significantly reduce net emissions from existing sources, one might ask: Is NSR for existing sources even necessary any longer? We'll return to this question after discussing current NSR policy and its negative effects on businesses, workers, consumers, and the environment.

Conclusion #2: Air quality in the U.S. has improved considerably since NSR was adopted. The NSR program probably had little to do with this improvement.

Changes in NSR enforcement

EPA promulgated regulations to implement the NSR program in 1978, and revised regulations were promulgated in 1980 in response to litigation (*Alabama Power Co. v. Costle*). Except for a 1992 rule concerning how utilities measure future emissions, also promulgated in response to litigation (*Wisconsin Electric Power Co. v. Reilly*), no new regulations concerning NSR have gone through the formal rulemaking process since 1980.

Since 1980 EPA has released some 4,000 pages of "guidance" and produced many (often conflicting) letters and several proposals for NSR revision, none of them finalized. Some commentators contend EPA has frequently and substantially changed its enforcement policies

without going through the formal (and legally required) rulemaking procedure.¹⁸ While some concerns over enforcement are in response to policies adopted during the Clinton administration, particularly a series of enforcement actions begun in 1994, most concerns actually pre-date that administration. Three areas of enforcement policy have been the source of greatest concern.

(1) EPA’s uncertain and increasingly narrow interpretation of the “routine maintenance, repair and replacement” (RMR&R) exclusion

Companies subject to NSR have little way of knowing what activities will trigger the NSR permitting process and its subsequent costs and delays.

Consistent with Congress’s intent,¹⁹ EPA until 1999 excluded “routine maintenance, repair and replacement” (RMR&R) activities from the NSR permitting process. Starting in 1988, though, EPA began to challenge the meaning of “routine,” subjecting or threatening to subject more activities to NSR

than before. The definition of “routine” has become increasingly subjective over time: In its 2002 *Report to the President*, EPA says it “consistently has taken a case-by-case approach, weighing the nature, extent, purpose, frequency and cost of the work, as well as other relevant factors.”²⁰

Actually, such an approach is anything but “consistent.” Companies subject to NSR have little way of knowing what activities will trigger the NSR permitting process and its subsequent costs and delays. In May 2000, for example, in a letter to Detroit Edison, EPA introduced “an open-ended test involving at least fourteen factors, and perhaps up to twenty-four factors.”²¹ Such a test provides no guidance at all: Virtually every change to an existing facility is potentially a trigger for NSR permitting.

(2) Substitution of “actual-to-future potential” for “actual-to-future-actual” in the rules for measuring changes in emissions

Until 1996, EPA typically estimated the effect of facility modifications on emissions by comparing current actual emissions with reasonably likely future emissions, a so-called “actual-

¹⁸ See, for example, Corporate Environmental Enforcement Council, *NSR Enforcement White Paper*, May 23, 2001, p. 25.

¹⁹ See quotations and sources cited by Dana Joel Gattuso, “Why the New Source Review Program Needs Reform: A Primer on NSR,” *Backgrounder* #1518 (Washington, DC: The Heritage Foundation), February 21, 2002, pp. 1-2.

²⁰ EPA, *New Source Review: Report to the President*, p. 11.

²¹ Corporate Environmental Enforcement Council, *supra* note 18, p. 10. Detroit Edison’s plan to replace its turbine blades with a more energy-efficient design was eventually approved without triggering NSR.

to-future-actual” methodology. As early as 1990, EPA indicated it intended to replace this methodology for all emitters except utilities²² with a methodology called “actual-to-potential,” in which the decision to apply NSR is determined by the emitter’s “potential to emit” (PTE). Which test was actually used was determined on a case-by-case basis until 1996, when EPA told the nonutility regulated community to presume the “actual-to-potential” method applied.

Two parts of the controversy over calculating PTE are the choice of a base year and the expected future utilization of capacity. Many plants run at less than full capacity and maintain their emissions below caps put in place by other programs (e.g., caps on SO_x under the Title IV acid rain program and caps on other pollutants under the National Ambient Air Quality Standards Program) in order to have the flexibility to increase or alter production on short notice without having to go through the permitting process. If emissions in a year of historically low utilization are used as the base for determining whether future emissions are significant, then more modifications become subject to NSR.

A modification that reduces emissions may nevertheless be scored as increasing the emitter’s PTE if it allows the facility to run longer or at a higher capacity.

Whereas estimates of “future actual” emissions are based on mechanical analysis of the modification being made and actual emission records, the “potential to emit” is based on hypothetical projections of the modification’s impact on a plant’s overall efficiency, reliability, and output. A modification that reduces emissions may nevertheless be scored as increasing the emitter’s PTE if it allows the facility to run longer or at a higher capacity. EPA uses the unrealistic forecast that modified facilities would operate at full capacity for 24 hours a day, seven days a week – 8,760 hours a year. Hence, even small improvements in efficiency can generate large increases in PTE relative to current emissions.

(3) De-bottlenecking and aggregation

What happens if a modification to one unit in a manufacturing complex allows output and therefore emissions to increase in other, un-modified, units of the same complex? If two modifications are made at the same time or sequentially, should the emission impacts of the two projects be combined (aggregated) to determine whether the total effect is sufficiently large to trigger NSR?

Originally, EPA ruled that only the direct effect on emissions from the unit being modified

²² The methodology was not applied to utilities because a 1990 court decision (*Wisconsin Electric Power Co. v. Reilly*) held it would substantially change the legal meaning of a “major modification” and therefore had to go through the rulemaking process before being changed. EPA interprets the court’s ruling narrowly, asserting it still can use “actual-to-potential” when regulating nonutility emitters. The switch to “actual-to-potential” for nonutility emitters has never gone through formal rulemaking procedures.

would be considered in determining whether an NSR permit was required. More recently, EPA has moved to a more expansive definition in which ancillary increases in emissions from unmodified but “de-bottlenecked” units must be included in the calculation of future emissions. For example, the 1992 “WEBCO Rule” reads:

As discussed, EPA considers emissions increases due to increased operation that could not be physically or legally accommodated during the representative baseline period but for the proposed physical or operational change, to result from the change.²³

According to EPA, 70 to 80 percent of the wood products industry, and 80 to 90 percent of the electric utility industry, are operating in violation of NSR requirements.

This policy has been restated by EPA in letters and proposed rules several times since.²⁴ The matter of “aggregation” has also come up repeatedly. EPA attempts to combine separate projects and claim the aggregate effect on emissions is sufficient to trigger NSR. When industries protest, EPA alleges regulated emitters split projects for the purpose of

evading NSR. Once again, the result of EPA’s latest interpretation is to make more modifications subject to NSR.

EPA’s three changes in enforcement policy, if consistently enforced in the future, would vastly expand the number of applications for NSR required from regulated emitters. But EPA is not content with applying its latest interpretations to future cases. Starting in 1994, EPA began a series of enforcement actions alleging that whole industries had been violating its interpretations of policy for decades. According to EPA, 70 to 80 percent of the wood products industry and 80 to 90 percent of the electric utility industry are operating in violation of NSR requirements. In 2000, one-third of all refineries received letters from EPA seeking information on plant operations, apparently in preparation for legal action against that industry.

Unfortunately, EPA Administrator Christine Todd Whitman has pledged to continue these legal and administrative enforcement actions, even though a strong case can be made for putting such actions on hold pending NSR reform. In defense of the Clinton EPA, it should be noted that the problems and inefficiencies of NSR were observed and a reform agenda was in the works well before the November 2000 election. As we note below, some of EPA’s 2002 reform proposals are based on reforms first proposed and endorsed by the previous administration.

²³ 57 Fed. Reg. 32314, 32327 (July 21, 1992).

²⁴ See citations in Corporate Environmental Enforcement Council, *supra* note 18, pp. 13-15.

Conclusion #3: Recent EPA interpretations have extended NSR to physical and operational changes that neither Congress nor EPA itself in past rulings intended to be subject to NSR's permitting requirements.

Negative consequences of changing enforcement policies

EPA's constantly changing and increasingly narrow interpretation of NSR enforcement policies has had major negative effects on businesses, workers, consumers, and the environment. Evidence to this effect was presented at hearings and in written petitions to EPA and is referenced in EPA's *Report to the President*. This section briefly reviews some of that evidence and EPA's own evaluations of it.

EPA's narrow interpretation of the RMR&R exclusion is discouraging investments in efficiency improvements by utilities.

(1) Negative consequences of EPA's interpretation of the RMR&R exclusion

EPA's narrow interpretation of the RMR&R exclusion is discouraging investments in efficiency improvements by utilities, even though such improvements are closely linked to lower emissions and are encouraged by other federal and state environmental programs. The type of modification to electric generators proposed by Detroit Edison, for example, would reduce the amount of coal needed to generate the same level of power by about 112,000 tons per year.²⁵ Detroit Edison estimates 1,000 other electric utility units in the U.S. could similarly replace their turbine blades, reducing carbon dioxide (CO₂) emissions by 81 million tons per year.

Several utilities estimated the impact a narrow interpretation of the RMR&R exclusion would have had on their ability to produce electricity, had the policy been consistently enforced during the past 20 years.²⁶ The results are stunning: the TVA would have lost 32 percent of its coal system's energy capability; the Southern Company said it would not have been able to meet 38 percent of its customer demand; First Energy estimated it would have lost 39 percent of its coal-fired generating capacity, and so on. Negative environmental effects would also have occurred because reducing the utilization of highly efficient low-cost baseline generators would mean having to use less-efficient and dirtier units more often.²⁷

²⁵ Ibid., pp. 15-16.

²⁶ EPA, *New Source Review: Report to the President*, pp. 12-13. The scenario assumes the utilities would elect to accept caps on emissions from the affected units (so-called "minor" NSR permits) limiting generation to recent levels rather than take units offline during the permitting process.

²⁷ Ibid.

Nonutility industry spokesperson also testified to EPA that the threat of imposing a new, narrower interpretation of RMR&R has prevented them from making investments that would improve energy efficiency and plant safety or that would reduce emissions. Here are just three of the many case studies presented during EPA's hearings:

Reducing the utilization of highly efficient low-cost baseline generators would mean having to use less-efficient and dirtier units more often.

- ▶ A facility equipped with boilers that currently burn fuel oil wanted to change its boilers so they could burn natural gas, which would reduce emissions of SO₂ and NO_x. It may also result in a fuel cost savings. Although emissions of SO₂ and NO_x would decrease significantly, the facility projected emissions of VOCs and CO would increase slightly. These increases could trigger NSR and expensive retrofitting, and the facility is likely to conclude the project is no longer viable and continue to burn oil.
- ▶ One company testified that it elected not to replace spray nozzles in a process dryer, even though it determined significant energy savings could result, because EPA would not consider the new Teflon-coated nozzles to be equivalent parts, and consequently the project would trigger NSR. The new nozzles would have resolved the need to repeatedly replace existing equipment and may have provided a safer and more reliable operating environment for workers.
- ▶ A company in the flexible packaging industry asked its permitting agency to allow it to run a thermal oxidizer only when it runs solvent-based inks and coatings, since the increasingly popular water-based inks and coatings contain materials that can poison the oxidizer's catalyst. The change would have saved approximately 15,000 cubic feet of natural gas and 650 kWh of electricity each day. However, the company felt EPA would view the request as a change in the plant's method of operation, triggering NSR, even though actual emissions were expected to be reduced. The project did not go forward.

In its *Report to the President*, EPA "concludes that concern about the scope of the routine maintenance exclusion is having an adverse impact on [utility] projects that affect availability, reliability, efficiency, and safety."²⁸ Concerning nonutility companies, EPA says "concern about the scope of the routine maintenance exclusion is having an adverse impact on industries outside the energy sector. It also is credible to conclude that projects have been discouraged that might have been economically and/or environmentally beneficial without increasing actual emissions."²⁹

²⁸ EPA, *New Source Review: Report to the President*, p. 11.

²⁹ *Ibid.*, p. 23.

(2) Negative consequences of substituting “actual-to-future-potential” for “actual-to-future-actual” in the rules for estimating changes in emissions

The actual-to-future-potential method of estimating the change in emissions means EPA can disregard the actual change in emissions caused by modifications, virtually negating Congress’s intent to have NSR apply only when modifications are likely to significantly increase emissions.³⁰ Combined with EPA’s narrow interpretation of RMR&R, the actual-to-future-potential methodology means industries where changes in production practices must be made frequently to respond to seasonal changes in product demand or government regulations, such as refineries, face virtually continuous NSR permitting requirements. Two examples demonstrate the delays and costs imposed by this arrangement:

- ▶ A plastics plant wanted to install a heat exchanger that would recover waste heat from one of its natural gas-fired units. As a result, natural gas consumption would have fallen 7.5 percent and emissions of NO_x would have fallen by 7.5 percent, SO₂ by 5.8 percent, CO by 7.6 percent, PM by 9 percent, and VOCs by 9.3 percent. However, because the boilers required back-up firing with oil during the winter to ensure operation, the actual-to-future-potential emission test would have caused the project to trigger NSR. To avoid NSR, the company says it is considering burning more fuel oil over the next two years to increase the base level of emissions (actual emissions).
- ▶ A pulp and paper mill reported it had planned to install a new overfire air system to allow for more complete combustion of bark fuel, reducing the amount of natural gas required to provide supplemental heat by roughly 200 million cubic feet, for an annual natural gas savings to the company of about \$1 million. Annual emissions of NO_x, CO, and VOCs would have decreased. However, because the boiler is currently operating below its rated capacity, and the PTE is based on operating at full capacity, the project would have triggered the installation of NSR-required emission controls costing \$17 million. The project was dropped.

“In some cases [NSR] may be discouraging projects that decrease emissions because of the ‘actual-to-potential’ test used for these industries.”

EPA Report to the President

EPA has concluded that “the current NSR program is having an adverse impact on energy efficiency by discouraging projects that may improve energy efficiency, or may increase capacity and reliability without actually increasing pollutant emissions. In some cases it may be discouraging projects that decrease emissions because of the ‘actual-to-potential’ test used for

³⁰ This is the position EPA argued in its enforcement action against the Tennessee Valley Authority in September 2000.

these industries.”³¹

(3) De-bottlenecking and aggregation

Plant modifications that resolve production bottlenecks and allow for higher rates of utilization of other plant components or units are discouraged when NSR is interpreted to include the extended or aggregate effects of each modification, even when the intended modification reduces emissions, improves plant safety, or improves energy and resource efficiency. Two examples of this effect are:

- ▶ An aerospace company proposed to speed up its manufacturing process for parts and subassemblies by using a new adhesive that would dry or cure faster. The company says the project would have reduced VOC emissions and overall energy consumption. However, by improving efficiency, the project would have increased utilization of other production equipment at the plant, potentially triggering NSR. The company declined to make the change.

Industry experts express great frustration with EPA’s apparent practice of changing NSR policies without following established rulemaking requirements.

- ▶ A refinery concluded that changes to the Fluid Catalytic Cracking Unit (FCCU) riser design to allow better catalyst-crude mixing would result in more gasoline being produced from the FCCU. While the change would not increase emissions at the FCCU, it would likely increase emissions from the gasoline loading dock and would lower emissions from diesel loading. Analysis has not yet been done

to show if the increase would be significant (i.e., > 40 tons/year); however, using the potential-to-emit methodology, the project would trigger the PSD permitting requirement since the facility is under the permit cap limit by more than 40 tons/yr. The project, if completed, would not cause the facility to exceed its state permit facility cap for VOC, NO_x, SO_x or any other pollutant.³²

In its *Report to the President*, EPA did not specifically acknowledge that its policies on de-bottlenecking and aggregation have harmful effects on efficiency, utilization, or emissions. However, EPA’s 2002 recommendations for reform include action on these matters.

³¹ EPA, *New Source Review: Report to the President*, p. 26.

³² This example was provided by the American Petroleum Institute.

Uncertainty and retroactive enforcement

Separate from the matter of EPA's final position on the three enforcement issues described above is the constant change and uncertainty surrounding its positions. Industry experts express frustration with EPA's apparent practice of changing NSR policies without following established rulemaking requirements.

For example, prior to 1990, EPA generally used the "actual-to-future-actual" method of estimating emission changes. In its 1990 Draft NSR Workshop Manual, EPA indicated it would begin to use the "actual-to-potential" test on a case-by-case basis. The change was successfully challenged by utilities in the WEPCO case, but EPA continued to assert that it could be used when regulating nonutility emitters. In 1996, EPA announced that nonutility emitters should presume the "actual-to-future-potential" method applied to them, but included a return to the "actual-to-future-actual" in its proposed reform agenda. Two years later, in 1998, EPA stated it would stay with the "actual-to-future-potential" test.

EPA has behaved in a similar fashion concerning the RMR&R exclusion. After approving an expansive interpretation of the exclusion by state permitting agencies for the better part of two decades, in 1999 EPA claimed to be shocked to find some companies "have tried to extend it to activities that are infrequently performed in the industry, alter the design or function of the equipment, or involve a significant capital cost" ³³

Attempting to apply current interpretations of rules retroactively is a violation of due process. It also is unlikely to be effective regulation, since it occurs too late to change the behavior in question. By punishing, after the fact, those who at the time were thought to be operating within the law, this enforcement policy discourages new investment and innovation.

EPA asked the Indiana Department of Environmental Management to withdraw a ruling even though it had been issued nearly two years (20 months) earlier.

State versus federal authority

In all three enforcement areas, current EPA policy has led to confusion and delay as EPA issues conflicting letters and decisions and state agencies, which are given NSR permitting authority in most states, attempt to interpret and apply those policies. One result is conflict between federal EPA and state agencies.

EPA Region V, for example, recently challenged an Indiana Department of Environmental Management (IDEM) decision concerning turbine blade replacement at a utility. The Indiana

³³ EPA Office of Enforcement and Compliance Assurance, "Enforcement Alert," January 1999, cited in Corporate Environmental Enforcement Council, *supra* note 18, p. 18.

agency concluded the change fell under the routine maintenance and replacement exclusion, but EPA launched its own inquiry and determined the change was a “major modification” subject to NSR. EPA then asked the IDEM to withdraw its ruling, even though it had been issued nearly two years (20 months) earlier.³⁴

Federal EPA rulings can also conflict with State Implementation Plans (SIPs). State agencies are given somewhat broad authority in negotiating the details of plans for bringing their states into compliance with federal clean air standards. Historically, EPA has deferred to state SIPs so long as they are consistent with the Clean Air Act. The constantly changing and seemingly arbitrary nature of federal EPA enforcement of NSR contradicts that policy.

Conclusion #4: Enforcement of EPA’s reinterpretation of NSR has discouraged modifications that, had they been allowed to proceed, would have been economically and/or environmentally beneficial and would not have increased emissions.

More cost-effective ways to reduce emissions

The NSR program may have reflected state-of-the-art thinking on air pollution regulation when it was adopted 25 years ago, but considerable thought since then has been given to finding better ways to reduce emissions and protect the environment. It should hardly be a surprise that NSR could be based on obsolete ideas and techniques.

If costs and benefits are not weighed, we cannot hope to get the “most bang” for every “buck” invested in environmental protection.

NSR mandates that regulated emitters adopt specific technological solutions “regardless of ambient air quality and are therefore structurally divorced, to a large extent, from benefits.”³⁵ The recurring problem at the heart of the case studies cited above is that costs apparently (sometimes

obviously) exceed benefits, yet there is no easy way in the framework of NSR to reconcile the dilemma. But if costs and benefits are not weighed, we cannot hope to get the “most bang” for every “buck” invested in environmental protection.

Reducing emissions through a permitting process requires bureaucracies to inspect facilities and enforce compliance, resulting in high costs, delays, litigation, political interference, and unintended consequences. Extensive empirical research of such programs has found they typically cost between four and six times as much as the least-costly means of reducing

³⁴ Corporate Environmental Enforcement Council, *supra* note 18, p. 22.

³⁵ Indur M. Goklany, *supra* note 9, p. 37.

emissions by the same amount.³⁶

Most major environmental improvements occur as older, inefficient plants and machinery with high air pollutant emissions are replaced with new, more efficient, and more environmentally benign plants and machines. NSR, like other end-of-the-pipe environmental mandates, slows the replacement process by grandfathering existing facilities (which increases their asset value) and raising the price of new construction. In light of the progress being made to improve air quality prior to 1970, it is plausible NSR has done more to slow than to speed up progress toward greater efficiency and less emissions.

More market-oriented strategies, such as emissions trading, have a better track record for cost-effectively reducing emissions. Such programs attempt to mimic real market incentives by allowing companies with high compliance costs to buy emission credits from companies with low compliance costs, thereby directing spending to where it can do the most good. Even emission trading, though, may not come close enough to real markets to achieve the most cost-effective air pollution strategy.

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In a typical “cap and trade” regime, allowable emissions and the initial distribution of credits among emitters are politically determined, making it unlikely either will be based on sound science. If emission credits are not given true protection as property rights, then businesses can be expected to hesitate to risk investing in them, and choose instead to bank what credits they have and make trades only internally, among units belonging to the company.³⁷

Market-based alternatives to emission trading can be found in the work of a growing number of academics and policy experts advocating so-called free-market environmentalism.³⁸ While are controversial, they at least illustrate the variety of promising alternatives to the now quarter-century-old NSR.

³⁶ T.H. Tietenberg, *Emissions Trading: An Exercise in Reforming Pollution Policy* (Washington, DC: Resources for the Future, 1985).

³⁷ James L. Johnston, “Emissions Trading for Global Warming,” *Regulation*, Vol. 21, No. 4 (1998), pp. 19-23).

³⁸ Terry Anderson and Donald R. Leal, *Free-Market Environmentalism* (New York, NY: Palgrave Macmillan, revised edition, 2000); Jonathan H. Adler, editor, *Ecology, Liberty & Prosperity: A Free Market Environmental Reader* (Washington, DC: Competitive Enterprise Institute, 2000); Richard L. Stroup and Roger E. Meiners, *Cutting Green Tape: Toxic Pollutants, Environmental Regulation and the Law* (San Francisco, CA: Independent Institute, 2000); James L. Johnston, “A General Theory of Regulation,” *U.S. Association for Energy Economists: Proceedings*, October 1996.

Conclusion #5: There are better, more cost-effective ways to improve and protect the nation's air quality.

EPA's recommendations

In May 2001, an inter-agency team convened by the Bush administration in response to California's "energy crisis" called for evaluation and possible reform of "regulatory restrictions

The report makes seven recommendations, the first four of which were proposed by the Clinton administration in 1996 but never implemented.

that do not take technological advances into account."³⁹ Among its specific recommendations was that EPA, in consultation with the Secretary of Energy and other federal agencies, "review New Source Review regulations, including administrative interpretations and implementation, and

report to the President within 90 days on the impact of the regulations on investment in new utility and refinery generation capacity, energy efficiency, and environmental protection." On June 13, 2002, EPA issued the report extensively cited above.

At the same time it released its report, EPA issued seven recommendations, the first four of which were proposed by the Clinton administration in 1996 but never implemented. These recommendations are:

- 1. Plantwide Applicability Limits (PALs).** Regulated emitters would be allowed to modify their plants without obtaining a major NSR permit provided their emissions do not exceed a plantwide cap based on an actual emissions baseline. Such "Plantwide applicability limits" (PALs) would have the effect of expanding the RMR&R exclusion and resolving conflicts over de-bottlenecking and aggregation.
- 2. Clean Unit Exclusion.** Regulated emitters who achieved federal BACT or LAER control levels or comparable state minor source BACT since 1990 would be entitled to a "clean unit exclusion" from NSR. A clean unit would trigger NSR only if permitted allowable emissions increase. Companies that make investments in pollution prevention or processes that are inherently clean or lower-emitting, and which achieve emission reductions comparable to BACT or LAER at the time the investment was made, would also qualify for the exclusion.
- 3. Pollution Control and Prevention Projects.** Modifications that result in a net overall reduction in air pollutants, including when an emitter switches to a cleaner-burning fuel, would be excluded from NSR, subject to certain conditions. Currently, only modifications done for the

³⁹ National Energy Policy Development Group, *National Energy Policy Report*, May 2001, p. x.

purpose of reducing emissions are granted such an exclusion. Caps on emissions under the National Ambient Air Quality Standards program and other programs would remain in place.

4. Actual-to-Future-Actual Methodology.

The actual-to-future-potential emissions test would be replaced with the previously used (and still used for utilities) actual-to-future-actual test, which is a more realistic calculation of future emissions. Only emission increases caused by a given modification would be considered. The baseline for calculating current actual emissions would be the highest consecutive 24-month period within the immediately preceding 10 years.

“Overall, our reforms will clarify and simplify the program so that industry will be able to make improvements to their plants that will result in greater environmental protection.”

EPA, *New Source Review Questions and Answers*

EPA expects to formally adopt the preceding four recommendations as quickly as possible. It further recommends making three changes to NSR that the Clinton administration did not approve. These would need to go through the formal rulemaking procedure (including public comment) before being implemented. They are:

5. More Objective Definition of the RMR&R Exclusion. EPA proposes to set cost-based thresholds below which projects would automatically qualify for the RMR&R exclusion. The thresholds would be set on an industry-by-industry basis and would exclude costs incurred for installing and maintaining pollution control technology. EPA would also attempt to codify activities that qualify for the RMR&R exclusion, possibly relying on industry groups for advice on what activities are common practice. The agency proposes to consider energy efficiency improvements “routine” and eligible for the RMR&R exclusion.

6. De-bottlenecking. EPA proposes to clarify that, when calculating actual emissions associated with a modification, emitters generally will need to look only at the unit undergoing the change. Emissions from units “upstream” or “downstream” of the unit being changed would be considered only when the permitted emissions limit of the upstream or downstream unit would be exceeded or increased as a result of the change.

7. Aggregation. EPA proposes to consider modifications to be separate and independent projects unless they are dependent upon another project to be economically or technically viable or the project has been intentionally split from other projects to avoid NSR. EPA says it “generally would defer to the States to implement the Agency’s aggregation rule.”

According to EPA, “Our reforms will remove the obstacles to environmentally beneficial projects, clarify NSR requirements, encourage emissions reductions, promote pollution prevention, provide incentives for energy efficient improvements, and help assure worker and

plant safety. Overall, our reforms will clarify and simplify the program so that industry will be able to make improvements to their plants that will result in greater environmental protection.”⁴⁰

The reforms address the biggest concerns about NSR expressed during EPA’s hearings, and appear to correct policies that currently lead to economic waste and foregone environmental benefits.

EPA goes on to say, “The basic elements of the NSR program remain in place. All new major sources of air pollution will need to comply with the best control technology and existing sources which make major modifications and have a significant increase in actual emissions also will have to meet these requirements. The reforms simply clarify which changes at existing sources can be made without triggering NSR.”⁴¹

The actual texts and implications of these seven recommendations are complex, and not all the consequences can be anticipated. The authors have studied the issue sufficiently closely, however, to conclude the reforms address the biggest concerns about NSR expressed during EPA’s hearings, and appear to correct policies that currently lead to economic waste and foregone environmental benefits. Other environmental regulations under the National Ambient Air Quality Standards program remain in place, and some conflicts between NSR and other programs (such as state SIPs) are potentially resolved.

The fact that four of the seven recommendations were initially proposed during the Clinton administration suggests they have been extensively debated by stakeholders. While this does not mean these four recommendations would necessarily be cost-effective or optimal, they are unlikely to have as their intended effect a weakening of existing protections of air quality. Certainty and clarity, missing from the current program and the source of much waste and lost opportunities to reduce emissions, are often-stated goals of the recommendations.

Conclusion #6: EPA’s 2002 reform recommendations promise to restore common sense to the New Source Review program, thereby avoiding the excessive costs, uncertainties, and counterproductive incentives resulting from recent enforcement deviations. The reforms do not put at risk recent gains in air quality.

Evaluation of EPA’s reform recommendations

EPA’s reform recommendations and the Bush administration’s Clear Skies Initiative would fix some of the biggest problems encountered by an aging, inefficient, and expensive environmental regulatory program. Replacing the NSR program as it affects utilities with the Clear Skies Initiative is a step in the right direction, though judgment must be reserved until

⁴⁰ EPA, *New Source Review Questions and Answers*.

⁴¹ *Ibid.*

legislation for the Initiative is made public.

Replacing NSR as it affects nonutility emitters with simpler Clean Air Act tools would be a superior option to NSR reform, but the administration may have feared a firestorm of criticism from Democrats and reporters had it attempted to cross that bridge. As it turns out, the administration's more modest reforms generated intense criticism nonetheless from those who seem determined to view the reform debate, naively we feel, as a contest between good (the environment) and evil (big business).

The NSR policy changes recommended by EPA, if put into practice, would not compromise air quality. We are skeptical that NSR has had a major positive effect on air quality since 1977, so predictions that EPA's proposed reforms would result in substantial increases in emissions⁴² strike us as partisan rhetoric, not analysis. The air quality goals and standards for protecting public health and the environment remain intact, and those aspects of the current program that unintentionally increase emissions by discouraging investments in energy efficiency would be avoided.

The country would be better served if NSR were changed to clarify and make more certain the scope of the routine maintenance exclusion and the method used to measure future emissions.

Finally, we are impressed by the administration's pledge to defer to state permitting authorities on several matters of implementation. As the National Governors Association states in its commentary on the need for NSR reform:

Within our federal system . . . the states have the lead responsibility for the protection of the environment and the judicious management of their energy and other natural resources. Regulatory practices should encourage net environmental improvements, while providing a stable planning environment for energy providers and consumers as well as a well-defined planning horizon. Unnecessary federal regulations, policies, and programs should be reviewed and revised as necessary.⁴³

In short, the country would be better served if NSR were changed to clarify and make more certain the scope of the routine maintenance exclusion and the method used to measure future emissions. Even better would be a move away from the costly and often counterproductive style of end-of-the-pipe regulation represented by NSR.

⁴² For example, see Earthjustice et al., "Smokestack Rollback: How the Bush administration's Clean Air Act proposals will increase toxic refinery pollution and jeopardize public health," February 2002.

⁴³ National Governors Association, "New Source Review," from the NGA Web site (www.nga.org) on June 11, 2002.

Conclusion #7: EPA's recommendations are justified by the facts and ought to be implemented as quickly as possible.

Conclusion

The failure to apply common sense to the New Source Review program has burdened American consumers and American industry with higher economic costs and higher levels of pollution than were envisioned by Congress when it wrote the Clean Air Act amendments of 1977. As EPA itself now admits,

Our findings in this report ratify a longstanding and broadly-held belief that parts of the NSR program can and should be improved. For example, we conclude above that changes to NSR that add to the clarity and certainty of the scope of the routine maintenance exclusion will improve the program by reducing the unintended consequences of discouraging worthwhile projects that are in fact outside the scope of NSR.⁴⁴

Many of these investments and activities were once correctly understood to be outside the scope of NSR, and ought once again be put beyond NSR's reach.

Current policies plainly have the unintended consequences of discouraging worthwhile investments and maintenance activities that would benefit companies and consumers as well as the environment. Many of these investments and activities were once correctly understood to be outside the scope of NSR, and ought once again be put beyond NSR's reach.

EPA's recent enforcement of policy reinterpretations have forced companies to count imaginary emissions from previously unused capacity in determining whether a repair or other moderation would cause a significant increase in emissions. As a result, under current rules most repair projects would trigger a full New Source Review, even if actual emissions *decrease* as a result of the modification. Given the cost of complying with the NSR permitting process, many companies choose not to upgrade and modernize plants or even make routine changes and repairs. Efficiency improvements that would have reduced emissions and energy consumption or improved worker or community safety have been foregone.

NSR was adopted at a time when forecasts of a "post-industrial era" were naively thought to justify anti-manufacturing policies. Balancing costs against benefits was thought to be unnecessary, and the effects of regulations on the incentives of regulators and members of the regulated community alike were poorly understood and often dismissed as unimportant.

⁴⁴ EPA, *New Source Review: Report to the President*, pp. 31-32.

Since 1977, air quality, technology, and regulatory theory have improved dramatically, creating new opportunities to more cost-effectively protect air quality. Investors, too, have also rediscovered the inherent value of companies that manufacture real goods and services, and the negative impact that defective regulations can have on global competitiveness.

EPA's recommendations and the Bush administration's Clear Skies Initiative are good places to start, but they do not mark the end of the need for reform.

It is entirely appropriate, at this time in U.S. history, to re-examine the rules and regulations known to be ineffective or damaging to the manufacturing sector of the country's economy. EPA's recommendations and the Bush administration's Clear Skies Initiative are good places to start, but they do not mark the end of the need for reform.

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