

Reform or Rollback?

How EPA's Changes to New Source Review Affect Air Pollution in 12 States

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A joint study by the Environmental Integrity Project
and the Council of State Governments/Eastern Regional Conference



Contact

Eric Schaeffer
Environmental Integrity Project
919 Eighteenth Street, NW
Suite 975
Washington DC 20006
Phone: (202) 296-8800
Fax: (202) 296-8822

Rona Cohen
Council of State Governments/Eastern Regional Conference
14 Wall Street, 20th Floor
New York, NY 10005
Phone: (212) 912-0128
Fax: (212) 912-0549

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Section 1

Executive Summary

On December 31, 2002, the Environmental Protection Agency (EPA) announced sweeping changes to the Clean Air Act's New Source Review (NSR) program. One of the most significant would allow industrial plants (other than utilities) to increase air emissions to their highest level in the past ten years without being subject to NSR permit or pollution control requirements. The EPA has stated that pollution increases under the new NSR rule will generally be held in check by other Clean Air Act restrictions.

A joint analysis by the Environmental Integrity Project and the Council of State Governments/Eastern Regional Conference (EIP-CSG/ERC) reveals that the revised NSR rule could allow significant increases in emissions. In addition, the analysis finds that emissions growth from industrial facilities will often not be limited by other federal programs absent NSR.

The study analyzed emissions and permit data obtained from state agencies to evaluate whether the new, ten year baseline for measuring emissions would increase air pollution. EIP-CSG/ERC also reviewed the operating permits of existing plants to test whether other restrictions would limit emissions that otherwise would be precluded by NSR. In brief, the data show that emissions are likely to increase under the new rule because a) emissions in the past tend to be higher than they are today for many plants, and b) other federal limits are not as stringent as NSR, and may be absent altogether for facilities that are "grandfathered" under the Clean Air Act. The major findings of this report are summarized in the sections that follow.

EPA reopened the NSR rule on July 25 for further examination of its environmental impacts. Based on the results of this analysis, the Agency should review the EIP-CSG/ERC data as part of this process. In addition, we recommend that states *not* be required to implement the new NSR rule until the Agency's review of environmental impacts is complete and, that regardless of the outcome, states should be allowed to maintain their own, more stringent standards for controlling emissions growth.

The New Rule Allows Emissions to Increase at Many Facilities

The "ten-year lookback" in the new rule could allow emissions from 1,279 major sources to increase by a total of nearly 1.6 million tons in 12 key states (see Table 1.1).

- Sulfur dioxide emissions could increase by as much as 445,000 tons from all major stationary sources, or an average of 9% above 1999 levels across all 12 states. (See attachment for listing of absolute and relative increases of each of the criteria pollutants in the twelve states examined.) Indiana has the highest potential emissions increase (160,346 tons) among the 12 states surveyed, while Maine would have the highest percentage increase (32%) above 1999 levels.
- Nitrogen oxide emissions could increase 335,000 tons, or an average of 14% above 1999 levels. Louisiana has the highest potential increase (111,318 tons) while Delaware would have the highest relative increase (64%).

- Volatile organic compounds (which form smog) could increase 173,000 tons, or an average of 37%. Louisiana has the highest potential increase (57,405 tons) while Pennsylvania would have the highest relative increase (70%).
- Carbon monoxide could increase by more than 600,000 tons, or an average of 46%. Indiana has the highest potential increase (233,275 tons), while Illinois would have the highest relative increase (58%).
- Particulate matter emissions could increase by as much as 51,000 tons or an average of 14% across all states. Indiana has the highest potential increase (10,731), while New York would have the highest percentage increase (55%).

Table 1.1 Additional Allowable Increases in Emissions without Triggering NSR (tons per year)

No.	State	Major Sources	Particulate Matter	Nitrogen Oxides	Sulfur Dioxide	VOCs	Carbon Monoxide
1	Connecticut	11	not available	2,068	3,219	54	512
2	Delaware	16	460	13,801	13,847	3,426	3,410
3	Florida	195	10,032	19,376	26,077	13,175	44,430
4	Illinois	158	6,057	39,185	78,882	39,109	69,502
5	Indiana	150	10,731	37,233	160,346	16,445	233,275
6	Louisiana	263	6,025	111,318	48,932	57,405	140,256
7	Maine	24	2,932	5,776	14,755	1,298	5,472
8	New Jersey	47	694	7,703	4,323	6,359	3,964
9	New York	86	2,883	20,388	13,974	3,149	18,263
10	Pennsylvania	250	9,793	70,172	61,693	27,157	69,745
11	Vermont	6	45	0	158	64	149
12	Wisconsin	73	1,056	8,274	19,092	5,784	14,482
TOTAL:		1,279	50,708	335,294	445,298	173,425	603,460

The complete analysis of the emissions inventory data for each of the twelve states can be found in Section 2 and 3, and Appendix A of the complete report.

Absent NSR, Existing Permit Limits May Not Limit Emissions Growth

EIP and CSG/ERC examined six specific facilities (two refineries, two chemical plants, and two pulp and paper mills) to determine whether other (non-NSR) federal restrictions would curb emissions growth from production units that were modified (Table 1.2). The study showed that absent NSR, these permits imposed few constraints on emissions growth:

- At three of these plants, there are no permit limits other than NSR that would limit emissions growth, with one possible (but unlikely exception) for particulate matter at one plant. Emissions from key production units at these plants would rise 1,757 tons under the new rule compared to the old, if the facility took advantage of the 10-year lookback allowed in the new rule.
- At one plant, existing emission limits would restrict emissions growth to 23 tons per year (a 15% increase, instead of a possible 39% increase) under the new rule compared to the old.

- At the remaining two plants, emissions growth could be limited if EPA allows more stringent state preconstruction requirements to remain in effect under the new rule. But if these are preempted by EPA's final NSR changes, as the Agency has suggested, emissions would rise by 633 tons. Other than state preconstruction requirements, only one other federal limit (for NO_x at one plant) would have any effect in limiting increases the new rule otherwise allows.

As the last example illustrates, emissions will increase somewhat less under EPA's NSR changes if states are allowed to keep more stringent permit requirements for plant modifications in place. EPA has suggested that these more stringent standards may be preempted by the final rule, which is one of the reasons why 14 states have petitioned the Court to strike down the regulation.

The detailed analysis of each of the six permits can be found in Section 4 of the complete report.

EPA Should Revisit Assumption that Non-NSR Permit Limits Restrict Emissions Growth

EPA has claimed that emissions are unlikely to increase under the new NSR rules, because the Clean Air Act contains other permit restrictions. For example, Assistant Administrator Jeff Holmstead, testifying on September 3, 2002, before the Senate Committee on Health, Education, Labor and Pensions stated that:

An important consideration to keep in mind is that the NSR program is by no means the primary regulatory tool to address air pollution from existing sources. The Clean Air Act provides authority for several other public health-driven and visibility-related control efforts: for example, the National Ambient Air Quality Standards (NAAQS) Program implemented through enforceable state implementation plans, the NO_x SIP call, the Acid Rain Program, the Regional Haze Program, the National Emission Standards for Hazardous Air Pollutants (NESHAP) program, etc. Thus... Congress provided numerous other tools for assuring that emissions from existing sources are adequately controlled.

As the EIP-CSG/ERC study illustrates, however, these other tools often do not apply. For example, the Acid Rain program applies only to utilities, and imposes no limits on refineries, paper mills, steel mills, cement kilns and other stationary sources that benefit from the relaxation of NSR standards in EPA's final rule. There are only a handful of counties currently classified as exceeding the ambient standards for sulfur dioxide, particulate matter, and carbon monoxide. Consequently, NAAQS-driven limits designed for nonattainment areas have virtually no application to emissions of these pollutants outside those few counties. Moreover, NESHAP standards for hazardous air pollutants do not apply at all to sulfur dioxide, nitrogen oxide, or carbon monoxide, and only to some volatile organic compounds, and some of the pollutants that form particulate matter.

Most significantly, the EIP-CSG/ERC study of six plants found a significant number of "grandfathered" production units that appear to be exempt altogether from any real emission limits; this despite the fact that NSR was designed to limit emissions growth from older units.

Table 1.2 Emissions Impacts of the New NSR Rules: Summary of Permit Analyses

Company, State	Pollutant	Allowable increase in emissions without triggering NSR (old rule vs. new rule)	Allowable increase in emissions after taking into account other federally enforceable limits
American Paper Mills of Vermont	PM	45 tpy / 17%	Increase prohibited if NSPS applicable
	NO _x	86 tpy / 79%	No other limits apply
	CO	129 tpy / 20%	No other limits apply
BP Amoco Chemical Corporation – Joliet Plant, Illinois	VOCs	62 tpy / 39%	23 tpy / 15% (NSPS -already applicable, MACT, and current preconstruction permit)
ConocoPhillips Tosco Trainer Refinery, Pennsylvania	PM	1 tpy / 2%	Increase in emissions potentially limited by state preconstruction permitting program
	NO _x	32 tpy / 8%	Increase in emissions potentially limited by state preconstruction permitting program
	SO ₂	470 tpy / 146%	Increase limited to 265 tpy / 82% if NSPS applicable Increase in emissions potentially limited by state preconstruction permitting program
Degussa Goldschmidt Chemical Corporation, Wisconsin	VOCs	66 tpy / 41%	No other limits apply
Stone Container Corporation, Florida	PM	0 tpy / 0%	No other limits apply
	NO _x	983 tpy / 93%	No other limits apply
	SO ₂	448 tpy / 22%	No other limits apply
Sunoco Marcus Hook Refinery, Pennsylvania	PM	5 tpy / 14%	Increase in emissions potentially limited by state preconstruction permitting program
	NO _x	304 tpy / 91%	97 tpy / 29% (NO _x RACT) Increase prohibited if NSPS applicable Increase in emissions potentially limited by state preconstruction permitting program
	CO	28 tpy / 6%	Increase in emissions potentially limited by state preconstruction permitting program

How the New 10-Year Baseline Would Allow Emissions to Increase

NSR requires major industrial sources to apply for permits and install the best available pollution controls for any physical modification or operational change that is expected to significantly increase air emissions. Under the law, in most areas of the country an increase is only considered significant if it exceeds 39 tons per year for sulfur dioxide (SO₂), nitrogen oxide (NO_x) and volatile organic compounds (VOCs), 24 tons per year for particulate matter (PM), and 99 tons per year for carbon monoxide (CO). These provisions are particularly important in controlling emissions from so-called “grandfathered” facilities. Under the Clean Air Act, plants built before 1977 are generally exempt from the strict air pollution control standards that apply to newer sources, until they are modified and emissions increase in a way that triggers NSR. The exemption for grandfathered sources is significant. For example, the state of Texas estimates that over one-third of its industrial emissions come from grandfathered pollution sources.

EPA’s NSR revisions change the way that emission increases are calculated. Under the old rule, facilities other than power plants would measure potential emission increases from a plant modification against a “baseline” of the most recent two-year average annual emissions. For example, suppose a facility wanted to rebuild and expand an old boiler with average annual emissions 505 tons per year in 2000 and 2001. Under the old rule, the utility would have to obtain an NSR permit and install state-of-the-art emission controls if it expected the boiler’s emissions after project completion to exceed 505 tons, plus the significance level for each pollutant. For example, the company would be subject to NSR if it expected boiler emissions to exceed 544 tons for NO_x.

Under the new rule, industrial plants other than utilities are allowed to completely avoid NSR so long as their emissions do not exceed their highest level in the past ten years. In the example above, suppose the boiler averaged 505 tons in annual emissions in 2001 and 2002, but 938 tons in 1995 and 1996. Under the new rule, the facility may now increase its emissions after rebuilding the boiler to 938 tons plus the “significance level”. For example, under the new rule the company would only be subject to NSR if it expected boiler emissions to exceed 977 tons (i.e., 938 + 39) after reconstruction. Figure 1.1 illustrates this example.

How EIP and CSG/ERC Gathered and Analyzed the Data

The EIP-CSG/ERC study examined both statewide emissions inventory data and individual permits. The first step was obtaining emissions inventory data (which EPA requires states to maintain) from a large cross-section of states. Because NSR applies only to major sources, the data were then sorted on a pollutant-by-pollutant basis to eliminate any facilities that did not report significant quantities of regulated pollutants. Because the new ten-year baseline does not apply to power plants, such facilities were also eliminated from the database. Finally, only sources that reported emissions in recent years were included, to eliminate shutdowns from the analysis. Based on data collected, emissions baselines were calculated for each facility based on a ten-year historical period to approximate the analysis that a facility would perform in complying with the new rule.¹ Emissions baselines were also calculated based on a facility’s most recent two years of emissions in order to approximate the baseline calculation specified in the old rule (see discussion of limitations).

Recall that the new rule allows an industrial plant to escape NSR so long as its emissions do not exceed the average emissions calculated based on any consecutive 24-month period during the entire decade prior to the modification, plus a pollutant specific emissions increase (or “significance

¹ In many cases, state authorities were unable to provide ten years of historical emissions data. Therefore, the analysis relied on the years available, but never used less than six years of data to calculate facility baselines.

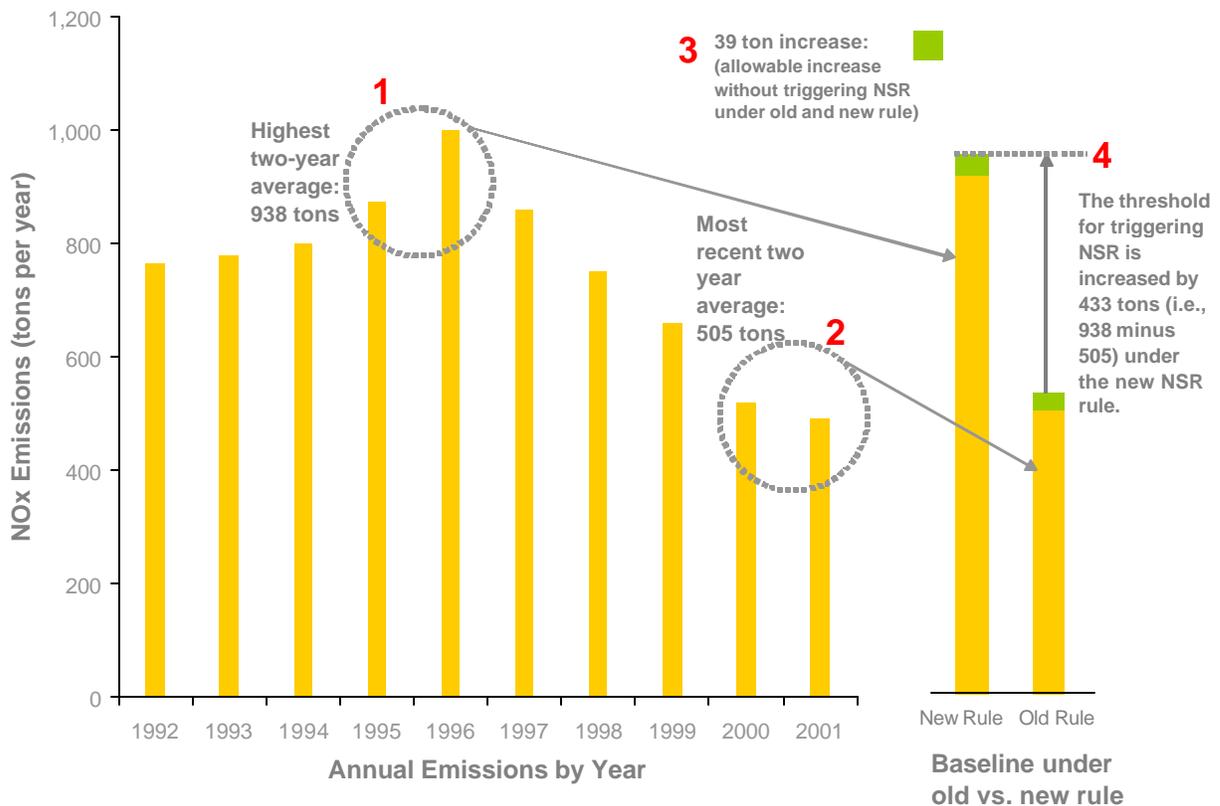


Figure 1.1 Illustration of Baseline Calculations

level”). The facility’s potential to increase emissions under the new rule compared to the old was calculated by subtracting the most recent two year average (old rule baseline) from the highest two year average within the past ten years (the new rule baseline).

EIP-CSG/ERC selected six facilities from the universe of facilities that was found to have a higher NSR baseline under the new rule to determine whether other permit limits would restrict their emissions growth. A significant process unit, or group of units, was selected within each facility for further study. The study evaluated potential restrictions in the facility and process unit’s permit and in State Implementation Plans, including New Source Performance Standards, the NOx SIP call, regulations on hazardous air pollution, and any other limits that appeared applicable.

Limitations of the Analysis

Any evaluation of emissions and permit data, no matter how careful, must be accompanied by an explanation of limitations that could lead to some distortion of results. The inventory data that EIP-CSG/ERC evaluated is no doubt inaccurate for some facilities, and this may overstate or understate the impact of the new rule. For example, historic emissions data may be exaggerated if recent revisions to emission factors result in lower estimates from some sources. On the other hand, more recent data may reflect an upward adjustment in measured emissions not captured by historical data. The older data may also not include pollution from sources which have only recently been measured. Under the old rule, a facility could rely on emissions from an earlier period (before the most recent two years) if a state agency determined this period was more representative of actual emissions.

Preliminary review suggests use of the earlier baseline was relatively infrequent. Finally, under the new rule a facility can use accidental releases to inflate its baseline emissions, which will make it easier to avoid NSR. These accidental emissions, which can be substantial, are not included in the analysis.

There are at least two ways the EIP-CSG/ERC analysis is conservative. First, a source is considered “major” if it has the *potential* to emit pollution above a certain threshold. The EIP-CSG/ERC analysis includes only those facilities that show *actual* releases above that threshold, excluding some sources that would otherwise show a potential increase in emissions under the new rule. Second, a number of states did not have reliable emissions data as far back as ten years. In such cases, the analysis was limited to a shorter period (e.g., seven or eight years), and did not capture those facilities with higher emissions in the more distant past and or reduced the average emissions that might otherwise have been calculated.

The EIP-CSG/ERC chose to examine process units (e.g., industrial boilers) at individual facilities because most permit restrictions are written for process units. In some cases, there were no historical emissions data for a facility, so emissions were apportioned based on the unit’s relative heat input. This method seemed fair for combustion sources, but may not provide an accurate basis for estimating pollutants like PM, where total facility emissions may include some non-combustion sources. To be conservative, the analysis assumed that any NSPS/MACT standard developed for the relevant source category would apply to the process unit in question, which may not always be the case.

Recommendations

The following recommendations are offered as EPA considers the future of the NSR program:

- On Friday, July 25, EPA reopened its new NSR rule for further examination of its potential environmental impact, including whether or not the ten-year baseline would allow emissions to increase. The Agency should consider the CSG/ERC and EIP data and conduct its own objective and transparent review of emissions and permit data.
- State agencies should not be required to implement the new NSR rule until the Agency’s review of environmental impacts is complete.
- Federal law has always recognized the right of states to maintain more stringent emission limits. EPA should allow any state to maintain its own permit requirements for construction or modifications, so long as these are more stringent than federal standards require.

ATTACHMENT

How Significant are the Emissions Increases?

Having calculated the potential increases in emissions under the new NSR rule, a logical question is whether these levels are significant. For example, if facilities in Pennsylvania were to increase their emissions of PM by 9,793 tons, as this analysis suggests is now possible, is this increase significant relative to current levels of emissions in the state?

To judge the significance of the results, the potential increases in emissions under the new NSR rule were compared against total statewide emissions for each of the pollutants. The following tables present the calculations that were performed for PM, NO_x, SO₂, VOCs, and CO. Potential increases were compared with total stationary source emissions for each state, to provide a common basis for comparison (i.e., 1999 stationary source emissions from EPA's website). Total stationary source emissions include utilities, which are not affected by the new NSR rule, making this comparison somewhat conservative.

In general, the results suggest that the allowable increases are significant, while varying significantly between states. For example, for VOCs, the percentages range from one percent to a high of 70 percent.

Allowable Increases Relative to Total Statewide Emissions: PM

State	(A) Allowable Increase Without Triggering NSR (tons)	(B) Total Stationary Source Emissions (1999, tons) ¹	(A / B) Increase as Percent of Total Emissions
Connecticut	NA	NA	NA
Delaware	460	2,908	16%
Florida	10,032	69,526	14%
Illinois	6,057	47,144	13%
Indiana	10,731	72,192	15%
Louisiana	6,025	69,682	9%
Maine	2,932	11,587	25%
New Jersey	694	25,015	3%
New York ²	2,883	5,265	55%
Pennsylvania	9,793	42,326	23%
Vermont	45	524	9%
Wisconsin	1,056	11,272	9%
TOTAL	50,708	357,441	14%

1. Source: U.S. EPA, <http://www.epa.gov/air/data/geosel.html>

Allowable Increases Relative to Total Statewide Emissions: NO_x

State	(A) Allowable Increase Without Triggering NSR (tons)	(B) Total Stationary Source Emissions (1999, tons) ¹	(A / B) Increase as Percent of Total Emissions
Connecticut	2,068	19,151	11%
Delaware	13,801	21,483	64%
Florida	19,376	391,135	5%
Illinois	39,185	404,240	10%
Indiana	37,233	438,259	8%
Louisiana	111,318	346,603	32%
Maine	5,776	24,716	23%
New Jersey	7,703	117,850	7%
New York	20,388	161,779	13%
Pennsylvania	70,172	314,147	22%
Vermont	0	1,290	0%
Wisconsin	8,274	151,261	5%
TOTAL	335,294	2,391,913	14%

1. Source: U.S. EPA, <http://www.epa.gov/air/data/geosel.html>

Allowable Increases Relative to Total Statewide Emissions: SO₂

State	(A) Allowable Increase Without Triggering NSR (tons)	(B) Total Stationary Source Emissions (1999, tons) ¹	(A / B) Increase as Percent of Total Emissions
Connecticut	3,219	47,681	7%
Delaware	13,847	69,694	20%
Florida	26,077	813,746	3%
Illinois	78,882	950,746	8%
Indiana	160,346	1,046,204	15%
Louisiana	48,932	288,196	17%
Maine	14,755	46,367	32%
New Jersey	4,323	131,184	3%
New York	13,974	376,850	4%
Pennsylvania	61,693	1,096,193	6%
Vermont	158	1,399	11%
Wisconsin	19,092	281,818	7%
TOTAL	445,298	5,150,077	9%

1. Source: U.S. EPA, <http://www.epa.gov/air/data/geosel.html>

Allowable Increases Relative to Total Statewide Emissions: VOCs

State	(A) Allowable Increase Without Triggering NSR (tons)	(B) Total Stationary Source Emissions (1999, tons) ¹	(A / B) Increase as Percent of Total Emissions
Connecticut	54	3,910	1%
Delaware	3,426	5,744	60%
Florida	13,175	36,116	36%
Illinois	39,109	80,409	49%
Indiana	16,445	55,649	30%
Louisiana	57,405	85,873	67%
Maine	1,298	5,343	24%
New Jersey	6,359	65,161	10%
New York	3,149	52,818	6%
Pennsylvania	27,157	38,800	70%
Vermont	64	1,713	4%
Wisconsin	5,784	34,665	17%
TOTAL	173,425	466,201	37%

1. Source: U.S. EPA, <http://www.epa.gov/air/data/geosel.html>

Allowable Increases Relative to Total Statewide Emissions: CO

State	(A) Allowable Increase Without Triggering NSR (tons)	(B) Total Stationary Source Emissions (1999, tons) ¹	(A / B) Increase as Percent of Total Emissions
Connecticut	512	5,776	9%
Delaware	3,410	16,031	21%
Florida	44,430	172,444	26%
Illinois	69,502	120,871	58%
Indiana	233,275	439,593	53%
Louisiana	140,256	304,693	46%
Maine	5,472	14,185	39%
New Jersey	3,964	42,059	9%
New York	18,263	67,784	27%
Pennsylvania	69,745	121,335	57%
Vermont	149	2,145	7%
Wisconsin	14,482	51,592	28%
TOTAL	603,460	1,358,508	44%

1. Source: U.S. EPA, <http://www.epa.gov/air/data/geosel.html>