

**PREVENTION OF SIGNIFICANT DETERIORATION AND
NEW SOURCE REVIEW: APPLICABILITY AND OTHER BASICS**

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I. INTRODUCTION

Six letters — PSD/NSR — are often the reason that many environmental attorneys describe themselves as “ABA” lawyers, that is, “anything but air” lawyers. There is some basis for this. The PSD/NSR regulatory scheme is among the most complex and confusing of all environmental programs. Moreover, EPA rules, preambles, interpretations, guidance and memoranda addressing PSD/NSR applicability and related issues fill volumes, and, seemingly, are ever-changing. It is also a veritable alphabet soup of acronyms – BACT, LAER, ERCs, PTE, to name but a few. As a result, this area of the law often seems unapproachable. Yet compliance with PSD/NSR requirements for facilities is critical — some of the largest fines and most costly corrective measures (sometimes ranging into the billions) have been assessed or required by EPA for alleged PSD/NSR violations, with many claims based on actions that occurred years, and even decades, before.

The purpose of this paper is to help demystify this area for general environmental law practitioners and environmental managers with no or only limited experience in these programs. It does this by presenting the basic concepts underpinning PSD/NSR, defining key terms, and describing certain general principles used in determining program applicability. It is intended as a general guide only; actual PSD/NSR applicability determinations are, unfortunately, and notwithstanding reform efforts, complex and highly facts-specific, and must be made on a case-by-base basis.

II. The Starting Point – National Ambient Air Quality Standards

A. The Establishment of National Ambient Air Quality Standards

The starting point for understanding the PSD/NSR programs is the set of standards known as the National Ambient Air Quality Standards, or “NAAQS,” for short. The federal Clean Air Act, 42 U.S.C. §§ 7401 *et seq.* (hereafter, “CAA”), directs EPA to establish nationwide NAAQS for pollutants that the Agency has listed as “criteria pollutants,” based on their likelihood of causing adverse effects to public health and welfare. *See* CAA §§ 108 and 109. EPA has set national ambient air quality standards for six air pollutants: ground-level ozone (or “smog”), carbon monoxide (CO), lead, nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and particulate matter (PM-10) (particulate matter of 10 microns or less). *See* 40 C.F.R. Part 50. EPA recently supplemented the PM-10 NAAQS by establishing a new NAAQS for even smaller particles, “PM-2.5.” (Note: “Volatile organic compounds” (or “VOCs”) and NO_x (referring generally to oxides of nitrogen) are precursors to ozone formation.)

The basic idea behind these ambient air quality standards is that they are to be based on scientific determinations of the threshold levels of air pollution below which no adverse effects will be experienced by humans or the environment. More specifically, for each of these six pollutants, EPA has set health-based or “primary” standards to protect human health, and “secondary” standards to prevent adverse effects on vegetation, property or other elements of the environment (generally lower than the primary standards). The standards also reflect the fact that people can tolerate brief exposures to higher levels of pollution and that prolonged exposure to much lower concentrations can also lead to

adverse health impacts. As a result, there are generally both “short term” and “long term” NAAQS for the criteria pollutants.

B. Attainment vs. Nonattainment Areas

An area of the country which has achieved the NAAQS for a given criteria pollutant is referred to in clean air parlance as an “attainment area” with respect to that pollutant. Conversely, an area that has not achieved attainment of the NAAQS for a given pollutant is referred to as a “nonattainment area” with respect to the pollutant for which the NAAQS have not been achieved. (There are some areas of the country that cannot be classified as attainment or nonattainment, and are designated by EPA as so-called “unclassifiable” areas. However, as a practical matter, these areas are essentially treated as “attainment” with respect to the relevant pollutant.)

In general, designations of attainment vs. nonattainment are made on a county-by-county or other regional basis, predicated on ambient air quality monitoring data collected by states and local air pollution control agencies. The NAAQS designations for a particular state and county (or other region) are found at 40 C.F.R. Part 81.

C. The NAAQS Designations for Pennsylvania

EPA’s specific NAAQS designations for Pennsylvania are published at 40 C.F.R. § 81.339. The state is generally attainment or unclassifiable for SO₂, carbon monoxide, NO₂, and PM-10. However, the status of the state with respect to attainment of the NAAQS for ozone and particulate matter is more complex.

1. Ozone

The Clean Air Act Amendments of 1990 established categories of ozone nonattainment areas based on the severity of the nonattainment problem in a given region, broken down into marginal, moderate, serious, severe, and extreme nonattainment areas. (Recent revisions to the ozone NAAQS, discussed briefly below, also added a “basic” nonattainment category.”) For example, in Pennsylvania, the 5-County Philadelphia area was designated as a severe ozone nonattainment area. Further complicating things, the amendments established an ozone transport region (“OTR”) extending from Washington, D.C. to Maine, where ozone nonattainment problems are interconnected. All areas in the OTR, including Pennsylvania, are treated as though they are at least moderate nonattainment for ozone. This means that, for Pennsylvania, the entire state, except the Philadelphia area, was considered to be a moderate nonattainment area for ozone, regardless of whether a given locality actually meets the NAAQS for ozone.

The CAA also mandates that EPA review the NAAQS for each criteria pollutant once every five years to determine whether revisions to these standards are necessary. As a result, in 1997, EPA adopted a tougher

standard for ozone based on an 8-hour averaging period, replacing the former 1-hour ozone standard. Effective June 15, 2005, the 1-hour ozone standard was revoked, and attainment designations under the new, 8-hr standard became effective, including throughout Pennsylvania. Under the new standard, the status of the Philadelphia area changed, from a severe, to a moderate, ozone nonattainment area. This means that, effectively, all of Pennsylvania is treated as a moderate ozone nonattainment area for PSD/NSR purposes, because, again, it is included within the OTR. Note: Because VOCs and NO_x are precursors to ozone formation, these compounds are also nonattainment pollutants in the state.

2. Particulate Matter

Until very recently, EPA's NAAQS for particulate matter addressed "PM-10." However, the same review that led to a change in the ozone standard in 1997 resulted in the establishment of a new PM standard for even smaller particles – PM-2.5. This new standard supplements the PM-10 standard. Nonattainment designations under the PM-2.5 standard became effective on April 4, 2005. Although the state is attainment or unclassifiable for PM-10, there are a number of areas in Pennsylvania designated as PM-2.5 nonattainment.

D. The Relationship Between the NAAQS and PSD/NSR

The reason the NAAQS are relevant to an understanding of PSD/NSR is that the underlying purpose of these programs is to prevent the deterioration of air quality in attainment areas or to facilitate the achievement and maintenance of the NAAQS in nonattainment areas. That is, the PSD program is intended to prevent the significant deterioration of air quality in those areas which have achieved the NAAQS with respect to one or more criteria pollutants; hence the name, the "prevention of significant deterioration," or "PSD," program. The analogous program in nonattainment areas is intended to help ensure that those areas of the country which have not achieved the NAAQS with respect to one or more criteria pollutants do so. This is why the program in nonattainment areas is more accurately referred to as "Nonattainment New Source Review," or "NA NSR." Although somewhat confusing, the term, "New Source Review," or "NSR," is sometimes used to refer to NA NSR, and sometimes used more generically to refer to both the PSD and NA NSR programs together. To help avoid confusion, and to be clear when we are discussing these programs, this paper will use the term, NA NSR, when specifically addressing the nonattainment program, and the term, "NSR," when referring to both the PSD and the NA NSR programs.

In order to know which of these programs — the PSD program or the NA NSR program — might apply to your facility or a project that you are undertaking, you must know the attainment status for each of the pollutants emitted by your facility. This can be determined by reviewing the information at 40 C.F.R. § 81.339, referenced above. Also, DEP's Bureau of Air Quality Control website contains good statewide maps showing the designations under the new 8-hour ozone and PM-2.5 standards. Note: Because all of

Pennsylvania is considered to be an ozone nonattainment area, its NA NSR regulations apply statewide to the two precursors to ozone formation, VOCs and NO_x. At the same time, Pennsylvania is attainment or unclassifiable for NO₂, meaning that NO_x would also need to be considered in a PSD analysis for a given project.

The next section of this paper provides a very basic overview of the factors to be examined in determining whether a given project might actually trigger PSD or NA NSR applicability.

III. PSD/NA NSR APPLICABILITY BASICS

Although the basic concepts underpinning applicability of the PSD and NA NSR programs are identical or substantially identical, there are certain differences. Moreover, EPA has authorized the Pennsylvania Department of Environmental Protection (“DEP”) to administer the clean air programs in Pennsylvania, and DEP has incorporated by reference the federal PSD program, but has adopted its own, separate NA NSR program. DEP’s NA NSR program differs from the federal PSD program in some key respects. Therefore, this paper addresses PSD and NA NSR applicability separately.

A. The PSD Program: General Approach and Key Definitions

DEP has incorporated the federal PSD program into its own rules. This incorporation is found at 25 Pa. Code § 127.83, and the federal PSD program is codified at 40 C.F.R. § 52.21. EPA’s PSD rules (as well as its NA NSR rules) underwent substantial revision in late December 2002 (effective March 3, 2003), when EPA adopted significant changes and reforms to its then-existing program. *See* 67 Fed. Reg. 80186 (Dec. 31, 2002). However, even with these reforms, the PSD rules remain highly complex. For example, even the definitional section is not straightforward; there are over 50 defined terms, none of which are arranged alphabetically, and many of which have multiple, imbedded sections and subsections. *See* 40 C.F.R. § 52.21(b).

Notwithstanding this complexity, the fundamental test of PSD applicability can largely be distilled into one general statement:

- The PSD program applies to the construction of new “major stationary sources” of air pollutants, or the “major modification” to existing major stationary sources of air pollutants, in an attainment area.

Certain of these terms are either largely self-explanatory, such as “construction,” or have already been addressed, such as “NAAQS” or “attainment area.” The two, key remaining terms — major stationary source and major modification — are discussed below.

1. The definition of major stationary source

This term actually consists of two definitions — “stationary source” and “major.”

- a. First, the term, “stationary source,” is defined to mean “any building, structure, facility or installation which emits or may emit a regulated NSR pollutant.” 40 C.F.R. § 52.21(b)(5).
- b. The phrase, “building, structure, facility or installation,” is itself defined, to mean “all of the pollutant emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control)” 40 C.F.R. § 52.21(b)(6). Whether activities belong to the same industrial grouping is determined by reference to the “major group” codes in the Standard Industrial Classification (“SIC”) Manual.

Although this definition, and the determination of the scope of a “stationary source” presents (or can present) some complexities, as practical matter, and for purposes of this paper, it generally refers to a manufacturing or similar facility under common ownership or control and that emits certain pollutants or their precursors. (The basic list of pollutants subject to the PSD program is found at 40 C.F.R. § 52.21(b)(23)(i), and is included in this paper at Attachment I.)

- c. The term, “major,” in qualifying “stationary source,” refers to those stationary sources which emit, or have the “potential to emit,” 100 tons per year (“tpy”) or more of any regulated NSR pollutant, if the source falls within one of 28 enumerated industrial categories. These categories are listed at 40 C.F.R. § 52.21(b)(1)(i)(a), and are included in this paper at Attachment II. Further, sources within these 28 categories must take into consideration fugitive emissions when determining whether they reach the 100 tpy emissions threshold. 40 C.F.R. § 52.21(b)(1)(iii). For all other sources, the major source threshold is 250 tpy for a given pollutant (and fugitives are not required to be included). Also, because VOCs and NO_x contribute toward ozone formation, a major stationary source that is major for VOCs or NO_x is considered to be major for ozone. 40 C.F.R. § 52.21(b)(1)(ii).
- d. As noted in the last paragraph, the discussion of “major” has introduced yet another term that requires definition, “potential to emit,” or “PTE.” PTE is defined to mean “the maximum capacity of a stationary source to emit a pollutant under its physical and operational design.” 40 C.F.R. § 52.21(b)(4). This definition, in itself, has been the subject of considerable controversy, because determining whether emissions or other limitations should be taken into consideration in calculating PTE for a source is not always clear. In brief, physical and operational limitations on a unit’s

capacity to emit, such as air pollution control equipment or restrictions on hours of operation or the type or amount of fuel combusted, are to be considered in calculating PTE, provided that these limitations are enforceable (through a permit, for example).

e. To simplify this, if a source is subject to emissions or other limitations that relate to emissions (such as fuel use), these limitations are generally to be taken into account in determining PTE. Also, if the capacity of the source is inherently limited by physical or design constraints, these limitations are also to be considered. However, PTE analyses can be less than straightforward, and they must be undertaken on a case-by-case basis.

f. Examples:

Fossil fuel-fired boiler: One of the 28 PSD source categories subject to the 100 tpy threshold is fossil fuel-fired steam generators with a heat input of greater than 250 million Btu/hr. Therefore, a 300 million Btu/hr boiler that is designed and permitted to burn a fossil fuel that emits 100 tpy or more of any regulated pollutant (such as NO_x or SO₂) is a major stationary source.

Unit with an enforceable design limitation: If a boiler identical to the above takes an enforceable design limitation in a permit that restricts heat input to 240 million Btu/hr, this source would no longer be classified within one of the 28 categories subject to the 100 tpy major source threshold; rather the 250 tpy emissions threshold would apply. If this same or another enforceable permit limitation had the effect of limiting emissions to less than 250 tpy from this unit, then it would not be a major stationary source for PSD purposes, and the PSD program would not apply.

Caution – Even if your source is not currently major under the PSD program, a physical change (such as construction of a new, large emitting unit) that would, in itself, constitute a major stationary source (i.e., that emits or has a PTE at or above 100 tpy or 250 tpy, as applicable), would be subject to PSD.

2. The definition of “major modification”

The definition of major modification has proven to be particularly troublesome, and much of the controversy surrounding the NSR program has revolved around these two, seemingly simple, words. EPA defines major modification to mean:

any physical change in or change in the method of operation of a major stationary source that would result in a significant emissions

increase . . . of a regulated NSR pollutant . . . and a significant net emissions increase of that pollutant from the major stationary source. 40 C.F.R. § 52.21(b)(2)(i).

There are a number of important concepts and key terms imbedded within this definition. These are discussed below.

- a. First, the term “physical change or change in the method of operation” is not defined. However, the rules exclude certain key activities. 40 C.F.R. § 52.21(b)(iii). These are (among a number of others):
 - (i) routine maintenance, repair or replacement (“RMRR”) activities;
 - (ii) a switch at a steam generating unit to a fuel derived in whole or in part from municipal solid waste;
 - (iii) a switch to a fuel or raw material which the source was capable of accommodating before January 6, 1975, so long as that switch would not be prohibited by any federally enforceable permit condition established after that date;
 - (iv) an increase in the hours or rate of operation of a source, so long as the increase would not be prohibited by a federally-enforceable permit condition established after January 6, 1975; and
 - (v) a change in the ownership of a stationary source.
- b. Second, the term, “significant emissions increase” means an increase in the rate of emissions of a given pollutant that would equal or exceed the emission rates set forth at 40 C.F.R. § 52.21(b)(23). The significant emission thresholds for a few of the key pollutants are: 40 tpy for each of NO_x, SO₂, and ozone, 25 tpy for total particulate matter, and 15 tpy for PM-10. *See* Attachment I.
- c. Third, and importantly, even if a given physical or operational method change results in a significant emissions increase of a regulated pollutant, the definition of major modification includes yet another qualifier. That is, the change must also result in a “significant net emissions increase” in order for there to be a major modification triggering PSD requirements. In other words, this is a two-step process. Stating it a slightly different way, “[i]f the project causes a significant emissions increase, then the project is a major modification only if it also results in a significant net

emissions increase.” 40 C.F.R. 52.21(a)(2)(iv)(a) (emphasis added). This segues into a complex process known as “netting.”

However, before we get to netting, the first step in determining whether a project may be a major modification must be examined — namely, whether the project will result in a significant emissions increase of a given pollutant.

B. The PSD Program: Determining Whether There Has Been a Significant Emissions Increase

1. Possible methodologies

Even without reading the PSD regulations or delving into the statutory or regulatory history of this program, one could imagine a number of different ways (or “tests”) to determine the size of an emissions increase that might result from a given modification to a major stationary source. For example —

- One might calculate the emissions resulting from a change by comparing the actual level of emissions from the relevant unit before the change (the “baseline”) to the projected actual level of emissions after the change. This is the methodology set forth in EPA’s current rules, adopted in its December 2002 NSR reforms. For short, it is referred to as the “actual-to-projected actual” test. (This was the rule for electric utility units even before EPA’s NSR reforms, beginning in 1992. It has now been extended to all other source types.) *See* 40 C.F.R. § 52.21(a)(2)(iv)(c).
- One might also calculate the emissions resulting from a change by comparing the actual level of emissions from the relevant unit before the change to the potential level of emissions (i.e., the “PTE”) after the change. Beginning in the late 1980s, and reaching its height during EPA’s NSR enforcement initiative in the late 1990s, EPA interpreted its then-current NSR program to require use of this “actual-to-potential test.” However, no court that has examined this issue has upheld the use of this test under EPA’s prior NSR programs in determining emissions changes resulting from modifications to existing units. EPA’s current rules make clear that, although the actual-to-potential test may be used at the discretion of the source, it is not required. (There is an exception for entirely new units, for which the actual-to-potential test still must be used.)
- Finally, one might calculate emissions resulting from a change by comparing the potential level of emissions from the relevant unit before the change to the potential level of emissions after the change. Further, one might base potential emissions before and after the

change on an hourly rate of emissions, or, alternatively, on a tons-per-year basis. Known as the potential-to-potential test, the Fourth U.S. Circuit Court of Appeals has adopted this test as the correct way to determine whether there is a significant emissions increase (based on an hourly rate of emissions), but this ruling applies only to operations within the Fourth Circuit (MD, W. VA, VA, NC, and SC). *See U.S. v. Duke Energy Corp.*, 411 F.3d 539 (4th Cir. 2005).

2. Baseline emissions under the actual-to-projected actual test

The first step in the application of the actual-to-projected actual analysis (again, adopted by EPA's in its current PSD regulations, and, therefore, by DEP, at 25 Pa. Code § 127.83), is to determine the pre-change actual emissions of the unit(s) proposed to be modified. Referred to as the "baseline actual emissions," this term is defined to mean, in general, the emissions actually emitted during any consecutive 24-month period within the 10 years preceding the date actual construction of the proposed project begins or a complete permit application for the project is submitted, whichever is earlier. For electric utilities, the relevant baseline period is the 24-month period within which the 5-year period preceding the date on which actual construction begins. *See* 40 C.F.R. § 52.21(b)(48).

There are a few qualifications worth being aware of here. For example –

- The emissions are to include fugitives, to the extent quantifiable.
- Emissions associated with startups, shutdowns, and malfunctions are also to be included.
- Baseline emissions cannot include any emissions in the 24-month period that were in excess of applicable limitations.
- Where new emissions limitations are established subsequent to the 24-month period selected, emissions in the baseline period must be adjusted downward to exclude any emissions that would exceed an emissions limitation with which the source must currently comply.

3. Applying the actual-to-projected actual emissions test

As previously explained, the determination of whether an emissions increase results from a physical change or change in the method of operation (*i.e.*, a modification) is to be made through the "actual-to-projected actual" emissions test. If the difference between projected actual emissions and the baseline actual emissions is at or above the PSD significance level for a given pollutant, then there is a significant emissions increase from the project, and the second step in determining PSD applicability (netting) must be undertaken.

Conducting an actual-to-projected actual analysis can be complex and may require the assistance of an air quality engineer, but here are a few key points:

- The basic formula under the test is simple —
$$\text{Projected Actual} - \text{Baseline Actual} = \text{Emissions Increase}$$
- Post-change emissions for existing units are to be determined by projecting an annual rate that reflects the maximum annual emissions rate that will occur during any one of the five (or under certain circumstances, 10) years immediately after the physical or operational method change. Post-change emissions are to include fugitive emissions (to the extent quantifiable) and emissions associated with startups, shutdowns, and malfunctions. Importantly, however, any emissions that could have been accommodated during the 24-month baseline period and that are unrelated to the change are to be excluded in making the post-change emissions calculation.
- Drilling down a bit further, the projected actual emissions are the product of (1) the hourly emissions rate, which is to be based on the emission unit's operational capabilities following the change (taking into consideration legally enforceable restrictions); and (2) the projected level of utilization, which is to be based on the unit's historic annual utilization rate and available information regarding the emission unit's likely post-change capacity utilization.
- The emissions figure derived from the step above is then to be adjusted by subtracting from that figure the emissions that could have been accommodated prior to the change that are unrelated to the change. This is intended to help ensure that the analysis includes only emissions increases that will actually result from the project, and not, for example, a growth in demand which could already have been accommodated before the modification during the selected 24-month baseline.

4. New units

Determining whether a significant emissions increase has occurred as the result of construction of an entirely new unit at a major stationary source is much simpler than for modifications to existing units. New units remain subject to the actual-to-potential test. That is, the baseline emissions rate for a new unit is zero, and the potential-to-emit of the new unit is to be used as its projected emissions. *See* 40 C.F.R. § 52.21(a)(2)(iv)(d), (b)(21)(iv), and (b)(48)(iii). Therefore, as a practical matter, the permitted limits (or emissions at maximum capacity of the unit where there are no permit limits) determine the emissions increase from the new unit, and whether it is then necessary to proceed to step two with respect to facility-wide netting.

C. The PSD Program: Determining Whether There Has Been a Significant Net Emissions Increase — Conducting a Netting Analysis

Although the details and mechanics of netting are involved, the basic concept is not.

Emissions netting refers to the process of considering certain prior and prospective emissions changes at an existing major stationary source to determine if a net emissions increase will result from a proposed physical change or change in the method of operation. If this analysis shows that a net emissions increase will result, PSD would apply to each pollutant's emissions for which the net increase is found to be "significant," as defined at 40 C.F.R. § 52.21(b)(23) and as summarized at Attachment I (i.e., 40 tpy for each of NO_x, SO₂, ozone, etc.). In other words, not only the emissions resulting from the proposed change itself are to be examined — certain past and prospective emissions increases and decreases at the major source must also be considered to determine if the proposed change constitutes a major modification triggering PSD requirements.

Which emission increases and decreases are to be considered in a netting analysis? The short answer to this question can be reduced to a simple formula:

- Net emissions change = emissions increases associated with the proposed modification – source-wide "creditable contemporaneous" emission decreases + source-wide "creditable contemporaneous" emission increases.

The contemporaneous period refers to the period between the date five years before construction on the particular proposed change commences and the date that the increase from the particular change actually occurs. In other words, emission increases and decreases that occurred during the 5-year window prior to the proposed project are to be considered in the netting process. The term, "creditable," is also defined, and has a number of criteria. At its most basic, it means, in effect, that the increase or decrease must be real and, for emission decreases, enforceable by EPA or a state. *See* 40 C.F.R. 52.21(b)(3)(iii)-(vi).

If after, conducting the netting analysis, it is determined that the project will result in a significant net emissions increase, then there is a PSD trigger, and the requirements under this program must be met (summarized at Section IV below).

D. The Routine Maintenance, Repair and Replacement Exclusion from the Definition of Major Modification

As noted earlier, there are a number of types of activities that EPA has, by rule, excluded from the scope of the definition of "major modification," and therefore, from the scope of the NSR program. The most important of these, and the one that has generated the most controversy, is the routine maintenance, repair and replacement exclusion (again, "RMRR"). Because of its significance in the NSR

applicability scheme, it is worth spending at least some time on this exclusion and its background. However, RMRR could itself be the subject of a lengthy paper, and only the basics will be presented.

RMRR is not defined in the CAA, and until very recently, was not defined or spelled out under EPA's NSR rules. As a result, historically, a determination of whether an activity fell within the scope of the exclusion was undertaken on a case-by-case basis. Often, EPA and state interpretations regarding what qualified for the "routine" exclusion were not memorialized, but were reflected in practices accepted by EPA and state agencies.

Beginning in the mid-to-late 1990s, as part of EPA's NSR enforcement initiative against electric utilities, petroleum refineries and other industry sectors, EPA began to limit the scope of the RMRR exclusion by narrowly applying certain factors to determine whether a given project was routine. Specifically, EPA examined the nature, extent, frequency (at the plant -- not within the industrial category), purpose, and the cost of the work, to conclude that many projects that previously would have been considered routine, were not. As a result, EPA claimed that only activities that were frequent or "traditional," and were comparatively inexpensive, could qualify for the exclusion. EPA proceeded to bring numerous enforcement actions seeking multi-million dollar penalties, primarily against electric utilities and large industrial facilities, asserting that repair and replacement work that had occurred years before was not routine, and had triggered NSR requirements. This, in turn, resulted in significant litigation.

Under the Bush Administration, EPA adopted a rule to clarify and define the scope of the RMRR exclusion. Known as the Equipment Replacement Rule (or "ERP"), this rule provides that, if activities meet certain criteria, they are considered to constitute RMRR, which would then exclude these activities from the scope of the NSR program. Specifically, under the ERP, an activity can qualify as RMRR if it involves replacement of any component of a process unit (broadly defined) with an identical or "functionally equivalent" component if (a) the fixed capital costs of the replacement (plus associated maintenance and repair) does not exceed 20% of the replacement value of the process unit, (b) the replacement does not change the basic design parameters for the process unit (such as maximum fuel or heat input), and (c) the replacement does not cause the process unit to exceed any legally enforceable emissions or operational limitations. *See* 69 Fed. Reg. 40278 (Jul. 1, 2004), codified at 40 C.F.R. § 52.21(b)(2)(iii) and (cc).

EPA's adoption of the ERP rule was controversial, particularly the rule's 20% cost threshold for replacement and related work. Not unexpectedly, the rule was challenged by a number of states and environmental groups, and in late December 2004, the rule was stayed by the U.S. Circuit Court for District of Columbia, pending the outcome of this litigation. Oral argument was held in early February 2006. Although EPA has indicated that any new enforcement actions regarding

RMRR would only be brought if the activities in question did not constitute RMRR under the criteria of the ERP (at least for electric utilities), the rule is not in effect, and it may not survive the current court challenge. Therefore, what constitutes RMRR remains uncertain, and facilities need to be sensitive to the implications of projects that, but for their status as routine, might otherwise trigger NSR requirements.

E. Pennsylvania's Nonattainment New Source Review Program ("NA NSR") (25 Pa. Code Chapter 127, Subchapter E)

Most of the general applicability principles established under the PSD program are identical to those under the NA NSR program. Therefore, the discussion above generally carries over to NA NSR, as well. However, there are some differences between the PSD and NA NSR programs, particularly here in Pennsylvania. This section focuses on the key differences that you need to be aware of for a basic understanding of NA NSR applicability.¹

Key differences in applicability under the PSD and NA NSR programs —

Major source status: The definition of major source differs under these two programs. Unlike the 250 tpy/100 tpy major source categories for PSD, the definition of major source under the NA NSR program is tied to the type of pollutant at issue and the severity of the pollution problem in the relevant area.

Under PADEP's current and draft NA NSR programs, a facility which emits, or has the potential to emit, 100 tpy or more of a regulated NSR pollutant is a major source, except that certain lower thresholds apply to VOCs and NOx. For areas designated as part of the OTR, such as all of Pennsylvania (unless also a severe or extreme ozone nonattainment area), the cutoff is 50 tpy for VOC and 100 tpy for NOx (again, because these pollutants are precursors to ozone formation). For severe ozone nonattainment areas, the cutoff is 25 tpy for each of these pollutants. 25 Pa. Code § 127.203.

Although the 5-County Philadelphia area is no longer considered to be a severe ozone nonattainment area under the new, 8-hour ozone standard, PADEP's changes to its NA NSR program would continue to apply the 25 tpy VOC and NOx thresholds in this area. For the remainder of the state, the cutoff for major

¹ Pennsylvania's current NA NSR program, which has been in effect since 1994, is to be revised in the very near future to incorporate certain provisions of EPA's December 2002 NSR reform rules. EPA requires states to adopt these provisions or to submit an "equivalency demonstration." As of the date of this paper, PADEP's proposed revisions to its NA NSR program are in draft form only, and have not yet been formally proposed. However, publication in the Pennsylvania Bulletin is anticipated shortly. The discussion of Pennsylvania's NA NSR program generally focuses on the rules in their current form, although does include a few references to certain of the anticipated changes to this program. A number of these changes impose requirements more stringent than EPA's NSR reform rules.

source status with respect to these pollutants is currently, and will be under PADEP's anticipated revisions, 50 tpy for VOCs and 100 tpy for NOx.²

Significant net emissions increase: The cutoffs for what constitutes a significant net emissions increase (and hence a modification) under Pennsylvania's NA NSR program are generally the same as the cutoffs under the PSD program, with the principal exception being for NOx and VOC in areas with more severe pollution. In Pennsylvania, for sources located in the 5-County Philadelphia area, the cutoff under the old 1-hour ozone standard was (and will be under DEP's pending changes) 25 tpy for VOCs and NOx, instead of the 40 tpy threshold under the PSD program. *See* 25 Pa. Code § 127.203. Attachment III presents a brief summary of significant net emissions increase levels.

Applicability test: Applicability under Pennsylvania's current NA NSR determined by applying a potential-to-potential test, comparing PTE before and PTE after a given change, in tons per year. *See* 25 Pa. Code §§ 127.203(a) and (b). However, DEP's anticipated revisions to its NA NSR program will change this, by adopting a form of EPA's actual-to-projected actual test, described above for the PSD program. If adopted as drafted, DEP's version of this test will be tougher than EPA's. For example, baseline actual emissions would be determined based on a 5-year, not 10-year, look-back. Also, if projected actual emissions are in excess of baseline, a source will be required to incorporate its emissions projection into the permit for the project as an emissions limit. This limit is to reflect the sum of three elements — baseline actual emissions, emissions that could previously be accommodated prior to the proposed modification, and the projected actual emissions increase due to the proposed project. Further, the source must demonstrate compliance with the established total emission limit for a period of 5 years, or 10 years where there will be an increase in capacity or PTE. Annual reporting of this compliance demonstration (e.g., monitoring data) will be also required.

Aggregation of de minimis emission increases: Pennsylvania's NA NSR program requires that an applicability review be undertaken even for proposed emission increases of nonattainment pollutants that are less than the significance levels discussed above (so-called "de minimis emission increases"). De minimis increases must be summed with all other emission increases and decreases occurring after January 1, 1991. 25 Pa. Code § 127.211(b)(1). Under DEP's draft revisions, this aggregation period would reach back to April 5, 2005 for PM-2.5, and would be limited to a 15-year look-back period for other nonattainment pollutants.

² PADEP's draft revisions also include lower thresholds for sources that emit or have the potential to emit 70 tpy of PM-10 (or its precursors) or 50 tpy of carbon monoxide (CO) and that are located in serious nonattainment areas for these pollutants. No portions of Pennsylvania are currently designated as serious nonattainment areas for either PM-10 or CO.

IV. Key Requirements If NSR Programs Are Triggered

If it is determined that your project triggers PSD or NA NSR because it constitutes construction of a new major source or a major modification to an existing major source, then the project must meet a number of tough, and expensive, requirements. At its most basic, these programs are federally mandated preconstruction permitting programs, and preconstruction permits must be obtained from DEP before any project subject to NSR can proceed. These permits are required under both PSD and NA NSR, but there are important differences in the specific elements that these programs impose. Key requirements are outlined below.

A. PSD

BACT: Sources subject to the PSD program must, among other measures, comply with best available control technology, or “BACT” standards. In brief, the BACT requirement is an emissions limitation based on the “maximum degree of reduction” for each PSD pollutant emitted by the proposed project, which the permitting authority determines, on a case-by-case basis, is achievable, “taking into consideration energy, environmental and economic impacts and other costs . . .” 40 C.F.R. § 52.21(b)(12). A BACT analysis is undertaken using a “top-down” approach. This provides that all available control technologies be ranked in descending order of control effectiveness. The applicant first examines the most stringent, or “top,” alternative. This technology becomes BACT, unless it can be demonstrated that technical or other considerations (including economic impacts) justify a conclusion that it is not achievable. If the top technology is eliminated, then the next most stringent alternative is analyzed in the same way. EPA maintains a database of BACT determinations in its “BACT/RACT/LAER Clearinghouse.”

Other required analyses: In addition to meeting BACT requirements, applicants for PSD permits must model the expected impact of the project on ambient air. Emissions from the proposed source must not cause a violation of any NAAQS or an increase in pollutant concentrations over a baseline concentration above certain maximum allowable amounts, known as “increments.” The applicant must also conduct additional impacts analysis, including an analysis of any impairment to visibility, soils and vegetation that would occur as a result of the source and general commercial, residential, industrial and other growth associated with the source.

B. NA NSR

LAER: Like the PSD program, the NA NSR program requires the installation of state-of-the art control technology, except that under the NA NSR program, the technology standards are even tougher. The required controls must be designed to meet the lowest achievable emission rate, or “LAER,” for the pollutants subject to NA NSR. LAER reflects the stricter of the most stringent emission limit contained in a state’s federally approved rules or the most stringent emission limit achieved in practice within the applicable source category. 25 Pa. Code §§ 121.1, 127.205.

Unlike BACT, the LAER requirement, by definition, does not consider economic, energy, or other environmental factors. As a practical matter, LAER costs can be considered, but only to the degree that they reflect unusual circumstances which differentiate the costs of control for the applicant's source from control costs for the rest of the relevant industrial category. As with BACT, previous agency LAER determinations can be found in the BACT/RACT/LAER Clearinghouse.

Emission offsets: NA NSR also requires that emission increases for a new or modified major source be offset by creditable emission reductions from the same or other facilities. These reductions must be great enough to more than offset the proposed emissions increase. For most of Pennsylvania, the ratio of creditable emission offsets to total increased emissions for VOC and NOx must be 1.15 to 1. *See* 25 Pa. Code § 127.210 for a list of other offset ratios.

Creditable emission offsets in Pennsylvania are known as "emission reduction credits," or "ERCs," and must meet certain criteria and be fully approved and certified by DEP in its ERC Registry system before they can be used to satisfy NSR offset requirements. Acceptable methods of generating ERCs include shutdowns, permanent curtailments in production or operating hours, and new technology, materials or changes in process equipment not otherwise required by law. Caution — ERC Registry applications must be filed with DEP within 1 year of initiating the emissions reductions used to generate the ERCs, or the ERCs will be lost. DEP's ERC Registry lists ERCs that can be purchased from other facilities, but the ERC transaction must be processed through the Registry. *See generally* 25 Pa. Code §§ 127.207-127.209.

Other requirements: In order for a NA NSR preconstruction permit to be granted, all existing sources in Pennsylvania owned or controlled by the owner of the proposed source must be in compliance with applicable clean air requirements. DEP's NA NSR rules also require that the application for a preconstruction permit under this program include an analysis of alternative sites, sizes, production processes and environmental control techniques which demonstrates that the benefits of the proposed facility significantly outweigh the environmental and social costs imposed as a result of its location, construction, or modification. *See generally* 25 Pa. Code § 127.205.

ATTACHMENT I

PRINCIPAL PSD POLLUTANTS AND SIGNIFICANCE LEVELS

Carbon monoxide (CO): 100 tpy

Nitrogen dioxide (NO₂): 40 tpy

Sulfur dioxide (SO₂): 40 tpy

Particulate matter:

25 tpy for particulate matter

15 tpy for PM-10

Ozone: 40 tpy of volatile organic compounds (VOCs) or NO_x

Lead: 0.6 tpy

Sulfuric acid mist: 7 tpy

Hydrogen sulfide: 10 tpy

Total reduced sulfur: 10 tpy

(A complete list of PSD pollutants can be found at 40 C.F.R. § 52.21(b)(23).)

ATTACHMENT II

PSD SOURCE CATEGORIES WITH 100 tpy MAJOR SOURCE THRESHOLDS

1. Fossil fuel-fired steam electric plants of more than 250 million Btu/hr heat input
2. Coal cleaning plants (with thermal dryers)
3. Kraft pulp mills
4. Portland cement plants
5. Primary zinc smelters
6. Iron and steel mill plants
7. Primary aluminum ore reduction plants
8. Primary copper smelters
9. Municipal incinerators capable of charging more than 250 tons of refuse per day
10. Hydrofluoric acid plants
11. Sulfuric acid plants
12. Nitric acid plants
13. Petroleum refineries
14. Lime plants
15. Phosphate rock processing plants
16. Coke oven batteries
17. Sulfur recovery plants
18. Carbon black plants (furnace plants)
19. Primary lead smelters
20. Fuel conversion plants
21. Sintering plants
22. Secondary metal production plants
23. Chemical process plants
24. Fossil fuel boilers (or combinations thereof) totaling more than 250 million Btu/hr heat input
25. Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels
26. Taconite ore processing plants
27. Glass fiber processing plants
28. Charcoal production plants

ATTACHMENT III

SUMMARY OF PRINCIPAL NA NSR POLLUTANTS SIGNIFICANCE LEVELS

Carbon monoxide (CO): 50 tpy (100 tpy under DEP's proposed revisions, unless in serious nonattainment area and determined to contribute significantly to CO levels)

Nitrogen oxides (NO_x): 40 tpy (25 tpy in Philadelphia area under old 1-hr ozone standard and DEP's proposed revisions to NA NSR)

Sulfur oxide (SO_x): 40 tpy

Ozone: 40 tpy VOCs or NO_x (25 tpy in Philadelphia area under old 1-hr ozone standard and DEP's proposed revisions to NA NSR)

Lead: 0.6 tpy

Particulate matter

25 tpy particulate matter

PM-10 or PM-10 precursors: 15 tpy

PM-2.5 or PM-2.5 precursors (in proposed revisions only): 15 tpy