

ATTACHMENT-2

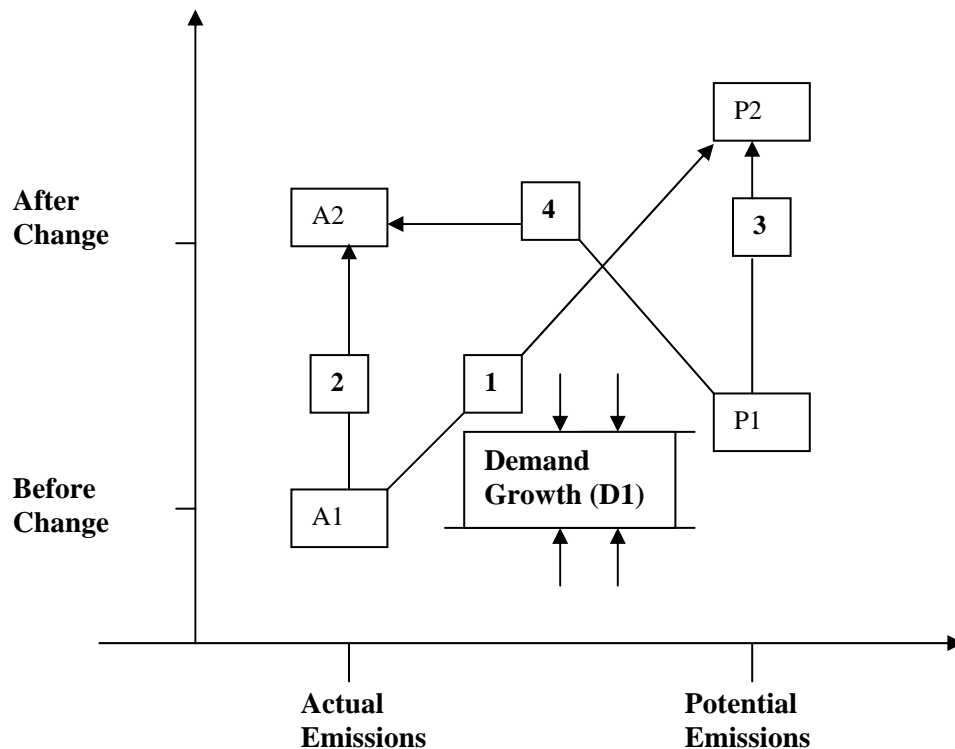
A COMPARISON OF NSR APPLICABILITY OPTIONS

[Proof of how the EPA current applicability rule is the least stringent option, and the New Jersey current rule is more stringent than the EPA current rule governing NSR applicability]

A. BACKGROUND:

To determine NSR applicability, a source/permitting authority must determine whether an increase in emission is significant, i.e., does it exceed defined significant levels. These significance levels are quantified in terms of tons per year increases in emissions. Whether the comparison of emissions before and after the change is based on actual or potential emissions is critical. Actual emissions are the annual emissions actually emitted by a source in any year. Potential emissions are the maximum capacity of a source to emit in a year, as constrained by air pollution controls in place and enforceable limitations on emissions set by permit.

There are four possible combinations of actual and potential emissions, before and after a change that may be used to determine if there has been an increase in emissions as shown graphically below.



These four combinations are listed below from most stringent to least stringent, as the analyses in this Attachment will demonstrate:

1. Actual before to potential after the change (A1 to P2 test): This combination is the emission increase calculation methodology set forth in the 1980 NSR regulations for most sources.
2. Actual before to actual after the change (A1 to A2 test): EPA implies that this combination is the test contained in the December 31, 2002 NSR Rule. However, in practice this combination is not the EPA test when the rule's demand exclusion is accounted for (see option 4 below).
3. Potential before to potential after the change (P1 to P2 test): This combination is contained in the New Jersey Emission Offset Rule. Actual decreases also enter into the New Jersey applicability determination, but that is not relevant for the purposes of this more general comparison of applicability, since both EPA and New Jersey applicability each only allow credit for actual emission reductions in a netting calculation.
4. Potential before to actual after the change (P1 to A2 test): This combination is what the December 31, 2002 NSR Rule is in practice, when taking into account the demand growth exclusion.

B. THE DECEMBER 31, 2002 NSR RULE APPLICABILITY TEST IS A POTENTIAL TO ACTUAL TEST (P TO A TEST)

EPA's applicability test takes the actual emissions after the change and then subtracts any increase from demand, which could have been accommodated before the change and compares it to the actual emissions before the change. This is the same as comparing the actual emissions after the change to the actual emissions before the change plus any demand that could have been accommodated before the change; and this is the same as comparing actual emissions after the change to the potential emissions before the change. This is because possible demand increases are included in the potential emissions. These concepts are evident when translated into simple mathematical equations:

Mathematically,

$$\text{December 31, 2002 NSR Rule net increase} = (A2 - D1) - A1$$

$$\text{By rearranging, December 31, 2002 NSR Rule net increase} = A2 - (A1 + D1)$$

Also, $A1 + D1 = P1$, because $D1$ is the maximum allowable demand increase before the change.

Therefore, the December 31, 2002 NSR Rule net increase equals $A2 - P1$ as follows:

$$(A2 - D1) - A1 = A2 - (A1 + D1) = A2 - P1$$

Where:

- A1 = actual emissions before change
- A2 = actual emissions after change
- D1 = emission increase due to the maximum demand increase that could have been accommodated before the change without exceeding allowable P1 (demand growth)
- P1 = potential to emit before change
- P2 = potential to emit after change (not used above)

If the emissions increase formula is $A2 - P1$, this means the potential emissions before the change are being compared to the actual emissions after the change. This is a “potential to actual” test.

Discussion: With respect to the EPA applicability test, does actual emissions, plus emissions that could be accommodated during the baseline period, really equal potential emissions during the baseline period? While this seems obvious, some discussion is warranted. Could this sum be less than, or more than, potential emissions before the change? If less than potential emissions, then the EPA test would be somewhat more stringent than a “potential to actual” test. If more than potential emissions, then the EPA test would be somewhat less stringent than a “potential to actual” test. The key is in the definition of potential emissions, which are restricted by allowable emissions and by the physical capacity of a source to emit. EPA's allowance for actual emissions increases which the emission unit could have accommodated during the baseline period is another way of referencing the potential emissions criteria related to the physical capacity of a source to emit.

The actual language of the EPA demand exclusion (52.21(b)(41)(ii)(C)) is "that portion of the units emissions following the project that an existing unit could have accommodated during the consecutive 24 month period used to establish the baseline actual emissions.... and that are also unrelated to the particular project, including any increased utilization due to product demand growth."

The phrase "and that are also unrelated to the particular project" may be an attempt to restrict what emissions increases are eligible, but is unclear and ineffective, and may do just the opposite. The phrase "including any increased utilization due to product demand growth" is informative because it does not restrict the emission exclusion to "product demand growth". Rather, it implies that other increases that could have been accommodated also are excluded. For example, this might include increasing the use of higher emitting fuels or the use

of higher emitting raw materials. Is such a case bounded by the potential to emit limitation on allowable emissions? The wording of the exclusion does not appear to provide any such limitation since it's an exclusion from the potential to emit language in the body of the definition of "projected actual emissions". Hence, the EPA demand exclusion may in fact allow higher emissions than the potential to emit before the change. In such a case, the EPA applicability test is even less stringent than presented in this appendix, since we assume that the actual emissions, plus demand that could be accommodated before the change, equals the potential to emit before the change."

Alternatively, this language could be an attempt by EPA to avoid reductions in potential emissions being interpreted in its demand exclusion provision as a creditable decrease in emissions for a netting calculation. If that is the case, New Jersey has a similar, but clearer provision, where only decreases in actual emissions (below allowable emissions) are creditable in a netting calculation.

What if the source increased use of higher emitting fuel use or raw material use after the change? Would that be "unrelated to the particular project"? Looking at the case of a burner change example, the use of higher emitting fuel would be exempt if the original burner also could accommodate multiple fuels. Alternatively, if the burner size were increased, those emissions increases would not be included in the demand exclusion up to the potential to emit before the change. Hence, this case is a "potential to actual" test.

What if the change involves adding the ability to burn a higher emitting fuel? It is not clear how the EPA rule would handle this case. The emissions increase associated with the higher emitting fuel would not be a change that could have been accommodated during the baseline period. But the amount of BTUs that could have been burned in the old burner would be allowed to be burned in the new burner under the demand exclusion, so it would be acceptable to discount the old burner potential emissions from the projected actual emissions. This brings us back to allowing the full potential emissions before the change to be used in the EPA NSR applicability test.

In one limited case, it can be argued that a source could not use the full potential to emit before the change if it never operates at the potential capacity before the change, and, therefore, EPA's demand exclusion would not result in a "potential to actual" test. However, EPA's lack of precision in defining demand growth, especially in not limiting eligible emission increases to demand growth, even in this limited case, EPA's applicability test could revert in practice to a "potential to actual" test. Also, the lack of enforceability of the EPA test, because records are not required, makes the likelihood of a regulating agency catching a NSR violation based on the "unrelated to a particular project" criteria remote since a violation would need to be based on records which show that the source's demand exclusion could not have been accommodated in the past. Hence, considering practical enforceability, the likelihood that a majority of changes would clearly

result in a potential to actual test using the EPA language, the limited possibility of a source not being able to take full advantage of the prechange potential emissions, and the possibility in some cases the EPA test could be less stringent than a potential to actual test, the EPA test overall is best characterized as a potential to actual test for the purposes of evaluating overall stringency of different applicability tests.

C. HOW IS THE STRINGENCY OF AN APPLICABILITY TEST DETERMINED MATHEMATICALLY ?

The stringency of NSR applicability is a function of whether an applicability test would be more likely to trigger the NSR requirements. Because NSR requires the installation of air pollution control technology that represents the best available control technology or the lowest achievable emission rate, along with an air quality evaluation to ensure no significant impacts and violations of ambient air quality standards, regulations that are more likely to trigger NSR compliance are more stringent than those that do not. The determination of significant emission increase test which results in the greater calculated emission increase is more likely to trigger NSR and is, therefore, more stringent than a determination that results in a lower calculated emission increase.

D. MATHEMATICAL PROOF THAT A POTENTIAL TO ACTUAL TEST (EPA) IS LESS STRINGENT THAN A POTENTIAL TO POTENTIAL TEST (NEW JERSEY)

1. Constraints and Givens - for testing the stringency of the 4 options for determining an emission increase based on actual or potential emissions:

- a. Actual emissions after the change must be greater than, or equal to, actual emissions before the change. See case 10 below for an increase in allowable emissions.

Mathematically, $A2 \geq A1$.

- b. Actual emissions must be less than, or equal to, potential emissions at any time. A source can not exceed the capacity of a unit to emit and is not allowed to exceed its allowable emissions.

Mathematically, $A1 \leq P1$ and $A2 \leq P2$.

2. Proof :

- a. Hypothesis: A significant emission increase based on the potential emissions before the change and the actual emissions after the

change is less than a significant emission increase based on the potential emissions before the change and the potential emissions after the change. Mathematically, $A2 - P1 \leq P2 - P1$.

- b. Calculation: Add P1 to both sides of equation to eliminate this common term and get: $A2 \leq P2$.
- c. Conclusion: Since A2 must as a matter of regulation always be less than or equal to P2, the hypothesis is proven. At the best the “potential to actual” test can be equal to a “potential to potential” test. It can never be more stringent than a “potential to potential” test.

E. PROOF BY EXAMPLES:

1. Case 1 - Both A and P increase by equal amounts; A2 does not exceed P1

Assumptions: $A1 = 300$ tpy; $A2 = 500$ tpy; $P1 = 800$ tpy; $P2 = 1000$ tpy

A to P test: $P2 - A1 = 1000 - 300 = 700$ tpy emission increase;

A to A test: $A2 - A1 = 500 - 300 = 200$ tpy;

P to P test: $P2 - P1 = 1000 - 800 = 200$ tpy;

P to A test: $A2 - P1 = 500 - 800 = -300$ tpy

(Note that the emissions change is negative and therefore will never trigger NSR.)

Conclusions: The December 31, 2002 NSR Rule’s P to A test is the least stringent. The Emission Offset Rule’s P to P test is more stringent than the EPA’s test.

2. Case 2 - P does not increase; actuals increase, but remain below P

Assumptions: $A1 = 300$ tpy; $A2 = 500$ tpy; $P1 = P2 = 800$ tpy

A to P test: $P2 - A1 = 800 - 300 = 500$ tpy emission increase

A to A test: $A2 - A1 = 500 - 300 = 200$ tpy

P to P test: $P2 - P1 = 800 - 800 = 0$ tpy

P to A test: $A2 - P1 = 500 - 800 = -300$ tpy

(Note that the calculated emissions change is negative and therefore will never trigger NSR.)

Conclusions: The December 31, 2002 NSR Rule's P to A test is the least stringent. The Emission Offset Rule's P to P test is more stringent than EPA's test.

Similarly, Case 3 through 10 and conclusions are specified in Table-1 (Attached).

F. EPA PAL PROVISION:

BACKGROUND: The U.S. Court of appeals for the D.C. circuit upheld three of the five provisions of the December 31, 2002 NSR Rule (except that it remanded to EPA the monitoring, recordkeeping, and reporting provisions for determining NSR compliance). Since the Court vacated the Clean Unit and Pollution Control Project provisions, the Department does not address them in its stringency demonstration. In this section of its stringency demonstration, the Department discusses the provision of the rule concerning the Plantwide Applicability Limit (PAL).

Use of a PAL is voluntary, and sources have rarely elected to use it. Even though the PAL has been in effect in New Jersey for almost 3 years under the PSD program (New Jersey is a delegated state for PSD), no company has requested a PAL. This outcome is not surprising when the analyses in section C, D and E above are considered. Whether a change causes an emission increase that exceeds a PAL is determined by an actual to actual test (A to A test), because there is no provision for the demand growth exclusion in determining PAL applicability. In all cases this A to A test is more stringent than the December 31, 2002 NSR Rule's general emission calculation methodology, which, as shown above, is a P to A test. As evidenced above, it is unlikely that many (if any) sources would choose to be covered by a PAL. Therefore, any significant environmental benefits to be realized with the EPA's voluntary PAL provisions are likely illusory.

If EPA revised the December 31, 2002 NSR Rule to make the PAL provisions mandatory, then it may be more stringent than the Emission Offset Rule's applicability test (potential to potential) in some cases. However, other more stringent provisions in the Emission Offset Rule more than offset any benefits of possible future limited use of the voluntary EPA PAL in New Jersey. Regardless, this is not an issue here because of the voluntary nature of the PAL, and the resultant lack of interest by industry in selecting a PAL.

The Department will consider PAL provisions when developing an improved Emission Offset Rule. If an "actual to potential" test is incorporated for NSR applicability, an "actual to actual" PAL would likely be an attractive voluntary option. Also, mandatory PALs will be considered.

G. OVERALL CONCLUSIONS:

Based on the above simple but graphic examples of all possible scenarios (cases 1 through 10) of actual and potential emissions before and after a change, the following conclusions are evident:

1. EPA's 1980 NSR applicability test using Actual to Potential (A1 to P2) emissions is the most stringent option.
2. The December 31, 2002 NSR Rule's applicability test using Potential to Actual (P1 to A2) emissions is the least stringent option.
3. The New Jersey Emission Offset Rule's NSR applicability test (P1 to P2), while generally less stringent than the 1980 test (A1 to P2), is more stringent than the December 31, 2002 NSR test (P1 to A2).
4. The voluntary PAL provisions of the December 31, 2002 NSR Rule, which industry has not elected to use in New Jersey despite such an opportunity for the last three years for PSD purposes, do not make the EPA rule more stringent than the Emission Offset Rule.