NEBRASKA

DEPT. OF WATER, ENERGY, AND ENVIRONMENT

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Maintaining Good Air Quality Through the Increment Rules of the New Source Review Program

The purpose of this document is to provide readers with a basic understanding of the increment rules of the New Source Review program and how they aid in maintaining good air quality in Nebraska. Key terms and elements to understanding these rules are defined and an explanation of how these elements work together is provided.

National Ambient Air Quality Standards (NAAQS)

The Environmental Protection Agency (EPA) has established maximum concentration limits for several air pollutants, known as the National Ambient Air Quality Standards (NAAQS), to protect human health and the environment. These standards provide the basis for Nebraska's Air Quality program and are established for six "criteria" pollutants — particulate matter, sulfur dioxide, nitrogen oxides, carbon monoxide, ozone, and lead. When the NAAQS are established, states are required to identify and define areas as in or out of compliance with these standards. Each state is responsible for enforcing compliance with the standards and restoring compliance in any areas that are out of compliance.

New Source Review (NSR)

New Source Review is a federal air quality construction permit program. Nebraska is delegated the responsibility for issuing permits under this program. The program is designed to prevent degradation of air quality in the "clean air" areas (areas not exceeding the NAAQS). NSR applies to construction of new major emission sources and major modifications at existing major sources. The program rationale is that it is more efficient to develop and install best available controls when an emission unit is first built rather than after the fact. The NSR program has three primary purposes:

1) to manage air pollutant emissions so that areas in compliance with the NAAQS remain in compliance even with increased industrial activity,
2) to address concerns about protection of visibility and sensitive flora and fauna in areas such as national parks, and
3) to protect against possible synergistic effects of multiple NAAQS pollutants.

Increment

Increment is the term for the maximum additional amount of each pollutant that is allowed for a major source construction project under the NSR program in an attainment area. Specifically, an NSR increment for a pollutant is the maximum allowed increase in concentration above its baseline concentration, which in general is the ambient concentration existing at the time that the first NSR permit application affecting the area is submitted. In other words, the increment is the maximum

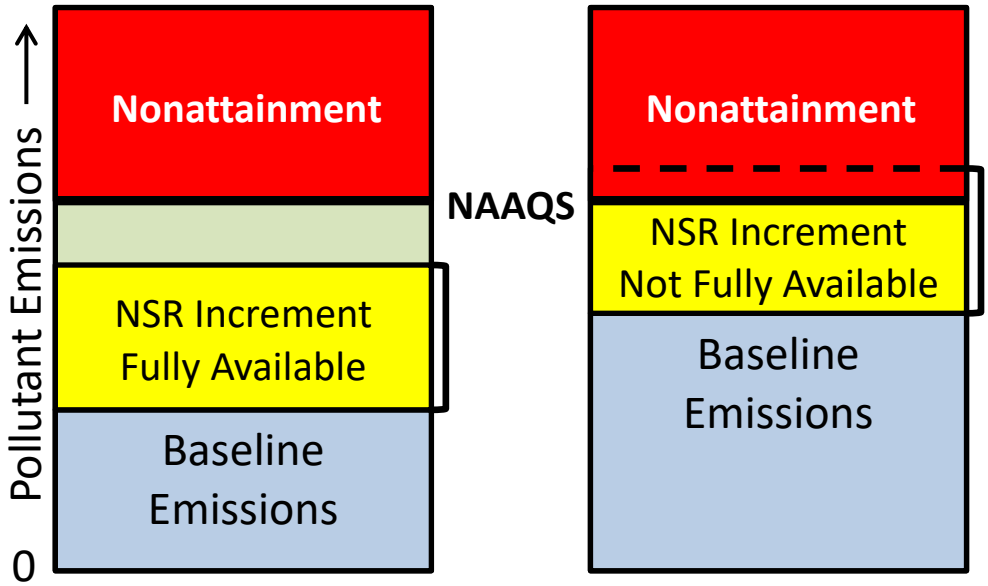
allowable deterioration of air quality. Additional pollutants in excess of the increment would produce a significant deterioration in air quality. Increment is consumed when applicable emissions increases contribute to an increase in ambient concentrations above the baseline level. This element of NSR is key to maintaining compliance with the NAAQS while allowing increases in industrial activity. The EPA has established the maximum allowable increment for each pollutant on a nationwide basis. However, estimating and managing available increment is localized. The maximum allowable increments applicable to Nebraska areas are shown in the table below:

Table 1

Pollutant	Maximum Allowable Increment* (micrograms per cubic meter, ug/m^3)
Particulate Matter with aerodynamic diameter less than 2.5 microns ($PM_{2.5}$):	
annual arithmetic mean	4 ug/m^3
24-hour maximum	9 ug/m^3
Particulate Matter with aerodynamic diameter less than 10 microns (PM_{10}):	
annual arithmetic mean	17 ug/m^3
24-hour maximum	30 ug/m^3
Sulfur Dioxide: annual arithmetic mean	20 ug/m^3
24-hour maximum	91 ug/m^3
3-hour maximum	512 ug/m^3
Nitrogen Dioxide: annual arithmetic mean	25 ug/m^3

* Nebraska Administrative Code Title 129 - Nebraska Air Quality Regulations

In an area that is close to not complying with the health-based NAAQS, the maximum allowable increment may not be available because of the likely potential for violation of the NAAQS. Only in areas where background levels are well below the NAAQS is the maximum allowable increment available.



Low Baseline Emissions: increased emissions from full NSR increment remain below the NAAQS limit.

High Baseline Emissions: increased emissions from full NSR increment would exceed the NAAQS limit.

Air Quality Control Regions (AQCRs)

Air Quality Control Regions are air quality management areas. These areas are typically subdivisions of the state. Boundaries of AQCRs are usually based upon county lines or other political divisions. AQCRs are defined for purposes of designating compliance or non-compliance with the NAAQS. These areas may also be designated as needed by the state in order to manage air quality in a more localized manner. AQCRs are designated on a pollutant-by-pollutant basis. For nitrogen dioxide and sulfur dioxide, the AQCR for Nebraska is the entire state. For particulate matter, the state is divided into several AQCRs: (1) Lincoln-Beatrice-Fairbury (Counties: Gage, Jefferson, Lancaster, and Thayer); (2) Metropolitan Omaha-Council Bluffs (Counties: Douglas and Sarpy; with Pottawattamie County, Iowa); (3) Metropolitan Sioux City (Dakota County; with Plymouth, Sioux, Woodbury Counties in Iowa; and Union County, South Dakota); and (4) the entire state of Nebraska.

Baseline Dates

A key element to understanding increment and increment consumption is baseline dates. These dates are trigger dates for determining what emissions are required to be examined for increment consumption. Increment is consumed when emission increases contribute to higher ambient air concentrations after the baseline date. The NSR program has two separate baseline dates for each pollutant, the major source baseline date and the minor source baseline date. EPA established the major source baseline date for each pollutant in the federal NSR rules for attainment areas. Unlike the major source baseline dates, the minor source baseline dates are not fixed by rule, but are established independently within each air quality control region (AQCR). A minor source baseline date is triggered by an application for an NSR permit from a facility located within the AQCR. Contact Nebraska Department of Water, Energy, and Environment if you have questions concerning minor source baseline dates in your area.

How do these elements fit together?

Before a major source subject to the NSR program can obtain a construction permit, it must demonstrate that the new emissions, in concert with existing emissions, will comply with the NAAQS. The source also must demonstrate that the emissions will not cause degradation in air quality beyond the maximum allowable increment. Compliance with the NAAQS and the increment are demonstrated using air quality models. Sources subject to the NSR program are required to evaluate increment consumption at the time of applying for a construction permit under the NSR program. Minor sources typically are not required to evaluate increment consumption as they build and expand their facilities.

In order to determine compliance with the increment, a NSR source must account for emission changes that occurred after the appropriate baseline dates and that consume all or part of the increment. A NSR source must evaluate all emission changes from major sources that have occurred since the major source baseline date and which might affect the facility in question. In addition, any emission changes at minor sources that have occurred after a minor source baseline date must also be evaluated for increment consumption.

To help explain is the following example:

The pollutant of concern is sulfur dioxide. The major source baseline date is January 6, 1975. The minor source baseline date is November 18, 1977. On March 10, 2000, a new facility applies for a PSD construction permit. To demonstrate compliance with the increment rules, the facility must consider these emissions changes in their analysis:

1) All changes in sulfur dioxide emissions from major sources since January 6, 1975. Only major sources in the vicinity and only those sources whose pollution may extend into the vicinity of the new facility require evaluation.

2) All changes in sulfur dioxide emissions from minor and area sources since November 18, 1977. Again, only sources in the vicinity and only those sources whose pollution may extend into the vicinity of the new facility require evaluation.

By evaluating increment consumption as large emitting sources are added or expand, the Department is equipped with information to ensure that significant deterioration in air quality does not occur and that air quality in Nebraska continues to meet the NAAQS.

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