



Facts About New Source Review

Air Quality #4.23 • July 2010

What is new source review?

The New Source Review (NSR) federal regulations became effective on August 7, 1980, with the goals of protecting human health and welfare, ensuring economic growth while also protecting existing clean air environments, and protecting the air quality in areas with pristine scenic, historic, and natural recreational value.

NSR is a pre-construction review program. It consists of the Prevention of Significant Deterioration (PSD) program and Non-Attainment Area Review. Before a new facility is built, or prior to the expansion or modification of an existing facility, the emissions of regulated NSR pollutants resulting from the project must be analyzed to see if the project is subject to NSR.

Pollutants regulated under NSR are:

- particulate matter (PM)
- particulate matter < 10 microns in diameter (PM₁₀)
- particulate matter < 2.5 microns in diameter (PM_{2.5})
- sulfur dioxide (SO₂)
- ozone (hydrocarbons and volatile organic compounds)
- nitrogen oxides (NO_x)
- carbon monoxide (CO)
- lead (Pb)
- fluorides
- total reduced sulfur compounds (includes hydrogen sulfides)

- sulfuric acid mist
- municipal waste combustor (MWC) acid gases
- MWC metals
- MWC organics
- municipal solid waste landfill gas
- greenhouse gases (carbon dioxide equivalents (CO₂e) as of January 2, 2011)

The U.S. Environmental Protection Agency (EPA) has established ambient air quality standards for seven “criteria” pollutants (CO, SO₂, PM₁₀, PM_{2.5}, NO_x, ozone, Pb). The EPA uses these standards to classify all geographic areas of the United States as either attainment (meeting the standard), or non-attainment (not meeting the standard) for each criteria pollutant. At this time, there are no non-attainment areas in Minnesota. Thus, only the PSD portions of the NSR regulations apply in Minnesota. The PSD regulations are found in 40 CFR § 52.21.

The EPA also protects geographic areas that have special scenic and recreational value. The EPA classifies these areas as Class I areas. Minnesota has two Class I areas: the Boundary Waters Canoe Area and Voyageurs National Park. Two nearby areas include Isle Royale in Lake Superior and the Rainbow Lakes Wilderness Area near Hayward, Wisconsin. Facilities located within ten kilometers of Class I areas are subject to more stringent NSR regulations.

What does it mean if my project is subject to NSR?

If your change or modification is subject to NSR, you have to do a Best Available Control Technology (BACT) analysis. (This is for the PSD program; in portions of the country that are designated non-attainment, facilities subject to NSR have to go through non-attainment area review to determine the Lowest Achievable Emission Rate (LAER)). You will also need to perform an air quality analysis and an additional impacts analysis, which includes dispersion modeling.

If you need guidance in determining if your change or modification is or was subject to NSR, see “Facts about Determining Applicability of New Source Review” or Minnesota Pollution Control Agency (MPCA) Forms CH-04, CH-04a, and CH-04b.

How do I determine BACT?

BACT is determined by doing a “top-down” analysis of available control technologies. Available technologies are ranked in descending order according to their control effectiveness. Many previous BACT determinations are kept in an EPA clearinghouse, which you can sort by date and/or operation type. The clearinghouse is available on the internet at <http://cfpub1.epa.gov/RBLC/>. Some states, including California and Texas, also have Web sites that record their BACT determinations. In addition, reviewing an industry’s journals may lead to the discovery of recent developments in control technologies in that industry.

A good source of information on how to do a BACT analysis is included in Section B of the EPA’s New Source Review Workshop Manual (Draft 1990). Many are familiar with this document as “the puzzle book.” While this is a draft document, it is routinely used as a resource when doing a top-down BACT analysis. (Note: Do not use Section A of the workbook; much of Section A was rendered obsolete by the December 31, 2002, revisions to NSR. The information in Section B is still valid.) This document is also available on the internet at www.epa.gov/region07/air/nsr/nsrmemos/1990wman.pdf.

Your facility will be held to the top or most effective control technology unless you can demonstrate to both the MPCA and EPA that the most stringent technology is not feasible due to technical, energy, environmental, or economic considerations. Each subsequent technology must be similarly evaluated.

There are four steps to a top-down BACT analysis.

STEP 1: Identify all potential control options, regardless of their cost, including pollution prevention alternatives and LAER technologies. The cost-effectiveness of a control option is determined in STEP 3.

STEP 2: Evaluate the technical feasibility of the control options. The control options you determine not to be feasible based on physical, chemical, or engineering principles can then be eliminated from further BACT analysis. Provide the MPCA with the rationale for eliminating a control option as technically infeasible.

STEP 3: Rank the remaining control technologies according to their control effectiveness. The ranked list should include the following information for each pollutant:

- control efficiency (percent of pollutant removed)
- expected emissions reduction (tons/year)
- economic impacts
- environmental impacts (i.e. significant impacts on other media or waste streams)
- energy impacts.

STEP 4: Consider, technology-by-technology, the energy, environmental, and economic impacts resulting from the selection of the BACT alternative for your facility.

Please refer to the listed references (next page) for additional information on how to do a BACT analysis.

LAER is a more stringent emissions limitation. Economic factors are not taken into account in LAER.

If you are in a situation where you are evaluating BACT for a previous modification that should have undergone New Source Review, remember that you must focus on the current BACT technologies and not just those available at the time the modification was made.

What are the air quality analysis and additional impacts analysis?

If your facility is identified as a major source or has installed major modifications for SO₂, PM₁₀, PM_{2.5}, or NO_x, you may be required to perform additional air quality studies. These studies involve air quality dispersion modeling, increment-consumption analysis, and other studies of the environmental effects. Information on these analyses (including the analysis required for facilities located within ten kilometers of a Class I area) can be found in sections C, D, and E of the New Source Review Workshop Manual (Draft 1990) (www.epa.gov/region07/air/nsr/nsrmemos/1990wman.pdf). Again, do not use Section A of the manual, since much of Section A was rendered obsolete by the December 31, 2002, revisions to NSR.

The MPCA also has information on dispersion modeling on the internet, at www.pca.state.mn.us/index.php/air/air-monitoring-and-reporting/air-emissions-and-monitoring/air-dispersion-modeling/air-dispersion-modeling.html?menuid=&missing=0&redirect=1.

What if I still need more help?

The MPCA strongly encourages you to review the published information on NSR regulations. The PSD regulations are codified at 40 CFR § 52.21. You can access the federal regulations on the internet at <http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=b896f1e4aa1d536073cb1887442f6c70&rgn=div8&view=text&node=40:3.0.1.1.1.1.19&idno=40>. Other NSR material is available from EPA at www.epa.gov/nsr/. Additional references that may be useful to you are listed below.

The MPCA also has an NSR Web site, located at www.pca.state.mn.us/index.php/air/air-permits-and-rules/air-permits-and-forms/new-source-review/new-source-review-nsr-web-clearinghouse.html?menuid=&missing=0&redirect=1. If you would like additional assistance or have questions, contact the MPCA at 651-296-6300 or 800-657-3864.

Additional resources

- Air Pollution Engineering Manual (2nd edition). Air and Waste Management Association 2000.
- Air Quality Permits. A Handbook for Regulators and Industry. State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials. Washington, D.C. 1991.
- Guideline for the Implementation of the Ambient Air Monitoring Regulations (EPA-450/4-79-803). US EPA. November 1979.
www.epa.gov/ttnamti1/files/ambient/criteria/reldocs/4-79-038.pdf.
- Compilation of Air Pollutant Emission Factors. Vol. I: Stationary Point and Area Sources (AP-42, 5th edition). The EPA Office of Air Quality Planning and Standards. Research Triangle Park, NC.
www.epa.gov/ttn/chief/ap42/index.html.
- Users Guide for the AMS/EPA Regulatory Model AERMOD. Pacific Environmental Services, Inc. Research Triangle Park, NC. September 2004 (EPA-454/B-03-001). Found at www.epa.gov/scram001/dispersion_prefrec.htm.
- New Source Review, Prevention of Significant Deterioration in Non-Attainment Area Guidance Notebook. Vol. 2: Air and Waste Management Association. US EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC. Pacific Environmental Services, Durham, NC.
- OAQPS Control Cost Manual. 4th Edition. US EPA Office of Air Quality Planning and Standards, Research Triangle Park, NC. January 1990 (EPA/450-3-90-006).
- The MPCA's Web site: www.pca.state.mn.us.