



Facts About Determining Applicability of New Source Review

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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.

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 (GHGs as carbon dioxide equivalent (CO₂e) as of January 2, 2011)

The purpose of this fact sheet is to guide you in determining if your proposed modification must be considered “major” and therefore, be subjected to NSR. Your proposed project is potentially subject to NSR if:

- The project takes place at an existing major source, and results in a significant emissions increase and a significant *net* emissions increase.
- The project takes place at an existing minor source, but the project by itself would be a major source. For pollutants other than greenhouse gases, that means the project has potential emissions of greater than or equal to 100 tons per year (TPY) if the project or facility is included in one of the categories in Table 1, or greater than or equal to 250 TPY if neither the project nor the facility is included in Table 1. For greenhouse gases, the threshold is 100,000 tpy of CO₂e. (However, a facility cannot be a major source for NSR solely due to greenhouse gas emissions until July 1, 2011.)

What is a modification?

Generically speaking, a modification is a physical change or a change in the method of operation. If you plan or have made a series of modifications that are/were part of a single project phased-in at your facility over time, the series of modifications is considered a single

modification for the purpose of NSR. The potential emissions of all the modifications associated with the project must be added together for each regulated pollutant for you to determine if the modification should be classified as major. Keep in mind that not all of the changes you might make at your facility are considered “modifications” under NSR regulations. Activities that are not considered modifications include:

- Routine maintenance, repair, or replacement of equipment, as defined under New Source Review.
- Switching fuel as required under the Energy Supply and Environmental Coordination Act of 1974, superseding legislation or a natural gas curtailment plan under the Federal Power Act.
- Switching fuel as required under Section 125 of the Clean Air Act.
- Switching in part or in whole to municipal solid waste for fueling steam generating units.
- Switching to a fuel or raw material that the source could accommodate prior to January 6, 1975, provided that the change would not be prohibited by a federally enforceable permit established after January 6, 1975, by a federally approved state implementation plan or a federal NSR permit, or the source is approved to make under a NSR permit.
- Any increase in production rate or hours of operation of the source, as long as the increase would not be prohibited by a federally enforceable permit or a federal NSR permit.
- A change in ownership of the source.

For these types of changes, you need not analyze projects for NSR applicability, but refer to Minn. R. 7007.1150 to 7007.1500 to determine if a permit or notification is required under state regulations.

How do I determine if I have an existing major source?

Your “stationary source” is defined as all activities located on contiguous or adjacent properties, operated under common ownership or control, and whose activities fall under similar standard industrial classification (SIC) codes.

The existing stationary source is major if it meets any of the following four criteria:

1. The stationary source conducts any of the 28 operations listed in Table 1 (on the next page), and

has the potential to emit (PTE) 100 or more tons per year of any regulated pollutant (listed above) of any pollutant other than greenhouse gases.

Note that fugitive emissions must be included in the PTE calculation for operations listed on Table 1.

“Fugitive” emissions are those that could not reasonably pass through a stack, vent, or similar opening. Examples include road dust, releases from loading operations, and leaking exterior valves and flanges.

2. The stationary source does not conduct any operations listed on Table 1, and has a PTE of 250 or more tons per year of any NSR regulated pollutant of any pollutant other than greenhouse gases. (Fugitive emissions must be included if the source is in a category regulated by a New Source Performance Standard promulgated before 1980, or a category regulated by a National Emission Standard For Hazardous Air Pollutants. Contact the Minnesota Pollution Control Agency (MPCA) for additional information).
3. The stationary source has a PTE of 100,000 or more tons per year of CO₂e, regardless of the type of operation. (Remember that a stationary source cannot be major under PSD solely due to greenhouse gas emissions until July 1, 2011).
4. The stationary source is located in a non-attainment area and has a PTE of 100 or more tons per year of any pollutant for which the area is designated as non-attainment. At this time, there are no non-attainment areas in Minnesota.

What is potential to emit?

The PTE is the capability at maximum design capacity to emit a pollutant, except as constrained by federally-enforceable conditions (which include the effect of installed air pollution control equipment and restrictions on the hours of operation, or the type or amount of material combusted, stored or processed). Do not take air pollution control equipment into account except as allowed by Minn. R. 7007.1200, subp. 2. You may not take credit for proposed or non federally-enforceable pollution control equipment.

How do I calculate an emissions increase?

The procedure for calculating emissions increases depends on the emissions unit being modified and whether or not the existing source is major.

If the proposed change is to unit(s) subject to a Plant wide Applicability Limit (PAL) based on actual emissions (actuals PAL), and you will be unable to meet the PAL after the change, you need to go through New Source Review in order to change the PAL. If the PAL will continue to be met after the change, then the change is not subject to NSR. However, you still need to check Minn. R. 7007.1150 to 7007.1500 to determine if a

permit amendment is needed under state rules. See “Facts About the Plant wide Applicability Limit” for further information on requirements under an actual PAL. This is available at www.pca.state.mn.us/air/permits/nsr/nsr-pal.html.

If your proposed change is not covered under an actual PAL, then use the following procedures to determine the emissions increase from the change.

Table 1
28 Source Categories

Coal cleaning plants with thermal dryers	Charcoal production plants
Portland cement plants	Kraft pulp mills
Iron and steel mills	Primary zinc smelters
Primary copper smelters	Primary aluminum ore reduction plants
Hydrofluoric acid plants	Municipal incinerator capable of charging more than 250 tons of refuse per day
Nitric acid plants	Sulfuric acid plants
Lime plants	Petroleum refineries
Coke oven batteries	Phosphate rock processing plants
Carbon black plants (furnace process)	Sulfur recovery plants
Fuel conversion plants	Primary lead smelters
Secondary metal production plants	Sintering plants
Fossil fuel boilers (or combination thereof) totaling more than 250 MMBtu/hr heat input	Chemical process plants (does not include ethanol production facilities that produce ethanol by natural fermentation, included in NAICS codes 325193 or 312140)
Fossil fuel fired steam electric plants of more than 250 MMBtu/hr heat input	Petroleum storage transfer units, total storage capacity over 300,000 barrels
Taconite ore processing plants	Glass fiber processing plants

Making changes at an existing major source

Modifications of existing emissions units

The emissions increase at an existing unit is determined by calculating the difference between the projected actual emissions (defined below) and the baseline actual emissions (defined below) for that unit. You also have the option of using potential emissions in place of projected actual emissions, which would reduce the recordkeeping requirements in the future.

Replacement of existing units with equivalent units

When replacing an existing unit with an equivalent unit, the increase is calculated in the same manner as for modification of an existing unit, provided the replaced unit is removed from the premises or rendered permanently inoperable. If this is the case, then the emissions increase is the difference between the projected actual emissions of the replacement unit and the baseline actual emissions of the replaced unit. You also have the option of using potential emissions in place of projected actual emissions.

Debottlenecked units

The emissions increase for each debottlenecked unit at an existing major source is calculated in the same manner as replacement or modified units. The emissions increase is the difference between the projected actual emissions after debottlenecking and the base baseline actual emissions of the unit prior to the debottlenecking. You also have the option of using potential emissions in place of projected actual emissions.

Installation of new units

The emissions increase at a new unit is equal to the PTE of the unit.

Modifications that involve multiple types of emission units

If you have a project that involves a combination of types of emission units, the emissions increase is calculated for each type of unit as described above. That means for the involved existing emission units you would calculate the increase by comparing future projected actual emissions with baseline actual emissions. For new units, the increase would be calculated at the potential to emit of the new unit, unless the new unit is a replacement unit.

Making changes at an existing minor source

In calculating the emissions increase from a proposed change or modification at an existing minor stationary source, you must calculate the PTE of the new or modified unit(s). At an existing minor source, the provisions for PALs, projected actual emissions, and baseline actual emissions do not apply.

What are projected actual emissions?

“Projected actual emissions,” defined at 40 CFR § 52.21(b)(41), means the maximum annual rate, in tons per year, at which an existing emission unit is projected to emit a regulated pollutant in any one of the five years (12-month period) following the date the unit resumes regular operation after the project. If the project increases the emission unit’s design capacity or potential to emit, and the potential to emit the regulated pollutant at full utilization of the unit would result in a significant emissions increase, then the projected actual emissions are the maximum annual rate at which the existing emission unit is projected to emit a regulated pollutant in any one of ten years following the date the unit resumes regular operation. As defined in 40 CFR § 52.21(b)(41), calculated projected actual emissions.

- shall consider all relevant information, including but not limited to, historical operational data, the company’s own representations, the company’s expected business activity and the company’s highest projections of business activity, the company’s filings with the State or federal regulatory authorities, and compliance plans under the approved State Implementation Plan
- shall include fugitive emissions to the extent quantifiable
- shall include emissions associated with startups, shutdowns, and malfunctions
- shall exclude that portion of the unit’s post-project emissions that the existing unit could have accommodated during the 24-month baseline period, including increased utilization due to demand growth, provided those emissions are unrelated to the project

You may instead use future potential emissions in the calculation if you choose. You may wish to do that to avoid recordkeeping requirements, and for electric utility units, recordkeeping and reporting.

What are baseline actual emissions?

Baseline actual emissions **for any unit other than an electric utility steam generating unit (EUSGU)** are the average rate that the unit actually emitted the pollutant over a 24 month period, selected by the owner or operator, within the ten years immediately preceding either:

- the date the owner or operator begins actual construction of the project
- the date a complete permit application is received by the MPCA

whichever is earlier, except that the ten year period shall not go back any further than November 15, 1990. The rule does not provide for determination that any other time period may be chosen.

Baseline actual emissions **for a EUSGU** are the average rate that the unit actually emitted the pollutant over a 24 month period, selected by the owner or operator, within the five years immediately preceding the date the owner or operator begins actual construction of the project. A different time period may be used upon determination by the MPCA or U.S. Environmental Protection Agency (EPA) that it is more representative of normal source operation.

In either case, if the project includes multiple existing units, one 24-month period must be used to determine the baseline actual emissions for all units being changed, for a particular NSR regulated pollutant. Different 24-month periods may be used for different pollutants. You may not choose a 24-month period for which there is inadequate information for determining actual emissions or for making the adjustments listed below. As defined, the average emissions rate:

- shall include fugitive emissions to the extent quantifiable
- shall include emissions associated with startups, shutdowns, and malfunctions
- shall be adjusted downward to exclude non-compliance emissions that occurred while the source was operating above any emissions limitation that was legally enforceable during the 24-month baseline period chosen

In addition, for units other than a EUSGU, the average rate shall be adjusted downward to exclude emissions that would have exceeded an emission limitation with which the source must currently comply, had the source been required to comply with the limitation during the 24-month baseline period. However, if the limitation is part of a proposed or promulgated maximum achievable control technology (MACT) standard, the downward adjustment need only be made if Minnesota has taken credit for the emissions reduction in an attainment demonstration or maintenance plan (for areas which have been redesignated from non-attainment to attainment).

What are past actual emissions?

Past actual emissions are not the same as baseline actual emissions. While past actual emissions are no longer used in determining NSR applicability (due to the NSR rule changes that became effective on March 3, 2003), they continue to be used in ambient modeling analyses for determining increment consumption. They are the actual emissions during the two years immediately preceding the proposed change or modification.

Is my emissions increase “significant”, and what if it is?

For existing major sources

Once you have calculated emissions increases for each modified emissions unit as described above, sum the positive emissions increases for the entire project and

compare that result to the levels listed in Table 2, on the next page. If the sum of the emissions increases for a particular pollutant is less than the significant emissions rate listed, the emissions increase for that pollutant is not significant, and an NSR analysis need not be done for that pollutant.

If the sum of the emissions increases is equal to or greater than the significant emissions rate listed in Table 2, the increase is significant for that pollutant. You may find that for a single project, emissions increases may be significant for one or more pollutants, and not significant for other pollutants. You need only go on to the next step for those pollutants which experience a significant emissions increase.

At this point, for those pollutants where you have calculated a significant emissions increase, you may want to consider whether you would like to propose federally enforceable limits or permit conditions which would result in decreasing the emissions increase(s) to below the associated significant emissions rate. Such limits are commonly referred to as “synthetic minor limits,” and are further described below.

Netting Emissions: The next step is to do a netting analysis for those pollutants where you have determined that the sum of emissions increases causes a significant increase for which you do not wish to propose synthetic minor limits. In the netting analysis, you will determine the “net emissions increase” and whether or not that is significant. Remember, in order for NSR to apply, there has to be a significant **net** emissions increase as well as a significant emissions increase from the project.

Determining the net emissions change is not a trivial matter, and not easily simplified. In simplest terms, a net emissions change is the sum of the emissions increases from the project and any other increases and decreases at the entire source that are contemporaneous and creditable. If the net emissions change is equal to or greater than the associated threshold listed in Table 2, then NSR applies to the change.

Table 2 Significant Emission Rates

Pollutant	Significant Emission Rate (tons per year)	Pollutant	Significant Emission Rate (tons per year)
CO	100	Fluorides	3
SO ₂ ; NO _x ; ozone/VOC; MWC acid gases	40	Sulfuric acid mist	7
Total particulate matter (PM)	25	PM _{2.5} ; Total reduced sulfur compounds	10
PM ₁₀ ; MWC metals	15	MWC organics	3.5 x 10 ⁻⁶
Lead	0.6	Municipal solid waste landfill gas	50
GHGs/CO ₂ e	75,000*	*as of 1/2/2011 for modifications that are otherwise major for NSR; as of 7/1/2011 for all modifications	

Contemporaneous means the increase or decrease occurred between the date five years prior to starting construction on the current project, and the date that the increase from the current project occurs. Creditable means the increase or decrease has not been relied on in a previous permit action. However, there are many other nuances associated with these terms specifically, and netting generally.

A common mistake in netting analyses is to include only increases or decreases that occur as part of the current project, rather than during the full contemporaneous period. It is recommended that if you are undertaking a complicated netting analysis, you contact the MPCA or an experienced environmental consultant for assistance.

For existing minor sources

Once you have calculated emissions increases as described above for minor sources (i.e., the post-change PTE of the modified/added/replacement/debottlenecked units), compare that to the major source thresholds. If the change or the existing minor source belongs to one of the categories listed in Table 1 of this fact sheet, and if the emissions increase is greater than or equal to 100 TPY (or 100,000 TPY for CO₂e), then the project by itself is a major source.

If the change or the existing minor source is not described by any of the categories in Table 1, and if the emissions increase is greater than or equal to 250 TPY (or 100,000 TPY for CO₂e), then project by itself is a major source.

For those pollutants where you have calculated an emissions increase that is a major source by itself, you may want to consider whether you would like to propose

federally enforceable limits or permit conditions which would result in decreasing the emissions increase(s) to below the major source threshold. Such limits are commonly referred to as "synthetic minor limits," and are further described below.

Emissions netting is not allowed for increases at existing minor sources. If the change results in potential emissions that are above the major source, and you are unable or unwilling to accept synthetic minor limits, then NSR applies to the change.

How do I propose synthetic minor limits?

Acceptable synthetic minor limits must include specific limits for specific pollutants. We cannot just say in your permit "do not exceed 100 tons per year" - that is too vague to be enforceable. Acceptable options to limit the emissions of a given pollutant include limiting the hours of operation of your equipment, or limiting material or fuel usage. If you choose to limit the hours of operation, note that your emissions have to be calculated assuming that the maximum design capacity operation occurs for all the hours allowed by the permit. This might make a limit on the hours of operation more restrictive for you than process limits.

Whichever type of limit is selected, there needs to be a time period associated with it. The default time period preferred by the EPA is daily. However, it is often too cumbersome to do daily limits, particularly for operations that are seasonal, or unpredictable. In such

cases, EPA will usually accept a longer time period, if it can be justified. For many sources, the limit may be proposed in any of several ways. It could be a straight monthly limit. It could be an annual limit where, every month, you calculate the total over the previous 12 months (called a 12 month rolling sum) or where, every month, you calculate the average over the previous 12 months (called a 12 month rolling average). Either of the rolling limits will give you a bit more operating flexibility than a monthly limit by compensating for high months with other months that are lower.

Some emission units are subject to federal New Source Performance Standards, which often require the use of a 30 day rolling period. For some facilities (often those that are complex), a longer rolling average may be necessary. If you propose a rolling average or rolling sum for a new unit, you must provide an additional way to show that you comply with your limits during the first 12 months of operation. This could be a formula, or a temporary monthly limit. If you are requesting new limits on an existing source, you have the option of using existing operating data in the rolling period. That would eliminate the need for a special limit for the first 12 months.

Once you have your synthetic minor permit, you will have to keep records to show that you are complying with the permit limits. Typically, we would expect you to do on-site daily record keeping and calculations at least monthly. Again, EPA's default preference is usually daily, unless a longer period is justified as described above. Every year, you will have to certify that you are in compliance with these limits and send the certification to the MPCA.

Make sure your proposed synthetic minor limits are limits that you can really live with. If, in the future, you want to modify your permit to exceed your limits, you may have to redo the entire project analysis.

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 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). US 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).
- MPCA's Web site: www.pca.state.mn.us.