MECC | MICHIGAN ENVIRONMENTAL COMPLIANCE CONFERENCE

Advanced Permitting

Major Source

New Source Review (NSR)

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Overview

- NAAQS - The National Ambient Air Quality Standards
- Attainment Areas v. Nonattainment Areas
- Major Source Determination
- Attainment NSR (PSD: 40 CFR 52.21, Part 18)
- Nonattainment NSR (40 CFR 52.165/51, Part 19)
    - Avoidance via A2P, A2A, Hybrid, PEA, or Netting

National Ambient Air Quality Standards (NAAQS)

- Established in the Federal Clean Air Act
- Applies to Criteria Pollutants
- Standards of air quality which apply to all regions of the country
- Below the standards, the air is considered in attainment.
- Above the standards, the air is considered nonattainment.
- Primary - Protective of Public Health
- Secondary - Protective of Public Welfare

National Ambient Air Quality Standards (NAAQS)

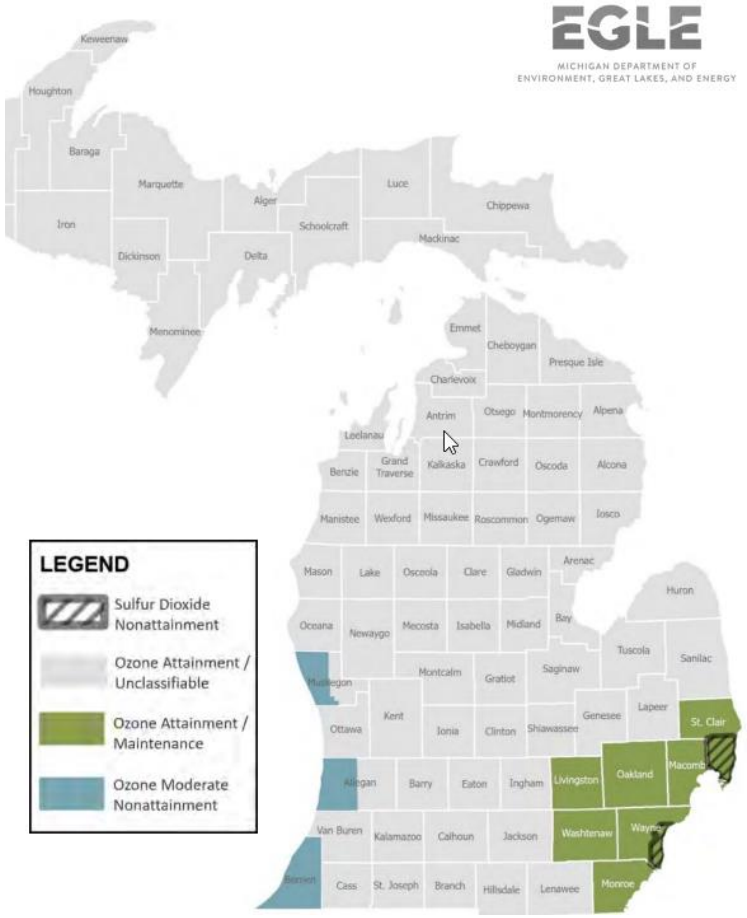
https://www.epa.gov/criteria-air-pollutants/naaqs-table

Sulfur Dioxide		
75 ppb	1-Hr Average	Primary Standard
0.5 ppb	3-Hr Average	Secondary Standard
Particulates (PM10)		
150 µg/m^3	24-Hr Average	Both
Particulates (PM2.5)		
9.0 µg/m^3 *	1-Yr Average	Primary Standard
15 µg/m^3	1-Yr Average	Secondary Standard
35 µg/m^3	24-Hr Average	Both
Carbon Monoxide		
35 ppm	1-Hr Average	Primary Standard
9 ppm	8-Hr Average	Primary Standard
Nitrogen Oxides		
100 ppb	1-Hr Average	Primary Standard
53 ppb	1-Yr Average	Both
Lead		
0.15 µg/m^3	Rolling 3-Month Avg.	Both
Ozone		
0.070 ppm	8-Hr Average	Both

* PM2.5 New Std. effective from May 6, 2024

Attainment v. Nonattainment

- Areas in which the measured air quality is below the NAAQS are **attainment** areas.
- Areas in which the measured air quality is above the NAAQS are **nonattainment** areas.



Attainment v. Nonattainment NSR

- Attainment New Source Review is designed to Prevent Significant Deterioration (PSD) of the air quality
- The goal is to keep attainment areas in attainment.
- Attainment areas are subject to the federal PSD regulations / Part 18 State of Michigan Air Pollution Control Rules.

- Nonattainment New Source Review is designed to clean up “nonattainment” air areas.
- The goal is to bring all nonattainment areas into attainment.
- Nonattainment areas are subject to federal 40 CFR 52.165/51 / Part 19 State of Michigan Air Pollution Control Rules.

Review Process Procedure

- Determine which **regulated** pollutants will be emitted and in what amounts.
- Determine if your location is attainment or nonattainment for the pollutants emitted.
- Determine if your emissions constitute a major source or major modification.
- Apply Part 18 Rules, Part 19 Rules as applicable, or both.

Major Source Definitions

Attainment Areas

Potential ≥ 250 TPY or 100 TPY for 28 Listed Source Categories

Nonattainment Areas

Potential ≥ 100 TPY for nonattainment Pollutant.

Notes

- Potentials for major source determinations are based upon current permitted allowable values.
- The 28 source categories are listed in 40 CFR 52.21, Part1 and Rule 1801(cc)(i)

Major Modification Definitions

Attainment Areas

Significant emissions increase or significant net emissions increase for any **regulated** pollutant.

Nonattainment Areas

Significant emissions increase or significant net emissions increase for the **specific** pollutant for which the area is in nonattainment.

Significant Emissions Rates

Pollutant	Emission Rate*
Carbon Monoxide	100 TPY
Volatile Organic Compounds	40 TPY
Sulfur Dioxide	40 TPY
Nitrogen Oxides	40 TPY
Particulates	10 TPY (PM2.5) 15 TPY (PM10) 25 TPY (PM**)
Lead	0.6 TPY
Greenhouse Gases**	100,000 TPY 75,000 TPY
Hydrogen Fluoride**	3 TPY
Hydrogen Sulfide / Total Reduced Sulfur**	10 TPY
Sulfuric Acid**	7 TPY

* For NANSR, it can be different for certain pollutants dependent on classification.

** Do NOT apply to NANSR

What's a Major Modification?

If it's not excluded it's included.

- Any physical change in,
- Or change in the method of operation of,
- A major stationary source that,
- Would result in a significant emissions increase, or significant net emissions increase of,
- Any pollutant subject to the Act (i.e., CAA).

Excluding: routine maintenance, repair, and replacement; use of alternative fuels (under certain circumstances); changes of ownership; increases in operating hours or production rate, unless are prohibited by permit condition.

What is "Significant"?

- Any modification that **by itself** does not increase emissions above the significant emissions rate is not subject to PSD/NANSR. A project can't be broken into pieces to avoid PSD/NANSR (2/5 years).
- Any modification that **by itself** exceeds the significant emissions rate may be netted out of PSD/NANSR by combining the emissions increase with emissions decreases made elsewhere at the facility.
- The significant emission rates are really the PSD/NANSR applicability thresholds **for modifications**.

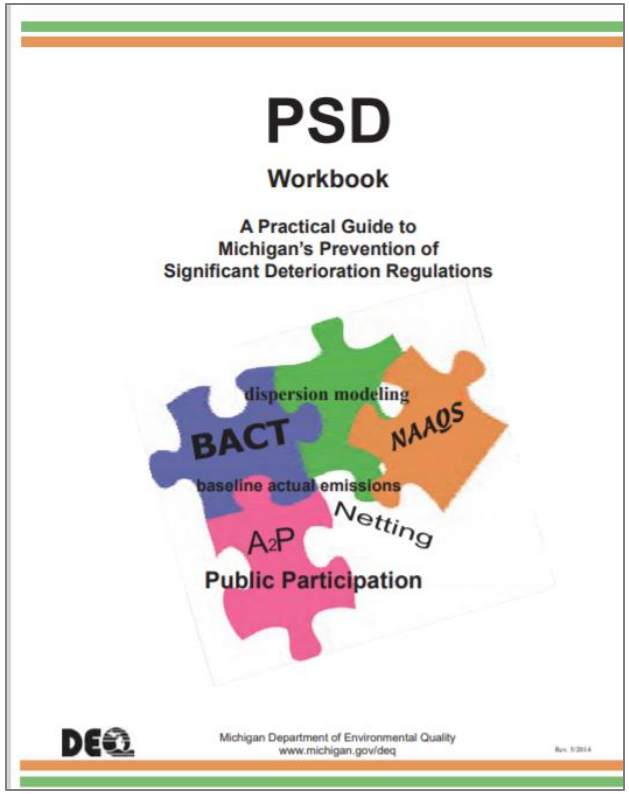
PSD / Nonattainment Rules

Federal PSD
- 40 CFR 52.21

State PSD
- Part 18 Rules

Federal NANSR
- 40 CFR 52.165 – State Implementation Plans
- 40 CFR 51 Appendix S – Emission Offset Interpretative Ruling

State of Michigan NANSR
- Part 19 Rules



Attainment NSR (A.K.A. PSD)

Applicability

- Applies to New Major Sources and some Modifications at Existing Major Sources
- Major Source is defined as having potential to emit greater than 250 TPY unless the source belongs to one of 28 named source categories (40 CFR 52.21), then 100 TPY.
- Minor Source is any source having potential emissions less than the applicable 250 TPY or 100 TPY major source threshold.

PSD Applicability

Identify which quadrant you are dealing with.

	New	**Existing**
Minor	No PSD	Modification that is new major source, PSD
Major	PSD	Modifications that result in significant net emissions increase, PSD

PSD Requirements

- Applies to new major sources (≥ 250 or 100 TPY) or major modifications (≥ Significance Levels). Can possibly pull in any other attainment pollutants
- Pre-construction air quality monitoring unless waived by AQD
- No construction waivers are allowed
- Top Down - Best Available Control Technology (BACT)
- Modeling must be performed by the applicant
- Class I area impacts must be identified by applicant
- Additional impact analyses - soils, vegetation, growth
- Public comment period required. Hearing if requested
- Response to comments document is required

Part 19 Rules Requirements

- Applies to new major sources (≥ 100 TPY, less based upon severity) or Major Modifications (> SER)
- Cannot pull in other pollutants (only applies to NA criteria pollutant and precursor)
- All other major sources (MI) owned by applicant must be in compliance
- Alternative Analysis per Rule 1902 (Sites, Sizes, Production Processes, and Control Techniques)
- Lowest Achievable Emission Rate (LAER) and Offsets
- NO: pre-construction monitoring, Class I area impact analysis, additional impacts analyses, and construction waivers.
- Public comment period required. Hearing if requested. Response to comments document

Nonattainment NSR

Underlying Theory

Problem: How can air quality be improved while still allowing economic growth?

- **Solution**: New major sources must install the most stringent level of control, the Lowest Achievable Emission Rate (LAER).
- **Solution**: New major sources/major modifications must obtain offsets at a greater than one-to-one ratio (i.e., there must be a net reduction of emissions within the nonattainment area).

This leaves two questions:

- What in the world is LAER?
- How do offsets work?

Defining LAER

LAER is the more stringent of the following:

- The most stringent limit contained in the regulations of any state or local air pollution control agency for the same or similar source-type, unless the applicant can demonstrate that the limit is not achievable.
- The most stringent limit achieved in practice for the same or similar source-type.

In Layman's terms:

- If anyone has achieved it, you must meet it or beat it.

Defining Offsets

- An offset is an emission reduction made to "offset" an emissions increase.
- Offsets may be made at the same stationary source or a neighboring stationary source. In the case of ozone, VOC and NO_x offsets may be obtained from sources at great distances (NA area).
- Offsets are required at ratios varying from 110% to as much as 150% of the emissions increase depending on the severity of the nonattainment designation. The specific amounts are outlined in Part 19 Rules.
- Offsets must be real, permanent, quantifiable, enforceable and must be provided prior to startup.

Summary

NANSR Applicability Determination

Identify which quadrant you are dealing with.

	New	Existing
Minor	No NANSR	Modification that is new major source, NANSR
Major	NANSR	Modifications that result in significant net emissions increase, NANSR

Only applies to Nonattainment pollutants and Precursors

Summary

PSD/NANSR Applicability

- Identify which quadrant of PSD/NANSR you are dealing with.
- Is it a modification?
- Is it a major modification?

Does it, **by itself,** increase emissions above the significant emission rates?

Can A2P, A2A, Hybrid, PEA, or Netting be used to reduce below the significant emission rates?

Step 1: Significant Emission Increase

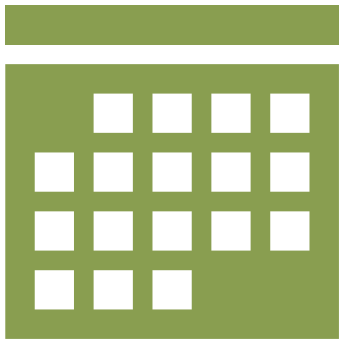
Applicability Tests

- Actual-to-Potential (A2P)
- Actual-to-Projected Actual (A2A)
- Hybrid Test (A2P + A2A)

Baseline Actual Emissions (BAE)

Determined on an emission unit-specific basis by:

- Identifying proper look back period
  - 5 years for EGU's or 10 years for all other
  - EGU: Immediately precedes the date construction begins
  - Non-EGU it is start of construction or complete application is received, whichever occurs first
  - Permit Issuance (no construction needed)
- Selecting a consecutive 24-month period
  - Can be different for each pollutant
  - Common to all emission units
  - Sufficient documentation

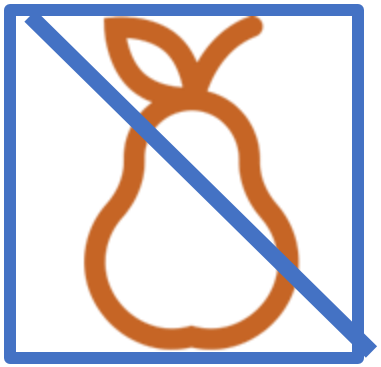


- Calculating the Annual Average rate (tpy) of actual emissions
- Adjusting the calculated emissions

Actual-to-Potential (A2P) Test

Comparison of PTE and BAE

- Potential Emissions (PTE)
  - **New** emission unit(s)
  - Modification to **existing** emission unit(s)
  - Based on maximum capacity of the unit or allowable emissions (synthetic minor limits)
- Baseline Actual Emissions (BAE)
  - Actual emissions from the new or modified unit(s)



PTE - BAE < SER = No further evaluation

PTE - BAE > SER = Go to Step 2, significant net emissions increase

Actual-to-Projected Actual (A2A) Test

Comparison of PAE and BAE

- Projected Actual Emissions (PAE)
  - Affected or modified **existing** emission unit(s) only
  - Estimates of future business activity during projection period
- Baseline Actual Emissions (BAE)
  - Actual emissions from the modified or effected unit(s)

A2A Test

Excludable Emissions

- Could have been accommodated during the 24-month BAE
- Unrelated to the project
- Had to achieve this level of emissions (30 days or 3 months) and can accommodate this level in the future
- **Not** the allowable permit limits
- Highest level of emissions the emissions unit operated at prior to the modification
  (≤ projected level of business activity)

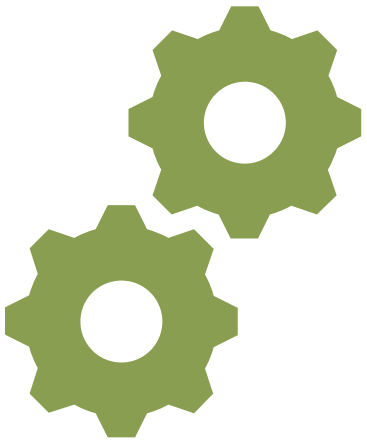
A2A Test

PAE - BAE - EE*

- < SER = No Further Evaluation
- ≥ 50% of SER = Reasonable Possibility
- > SER = Go to Step 2, Significant Net Emissions Increase

* *Projected Actual Emissions*
Baseline Actual Emissions
Excludable Emissions

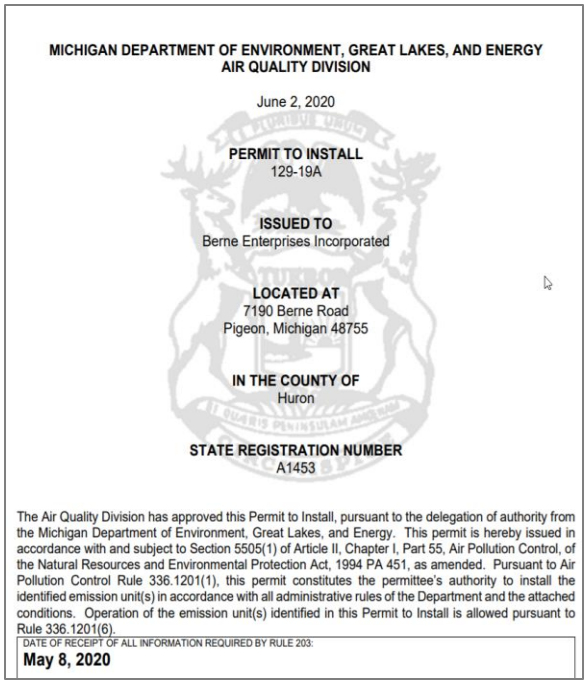
Hybrid Test



- For New and Existing Equipment
  - A2P + A2A
- Project Emissions Accounting (PEA)
  - NSR Regulations Revised
  - Final Rule October 22, 2020
  - Allows for emissions decreases to be considered in Step 1.
  - States are not required to modify SIPs.
  - Revision currently subject to public comment

Permit Requirements

- Emission Limits, Operational Restrictions
  - Synthetic Minor Limits
- Testing
  - Verify emission factors used in applicability test
- Recordkeeping
  - Reasonable Possibility Recordkeeping & Reporting, Emission Calculations
- Reporting
  - Annual emissions exceed BAE > SER
  - Projection differs



MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
AIR QUALITY DIVISION

June 2, 2020

PERMIT TO INSTALL
129-19A

ISSUED TO
Berne Enterprises Incorporated

LOCATED AT
7190 Berne Road
Pigeon, Michigan 48755

IN THE COUNTY OF
Huron

STATE REGISTRATION NUMBER
A1453

The Air Quality Division has approved this Permit to Install, pursuant to the delegation of authority from the Michigan Department of Environment, Great Lakes, and Energy. This permit is hereby issued in accordance with and subject to Section 5505(1) of Article II, Chapter I, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. Pursuant to Air Pollution Control Rule 336.1201(1), this permit constitutes the permittee's authority to install the identified emission unit(s) in accordance with all administrative rules of the Department and the attached conditions. Operation of the emission unit(s) identified in this Permit to Install is allowed pursuant to Rule 336.1201(6).

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203:
May 8, 2020

Step 2: Significant Net Emissions Increase - Netting

Net Emissions Change

equals

Emissions **increases** associated with the proposed modification

minus

Source-wide creditable contemporaneous emissions **decreases**

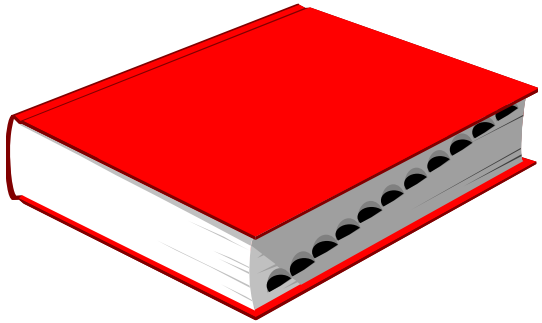
plus

Source-wide creditable contemporaneous emissions **increases**

New Terms to Define

And your dictionary won't help!

- "**Contemporaneous**" means that the increase or decrease happened within a five/ten-year period of when construction on the modification begins.



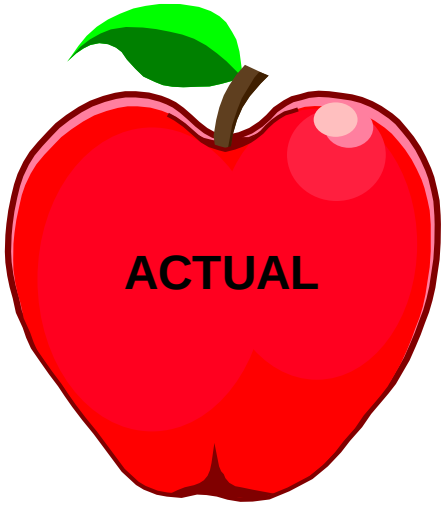
- "**Creditable**" means that the contemporaneous increase or decrease is real, permanent, quantifiable, enforceable and compliant.

How Does Netting Work?

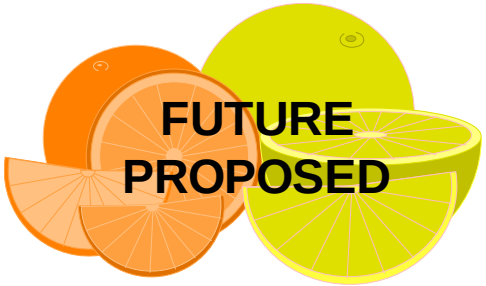
Does it work?

- To identify emission changes, we need a reference point - a **baseline**.
- To assure we are only looking at **contemporaneous** changes, the baseline must be less than five (EUSGU) or ten (non-EUSGU) years.
- To assure we are identifying **real** changes, the baseline must be the facility's actual emissions.
- To assure we are using only **compliant** emissions, any actual emissions during the baseline period that resulted from non-compliant activities must be subtracted.
- Therefore, EPA considers the baseline to be the facility's actual annual emissions averaged over a **representative 24-month** period within the last five/ten years.

Determining the Net Change



The proposed **future** emissions (± increases / decreases) are compared with the baseline of **actual** emissions.



Significant Emissions Rates

If the net change is greater than these levels, after considering contemporaneous increases and decreases, the modification is subject to PSD, NANSR, or both.

* *For NANSR, it can be different for certain pollutants dependent on classification.*

** *Do NOT apply to NANSR*

Pollutant	Emission Rate*
Carbon Monoxide	100 TPY
Volatile Organic Compounds	40 TPY
Sulfur Dioxide	40 TPY
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Lead	0.6 TPY
Greenhouse Gases**	100,000 TPY 75,000 TPY
Hydrogen Fluoride**	3 TPY
Hydrogen Sulfide / Total Reduced Sulfur**	10 TPY
Sulfuric Acid**	7 TPY

Questions?