Air Quality Regulations: The Year in Review

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Topics for Today

National Ambient Air Quality Standards (NAAQS) and State Implementation Plans (SIPs)

Federal rules and initiatives

State rules and initiatives
NAAQS and SIPs
Primer: National Ambient Air Quality Standards (NAAQS)

National standards for six common air pollutants called “criteria pollutants” – NO₂, SO₂, lead, ozone, CO, and particulate matter (PM)

Protective of human health (primary) and the environment (secondary)

Areas across the country “designated” as attainment, unclassifiable, unclassifiable/attainment, or nonattainment
Minnesota’s air quality and the NAAQS (2016-2018)

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>8-Hour</th>
<th>Annual</th>
<th>24-Hour</th>
<th>Gopher Resources</th>
<th>North Minneapolis</th>
<th>Statewide</th>
<th>Annual</th>
<th>1-Hour</th>
<th>8-Hour</th>
<th>1-Hour</th>
<th>1-Hour</th>
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</thead>
<tbody>
<tr>
<td>Ozone</td>
<td>90%</td>
<td>66%</td>
<td>60%</td>
<td>73%</td>
<td>53%</td>
<td>7%</td>
<td>25%</td>
<td>42%</td>
<td>43%</td>
<td>51%</td>
<td>21%</td>
</tr>
<tr>
<td>Fine Particles</td>
<td>66%</td>
<td>60%</td>
<td>73%</td>
<td>53%</td>
<td>7%</td>
<td>25%</td>
<td>42%</td>
<td>43%</td>
<td>51%</td>
<td>21%</td>
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</tr>
<tr>
<td>Lead</td>
<td>53%</td>
<td>7%</td>
<td>25%</td>
<td>42%</td>
<td>43%</td>
<td>51%</td>
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</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td></td>
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<td>Carbon Monoxide</td>
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<tr>
<td>Sulfur Dioxide</td>
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</tbody>
</table>

Percent of primary National Ambient Air Quality Standard

Federal Standard
# Ongoing NAAQS Reviews

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Stage of review</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfur oxides ($SO_2$)</td>
<td>Existing standard retained without revision</td>
<td>January 28, 2019*</td>
</tr>
<tr>
<td></td>
<td>– final action effective April 17, 2019</td>
<td></td>
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<tr>
<td>Fine particulate matter (PM$_{2.5}$)</td>
<td>Draft Policy Assessment open for comment</td>
<td>December 31, 2020</td>
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<tr>
<td></td>
<td>– step 4 of 5</td>
<td></td>
</tr>
<tr>
<td>Ozone ($O_3$)</td>
<td>Draft Policy Assessment open for comment</td>
<td>December 31, 2020</td>
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<td></td>
<td>– step 4 of 5</td>
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*EPA was under a Consent Decree to meet this deadline.*
Federally enforceable rules/regulations states use to ensure they attain/maintain the NAAQS

SIPs include:

• 40 CFR § 52.1220 :: EPA-approved statutes and regulations in MN SIP
• Infrastructure SIPs :: Clean Air Act sections 110(a)(1) and 110(a)(2)
• Source-specific SIPs :: Joint Title I/Title V program in MN
• Regional Haze
2019 SIP actions

2018 Submittals

• 2015 ozone Infrastructure SIP – 110(a) (October 1, 2018)

• “The Great SIP Revision” – Housekeeping SIP update (November 19, 2018)

2019 planned submittal: Exempt Source SIP
Regional Haze

• Addresses visibility impairment in mandatory Class I areas

• Minnesota’s Comprehensive SIP Update
  • In Progress :: due by July 31, 2021
  • 2028 projections based on 2016 emissions (NO\textsubscript{X}, SO\textsubscript{2}, PM\textsubscript{2.5}, NH\textsubscript{3}, VOCs)
  • Largest Minnesota contributors from Taconite, EGUs, and other ICI Boilers

• EPA Guidance (draft vs. final)?
  • Draft recommended states evaluate 80% of sources
  • Final guidance allows a “reasonable threshold” with appropriate justification

• Modeling to forecast visibility conditions in 2028
  • Performed by LADCO & MPCA
  • How we determine our reasonable progress goals
Reasonable Progress: Voyageur's National Park
Choose Class I area

○ Boundary Waters Canoe Area Wilderness, Minnesota (BOWA1)
○ Isle Royale National Park, Michigan (ISLE1)
○ Voyageurs National Park, Minnesota (VOYA2)

Visibility status

- Most impaired
- Clearest

Boundary Waters Canoe Area Wilderness, Minnesota (BOWA1)

Haze index (beechviews, DV)

Year

2004 2018 2028 2038 2048 2058 2064

2018 Goal 17.2 DV

Final goal: natural conditions

No degradation

Reasonable Progress: Boundary Waters Canoe Area
Visibility Impairment: Boundary Waters Canoe Area

11/7/19
Federal Rules and Initiatives
Federal Rules (in brief)

www.reginfo.gov, then select agency
NESHAPs: Risk and Technology Reviews

• Assess remaining risk from application of Maximum Achievable Control Technology (MACT) standard codified in each NESHAP.

• Conduct a risk assessment

• Review emission control technologies

• Does the standard meet acceptable risk thresholds with an ample margin of safety?

• Have there been developments in practices, processes or control technologies?

**EPA Final Rule Promulgation schedule** | **NESHAPs**
--- | ---
12/31/18 | 7
3/13/20 | 20
6/30/20 | 6

• Most proposed RTRs in 2019 find acceptable risk; add SSM provisions, address monitoring, reporting
Ethylene Oxide

- Toxicity Value for EtO updated in 2016
- NATA 2018 identified risk from facilities emitting EtO
  - ID Facilities and update emissions
  - Modeling
  - Ambient Air Monitoring
- Risk and Technology Reviews:
  - Hydrogen chloride manufacturing (NNNNN), but not from emissions activity regulated under the NESHAP (2/4/19)
  - Misc Organic Chemical Manufacturing (11/6/19)—Revised emission limits and work practice standards
  - Commercial Sterilizers and Fumigation Operations—ANPRM

EPA NATA Cancer Risk Map-2018
“Major HAP sources” may now be reclassified as “area” sources at any time, provided the facility limits its potential to emit below major source thresholds (10/25 tpy single/total HAPs).

EPA has proposed amendments to NESHAP General Conditions (40 CFR Part 63, Subpart A) July 26, 2019 84 FR 36304

- Define PTE by removing “federally enforceable” and replacing with “legally enforceable” and “practicably enforceable” conditions
- Notification to EPA of change, summary of new standard (if applicable), and submittal via CEDRI

“Limit PTE” requires modifying permit

Once known as Once in, Always In
Low-emitting facility General Permits expire April 2020

• Permit Expires April 30, 2020

• Apply for “permit reissuance” by November 2, 2019—that means ASAP!!

• Select a different permit option:
  • Registration permit or
  • Conditionally exempt source categories in Minn. R. chapter 7008
Affordable Clean Energy (ACE)—Adopted July 2019

• Replaces the Clean Power Plan under section 111(d)
  • Limits best system of emissions reduction (BSER) to Heat Rate Improvement
  • Does not provide emission standard. States assess and develop CO2 standard

• New Implementing Regulations for Section 111(d) emission guidelines—40 CFR 60 Subp. Ba

• Did not adopt NSR changes
  • EPA proposed to allow an emissions unit to increase annual emissions as long as they don’t increase hourly emissions.
The Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule

- EPA/NHTSA released proposed new standards for MY 2021-2026 (August 24, 2018)
  - Proposal freezes fuel efficiency at MY 2020
  - Withdraws the California Clean Air Act Waiver
Prevention of Significant Deterioration (PSD) Program

• Reminder: Minnesota now operates its own PSD program
  • Our existing rule (Minn. R. 7007.3000) incorporates the federal PSD rule (40 CFR § 52.21)

• Proposed federal rule changes
  • Hourly emissions rate test for PSD applicability (ACE Rule; 83 FR 44746; August 31, 2018)
  • Project emissions accounting (PEA Rule; 84 FR 39244; August 9, 2019)

• Changes/Clarifications to EPA’s policies
  • Emission projections (EPA Memo; Detroit Edison Lawsuit; December 7, 2017)
  • Projection aggregation (Reconsideration; 83 FR 57324; November 15, 2018)
  • Common control source definition (EPA Memo; April 30, 2018)
  • Adjacency source definition (EPA Memo; September 4, 2018)

• Modeling changes and clarifications
  • Significant Impact Levels (SILs) for PM$_{2.5}$/Ozone & Exclusions from ‘Ambient Air’
State Initiatives and Rules
# Our strategic plan

**Sixteen strategic goals for our agency | 2018-2022**

<table>
<thead>
<tr>
<th>Water</th>
<th>Land</th>
<th>Air</th>
<th>Cross agency</th>
<th>Excellence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce chloride (salt) entering surface waters and groundwater.</td>
<td>Reduce food waste from households and businesses by generating less and rescuing and recycling more.</td>
<td>Improve air quality in population centers.</td>
<td>Incorporate strategies to address environmental justice concerns in all programs.</td>
<td>Increase the diversity of the agency's workforce, through best efforts in recruitment, hiring and retention.</td>
</tr>
<tr>
<td>Accelerate prioritized and targeted reductions in nutrient pollution by integrating strategies with local watersheds.</td>
<td>Identify and address emerging risks by completing assessment of backlogged contaminated sites.</td>
<td>Offset excessive emissions and advance diesel reductions via the Volkswagen Settlement.</td>
<td>Increase involvement of communities in decisions and actions that affect them.</td>
<td>Accelerate the availability of data and information in a self-service format.</td>
</tr>
<tr>
<td>Achieve wastewater pollutant reduction goals and maximize cost-effectiveness of public infrastructure investment.</td>
<td>Prevent and reduce risks to groundwater from unlined construction and demolition landfills.</td>
<td>Reduce air permitting backlog.</td>
<td>Act on opportunities to increase resilience of communities and the environment to climate change impacts.</td>
<td>Improve agency’s ability to identify, manage and sustain organizational improvement.</td>
</tr>
</tbody>
</table>

**MPCA Strategic Goals**

Protect and Improve the Environment and Human Health | www.pca.state.mn.us
Ambient Air Projects
Current air quality

Current conditions
Last Updated: 10/29/2019 9AM CDT

<table>
<thead>
<tr>
<th>Location</th>
<th>Ozone</th>
<th>Particles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brainerd</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Detroit Lakes</td>
<td>21</td>
<td>13</td>
</tr>
<tr>
<td>Duluth</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>Ely</td>
<td>17</td>
<td>29</td>
</tr>
<tr>
<td>Marshall</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>Rochester</td>
<td>5</td>
<td>31</td>
</tr>
<tr>
<td>St. Cloud</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td>Twin Cities</td>
<td>13</td>
<td>38</td>
</tr>
</tbody>
</table>

Daily AQI forecasts available for 18 locations (11 shown)

- Good 0-50
- Moderate 51-100
- Unhealthy for sensitive groups 101-150
- Unhealthy 151-200
- Very unhealthy 201-300

Learn more
Air Quality Alert – July 6-7, 2019
Assessing Urban Air Quality

Understanding small-scale differences in air pollution in urban areas using new sensor technology

For more info, visit www.pca.state.mn.us/urbanair
Monitoring Perfluoroalkyl/Polyfluoroalkyl Substances (PFAS)
Greenhouse Gases (GHGs) and Climate Change
Minnesota’s Climate is Already Changing

Minnesota’s climate is already changing rapidly and will continue to do so into the foreseeable future.

These changes are impacting Minnesota’s wildlife, plants, waters, historic resources, infrastructure, and available outdoor recreation activities.

We have a responsibility to adapt to these changes.

We take mitigation steps to reduce our carbon dioxide and other greenhouse gas emissions.

We need your help to adapt to the changing climate and reduce its impact on Minnesota’s resources and people.

Action starts with you.

Find out more! mndnr.gov/climate

20% increase in the number of 1” rains

65% increase in the number of 3” rains

13% increase in the size of the heaviest rainfall of the year.

Our climate is becoming warmer and wetter since 2000

widespread rains of more than 6” are 4x more frequent than in the previous three decades.

The length of the frost-free season is increasing over time and is expected to continue to increase through the century.

The 10 warmest and wettest years on record have all occurred in the past 20 years.

Increases in temperature and precipitation are expected to continue to increase through the century.

winter is warming much faster than summer with fewer days and nights of extreme cold.

Nights have warmed 55% faster than days since 1970.

Average temperatures in Minnesota have warmed by nearly 3°F since 1895.
Next Generation Energy Act (2007)

- 2005: 0%
- 2015: -15%
- 2025: -30%
- 2050: -80%
- 2016 (-12%)
Minnesota GHG emissions (by sector) – 2005 to 2016
Proposal would adopt California’s emissions standards

• Low-Emission Vehicles (LEV)
• Zero-Emission Vehicles (ZEV)

Under proposal, vehicle manufacturers must provide LEV and ZEV vehicles for sale in Minnesota
Miscellany
Minnesota NSPS/NESHAP Incorporation by Reference

• Rule off notice 9/27/19
• Effective April 2020
• Adds 30 IBRs of NSPS/NESHAPs to state rules
• Incorporate Landfill Gas Control Emission Guidelines
• Other amendments to clarify/standardize titles, incorporations, delegation references.

• For 7 NSPS/NESHAP, IBR establishes 7/1/2018
  • NSPS for New EGUs
  • Mercury and Air Toxics Standard for EGUs
  • Crude Oil and Natural Gas Production (2)
  • NSPS for Landfills
  • Wood Heaters
  • New Residential Hydronic Heaters
Minnesota’s Statewide Mercury TMDL

Mercury Emissions (pounds)

- Energy Production
- Mercury in Products
- Mining Operations
- TMDL goal of 789 lb by 2025

Projected emissions


Mercury Emissions:
- 3312
- 2843
- 2705
- 2279
- 1653
- 1378
- 1518
- 1467
• MPCA continues to integrate environmental justice into all areas of our work

• Many areas throughout the state are considered to be areas of concern

• For more information, visit www.pca.state.mn.us/ej
Volkswagen Settlement

What we’ve been working on

• Phase 1: $4.9M funds awarded across four grant programs

• New data tool to track our progress

What’s next?

• Phase 2! (Tell us your thoughts...)

More at www.pca.state.mn.us/vw
Stay informed!

www.pca.state.mn.us/airmail

Minnesota Air app – available for iOS, Android, and Windows

www.pca.state.mn.us
Questions?
Proposed Rule and Policy Changes regarding PSD

Hourly Emissions PTE Comparison

• Would offer another route to avoid PSD by comparing hourly emissions before and after a modification
• MPCA disagreed with the proposal (ACE) and provided comments on rulemaking.

Project Emissions Accounting

• Would allow applicant to include emission decreases in Step 1.
• MPCA disagreed, as proposal is ill-defined and contrary to PSD intent. MPCA provided comments on rulemaking.
Changes to EPA’s PSD Policies

Emission projections (Detroit Edison)

- EPA will not “second-guess” a company’s pre-construction emissions projection. Makes PSD permitting more of a “trust-based” program.
- MPCA continues to review emissions projections during permitting.

Projection aggregation

- Supports EPA’s 2009 interpretation. An applicant must aggregate physical or operational changes only if they are “substantially related.” Set presumption that projects separated by more than three years are not “substantially related.”
- MPCA follows this guidance.
Common control (source definition)

• Memorandum (Meadowbrook Energy, Keystone Landfill) defines control as “the power or authority of one entity to dictate decisions of the other [on] ... relevant air pollution regulatory requirements.”

• MPCA continues to make case-by-case determinations on common control using EPA guidance, including this and previous memoranda.

Adjacency (source definition)

• EPA provided draft guidance making adjacency only a proximity assessment. MPCA provided comment on the draft guidance.

• MPCA continues to make case-by-case determinations on adjacency using EPA guidance, including this and previous memoranda.
Modeling Changes and Clarifications

Significant Impact Levels (SILs) for Ozone and PM$_{2.5}$

- Sets impact levels above which a facility’s modeled ambient impacts are significant. If impacts are significant, a facility may be culpable for a NAAQS exceedance or broader modeling analysis may be required.

- MPCA adopted the recommended levels for Ozone and PM$_{2.5}$. See the MPCA’s Air Dispersion Modeling Practices Manual.

Exclusions from “Ambient Air”

- EPA expands the options for precluding access beyond a fence or other physical barrier.

- MPCA considers state rules as well as federal requirements. See the MPCA’s Air Dispersion Modeling Practices Manual.