Air Quality Planning Update

November 8, 2018
Kathleen Knight
SIPRAC
Planning Goals

• Assure their quality in Connecticut meets federal health based standards (NAAQS),

• and does not significantly contribute to nonattainment, interfere with maintenance in another state or impair visibility in a Class I area.
Air Quality Planning Cycle

Start
Year 1
EPA Sets NAAQS
Year 2
Gov. Proposes Designations
Year 3
EPA Finalizes Designations
Year 4
"Infrastructure" SIP Due
Year 5
"Attainment" SIP Due
Year 6-12
Attainment Date

Clean Air Act Planning Cycle

Enforcement
Rules & Permits
Planning & Assessment
Scientifically Valid Data
Ambient AQ Monitoring
Plan, Implement & Enforce

Connecticut Department of Energy and Environmental Protection

Today’s Update
National Ambient Air Quality Standards

Traditionally- the NAAQS are the primary driver behind planning goals.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Primary/Secondary</th>
<th>Averaging Time</th>
<th>Level</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide (CO)</td>
<td>primary</td>
<td>8 hours</td>
<td>9 ppm</td>
<td>Not to be exceeded more than once per year</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 hour</td>
<td>35 ppm</td>
<td></td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>primary and secondary</td>
<td>Rolling 3 month average</td>
<td>0.15 μg/m³</td>
<td>Not to be exceeded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 hour</td>
<td>100 ppb</td>
<td>98th percentile of 1-hour daily maximum concentrations, averaged over 3 years</td>
</tr>
<tr>
<td>Nitrogen Dioxide (NO₂)</td>
<td>primary</td>
<td>1 hour</td>
<td>53 ppb</td>
<td>Annual Mean</td>
</tr>
<tr>
<td></td>
<td>primary and secondary</td>
<td>1 year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ozone (O₃)</td>
<td>primary and secondary</td>
<td>8 hours</td>
<td>0.070 ppm</td>
<td>Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Particle Pollution (PM)</td>
<td>PM₂.₅</td>
<td>primary</td>
<td>1 year</td>
<td>12.0 μg/m³ annual mean, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td>secondary</td>
<td>1 year</td>
<td>15.0 μg/m³ annual mean, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>primary and secondary</td>
<td>24 hours</td>
<td>35 μg/m³</td>
<td>98th percentile, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>PM₁₀</td>
<td>primary and secondary</td>
<td>24 hours</td>
<td>150 μg/m³ Not to be exceeded more than once per year</td>
</tr>
<tr>
<td>Sulfur Dioxide (SO₂)</td>
<td>primary</td>
<td>1 hour</td>
<td>75 ppb</td>
<td>99th percentile of 1-hour daily maximum concentrations, averaged over 3 years</td>
</tr>
<tr>
<td></td>
<td>secondary</td>
<td>3 hours</td>
<td>0.5 ppm</td>
<td>Not to be exceeded more than once per year</td>
</tr>
</tbody>
</table>
Visibility Goals

Natural visibility by 2064 at Class I areas (National Parks and Wilderness Areas). Incremental Progress required for 10 yr Planning Periods.

Hazy

Clear
How Does CT Measure Up?

Fine Particulates

Connecticut’s PM$_{2.5}$ 24-Hr Design Values

Connecticut’s PM$_{2.5}$ Annual Design Values

Well below both the long term and short term standard
How Does CT Measure Up?

Carbon Monoxide

Connecticut Maximum CO 8-Hour Design Value

8-Hour NAAQS=9 ppm
How Does CT Measure Up?

Nitrogen Dioxide

Well below both the long term and short term standard
How Does CT Measure Up?

Sulfur Dioxide

Connecticut 1-Hr SO$_2$ Design Value Distribution

SO$_2$ Concentration (ppb)

1-hour NAAQS = 75 ppb

Connecticut Department of Energy and Environmental Protection
How Does CT Measure Up?

**Lead**

0.04µg/m³ – 2015 Design value. This was determined to be far enough below the standard that lead specific monitoring was no longer required as of June 30, 2016.
How Does CT Measure Up?

**Ozone**

Ozone Design Values (ppb)
Connecticut's Two Nonattainment Areas

- Greater Connecticut Area
- NY-NJ-CT Area
- 2015 Ozone Standard (70 ppb)
- 2008 Standard (75 ppb)
How Does CT Measure Up?

Ozone

CT-NY-NJ 8-hour Ozone 2018 Design Values

Ozone ppb levels
(8-hour ozone NAAQS = 70 ppb)
- Incomplete Data
- \( \leq 70 \)
- 71-75 ppb
- 76-80 ppb
- 81-84 ppb
- 85+ ppb

NY-NJ-CT Non-attainment Area
Greater CT Non-attainment Area

Revised November 7, 2018
How does the Region Measure up?

SO2 Air Quality, 2000 - 2017
(Annual 99th Percentile of Daily Max 1-Hour Average)
Northeast Trend based on 40 Sites

2000 to 2017: 84% decrease in Regional Average

NO2 Air Quality, 2000 - 2017
(Annual 99th Percentile of Daily Max 1-Hour Average)
Northeast Trend based on 25 Sites

2000 to 2017: 32% decrease in Regional Average

CO Air Quality, 2000 - 2017
(Annual 2nd Maximum 8-hour Average)
Northeast Trend based on 22 Sites

2000 to 2017: 60% decrease in Regional Average

Lead Air Quality, 2010 - 2017
(Annual Maximum 3-Month Average)
National Trend based on 133 Sites

2010 to 2017: 80% decrease in National Average
How does the Region Measure up?

Daily Standard=35 ug/m³

Color Code | % Change 1990-2016 | CSA Name
---|---|---
Orange | -36 | Bridgeport-Stamford-Norwalk
Yellow | -44 | Hartford-West Hartford-East Hartford
Green | -38 | New Haven-Milford
Blue | -50 | New York-Newark-Jersey City
Gray | -52 | Worcester

Fine Particulate Trends in Major CBSAs Around Connecticut

Average Composite Fine Particulate Concentrations (μg/m³)

Data source: https://www.epa.gov/sites/production/files/2017-07/airqualitytrendsby1990-2016.xlsx
How does the Region Measure up?

Ozone Air Quality, 2000 - 2017
(Annual 4th Maximum of Daily Max 8-Hour Average)
Northeast Trend based on 121 Sites

Downwind monitors designated as attainment—but measuring violations

2000 to 2017: 19% decrease in Regional Average

Connecticut Department of Energy and Environmental Protection
Contributions- to CT

Note: This assumes projections are accurate. With each rendition of modeling to-date we find that it is under predicted once that year is measured.
Upwind contributions are a significant portion of the ozone problem for Connecticut and other states.
Air quality may appear to be pollutant specific; however, each strategy has multiple objectives.

For example:

- Ozone focused strategies also provides progress towards regional haze goals.
- 1-hour NO2 strategies also provides progress toward ozone goals.
- Regional haze strategies also provides progress toward ozone and particulate goals.
- Mobile strategies also provides progress towards ozone, particulate, and climate goals.
The 3 Month Outlook for Planning

Note that these two slides only account for existing standards

| Nov, 2018 | • Submit 2015 Ozone GN SIP  
|           | • Propose Emissions and NNSR Cert |
| Dec, 2019 | • Propose 2018 Regional Haze SIP  
|           | • [EPA Proposes Bump-Up for the 2008 Ozone NAAQS](https://www3.epa.gov/airquality/urbanair/sipstatus/reports/ct_areabypoll.html) |
| Jan, 2019 | • Evaluate Bump up and Submit Comments |
| Feb, 2019 | • Approx Submittal of Regional Haze SIP  
|           | • Approx Initiate Tri-State Planning Effort |

To track these efforts as requirements change and status are updated see: [https://www3.epa.gov/airquality/urbanair/sipstatus/reports/ct_areabypoll.html](https://www3.epa.gov/airquality/urbanair/sipstatus/reports/ct_areabypoll.html)

Connecticut Department of Energy and Environmental Protection
The 5-yr Outlook for Planning

Note that these two slides only account for existing standards

2019

• Approx RACT for 2015 NAAQS Planning
• EPA Proposes/Finalizes Bump-Up for the 2008 Ozone NAAQS

2020

• Initiate 2018 Regional Haze SIP- Lookback—Early timing will correlate with other State 2021 submittals.
• RACT SIP Submittal- (2008 NAAQS Serious & 2015 NAAQS)
• 2015 Ozone NAAQS MARGINAL Deadline (Greater CT)*
• Attainment Demonstrations for bump-up of 2008 NAAQS due.
• 2015 Ozone NAAQS Attainment Demonstrations

2021/22

• Approx RACT Implementation If Needed

2023

• Regional Haze Lookback
• PM2.5 2nd Maintenance Plan
• 2015 Ozone NAAQS Moderate Attainment Deadline (SW CT)*

*Measured attainment deadline. This varies from the regulatory deadline.
EPA is Aggressively Rolling Back Rules....

Many pending changes to federal rules and policy that will impact Connecticut SIP planning and/or air quality. For example:

- **CPP to ACE**
- NAAQS Revision (including the next *ozone review*)
- **SAFE**

Other potential impacts on SIP planning and Projections:

- Future NAAQS Reviews—Changes to Review Procedures may also impact planning.
- Incentives from other Agencies—Can alter our economic and thereby emissions and air quality projections
Summary

• Ozone is still primary focus

• Potential future actions could impact existing air quality goals and emissions targets.

• Transport remains a key element to the ozone and regional haze problem.

• Mobile sector efforts will continue to play critical role.
Questions?

Kate Knight
Kathleen.Knight@ct.gov