Air Quality Requirements for Transportation Projects

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Geo-Environmental
Outline

• Status of Oregon’s Air Quality
• What I can do for you?
• Regulations
• Air analysis scenarios
• Qualitative versus quantitative analyses
• Elements of air analysis process?
• Highlights
Pollutants of Concern -
- Fine particulate ($\text{PM}_{2.5}$),
- Air toxics
- Ground level ozone (a component of smog)
- Greenhouse gas emissions (40% from Transportation)

Most communities impacted by wildfires in 2017 & 2018 exceeded ozone standard.

Carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and $\text{PM}_{10}$ are far below the federal health standard and have been trending down for some time.
What can I do for you?

- Explain air quality regulations, guidance and models
- Tell you if you need an air quality analysis
- Review or prepare
  - consultant contracts
  - scoping
  - methodology and modeling
  - Air quality reports
  - permits
- Participate in interagency consultation
Transportation Air Quality Regulations

• Clean Air Act Amendments (CAAA 1990)
  – National Ambient Air Quality Standards (NAAQs)
  – Transportation Conformity Rule
    – (40CFR Part 93 & OAR 340-252)

• National Environmental Policy Act (NEPA)
  – FHWA Mobile Source Air Toxics (MSAT) Guidance (2016)
  – Greenhouse Gas Analysis

• DEQ & Lane Regional Air Protection Agency (LRAPA) Indirect Source Regulation (Title 20)
### Regulations

#### National Ambient Air Quality Standards

- **Clean Air Act** established air quality standards
- **Oregon mirrors these air standards**
- **No NAAQs for MSATs but Oregon has health benchmarks**

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Averaging Time</th>
<th>NAAQS</th>
<th>Oregon Concentrations</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Monoxide</td>
<td>8-hour</td>
<td>9 ppm</td>
<td>1.6 ppm</td>
<td>Portland</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>35 ppm</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>Calendar Quarter</td>
<td>0.15 µg/m³</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Ozone</td>
<td>8-hour</td>
<td>0.07 ppm</td>
<td><strong>0.072 ppm</strong></td>
<td><strong>Portland 2017</strong></td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>Annual Arithmetic Mean</td>
<td>0.053 ppm</td>
<td>0.012 ppm</td>
<td>Portland</td>
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<tr>
<td></td>
<td>1-hour</td>
<td>100 ppb</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>3-hour</td>
<td>0.50 ppm</td>
<td>0.004 ppm</td>
<td>Portland</td>
</tr>
<tr>
<td></td>
<td>1-hour</td>
<td>0.075 ppm</td>
<td>0.003 ppm</td>
<td>Portland</td>
</tr>
<tr>
<td>PM₁₀</td>
<td>24-hour Average</td>
<td>150 µg/m³</td>
<td>52 µg/m³</td>
<td>Eugene</td>
</tr>
<tr>
<td>PM₂.₅</td>
<td>Annual average</td>
<td>12 µg/m³</td>
<td>10.2 µg/m³</td>
<td>Medford</td>
</tr>
<tr>
<td></td>
<td>24 hour</td>
<td>35 µg/m³</td>
<td><strong>35-56 µg/m³</strong></td>
<td>Eugene, Oakridge, Lakeview, Prinville</td>
</tr>
</tbody>
</table>
## Regulations
### Oregon Nonattainment and Maintenance Areas

<table>
<thead>
<tr>
<th>Region 1</th>
<th>Region 2</th>
<th>Region 3</th>
<th>Region 4</th>
<th>Region 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attainment Area</td>
<td>Salem/Keizer (CO) SKATS</td>
<td>Medford (CO) RVCOG</td>
<td>Klamath Falls (CO) ODOT</td>
<td>La Grande (PM$_{10}$) ODOT</td>
</tr>
<tr>
<td>Region 2</td>
<td>Medford-Ashland (PM$_{10}$) RVCOG</td>
<td>Klamath Falls (PM$<em>{10}$/PM$</em>{2.5}$) ODOT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eugene-Springfield LCOG(PM$_{10}$)</td>
<td>Grants Pass (CO) MRMPO</td>
<td>Lakeview (PM$_{10}$) ODOT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oakridge (PM$<em>{10}$/PM$</em>{2.5}$) nonattainment</td>
<td>Grants Pass (PM$_{10}$) MRMPO</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Each area has a state implementation plan
  - mobile vehicle emission budget
  - Control measures
  - Conformity
Regulations
Nonattainment and Maintenance Areas

*Figures showing maps of Oregon Nonattainment Areas and Oregon Maintenance Areas with marked areas for particulate matter and other pollutants.*

Particulate maintenance areas are coarse particulate matter (PM10).
A Link between Transportation and Air Quality Planning
Types of Conformity Determinations

Regional Conformity Determinations
• RTP/TIP: Metropolitan Planning Organization
  – Approved by USDOT (FHWA/FTA) in consultation with EPA and other agencies.
• Rural Regional Conformity: ODOT

Project Level Conformity Determinations
• Project Sponsor is responsible to submit.
• Approved by USDOT (FHWA, FTA). However, EPA, DEQ and other agencies have opportunity to comment through the NEPA review process.

STIP submitted by ODOT
• Approved by FHWA, FTA and EPA.
• However, no separate emission analysis is needed.
Regulation
Projects Exempt from Project Level Conformity?

Exempt Projects (40 CFR 93.126; Table 2)

– Safety
  • Shoulder improvements
  • Railroad/highway crossing
  • Adding medians, fencing
– Air quality project
  • Bicycle and pedestrian facilities
  • Rideshare
– Mass Transit
  • Purchase of replacement buses
  • Bus shelters
  • Mass Transit
– Others
  • CNG fuel station
– Traffic signal synchronization projects (40 CFR 93.128)

Check out Air Quality Manual Appendix E for full list!

NO ANALYSIS REQUIRED!
Regulation
Projects Exempt from Regional Conformity?

Exempt Projects (40 CFR 93.127; Table 3)

- Intersection channelization projects;
- Intersection signalization projects at individual intersections;
- Interchange reconfiguration projects;
- Changes in vertical and horizontal alignment;
- Truck size and weight inspection stations; and
- Bus terminals and transfer points.

These projects need project level analysis. Check out Air Quality Manual Appendix E for full list!
Conformity Failure means Approval/Funding of projects can be denied.

Exempt projects can continue in conformity failure.
Regulation
NEPA - MSAT

• Pollutants that cause or may cause cancer
  Benzene, formaldehyde, acrolein, etc.

• To date, no NAAQs for MSATs

• Types of MSAT Analysis
  – Applies in all areas
    • Exempt (similar list to conformity) no action
    • Low potential (most projects) qualitative analysis
    • High potential (few projects) quantitative analysis 140K+
      e.g. new trucking facility or railyard near high volume
      freeway
Regulation
DEQ or Lane Regional Air Protection Agency (LRAPA)
Indirect Source Regulations (OAR 340-254 or Title 20)

• Indirect Source Permits may be required for construction of new facilities or modification to existing facilities

• Issued by DEQ or LRAPA

• They are infrequent but can occur (Beltline 2005)

• Examples of indirect sources
  – Highways and arterial roads
  – Parking facilities
  – Retail, commercial and industrial facilities
Is Air Quality Analysis Needed?

- Is the project federally funded? (conformity or NEPA)
- Is the project in nonattainment or maintenance area?
- If yes, what is the pollutant of concern? (conformity)
- What type of project is it? (exempt/non exempt or requiring indirect source permit)
- Does the project involve nonroad sources (general conformity)
- Are traffic volumes above the threshold? (quantitative vs qualitative)
- Is project near sensitive populations?
- What is the NEPA classification? (CE, EA & EIS)
Is Air Quality Analysis Needed?
Scenario 1- Conformity (CO, PM10 & PM2.5)

1. Uses federal funding or has federal nexus
2. Located in nonattainment and maintenance areas
3. Not on exempt list for conformity (e.g. of nonexempt-new signal, channelization, new thru lanes)
4. In CO area - for intersections build Level of Service is D, E or F
5. In PM10 or PM2.5 area - added thru lane, interchange reconfiguration.

***Conformity applies - requires hot spot analysis***
Is Air Quality Analysis Needed?
Scenario 2- NEPA: MSATs

1. Uses federal funding or has federal nexus
2. All locations. (attainment, nonattainment and maintenance)
3. Not on exempt list for conformity (e.g. new interchange, new diesel bus terminal, new thru lanes)
4. High traffic volumes 140,000+, 8% diesel & close to sensitive populations
5. Is project EA or EIS?

***Note other non-exempt project close to sensitive populations may require qualitative MSAT memorandum.
Is Air Quality Analysis Needed?
Scenario 3- NEPA: Greenhouse Gases

1. Uses federal funding or has federal nexus
2. All locations. (attainment, nonattainment and maintenance)
3. EIS project requires GHG analysis (operation, construction maintenance and emissions prior to vehicle purchase)
4. Project team decision for EA (Conducted for Rose Quarter Project)

NOT REQUIRED FOR CATEGORICAL EXCLUSION PROJECT
Is Air Quality Analysis Needed?
Scenario 4: Conformity: Outliers

For project in nonattainment of maintenance areas:

1. **Construction activities** occur at the same site for more than five years.
   - Consider construction emissions under transportation conformity

2. **Non-highway projects** like Rail (Oregon Passenger Rail)
   - Consider emissions under general conformity

3. **Regionally significant project** regardless of funding
   - Include in conformity analysis
Types of Air Quality Analysis
Qualitative or Quantitative Hot Spot Analysis?

**CO**
- If the LOS under build - A, B, or C (qualitative)
- If LOS under build - D, E or F (quantitative)

**PM10/ PM2.5** - Obtain daily traffic volumes, % diesel.
- Qualitative summary of traffic if <125k ADT
- Quantitative - if 125K and up, quantitative and 8% diesel and up. Initiate interagency consultation

**MSAT** - Obtain AADT and % diesel
- Qualitative if < 140K ADT and < 8% diesel
- Quantitative if 140K or higher ADT & 8% diesel and near homes if EA or EIS.
Elements of Air Quality Analysis

- Contracting - Statement of Work (SOW) (ODOT webpage)
- Traffic Data – obtain early (ODOT or consultants)
- Methodology
  - Interagency consultation
- Air Analysis
  - Qualitative – compare traffic data between alternative
  - Quantitative – (EPA emission and dispersion models)
- Construction (qualitative, mitigation in Standards Specs)
- Documentation (outlines in Manual and SOW)
- Review (ODOTAir Quality Specialist)
Elements of Air Quality Analysis
Are they ever Readdressed?

Yes, air quality analysis must be readdressed if:

- There is a significant change in design, concept or scope

- More than three years have passed since the most recent major step to advance a project. Example: NEPA process completion, start of final design, acquisition of significant portion of right-of-way
Highlights

• Coordinate with ODOT Air Quality Specialists

• Location, funding, project type and NEPA classification (Chapter 3 and 4)

• Exempt Project Lists (conformity & MSATs) (Appendix E)

• Air Quality Analysis types (project level conformity, MSATs, GHGs, construction, ISCP, general conformity)

• Traffic data can affect schedule (Appendix C)

• Check out ODOT Air Quality Webpage for more details
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https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Air.aspx