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AIR QUALITY MANUAL

PROJECT LEVEL

GEO-ENVIRONMENTAL

OREGON DEPARTMENT OF TRANSPORTATION

TABLE OF CONTENTS

SUMMARY OF CHANGES

Chapter	Summary of changes made	Date revised

1 INTRODUCTION

The Oregon Department of Transportation's Air Quality Manual is a technical resource for air analysts, on federal and state regulations and guidance, such as the National Environment Policy Act (NEPA), the Clean Air Act (CAA), and the Conformity Rule as they apply to transportation projects.

Air quality can be affected by construction or modification activities or of bridges and highways, and can include a wide variety of construction or demolition activities. The manual includes scoping, air quality analysis and documentation procedures for ODOT projects. These procedures apply to projects that receive federal funding or require federal approval. There are scenarios in which project methodology and procedures may vary with appropriate consultation with ODOT and agency partners as needed. In addition, the Indirect Source Construction Permitting (ISCP) regulations, Mitigation and the Congestion Mitigation Air Quality Program are discussed. The manual is focused on project-level analysis for highway projects.

This Air Quality Manual supersedes the ODOT Air Quality Manual, dated September 2008. Since, 2008 there have been a number of federal and state regulatory updates, which include changes to the National Ambient Air Quality Standards (NAAQs), the Transportation Conformity Rule, the United States Environmental Protection Agency's on-road emission model, new nonattainment area designations, reclassifications of both nonattainment and maintenance areas to limited maintenance areas and the conclusion of 20 years of maintenance. These new guidelines are in compliance with Title 23 CFR Part 771 and reflect recent procedures regarding conformity as promulgated by EPA as of April 2012 (Final Conformity Rule 40 CFR, Parts 51 and 93). ODOT's policy is to follow regulations issued by EPA, the Federal Highway Administration and the Oregon Department of Environmental Quality with relation to Project Level Air Quality analysis for highway projects.

1.1 ORGANIZATION OF THE MANUAL

The Air Manual is organized as follows:

- Chapter 2 – Air Quality Regulations: Provides an overview of federal and state air quality regulations that apply to transportation projects and pollutants.
- Chapter 3 – Oregon Nonattainment and Maintenance areas: Provides summaries of pertinent information related to each nonattainment and maintenance area in Oregon.
- Chapter 4 –Analysis Selection: Provides an overview of what types of air analyses are conducted for transportation projects in Oregon and when an analysis is necessary.
- Chapter 5 – Air Analysis Methodology: Provides information and methodologies for the following categories.
    - Attainment Areas
    - Mobile Source Air Toxics – this is driven by NEPA disclosure requirements
        - Exempt
        - Qualitative
        - Quantitative
    - Greenhouse Gas Emissions– this is driven by NEPA disclosure requirements
    - Project level conformity
        - Exempt Projects
        - Regional conformity Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP)
        - Carbon Monoxide (CO) project level conformity

        - Particulate Matter (PM_{10} and $PM_{2.5}$) project level conformity
    - ISCP – this is driven by state and local air quality regulations
- Chapter 6 – Construction Mitigation/ Specifications: Reviews construction mitigation and any applications to specifications for air quality.
- Chapter 7 – Report Documentation: Discusses NEPA documentation and the report format for qualitative and quantitative air quality reports.

1.2 SUPPORTING AGENCIES AND ORGANIZATION

Many agencies and organizations are involved in the transportation conformity processes associated with transportation projects. Oregon Administrative Rule (OAR) 340-252 outlines the procedures for interagency consultation with respect to the conformity of transportation plans, programs and projects which are funded or approved by US DOT. The following list summarizes some of the main responsibilities of members of the interagency consultation group. For a complete list of responsibilities see OAR 340-252-0060[1].

- ODOT – ODOT Air Quality Specialists in the Geo-Environmental Section are involved with the administration and review of project-level analysis in nonattainment, maintenance and attainment area for NEPA and Transportation Conformity. ODOT initiates interagency consultation with FHWA, Federal Transit Administration (FTA), EPA, DEQ and Lane Regional Air Protection Agency (LRAPA) for projects, rural regional conformity and State Transportation Improvement Program (STIP) reviews as needed. ODOT's Transportation Planning Analysis Unit (TPAU) and regional traffic engineers coordinate traffic data needs for Metropolitan Planning Organizations (MPOs), local agencies and projects teams. ODOT distributes draft and final project environmental documents prepared by ODOT to other agencies.
- FHWA and FTA are responsible for assuring timely action on final findings of conformity after consultation with other agencies. FHWA and FTA coordinate the federal review process, and facilitate additional consultation as necessary. If adverse comments are received, it provides technical guidance and advice on conformity issues, reviews air quality documentation and issues conformity determinations.
- US EPA – EPA promulgates conformity regulations, approves the state implementation plans (SIPs) and motor vehicle emission budgets (MVEBs), provides guidance on conformity criteria and procedures, reviews documentation, and makes a formal recommendation to FHWA for conformity determinations.
- Region 10 EPA – Coordinates development of MVEBs and SIPS, reviews project level and regional conformity documentation and provides guidance on conformity criteria and procedures to agencies in interagency consultation.
- Oregon DEQ and LRAPA – Are responsible for developing emission inventories, emission budgets, attainment and maintenance demonstrations, control strategy implementation plan revisions, updating motor vehicle emission factors and transportation control measures.
- MPOs – Are responsible for developing transportation plans, transportation improvement programs (TIPs), and making corresponding conformity determinations. They are also responsible for making conformity determinations for the entire nonattainment or maintenance area including areas beyond boundaries of the MPO where no agreement is in effect. They also monitor regionally significant projects, develop and evaluate Transportation Control Measures (TCMS) in nonattainment and/or

[1] https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=75431

maintenance areas, provide technical and policy input on emission budgets, perform transportation and regional emission modeling, and document timely implementation of TCMs.

1.3 ODOT REVIEW AND CONTACT INFORMATION

An electronic copy of the air quality report(s) and modeling files (if applicable) must be provided to ODOT's Geo-Environmental Section and the Regional Office for preliminary and final review. For all quantitative analyses electronic files must be submitted for emission and dispersion model input and output files, databases, and spreadsheets used for model input, traffic data and design data. The explanation of each of the modeling file names must be included in the accompanying report appendices and within the electronic submission. The agency/consultant performing the analyses must also retain copies of the plans, traffic, air quality models and all other related information and documentation in accordance with the contract.

Any questions or comments about this Air Quality Manual should be directed to the Air Quality Program Coordinator at Oregon Department of Transportation, Geo- Environmental Section. Go to ODOT Air Quality Web page for contact information[2].

1.4 CONSULTANT AND ANALYST QUALIFICATIONS

Air quality services must be executed by an Air Quality Specialist meeting the qualifications as stated or referenced in the project scope of work. The Air Quality Analyst must have at a minimum a bachelor's degree in environmental engineering, atmospheric sciences, transportation engineering or a closely related field or be a registered professional engineer in civil, environmental, or closely related field. In addition, the analyst must have a minimum of four years of experience in research, analysis, and performing complex air quality modeling for transportation projects. The reviewer must have recent experience of conducting and reviewing air quality analyses. If the project work involves an Environmental Assessment (EA) or higher, the analyst and reviewer must have experience working on transportation projects requiring NEPA documentation at the level of an EA or higher.

Additionally, the analyst and reviewer:

- Must have attended a formal classroom training for USEPA Motor Vehicle Emission Simulator ("MOVES") with project level and county level analysis (no later than MOVES2010) with EPA and must have used the MOVES model at the analysis level of project or county on multiple projects within the past 5 years or have extensive relevant experience in quantitative MSAT, PM_{10} or $PM_{2.5}$ MOVES analyses. The analyst must have formal training or mentorship and prior experience on the dispersion models used (CAL3QHC, AERMOD or other).
- It is preferred that the consultant have training in the most recent version of MOVES.

The analyst and reviewers both should have extensive knowledge of the NAAQS, transportation air dispersion models, various air pollutants and air toxics, and experience in both qualitative and quantitative (mesoscale and microscale) analysis. For example for conformity, the consultant should understand applicability, pollutants of concern, frequency, consultation, criteria, procedures and emissions related to transportation conformity.

[2] http://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Air.aspx

- The analyst must also have a thorough understanding of the Transportation Conformity Rule OAR 340-252-0010 through 0230 and 40 CFR 93.
- The analyst and reviewer must include a resume (2 pages or less), which includes all applicable training and a complete list of transportation air analyses performed within past the 5 years (including clients) for review. Training certificates may be requested.

2 REGULATIONS AND GUIDANCE

This section provides an overview of regulations and guidance applicable to project level air quality analysis for transportation projects. There are a number of federal and state regulations and programs that apply to the air quality analysis of transportation projects and programs. These include NEPA, the CAA, the Conformity Rule, and the CMAQ Program. Each of these is discussed below.

2.1 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

National Environmental Policy Act (NEPA) requires federal agencies to consider environmental impacts before taking actions that could significantly affect the natural and human environment (23 CFR part 771). As interpreted by the Council on Environmental Quality (CEQ), NEPA requires that "reasonably foreseeable" direct, indirect, and cumulative effects of a proposed action be considered in the decision-making process. The term *effect includes* "ecological aesthetic, historic, cultural, economic, social, or health" effects. Consistent with the CEQ regulations, FHWA's technical advisory[3] on environmental documents requires consideration of air quality effects as part of NEPA compliance.

Project level air quality analysis is performed as part of the NEPA process to identify project-related impacts, and to evaluate if mitigation is possible and if it is appropriate. For actions subject to NEPA, but not transportation conformity, FHWA has considerable discretion to select an air quality analysis approach that is most appropriate for the circumstances of each project. NEPA drives some air quality analysis requirements for environmental documents that are not specifically required by regulation, such as including an analysis of MSATs. FHWA has an interim guidance for addressing MSATs[4]. The evaluation of greenhouse gas emissions and climate change is also being driven by NEPA.

2.1.1 MOBILE SOURCE AIR TOXICS

Toxic air pollutants (also known as hazardous air pollutants) are those that are known to cause or suspected of causing cancer or other serious health effects. The Clean Air Act Amendments of 1990 listed 188 hazardous air pollutants, and addressed the need to control toxic emissions from transportation. EPA last updated the Control of Hazardous Air Pollutant Mobile Source Rule in 2007 with revisions published October 16, 2008. (40 CFR 80 and 86) (72 FR 8428) EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA). These MSATs are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA rules.

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[3] FHWA, Technical Advisory T6640.8A, "Guidance for Preparing and Processing Environmental and Section 4(f) Documents" (October 30, 1987)

[4] https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/

MSAT emissions will dramatically decrease in the future through cleaner fuels and cleaner engines. In the design future year, emissions from all projects are expected to decrease due to mobile sources regulations, such as the reformulated gasoline program (RFG), the national low emission vehicle standards (NLEV), Tier 2 motor vehicle emission standard and gasoline sulfur control requirements and proposed heavy duty engine and vehicle standards. Additional federal standards that are expected to impact MSAT emissions include the Tier 3 emissions and fuel standards which will be phased in from 2017 to 2025 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344). A mid-term revision was made to the GHG standard for year 2022-2025 by EPA that was published 4/13/18. (Federal Register Volume 83, number 72, April 13, 2018, page 16077) Oregon State is one of the 17 states that have files a lawsuit against the administration over this revised rule.

FHWA issued updated interim guidance for MSAT in October 2016 and also released a document titled, "Frequently Asked Questions for Quantitative MSAT analysis," in November 2016. The guidance document is pending changes. These documents provide templates for documenting MSAT analysis and guidance on how to conduct quantitative analyses in NEPA documents.

Since MSATs have neither standards like NAAQs nor conformity requirements, MSATs can only be discussed and evaluated in comparative terms. For example, a comparison of MSAT emissions between different project design alternatives can be conducted. The results are usually expressed in terms of pounds per day or tons per year for each alternative and each MSAT. MSAT impacts from alternatives can also be evaluated qualitatively. FHWA developed a tiered approach for MSAT analysis for projects which includes three categories: "exempt," "low potential," and "higher potential" to have meaningful MSAT emissions.

The criteria for the MSAT categories will be discussed in more detail in Section 2.1.1.2. The MSAT air quality analysis methodology is included in Section 5.2 along with MSAT prototype language for NEPA documents. Additionally, FHWA guidance indicates that "Although not required, projects with high potential for litigation on air toxics issues may also benefit from a more rigorous quantitative analysis to enhance their defensibility in court.

2.1.1.1 MSAT POLLUTANT DESCRIPTIONS

1. The EPA is in the process of assessing the risks of various kinds of exposures to MSATs. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at this link. The following toxicity information for the nine prioritized MSATs was taken from the IRIS database Weight of Evidence Characterization summaries or other sources. Acetaldehyde is a probable human carcinogen based on increased incidence of nasal and laryngeal tumors in rats and hamsters after inhalation exposure.
2. Benzene is characterized as a known human carcinogen.
3. Acrolein's potential carcinogenicity cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
4. 1,3-butadiene is characterized as carcinogenic to humans by inhalation.
5. Formaldehyde is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
6. Ethylbenzene is national cancer risk contributor.(NATA 2011 summary) The International Agency for Research on Cancer lists ethylbenzene as possibly carcinogenic.

7. Naphthalene is a possible human carcinogen based on inadequate data of carcinogenicity in humans exposed via oral and inhalation routes and limited evidence of carcinogenicity in animals via the inhalation route.
8. Diesel exhaust (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust is the combination of diesel particulate matter and diesel exhaust organic gases. Diesel exhaust also represents chronic respiratory effects, possibly the primary noncancerous hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.
9. Polycyclic organic matter defines a broad class of compounds that generally includes all organics structures containing three or more fused aromatic rings. The database has no specific listing for the broad class.

2.1.1.2 MOBILE SOURCE AIR TOXICS CRITERIA

The FHWA developed a tiered approach for analyzing MSAT in NEPA documents which include three categories. Please note that changes to the MSAT national guidance are pending. Once the updated MSAT guidance is published, any changes to the "2018 ODOT Manual" will be posted separately on ODOT Air Quality web page[5]. The categories are described here:

Exempt From MSAT Analysis

Projects without potential for meaningful MSAT effects are exempt and do not need to be analyzed. Additional information and documentation are given in Section 5.2.1 and 7.4.1. These projects include:

- Project qualifying as a CE under 23 CFR 771.117(c),
- Project exempt under the clean air act conformity rule under 40 CFR 93.126 and
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

Qualitative MSAT Analysis

Projects with a low potential MSAT effects require a qualitative analysis and these include projects adding capacity, adding new interchanges, relocating lanes closer to sensitive area or expansion to intermodal centers which have design year traffic AADT below 140,000 vehicles. For these projects, analysts should prepare a qualitative MSAT analysis per the FHWA MSAT Technical Interim Guidance using project traffic data. Additional information and documentation are given in Section 5.2.2 and 7.4.2.

Quantitative MSAT Analysis

Projects with a higher potential MSAT effects require a quantitative analysis to differentiate between alternatives. These types of projects have a design year AADT greater than 140,000. Additional information and documentation are given in Section 5.2.3 and 7.4.3. A quantitative MSAT analysis is detailed and time intensive. These projects are typically defined as projects that:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location; or

[5] https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Air.aspx

- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000, or greater, by the design year; and
- Also be located in proximity to populated areas, or in rural areas in proximity to concentrations of vulnerable populations (e.g., schools, nursing homes, hospitals).

2.1.2 GREENHOUSE GAS EMISSIONS AND CLIMATE CHANGE

Human activity is changing the earth's climate by causing the buildup of heat-trapping greenhouse gas emissions through the burning of fossil fuels and other human activities. Carbon dioxide (CO_2) is the largest component of human produced emissions; other prominent emissions include methane (CH_4), nitrous oxide (N_2O) and hydrofluorocarbons (HFCs). These emissions are different from criteria air pollutants since their effects in the atmosphere are global rather than localized and since they remain in the atmosphere for decades to centuries, depending on the species.

Greenhouse gas emissions have accumulated rapidly as the world has industrialized, with concentrations of atmospheric CO_2 increasing form roughly 300 parts per million (PPM) in 1900 to over 400 parts per million today. Over this timeframe, global average temperatures have increased by roughly 1.5 degrees Fahrenheit (1 deg. Celsius), the most rapid temperature increases occurring over the past 50 years. Scientists have warned that significant and potentially dangerous shifts in climate and weather are possible without substantial reductions in greenhouse gas emissions. They commonly have cited 2 degrees Celsius -- 1 degree C beyond warming that's already occurred -- as the total amount of warming the earth can tolerate without serious and potentially irreversible climate effects. For warming to be limited to this level, atmospheric concentrations of CO_2 would need to stabilize at a maximum of 450 ppm, requiring annual global emissions to be reduced 40-70 percent below 2010 levels by 2050.

ODOT is working to reduce the amount of greenhouse gases emitted through our operation and management of the state's transportation system. ODOT is collaborating with others to develop innovative responses, minimize energy use, increase fuel efficiency and use of low carbon fuels, and support multi-modal transportation systems. ODOT is also planning for the impacts of climate change on the transportation system (known as adaptation) and increasing transportation resilience through research, pilot studies, and strategic projects.

At this time, there are no national standards for GHGs, nor has the EPA established criteria or thresholds for ambient GHG emission pursuant to its authority to establish motor vehicle emission standards for CO_2 under the CAA. Additionally, FHWA has not issued guidance addressing GHG emissions or Climate Change in NEPA reviews. In Oregon, there are many strategies, policies, initiatives and rules in place at the state, MPO, county, and local agency level to aggressively reduce greenhouse gas emissions from various economic sectors. One GHG initiative is the 2013 Oregon Sustainable Transportation Initiative (OSTI), which is an integrated statewide effort to reduce greenhouse gas emissions from transportation while creating healthier and more livable communities. It builds on the Statewide Transportation Strategy, adopted by the Oregon Transportation Commission in 2018, which set a course for reducing GHG emissions. OSTI produced a document summarizing Oregon GHG Analysis tools that was last updated in 2018 that summarizes tools at various planning stages. The field of climate change and GHGs is evolving and analysts should work with ODOT and FHWA to use the most recent tools and methodologies available as well as to reference the most recent legislation, polices and guidance available.

At the strategic planning stage, OSTI staff works with local communities on long-range scenario planning efforts to assess local plans' GHG emissions relative to (OAR 660-044). Outside of the Portland Metro region, these GHG reduction targets are voluntary. It is important to note that there is a difference between GHGs and other pollutants in that the impact of GHGs results from the cumulative emissions in the atmosphere and not episodic or localized concentrations as criteria pollutants that directly impact human health. As a result, VisionEval tools, with detailed household vehicles but no roadway network, are sufficient for assessing GHG emissions at a strategic planning level.

At the project level a more detailed treatment of GHG may be desired, reflecting the project roadway network changes. ODOT's approach to GHGs in the NEPA process is divided by NEPA category. In some cases, it may be prudent to include discussion of future climate events for all projects. For example, in areas vulnerable to sea level rise impacts, NEPA documenation could reference relevant data such as vulnerability assessment maps.

2.1.2.1 ENVIRONMENTAL IMPACT STATEMENTS

For EIS projects, ODOT has an EIS annotated outline that was prepared in partnership with FHWA in 2010. Although the document is dated, it provides example language to address GHG and climate change qualitatively that can be updated with more current data by referencing ODOT's "Transportation and Climate Change[1]" web page. In addition to this discussion, the project's GHG emissions should be calculated quantitatively and compared across all alternatives (including no-build). In addition a comparison should be made to GHG emission associated with current conditions. For additional context, it may be useful to include emissions at the regional scale. It is important to note that there is a difference between an impact from GHGs relative to other pollutants in the sense that a GHGs impact is based on cumulative emissions, not episodic or localized concentrations. Three categories of GHG emissions should be calculated: operational, construction and maintenance emissions. Section 5.3 discusses the methodology that should be used to calculate GHG emissions.

In addition to the calculation of GHG emissions, all projects requiring an EIS should address, as appropriate, potential future climate change impacts on transportation infrastructure, potential future climate change effects to local ecosystems, and whether or not project GHG emissions can be or will be mitigated. Additional information on these topics is under development and no further details are given in this manual. However, additional ODOT specific data may be available on the ODOT "Transportation and Climate Change" web page.

2.1.2.2 ENVIRONMENTAL ASSESSMENTS

For EA projects, the analysis should assess GHG emissions and climate change considerations to the degree to which those topics are relevant to the project's potential to cause NEPA-significant impacts. This analysis could involve a quantitative analysis, a qualitative analysis, or in some cases, no analysis. GHG emissions analysis may be considered if requested by a co-project sponsor, commenting agency, or a compelling stakeholder. The EA project team should decide (with input from FHWA and ODOT) whether it makes sense to address GHG emissions disclosure, per this type of request. At this time, there is no regulatory or practical guidance for what might constitute NEPA-significant GHG emissions from a transportation project.

[1] http://www.oregon.gov/ODOT/Programs/Pages/Climate-Change.aspx

2.1.2.3 CATEGORICAL EXCLUSIONS AND PROGRAMMATIC CATEGORICAL EXCLUSIONS

Generally, for CEs and PCEs, no analysis is required for GHG emissions or future climate impacts (notwithstanding what the designers/engineers may be including in their analysis and reports).

2.2 CLEAN AIR ACT AND AMENDMENTS

Since the Clean Air Act was adopted in 1963, it has been amended three times; in 1970, 1977, and 1990. The CAA and its amendments form the basis for a broad range of regulations that control allowable emissions and concentrations of air pollutants in the environment. Some of these transportation specific regulations that were established include:

- More stringent emission standards for new vehicles (2.2.1)
- Air quality standards (2.2.2)
- Air quality nonattainment areas (2.2.3)
- State Implementation Plans (SIP) (2.2.4)
- Transportation Conformity - Air quality analysis requirements for transportation plans, programs and projects (2.3)

The CAAA also required that once the NAAQS have been met in nonattainment areas, they must be maintained and not allowed to deteriorate over time. Both the CAAA and NEPA require that air quality be considered in the preparation of environmental documents for any proposed project. Conformity under the CAAA requires specific analyses on a regional and local basis. NEPA requires project effects to be disclosed using the best information and methods available.

2.2.1 CONTROL OF EMISSIONS FROM NEW AND IN-USE HIGHWAY VEHICLES AND ENGINES (40 CFR 86)

Because of the recognized severity of the contribution of mobile sources to air quality problems, the CAA specifically required a reduction in mobile source pollution. A major portion of the mobile source reduction was to come from controls applied directly to vehicles and engines at the point of manufacture. Examples of these are:

- Exhaust emission controls such as the catalytic converter, fuel-injected engines, three-way catalyst, and reintroducing portions of exhaust gas into the combustion zone
- Evaporative emission controls, for example recycling vaporized fuel
- Cold start emission controls, like electrically heated check mechanisms and electrically fuel-injected engines
- Crankcase emission controls, for instance providing for returning the blow-by gases to the air intake system of the engine

Starting in the early 1970s, EPA promulgated numerous regulations to control air pollutant emissions from motor vehicles. In 2014, EPA finalized the Tier 3 standards for gasoline and the vehicles passenger cars, light-duty trucks, medium-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles. Starting in 2017, Tier 3 standards set a new vehicle emission standard and lower the sulfur content of gasoline. Although, these standards will not apply directly to projects, they do apply to all vehicles on the highway system. Additional information on timeline of major accomplishments in transportation is available

on EPA web page[6]. These regulatory controls are responsible for substantial reductions in vehicle emissions since the 1970s, as well as additional vehicle emissions reductions projected over the next 25 to 30 years.

2.2.2 NATIONAL AMBIENT AIR QUALITY STANDARDS AND STATE AMBIENT AIR QUALITY STANDARDS (40 CFR 50)

In an effort to develop air quality criteria to protect against potential adverse effects, the CAA of 1970 established the NAAQS. The NAAQS apply to six criteria air pollutants: carbon monoxide, sulfur dioxide, ozone, particulate matter (PM_{10} and $PM_{2.5}$), nitrogen dioxide, and lead. These standards are divided into two subsets of standards: primary and secondary (40 CFR 50). Primary standards are designed to protect human health, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards are established to protect human welfare from such effects as visibility reduction, soiling, material damage, and nuisance.

DEQ has also established State Ambient Air Quality Standards (SAAQS) that are at least as stringent as the EPA standards (OAR 340-202-0050 through -0130). SO_2 is the only pollutant with a secondary standard that varies from the primary standard. The NAAQS and SAAQS standards are used in evaluating the effects of transportation projects. The NAAQS and SAAQS primary standards are summarized in Table A-1 of Appendix A. Exceedance of the NAAQS are judged to be harmful to human health and welfare. Appendix A contains Table A-2 with summaries health effects regarding all NAAQs.

Web link to EPA's latest NAAQs:

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

The health effects of the NAAQS pollutants of concern for transportation projects in Oregon are summarized in on EPA's website.

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

2.2.3 AIR QUALITY NONATTAINMENT, MAINTENANCE AND LIMITED MAINTENANCE AREAS

Areas where any of the air quality standards are exceeded are designated as nonattainment areas for the specific pollutant. For such areas, control strategies must be developed, which will result in the reduction of the identified pollutant so that attainment will be achieved and maintained. These control strategies are documented in the SIP. Areas that were once in nonattainment but have since returned to attainment status are referred to as maintenance areas. After an area has been re-designated by EPA from a nonattainment area to an attainment area, it is considered to be a maintenance area for 20 years. The current nonattainment and maintenance areas in Oregon are discussed in Section 3.0 of this manual.

In Oregon, there are a number of areas with a limited maintenance plan in place of a regular maintenance plan. The conformity regulation of 40 CFR 93.101 defines a "limited maintenance plan" as follows: limited maintenance plan is a maintenance plan that EPA has determined meets EPA's limited maintenance plan policy criteria for a given NAAQS and pollutant". In order to qualify for a limited maintenance plan, an area must have a design value that is significantly below a given NAAQS. A design value[7] is an EPA assigned

[6] https://www.epa.gov/air-pollution-transportation/timeline-major-accomplishments-transportation-air-pollution-and-climate

[7] https://www.epa.gov/air-trends/air-quality-design-values

number that describes the air quality status of an area. The area must not be expected to result in a violation of the NAAQs, from any level of future motor vehicle emissions growth.

Oregon currently has limited maintenance plans for Salem, Medford, and Grants Pass for CO. Oregon also has a limited maintenance plan for Eugene-Springfield and Grants Pass for PM_{10}. Areas with adequate or approved limited maintenance plans for a NAAQS do not have to satisfy the requirement for a regional emissions analysis for that NAAQS. However, a conformity determination that meets the other applicable criteria in 40 CFR 93.109(b) for transportation plans, TIPs, and non-exempt projects would continue to be required, including hot-spot requirements for some projects in CO, PM_{10} and $PM_{2.5}$ areas.

2.2.4 STATE IMPLEMENTATION PLANS

The State Implementation Plans is defined as a document specifying measures to be used for achieving the applicable NAAQs in nonattainment area. A SIP is also required for maintenance areas to demonstrate how the state will continue to maintain compliance with the NAAQs for a 20 year period. State Implementation Plans were mandated in the 1970 CAAA for areas which did not meet the NAAQS. A SIP is prepared for each pollutant for which the area is in nonattainment or maintenance. The state air agency is responsible for preparing the SIP, and each SIP must be approved by EPA.

The SIP's major transportation components are:

- Mobile Vehicle Emission Budget (in some nonattainment and maintenance areas)
- Control Measures (CMs) and Transportation Control Measures (TCMs)
- Conformity

2.2.4.1 MOBILE VEHICLE EMISSION BUDGET

A SIP emission budget limits emissions as needed to meet and maintain attainment status in nonattainment and maintenance areas. There are separate emission budgets for different categories of sources, including stationary, area, and both on-road and off-road mobile sources. The on-road mobile vehicle emission budget is meant to be a ceiling for emissions from motor vehicles on the road system. The 1990 CAAA required that emissions budgets be based on the most current land use planning assumptions, transportation and air quality models.

2.2.4.2 CONTROL MEASURES

Control Measures (CMs) are programs and projects which result in emission reductions. These can be identified in the SIPs. Examples of CMs are woodstove burning restrictions, limits on road sanding in PM_{10} nonattainment areas, and inspection and maintenance programs in CO or ozone areas.

There are CMs that are specific to transportation, referred to as TCMs. TCMs reduce the use or reliance of the public on highway facilities. Any program which reduces vehicle miles traveled (VMT) could be considered a TCM. Examples of programs that reduce VMT are rideshare, mass transit, bicycle, and pedestrian facilities. Only Portland Metro CO Maintenance Plan includes TCMs. (See Section 3.1 for more details.)

2.3 STATE AND FEDERAL TRANSPORTATION CONFORMITY RULES

In 1970, the CAAA conformity requirements were introduced to require plans and programs to be in conformity with the SIP. In 1990, the CAAA definition of conformity was revised so that transportation projects, plans and programs must now conform to the purpose of a SIP for the attainment of air quality standards. Criteria and procedures for transportation conformity are regulated under section 176(c) of the CAA. Implementing regulations are under 40 CFR 93 and 40 CFR 51.390 at the federal level and OAR 340-252 at the state level. In 2010, the rule was amended to include a strengthened 24-hour $PM_{2.5}$ national ambient air quality standard while revoking the annual PM_{10} NAAQs. The 2012 update to the federal transportation conformity regulations restructured several sections of the rule and extended the grace period for Motor Vehicle Emission Simulator model for regional conformity determinations. The federal and state conformity regulations can be found at the following links:

http://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title40/40cfr93_main_02.tpl

https://www.oregon.gov/deq/Rulemaking%20Docs/div340-252table.pdf

The purpose of transportation conformity is to integrate air quality planning and transportation planning in nonattainment and maintenance areas for one or more transportation related pollutants. It ensures that transportation projects and their associated emissions are consistent with air quality nonattainment and maintenance plans (SIPs). The conformity rule applies to:

- Regional Transportation Plans
- Transportation Improvement Program
- Transportation projects that receive funding or require approval from FHWA or FTA
- Regionally significant nonfederal projects that are sponsored by recipients of FHWA or FTA funds, regardless of whether federal funds were actually used for the project in question

Under 40 CFR 93.101, *regionally significant project* means a transportation project (other than an exempt project) that is on a facility which serves regional transportation needs, such as access to and from the area outside of the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, etc., or transportation terminals as well as most terminals themselves. It would normally be included in the modeling of a metropolitan area's transportation network, including at a minimum all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

The transportation conformity requirements are only met if the plans, programs, and projects to be funded obtain a conformity determination before adopting, accepting, approving, or funding an activity or project located in a nonattainment or maintenance area. The CAA defines a conforming transportation plan, program or project as one that does not:

- Cause or contribute to a new violation of any air quality standards in any area
- Increase the severity or frequency of an existing violation of any standard in any area
- Delay timely attainment of any standard, required interim emission reductions, or milestones in any area

Projects funded or approved by FHWA and FTA must satisfy the transportation conformity requirements.

The down side of not considering air quality is a loss of federal funding and the potential for future violations of the NAAQS which would place further emission control requirements on the nonattainment area or cause a maintenance area to revert to nonattainment status.

2.3.1 REGIONAL CONFORMITY

The CAAA requires that upon approval by EPA of a Control Strategy SIP containing an emission budget, that the conformity of a metropolitan RTP and TIP are determined by comparing the emissions expected from full implementation of the RTP and TIP to the emission budgets established in the SIP. A new conformity determination is required within one year of an area being designated nonattainment for a new or revised NAAQS; after that, a conformity determination is required each time a RTP or TIP is adopted, updated or amended with nonexempt projects by the MPO or at least every four years. The MPO makes the initial conformity determination and the final determination is made jointly by FHWA and FTA. The key elements required in making a conformity determination for a RTP and TIP are:

- Identification and implementation of regional transportation needs
- Regional emissions analysis showing that the total emissions projected for the metropolitan area, assuming implementation of all projects in the plan or TIP, conform to the emissions levels allowed for that pollutant in the SIP.
- Use of the latest planning assumptions in effect at the time the conformity analysis begins
- Use of the latest emissions model specified by EPA for use in conformity analyses
- Fiscal constraint on the same projects that were included in the fiscally constrained portion of the MPO's RTP or TIP
- Inclusion of and commitment to timely implementation of TCMs
- Demonstration that plan and program funding is reasonably available ("fiscally constrained")
- Interagency Consultation and public involvement

Plans and Programs are found to be in conformity if:

- The build emissions are lower than the emissions budget
- There is timely implementation of TCMs

Note: For projects in areas where a SIP emissions budget is required but has not been established, other requirements apply. As an example, this can include areas in the interim period for $PM_{2.5}$, where a no-build to build comparison or a baseline test can be performed. Refer to the conformity rule and discuss with ODOT staff if this case applies.

2.3.2 REGIONAL TRANSPORTATION PLAN

A Regional (or Metropolitan) Transportation Plan (RTP) is an intermodal metropolitan transportation plan. It is a long-term (typically 20 or 25 year) plan. The Federal Highway Administration - Statewide and Nonmetropolitan Planning and Metropolitan Planning Rule were updated May 2016. The updated rule can be found at: https://www.gpo.gov/fdsys/pkg/FR-2016-05-27/pdf/2016-11964.pdf. MPOs must typically consider the following issues when preparing an RTP:

1. Support the economic vitality of the metropolitan area
2. Increase the safety of the system for users of all modes of transportation
3. Improve accessibility and mobility for people and freight

4. Enhance the integration and connectivity of the transportation system, between modes, for people and freight
5. Make environmental considerations
6. Promote consistency between transportation projects, and State and local planned growth and economic development patterns
7. Promote efficient operation and management of the system
8. Emphasize the preservation of the existing transportation system
9. Improve resilience and reliability of the transportation system and reduce or mitigate storm water impacts.
10. Enhance travel and tourism.

A conformity demonstration is required to show that the RTP complies with the SIP as discussed in Section 2.3.1.

2.3.3 TRANSPORTATION IMPROVEMENT PROGRAM

The Transportation Improvement Program (TIP) is a staged, multiyear intermodal program of transportation projects covering a metropolitan planning area and is consistent with the RTP. The TIP is more project specific and covers a shorter time frame than the RTP. The TIP should include:

- Project type
- Project details
- Financial plan
- Project prioritization

The TIP covers a time period of four years and must have a financial plan to verify that it is fiscally constrained, this is a requirement under the 1990 CAAA. The TIP must go through a public involvement process and be approved by the MPO and the Governor. Although the TIP does not have to be approved directly by the FHWA and the FTA, it does have to be adopted into STIP without modification.

A conformity demonstration is required to show that the TIP complies with the SIP.

2.3.4 STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM

The Statewide Transportation Improvement Program [8](STIP) is a staged, multiyear, statewide, intermodal program of transportation projects. It is essentially a "roll-up" of all metropolitan area TIPs plus the projects in areas without sufficient population to require a TIP. The STIP must be approved by FHWA and FTA, cover a four-year period (e.g. 2018-2021) and have a financial plan to verify that it is fiscally constrained.

For projects outside of metropolitan areas, a regional conformity determination analysis is required before the projects can be added to STIP. ODOT is responsible for conformity determinations in rural areas. A regional conformity determination analysis requires an extensive level of effort and may require up to 1½ to 2 years to analyze. Rural regional conformity occurs infrequently. The most recent rural regional conformity determination was prepared in 2003 for some projects in La Grande.

[8] https://www.oregon.gov/ODOT/STIP/Pages/index.aspx

Prior to FHWA and FTA approval of the STIP, ODOT prepares a paper titled, "Current Status for Air Quality Conformity for 20XX to 20XX STIP", that includes a review of the projects in rural areas to determine if they will need an air conformity determination analysis. The paper also summarizes the status of air conformity determinations for MPOS areas. The current conformity paper for the 2018-2021 STIP is located at the following link:

https://www.oregon.gov/odot/GeoEnvironmental/Docs_Environmental/STIP_AQCD_2021-2024.pdf

The La Grande Regional conformity analysis is located at the following link:

http://www.oregon.gov/ODOT/GeoEnvironmental/Docs_Environmental/Air_Sample-Report_Regional-Analysis-Rural-Area.pdf

2.3.5 CONFORMITY SIP - INTERAGENCY CONSULTATION (OAR 340-252)

Oregon DEQ developed a conformity SIP which includes the interagency consultation processes and procedures that must be used in the development of transportation conformity determinations. The EPA approval was published in 77 FR 60627, and was effective November 5, 2012. The interagency members include MPOs, ODOT, affected local jurisdictions, DEQ, EPA Region 10, FHWA, and FTA. Different agencies are assigned responsibility by regulation for particular items and areas (see OAR 340-252).

Some key items subject to interagency consultation are:

- Developing RTPs and TIPs
- Identifying "regionally significant" projects
- Developing data collecting and modeling practices
- Determining significant changes in design concept and scope
- Determining whether any exempt projects should be treated as non-exempt
- Determining whether TCMs are being implemented in a timely manner
- Forecasting of vehicle miles traveled
- Determining whether project-level mitigation measures are needed
- Assuring that regionally significant, local projects have been disclosed to the MPO
- Establishing a mobile source emissions budget

2.3.6 CONFORMITY LAPSE

If an MPO fails to make a conformity determination on its plan or TIP within the four-year period as required by the Clean Air Act, the MPO enters a one-year "conformity lapse grace period." If the conformity determination is not made within that period, the MPO area enters a "conformity lapse"—a status that essentially means the MPO is out of compliance with conformity requirements. A grace period is not available related to the one-year conformity deadline for new nonattainment areas; those areas immediately enter a lapse if they fail to meet that deadline. When a conformity lapse occurs, only certain projects in the area can proceed, thereby affecting implementation of most transportation projects in the MPO area—except for certain safety-related and non-capacity-expanding projects. A conformity lapse is a relatively rare occurrence, and generally results when there is an impasse on some over-arching policy issue within the governing body of the MPO or between the MPO and other agencies. During a conformity lapse grace period, a project-level conformity determination can proceed if the project came from a previously conforming plan and TIP. However, during a conformity lapse, no project-level conformity determination can

be made. For an individual project, it is important to be aware of a potential conformity lapse because it could delay a needed plan or TIP amendment, which in turn could delay completion of the NEPA process for the project.

2.3.7 PROJECT LEVEL CONFORMITY

In nonattainment and maintenance areas, systems level plans, as well as highway or TCM projects, must be reviewed to ascertain that they conform to the SIP. The need for a particular highway project to be built is generally determined from the analysis completed as part of the overall urban transportation planning process as well as from the state project prioritization process for highways. Conformity is met on a project level if:

- The project comes from a currently conforming transportation plan and program.
- The project as approved in the NEPA process is consistent in "design concept and scope" with the project definition that was used in the regional emissions analysis for the plan and TIP.
- The 'hot-spot' analysis (if required) demonstrates that the project does not cause or contribute to an exceedance of the NAAQS, increase the frequency or severity of any existing violation or any standard, or delay timely attainment of any standard or any required interim emission reductions, or other milestone in any area.
- The project does not interfere with the implementation of TCMs (requirement for rural areas only).
- The project complies with any applicable PM control measures in the SIP
- Interagency consultation and public involvement
- In rural areas, the project is part of a regional emissions analysis that shows that the applicable emissions tests at the regional level (the emissions budget or interim conformity tests) are met.

EPA has issued detailed regulation and guidance regarding methodologies to be used for conducting hot-spot analyses. These analyses must closely follow the methodology prescribed in the EPA regulations and guidance. Additional Oregon specific guidance is given in Section 5.4.

It is not necessary to perform a regional analysis for each individual project if the project comes from a conforming transportation plan and program. The project can simply reference the regional analysis work done for the plan and program.

The timing of project level conformity analysis depends on the NEPA category. For EIS projects, a draft conformity determination is presented for public review in the FEIS, and the final conformity determination is made in the ROD. For a project involving an EA, a draft conformity determination is made in the EA and the final conformity determination is made when the FONSI is issued. For a project involving a CE, the conformity determination is documented concurrently with the approval of the CE after a public review period for a draft determination. In summary, the conformity determination must be made before FHWA adopts, accepts, approves or funds a project.

Although non-federal projects do not require conformity determinations, recipients of federal aid may not approve or adopt regionally significant non-federal projects in the absence of a conforming RTP and TIP. Only projects that are exempt by the conformity rule, projects which have completed all RTP, TIP and project-level conformity determinations and non-federal projects which are not regionally significant or which do not involve recipients of federal funds may proceed.

2.3.7.1 CONFORMITY EMISSION AND DISPERSION MODELS

Quantitative project level analysis requires the use of emission and dispersion models that were developed by EPA. EPA has a number of rules and guidance documents on emission and dispersion models that should be used for project level conformity. These models will be discussed in detail more in Section 5.0. It should be noted that emission and dispersion modeling guidance can differ depending on the pollutant that is being modeled. The preferred emission model is EPA MOVES2014b and the preferred dispersion model is AERMOD, however, CAL3QHC is allowed for CO screening analyses. EPA says there is no difference in the mobile source emissions estimates between MOVES version 2014a and 2014b, but EPA still recommends use of the newer version.

2.3.8 REDETERMINATION OF CONFORMITY

In some cases, it is necessary for FHWA to re-determine conformity following the completion of the NEPA process. The need for a new conformity determination arises when:

- There is a significant change in the project's design concept or scope
- More than three years have elapsed since project approval without major steps to advance the action, such as starting final design or acquiring a significant portion of right-of-way
- A supplemental EIS has been initiated to address air quality issues.

2.3.9 GENERAL CONFORMITY

This section was included for informational purposes only. For additional guidance on general conformity analysis related to ODOT projects, please contact ODOT Air Quality Specialist for assistance.

Non-highway projects may be subject to general conformity if they receive federal funding or require federal approval. Below is the link to EPA's Frequently Asked Question document that explains the relationship between transportation conformity and general conformity. General conformity determinations are required when a department, agency or instrumentality of the Federal government engages in, supports in any way or provides financial assistance for, licenses or permits or approves any activity to ensure that the activity conforms to an applicable SIP (within nonattainment/maintenance areas). However, non-regionally significant projects would be considered exempt from making a general conformity determination because the project would be clearly at or below de minimis levels (e.g. 100 tons/year PM_{10}, 100 tons/year for CO) and not considered regionally significant (40 CFR.153).

Note that general conformity requirements do not extend beyond the 20-year maintenance period, unless the SIP commits to continuing these analyses. (42 USC 7506 (c)(6) and 42 USC 7407(d)(1). The following is a link to EPA's general conformity frequently asked questions:

https://www.epa.gov/general-conformity/frequent-questions-about-general-conformity

2.4 FIXING AMERICA'S SURFACE TRANSPORTATION ACT (FAST ACT)

FAST Act was signed into law on December 4, 2015 and governs surface transportation spending during federal fiscal years 2016-2020. The Moving Ahead for Progress in the 21st Century Act (MAP-21) enacted in 2012 included provisions to make the federal surface transportation spending more streamlined, performance-based, multimodal, and to address the challenges facing the U.S. transportation system. Some

of these challenges include improving safety, maintaining infrastructure condition, reducing traffic congestion, improving efficiency of the system and freight movement, protecting the environment, and reducing delays in project delivery. The FAST Act builds on the changes made by the previous Act MAP-21. However, FAST Act did not make any changes to the federal conformity regulations.

The FAST Act largely maintains current program structures and funding shares between highway and transit. The act also makes changes and reforms to many federal transportation programs, including streamlining the approval processes for new transportation projects, providing new safety tools, and establishing new programs to advance critical freight projects. Notably, the FAST Act adds resiliency to the list of factors that states and MPOs must consider in their transportation planning processes. The FAST Act also requires USDOT to designate alternative fuel corridors along major national highways. The alternative fuels include electric charging, hydrogen, propane and natural gas.

A previous act called the Intermodal Surface Transportation Efficiency Act- the ISTEA of 1991, was the act under which the Congestion Mitigation and Air Quality Improvement program (CMAQ) was implemented to support surface transportation projects and other related efforts that contribute to air quality improvements and provide congestion relief. The following Section 2.4.1 reviews key aspects of that program.

2.4.1 CONGESTION MITIGATION AIR QUALITY PROGRAM

CMAQ is a flexible federal-aid funding source to State and local governments for transportation projects and programs that reduce traffic congestion and contribute to the attainment and maintenance of NAAQS. Projects funded under the CMAQ program must be expected to result in tangible reductions of CO, ozone precursors, $PM_{10,}$ or $PM_{2.5}$. The program is jointly administered by FHWA and FTA.

2.4.1.1 CMAQ PROJECT ELIGIBILITY CRITERIA

In Oregon, CMAQ funding is available for all nonattainment and maintenance areas. ODOT allocates CMAQ funds to eligible Metropolitan Planning Organizations (MPOs) and rural cities who then decide how best to invest CMAQ funds. MPOs manage their own selection process while rural cities work directly with ODOT. ODOT confirms program eligibility for all CMAQ projects in Oregon with final concurrence from FHWA. CMAQ projects must demonstrate the three primary elements of eligibility:

1. Projects must be a transportation project
2. Projects must generate a transportation emission reduction for specific pollutants and
3. Projects must be located in or benefit a nonattainment area

Additionally, CMAQ funded projects must meet the following general conditions:

1. Projects must be included in a long-range transportation plan and conform to the requirements of the Clean Air Act.
2. Projects must complete NEPA requirements and basic eligibility requirements for funding under Title 23 and 49 of USC.
3. Projects must be part of the MTIP/STIP.

An Air Quality Analyst may be asked to prepare emission reductions calculations for CMAQ projects. There are a number of resources available to assist with these calculations. The MPOs typically prepare their own

emission calculations. ODOT's Air Quality Analysts in the Geo-Environmental section typically assist rural areas with their calculations. The following links give additional information about the FHWA and ODOT CMAQ program.

FHWA CMAQ web page: https://www.fhwa.dot.gov/environment/air_quality/cmaq/

ODOT CMAQ web page: http://www.oregon.gov/ODOT/LocalGov/Pages/CMAQ.aspx

2.5 INDIRECT SOURCE CONSTRUCTION PERMIT

An Indirect Source construction Permit (ISCP) is required prior to starting construction of an indirect source within the boundaries of a CO nonattainment or maintenance area within a city containing a population of 50,000 or more. Therefore, the requirements currently apply in Salem, Medford, and Eugene. Eugene is subject to the Lane Regional Air Protection Agency (LRAPA) ISCP requirements. The requirements of ISCP still apply in Portland's CO maintenance area even though they have completed 20 years of being under the CO maintenance plan.

Construction of new facilities or the modification of existing facilities can require an ISCP which is issued by DEQ or the LRAPA. An indirect source is defined as a facility, building, structure, installation, or any combination of these which indirectly causes vehicular activities that results in emissions of air pollutants. Examples of indirect sources are:

- Highway and Roads
- Parking Facilities
- Retail, Commercial, and Industrial Facilities
- Recreation, Amusement, Sports, and Entertainment Facilities
- Airports
- Office and Government Buildings
- Apartments and Mobile Home Parks
- Educational Facilities
- Hospital Facilities
- Religious Facilities

2.5.1 DEQ RULES FOR INDIRECT SOURCES (OAR 340 DIVISION 254)

The DEQ regulations (OAR 340-254, Rules for Indirect Sources) basically apply to parking facilities in the Portland, Salem, or Medford CO maintenance areas. If a project involves a parking facility of 1,000 spaces or more in Salem, Medford, or areas of Portland outside the central city, an ISCP is required. Within the Portland central city, an ISCP is required for facilities with 800 or more spaces. When determining whether an indirect source requires permitting, all increments of construction started after January 1, 1975 must be included in the total. A permit is required for the cumulative effect, even if previous individual projects did not trigger the requirement. The DEQ Indirect Source Regulations can be found at the following link:

http://arcweb.sos.state.or.us/pages/rules/oars_300/oar_340/340_254.html

2.5.2 LANE REGIONAL AIR PROTECTION AGENCY INDIRECT SOURCE REGULATIONS (TITLE 20)

LRAPA has separate and more stringent requirements for ISCPs within Lane County. When determining whether an indirect source requires permitting, all increments of construction begun after January 1, 1975 must be included in the total. The following sources in or within five miles of the municipal boundaries of the City of Eugene or City of Springfield require an ISCP:

- Any parking facility or other indirect source with associated parking being constructed or modified to create new or additional parking (or associated parking) with a capacity of 250 or more parking spaces.
- Any highway section being proposed for construction with an anticipated annual average daily traffic (AADT) volume of 20,000 or more motor vehicles per day within ten years after completion, or being modified so that the AADT on that highway section will be increased to 20,000 or more motor vehicles per day or will be increased by 10,000 or more motor vehicles per day within ten years after completion.

The following sources within Lane County require an ISCP:

- Any parking facility or other indirect source with associated parking being constructed or modified to create new or additional parking (or associated parking) capacity of 500 or more parking spaces.
- Any highway section being proposed for construction with an anticipated AADT volume of 20,000 or more motor vehicles per day within ten years after completion, or being modified so that the AADT on that highway section will be 20,000 or more motor vehicles per day or will be increased by 10,000 or more motor vehicles per day within ten years after completion.

The LRAPA Indirect Source Regulations can be found at the following link:

http://or-lanerapa.civicplus.com/DocumentCenter/Home/View/254

3 NONATTAINMENT AND MAINTENANCE AREAS BY ODOT REGION

This section reviews all nonattainment and maintenance areas in Oregon by region and provides links to boundary maps, area attainment or maintenance plans, regional conformity determinations and lists any control measures by area. A nonattainment area is a region where pollutant concentrations exceed the NAAQS. A maintenance area is a redesignated nonattainment region that has an approved SIP that demonstrates the NAAQS have been attained and shows how the attainment will continue for two 10-year periods. The current Oregon nonattainment and maintenance areas are shown in Table 3-1 and are organized by ODOT Region. Projects located within the nonattainment or maintenance area boundary are subject to conformity analysis requirements. Conformity compliance does not always involve quantitative or even qualitative analysis but always requires documentation of compliance.

Since the 2008 Air Manual was written, both Eugene-Springfield and Portland CO Maintenance Plans have reached the end of their 20 years under a maintenance plan. Conformity regulation 40 CFR 93.102(b)(4) states that conformity could apply for a longer period of time if “the applicable implementation plan specifies that the provisions of this subpart shall apply for more than 20 years.” Actions on metropolitan transportation plans, TIPs, and FHWA/FTA projects taken on or after the date when conformity requirements no longer apply will not require a conformity determination for the applicable pollutant and NAAQS. However, conformity requirements for other transportation-related pollutants for which the area is nonattainment or maintenance (if any) will still apply.

Even though the conformity obligation for CO has ended for Eugene-Springfield and Portland, the terms of the maintenance plan remain in effect and all measures and requirements contained in the plan must be complied with until the state submits and EPA approves a revision to the state plan. The SIP and any revised SIPs would have to comply with anti-backsliding requirements of CAA section 110(l) and if applicable CAA section 193, if the intent of the revision is to remove a control measure or to reduce its stringency.

TABLE 3-1 OREGON MAINTENANCE AND NONATTAINMENT AREAS

Cities Organized by ODOT Region	Boundary	Pollutant	Maintenance (M) or Nonattainment (N)
Region 1			
Metro (ended 10/2/2017)	UGB - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/Portland_ugbmap0506.pdf Transportation Conformity does not apply.	NA	NA
Region 2			
Salem-Keizer	Air Quality Control Area (SKATS) – ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/DEQskats.pdf	CO	M (Limited Maintenance
Eugene – Springfield	UGB - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/EugeneAQMA-UGB.pdf	PM_{10}	M (Limited Maintenance)
	Note: UGB CO area is now well beyond the 20-year maintenance period. (ended 2/4/14)	CO	NA
Oakridge	UGB - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/OakridgeUGB.pdf	PM_{10}	N
	$PM_{2.5}$ Nonattainment Area- ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/oakridge_non_attainment_area_PM_2.5.pdf	$PM_{2.5}$	N
Region 3			
Medford	UGB - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/MedfordUGB.pdf	CO	M (Limited Maintenance)
Medford-Ashland	AQMA - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/MedfordAshlandAQMA.JPG	PM_{10}	M
Grants Pass	CBD - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/Gr	CO	M (Limited Maintenance)

TABLE 3-1 OREGON MAINTENANCE AND NONATTAINMENT AREAS			
Cities Organized by ODOT Region	**Boundary**	**Pollutant**	**Maintenance (M) or Nonattainment (N)**
	antsPassCBD.PDF		
Grants Pass	UGB - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/GrantsPassUGB.pdf	PM_{10}	M (Limited Maintenance)
Region 4			
Klamath Falls	UGB - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/KlamathFalls_UGB_PM10%26CO.pdf	CO & PM_{10}	M
Klamath Falls	Klamath Falls $PM_{2.5}$ Boundary - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/k_falls_non_attainment_area_PM_2.5.pdf	$PM_{2.5}$	N
Lakeview	UGB - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/LakeviewUGB.pdf	PM_{10}	M
Region 5			
La Grande	UGB - ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/LakeviewUGB.pdf	PM_{10}	M

NA - Not applicable
Notes: METRO: Metropolitan Portland; AQMA: Air Quality Maintenance Area; SKATS: Salem-Keizer Area Transportation Study; CATS: Central Area Transportation Study; UGB: Urban Growth Boundary; CBD: Central Business District.
Isolated rural areas include Oakridge, Klamath Falls, Lakeview and La Grande.

3.1 REGION 1 MAINTENANCE AREA PLAN INFORMATION

3.1.1 PORTLAND

Portland is in attainment with all NAAQs. Portland ended their 20 years as a CO maintenance area on October 2, 2017. Both transportation conformity and general conformity no longer apply to plans, programs, or projects in Portland. However, the terms of the maintenance plan remain in effect and all measures and requirements contained in the plan must be complied with until the state revises and EPA approves the changes. Transportation control measures stay in place. Key information for the Portland CO Maintenance Plan that remains in place is shown in Table 3-2.

Note, that from a federal point of view, Portland is attainment for ozone but from a state point of view Portland is recognized as attaining the ozone standard but continues to be defined as a maintenance area that is subject to transportation controls measures listed in the SIP. There are no conformity requirements for ozone.

TABLE 3-2 KEY INFORMATION FOR PORTLAND PREVIOUS CO MAINTENANCE AREA	
CO Maintenance Area Boundary	Metropolitan Portland ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/Portland_ugbmap0506.pdf
CO Maintenance Plan	Portland Area Carbon Monoxide Maintenance Plan (Second Plan) December 10, 2004. http://www.oregon.gov/deq/FilterDocs/pdxCOplan.pdf https://www.epa.gov/sips-or/summary-portland-carbon-monoxide-co-2nd-10-year-maintenance-plan Conformity requirements ended 10/2/17
Last Regional Conformity Determination	http://www.oregonmetro.gov/air-quality-conformity-determination
Transportation Control Measures from Maintenance Plan	• Transit service increase • Bicycle paths • Pedestrian paths
CMAQ	Projects are eligible for CMAQ funds and projects must generate a transportation emission reduction for CO.

Note: Conformity requirements ended on 10/2/17.

3.2 REGION 2 NONATTAINMENT AND MAINTENANCE AREAS AND PLAN INFORMATION

3.2.1 SALEM-KEIZER

The Salem-Keizer area has a CO limited maintenance plan. Therefore, a regional emissions analysis for conformity is not required for this area. However, CO hot spot analysis is required for projects that meet the criteria. The Mid-Willamette Valley Council of Governments is responsible for regional transportation conformity in the Salem-Keizer area. Key information for the Salem-Keizer CO area is shown in Table 3-3. Salem is in attainment with all other NAAQs.

Note, that from a federal point of view, Salem is attainment for ozone but from a state point of view Salem is recognized as attaining the ozone standard but continues to be defined as a maintenance area that is subject to transportation controls measures listed in the plan. There are no conformity requirements for ozone.

TABLE 3-3 KEY INFORMATION FOR THE SALEM-KEIZER CO AREA	
CO Maintenance Area Boundary	Salem-Keizer Area Transportation Study http://www.oregon.gov/deq/FilterDocs/skats.pdf
CO Limited Maintenance Plan	Salem-Keizer Area 1st Carbon Monoxide Limited Maintenance Plan ***Effective date: 3/9/2009*** http://www.oregon.gov/deq/FilterDocs/salemKeizerPlan.pdf https://www.epa.gov/sips-or/summary-salem-carbon-monoxide-co-maintenance-plan ***End of 20 years of maintenance: 03/09/2029***

TABLE 3-3 KEY INFORMATION FOR THE SALEM-KEIZER CO AREA	
Regional Conformity Determination	2018-2023 MTIP finalized 2/28/18 and RTSP 2015-2035 (6/28/2016)http://www.mwvcog.org/programs/transportation-planning/skats/planning-programs/air-quality-conformity-determination/
CMAQ	Projects are eligible for CMAQ funds and projects should generate a transportation emission reduction for CO.

Note: There are no CO motor vehicle emission budgets, transportation control measures or intersections with high potential.

3.2.2 EUGENE-SPRINGFIELD

Eugene-Springfield completed their 20 years under a CO maintenance plan on February 4, 2014. There are no longer any transportation conformity requirements for CO in the Eugene-Springfield Area.

Eugene-Springfield became a limited maintenance area for PM_{10} on May 13, 2013. Limited maintenance plans do not require regional emission analysis for conformity. A PM_{10} project level conformity analysis is still required for projects in the Eugene-Springfield PM_{10} maintenance area. The Lane County Council of Governments (LCOG) is responsible for regional transportation conformity in the Eugene-Springfield area. Key information for the Eugene-Springfield PM_{10} area is shown in Table 3-4.

TABLE 3-4 KEY INFORMATION FOR THE EUGENE-SPRINGFIELD PM10 AREA	
PM_{10} Maintenance Area Boundary	Urban Growth Boundary ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/EugeneAQMA-UGB.pdf
PM_{10} Limited Maintenance Plan	Eugene-Springfield 1st PM_{10} Limited Maintenance Plan ***Effective date 05/13/2013 (78 FR 21547)*** http://www.lrapa.org/DocumentCenter/View/1126 ***End of 20 years of maintenance: 05/13/2033***
Regional Conformity Determination	2018-2021MTIP (September 2017) and 2040 RTP (June 2017) http://www.thempo.org/355/Air-Quality
Road Dust Emission Factor	Starting page 36 of Attainment Plan
PM_{10} Control Measures	Mandatory home wood heating curtailment program
CMAQ	Projects are eligible for CMAQ funds and projects should generate a transportation emission reduction for CO and PM_{10}.

Note: No PM_{10} motor vehicle emission budgets.

3.2.3 OAKRIDGE

The Oakridge Urban Growth Boundary (UGB) is designated as a PM_{10} nonattainment area. A rectangular area larger than the Oakridge UGB was assigned the $PM_{2.5}$ nonattainment area by EPA. Oakridge is a rural nonattainment area with a population less than 50,000 and does not have an MPO. Therefore, ODOT is responsible for regional transportation conformity in the Oakridge area.

EPA approved the Oakridge PM_{10} attainment plan on March 15, 1999 and EPA published a finding of attainment of the PM_{10} standard on July 26, 2001.

On December 12, 2012, the Oregon Department of Environmental Quality (ODEQ) submitted the first version of the $PM_{2.5}$ attainment plan for Oakridge. The Lane Regional Air Protection Agency (LRAPA), in coordination with the ODEQ, developed the 2012 attainment plan submission for purposes of attaining the 2006 24-hour $PM_{2.5}$ NAAQS. After a resubmittal to EPA in 2016, on November 14, 2017, EPA published the Air Plan Approval; OR, Oakridge; $PM_{2.5}$ Moderate Plan, Finding of Attainment and Clean Data Determination which became effective on March 12, 2018. The schedule for completing the Oakridge $PM_{2.5}$ maintenance plan is about 2 years out. The EPA also approved a comprehensive precursor demonstration for VOCs, SO_2, NO_X, and NH3 and the 2015 MVEB of 22.2 lb. /day for direct $PM_{2.5}$. Until the maintenance plans for $PM_{2.5}$ and PM_{10} are submitted and approved, the area would continue to be considered as a nonattainment area.

Key information for the Oakridge $PM_{2.5}$ and PM_{10} maintenance area is shown in Tables 3-5 and 3-6.

TABLE 3-5 KEY INFORMATION FOR THE OAKRIDGE PM10 NONATTAINMENT AREA

PM_{10} Maintenance Area Boundary	Urban Growth Boundary ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/OakridgeUGB.pdf
PM_{10} Attainment Plan	Oakridge PM_{10} Attainment Plan EPA approved the plan March 15, 1999 (64 FR 12751) https://www.epa.gov/sips-or/summary-oakridge-pm-10-attainment-plan
Regional Conformity Analysis	Contact ODOT Air Quality Program Specialist
PM_{10} Motor Vehicle Emission Budgets	pounds/winter day –(used outdated model) 2000 2003 175 178.8
PM_{10} Emission Factors for Paved/Unpaved Roads	1.72 / 240.6 gram/mile (calculated using AP-42 in 1996) Note:AP-42 Methods for Estimating Re-Entrained Road Dust from Paved roads 13.2.1 was updated on January 2011 and required for any conformity analysis Feb. 4, 2013**.** The current AP-42 Methods for Unpaved Roads can be found in Section 13.2.2 last updated November 2006.
PM_{10} Control Measures	• Accelerated wood stove replacement program • Voluntary wood stove curtailment • Reduction in winter road sanding • Road paving program
CMAQ	Projects are eligible for CMAQ funds and projects should generate a transportation emission reduction for PM_{10} and $PM_{2.5}$.

TABLE 3-6 KEY INFORMATION FOR THE OAKRIDGE PM2.5 NONATTAINMENT AREA

$PM_{2.5}$ Maintenance Area Boundary	New area greater than Urban Growth Boundary ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/oakridge_non_attainment_area_PM_2.5.pdf

TABLE 3-6 KEY INFORMATION FOR THE OAKRIDGE PM2.5 NONATTAINMENT AREA	
$PM_{2.5}$ Attainment Plan	Oakridge $PM_{2.5}$ Attainment Plan Submitted by LRAPA November 15, 2012 (partially approved and partially disapproved) http://www.lrapa.org/DocumentCenter/View/1148 Oakridge $PM_{2.5}$ Supplemental Attainment Plan 2014-2016 http://www.lrapa.org/DocumentCenter/View/1848 Air Plan Approval published 11/14/17 https://www.gpo.gov/fdsys/pkg/FR-2017-11-14/html/2017-24539.htm
Regional Conformity Analysis	Contact ODOT Air Quality Program Coordinator
$PM_{2.5}$ Motor Vehicle Emission Budgets	2015 MVEB of 22.2 lbs/day for direct $PM_{2.5}$ is a sum of primary exhaust, brake wear and tire wear
$PM_{2.5}$ Emission Factors for Paved/Unpaved Roads	$PM_{2.5}$ emission factors are not in attainment plan, contact ODOT for assistance.
$PM_{2.5}$ Primary Control Measures	Mandatory curtailment program Woodstove change-outs OR Heat Smart – uncertified wood stove removal upon sale of home OR and the EPA wood stove certification program Transportation and fuel related measures Diesel Retrofits of school buses Oregon's low emission vehicle program Increased fuel economy.
CMAQ	Projects are eligible for CMAQ funds and projects should generate a transportation emission reduction for PM_{10} and $PM_{2.5}$.

Note: No transportation control measures.

3.3 REGION 3 NONATTAINMENT AND MAINTENANCE AREAS AND PLAN INFORMATION

3.3.1 MEDFORD-ASHLAND

The Medford UGB is designated as a limited maintenance area for CO. The Medford-Ashland AQMA is a maintenance area for PM_{10}. The Rogue Valley Council of Governments (RVCOG) is responsible for regional transportation conformity in the Medford-Ashland area. Key information for the Medford CO maintenance area and the Medford-Ashland PM_{10} maintenance area are shown in Table 3-7.

TABLE 3-7 KEY INFORMATION FOR THE MEDFORD CO LIMITED MAINTENANCE AREA AND MEDFORD-ASHLAND PM10 MAINTENANCE AREA	
CO Maintenance Area Boundary	Urban Growth Boundary: ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/MedfordUGB.pdf
CO Limited Maintenance Plan	Medford Carbon Monoxide Limited Maintenance Plan ***Effective date: 06/30/2016*** http://www.oregon.gov/deq/FilterDocs/medfordmp.pdf ***End of 20 years of maintenance: 09/23/2022***

TABLE 3-7 KEY INFORMATION FOR THE MEDFORD CO LIMITED MAINTENANCE AREA AND MEDFORD-ASHLAND PM10 MAINTENANCE AREA	
Regional Conformity Determination	Amended 2013-2038 RTP (05/20/15), 2018-2021 TIP (09/29/17) https://dvel.rvmpo.org/air-quality-conformity-determination-aqcd/
PM_{10} Maintenance Area Boundary	Air Quality Maintenance Area ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/MedfordAshlandAQMA.JPG
PM_{10} Maintenance Plan	Maintenance Plan for Particulate Matter (PM_{10}) in the Medford-Ashland Air Quality Maintenance Area December 10, 2004 http://www.oregon.gov/deq/aq/Pages/Medford-Ashland.aspx ***End of 20 years of maintenance: 08/18/2026***
PM_{10} Motor Vehicle Emission Budgets	2015 – 3,754 tons per year (outdated with pre-MOVES model)
PM_{10} Emission Factors for Paved/Unpaved Roads	See Tables 11, 12 and 13 from 2018-2021 Air Quality Conformity adopted March 28, 2017. Factors vary by area.
PM_{10} Transportation Control Measure	Maintenance Plan includes street cleaning, however, by definition this is not a transportation control measures. At a minimum, the cleaning program must continue to use a high efficiency, vacuum street sweeper or equivalent, and cover an area that includes Medford, White City and significant intervening travel corridors, and provide cleaning frequency no less than twice per month.
PM_{10} Control Measures	• Industrial control including fugitive dust and dust track out • Residential wood smoke controls • Residential open burning controls • Road dust controls, specifically o Paving unpaved roads o Curb and gutters on paved roads o High efficiency street sweeping • Forestry and agricultural smoke management program • Agricultural track out controls
CMAQ	Projects are eligible for CMAQ funds and project should generate a transportation emission reduction for CO and PM_{10}.

Note: No transportation control measures.

3.3.2 GRANTS PASS

The Grants Pass UGB is designated as a limited maintenance area for PM_{10}. The Grants Pass Central Business District (CBD) is a limited maintenance area for CO. The RVCOG is responsible for regional transportation conformity in the Grants Pass area. Key information for the Grants Pass CO and PM_{10} maintenance areas are shown in Table 3-8.

TABLE 3-8 KEY INFORMATION FOR THE GRANTS PASS CO AND PM10 LIMITED MAINTENANCE AREAS	
CO Maintenance Area Boundary	Central Business District ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/GrantsPassCBD.PDF
CO Limited Maintenance Plan	Second Maintenance Plan: Grants Pass Carbon Monoxide Limited Maintenance Plan in the Grants Pass Urban Growth Boundary (80 FR44864) http://www.oregon.gov/deq/FilterDocs/grantsPassMP.pdf ***End of 20 years of maintenance: 10/30/2020***
Regional Conformity Analysis Determination	http://dvel.mrmpo.org/transportation-improvement-program-tip/
PM_{10} Maintenance Area Boundary	Urban Growth Boundary ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/GrantsPassUGB.pdf
PM_{10} Limited Maintenance Plan	Grants Pass PM_{10} Limited Maintenance Plan in the Grants Pass Urban Growth Boundary (80 FR45653) http://www.oregon.gov/deq/FilterDocs/grantspass_mp_pm10.pdf ***End of 20 years of maintenance: 12/26/2023***
PM_{10} Emission Factors for Paved/Unpaved Roads	3.54 / 337.94 grams/mile (outdated calculated in 10/17/73) Contact ODOT for assistance.
PM_{10} Control Measures from Maintenance Plan	• Voluntary Woodstove Curtailment • Wood stove Certification • Ban on sale of used woodstoves • Open Burning ventilation index • New Source Review: BACT & offsets exemption • Industrial controls on veneer dryers/wood-fired boilers • Forestry smoke management plan
CMAQ	Projects are eligible for CMAQ funds and project should generate a transportation emission reduction for CO and PM_{10}.

Note: No transportation control measures.

3.4 REGION 4 NONATTAINMENT AND MAINTENANCE AREAS AND PLAN INFORMATION

3.4.1 KLAMATH FALLS

The Klamath Falls UGB is designated as a maintenance area for CO and PM_{10}. In addition, the Klamath Falls area was designated nonattainment for $PM_{2.5.}$ However, the area came into attainment on July 6, 2016. The $PM_{2.5}$ area is pending a maintenance plan. Klamath Falls is a rural maintenance area with a population less than 50,000 and does not have an MPO. Therefore, ODOT is responsible for regional transportation conformity in the Klamath Falls area. Key information for the Klamath Falls CO, PM_{10} and $PM_{2.5}$ maintenance areas are shown in Table 3-9.

TABLE 3-9 KEY INFORMATION FOR THE KLAMATH FALLS CO AND PM10 MAINTENANCE AREAS AND PM2.5 NONATTAINMENT AREA	
CO Maintenance Area Boundary	Urban Growth Boundary: ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/KlamathFalls_UGB_PM10%26CO.pdf
CO Maintenance Plan	Klamath Falls Carbon Monoxide Maintenance Plan approved September 20, 2001 https://www.epa.gov/sips-or/summary-klamath-falls-carbon-monoxide-co-maintenance-plan ***End of 20 years of maintenance: 11/19/2021***
Link to Regional Conformity Determination (CO and PM_{10})	Contact ODOT Air Quality Program Specialist
CO Motor Vehicle Emission Budgets	2015 – 24,880 pounds per winter day (outdated based on pre-MOVES model)
PM_{10} Maintenance Area Boundary	Urban Growth Boundary: ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/KlamathFalls_UGB_PM10%26CO.pdf
Link to PM_{10} Maintenance Plan	Maintenance Plan Revision for Particulate Matter (PM_{10}) in the Klamath Falls Urban Growth Boundary EPA approved October 21, 2003 https://www.epa.gov/sips-or/summary-klamath-falls-pm-10-maintenance-plan ***End of 20 years of maintenance: 12/22/2023***
PM_{10} Motor Vehicle Emission Budgets	Pounds per winter day Year – 2015 3,725 (calculated with outdated emission model)
PM_{10} Emission Factors for Paved/Unpaved Roads	The current SIP uses Part 5, an outdated emissions model. Contact ODOT for more information.
PM_{10} Control Measures	• Mandatory wood stove and open burning curtailment program • Wood stove certification program • Wood stove removal and low income heat replacement program • Wood stove certification • Reduced winter road sanding • Wood stove opacity limit • Agricultural open burning ban • Forestry smoke management program
$PM_{2.5}$ Nonattainment Area Boundary	$PM_{2.5}$ nonattainment area: ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/k_falls_non_attainment_area_PM_2.5.pdf
$PM_{2.5}$ Attainment Plan	Finding of Attainment and Approval of Attainment Plan for Klamath Falls, Oregon Fine Particulate Matter Nonattainment Area. EPA approved June 6, 2016. https://www.epa.gov/sips-or/summary-klamath-falls-pm-25-attainment-plan

TABLE 3-9 KEY INFORMATION FOR THE KLAMATH FALLS CO AND PM10 MAINTENANCE AREAS AND PM2.5 NONATTAINMENT AREA	
$PM_{2.5}$ Motor Vehicle Emission Budgets	Pounds per winter day through 2037 -- 699 for $PM_{2.5}$ and 4834 for NOx Tons per year annual season through 2037—60.7 for $PM_{2.5}$ and 860.6 for NO_x
CMAQ	Projects are eligible for CMAQ funds and project should generate a transportation emission reduction for CO, PM_{10} and $PM_{2.5}$.

Note: No transportation control measures.

3.4.2 LAKEVIEW

The Lakeview UGB is designated as a PM_{10} maintenance area. Lakeview is a rural maintenance area with a population less than 50,000 and does not have an MPO. Therefore, ODOT is responsible for regional transportation conformity in the Lakeview area. Key information for the Lakeview PM_{10} maintenance area is shown in Table 3-10.

TABLE 3-10 KEY INFORMATION FOR THE LAKEVIEW PM10 MAINTENANCE AREA	
PM_{10} Maintenance Area Boundary	Urban Growth Boundary ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/LakeviewUGB.pdf
PM_{10} Maintenance Plan	Approval and Promulgation of Air Quality Implementation Plans; Lakeview PM_{10} Maintenance Plan and Re-designation Request-71 FR 35159 (EPA approved June 19, 2006) https://www.epa.gov/sips-or/summary-lakeview-pm-10-maintenance-plan ***End of 20 year of maintenance: 07/19/2026***
Regional Conformity Determination	Contact ODOT Air Quality Program Specialist
PM_{10} Motor Vehicle Emission Budget Revision	2017 -- 311 pounds per winter day (based on Mobile6.2) VMT – 78,209 per day
PM_{10} Emission Factors for Paved/Unpaved Roads from Revision	1.55 / 313.2 grams per mile Note:AP-42 Methods for Estimating Re-Entrained Road Dust from Paved roads 13.2.1 was updated on January 2011 and required for any conformity analysis Feb. 4, 2013. The current AP-42 Methods for Unpaved Roads can be found in section 13.2.2 last updated November 2006.
PM_{10} Control Measures from Revision	• Wood stove certification program • Wood stove removal and low income heat replacement program • Wood stove and open burning curtailment on poor air days • Winter road sanding control • Public education • Industrial restrictions • Forestry smoke management program

TABLE 3-10 KEY INFORMATION FOR THE LAKEVIEW PM10 MAINTENANCE AREA	
	• Industrial source controls
CMAQ	Projects are eligible for CMAQ funds and project should generate a transportation emission reduction for PM_{10}.

Note: No transportation control measures.

3.5 REGION 5 NONATTAINMENT AND MAINTENANCE AREAS AND PLAN INFORMATION

3.5.1 LA GRANDE

The La Grande UGB is designated as a PM_{10} maintenance area. La Grande is a rural maintenance area with a population less than 50,000 and does not have an MPO. Therefore, ODOT is responsible for regional transportation conformity in the La Grande area. Key information for the La Grande PM_{10} maintenance area is shown in Table 3-11.

TABLE 3-11 KEY INFORMATION FOR THE LA GRANDE PM10 MAINTENANCE AREA	
PM_{10} Maintenance Area Boundary	Urban Growth Boundary ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Air_Noise_Energy/Boundary_Maps/LakeviewUGB.pdf
PM_{10} Maintenance Plan	Approval and Promulgation of Air Quality Implementation Plans; La Grande PM10 Maintenance Plan and Redesignation Request – 71 FR 35161 June 19, 2006. https://www.epa.gov/sips-or/summary-la-grande-pm-10-maintenance-plan ***End of 20 years of maintenance: 07/19/2026***
Regional Conformity Determination	Contact ODOT Air Quality Program Specialist
PM_{10} Motor Vehicle Emission Budgets	2017 – 2,750 pounds per winter day (based Mobile 6.2) AP-42 Methods for Estimating Re-Entrained Road Dust from Paved roads 13.2.1 was updated on January 2011 and required for any conformity analysis February 4, 2013. The current AP-42 Methods for Unpaved Roads can be found in section 13.2.2 last updated November 2006.
PM_{10} Emission Factors for Paved/Unpaved Roads	2.5 / 41.7 grams per mile
PM_{10} Control Measures	• Wood stove certification program • Wood stove removal and low income heat replacement program • Wood stove and open burning curtailment on poor air days • Winter road sanding control • Industrial restrictions • Forestry and agricultural burning growth management

TABLE 3-11 KEY INFORMATION FOR THE LA GRANDE PM10 MAINTENANCE AREA	
CMAQ	Projects are eligible for CMAQ funds and project should generate a transportation emission reduction for PM_{10}.

Note: No transportation control measures.

4 AIR ANALYSIS TYPE DETERMINATION

The purpose of this section is to describe what types of air quality analyses are needed for highway projects to comply with NEPA, transportation conformity or other applicable air quality regulatory requirements in Oregon. The types of air quality analyses needed for a project depends on several factors which include the project location, project type, pollutant of concern, funding source, NEPA classification and traffic data. NEPA or conformity compliance does not always involve quantitative or even qualitative analysis but always requires some form of documentation of compliance. Most of the analyses addressed in this section are only performed for projects that use federal funding or require federal approval. Two funding exceptions are for indirect source construction permits and regionally significant projects.

The air analyses categories covered in this section are listed below. The Air Quality Manual sections that discuss the rule or the analysis are given in brackets.

- Attainment Area Documentation Requirements
  - CE (5.1.1)
  - EA/EIS (5.1.2)
- NEPA
  - MSATs (2.1.1), Qualitative MSAT (5.2.2) or Quantitative MSAT (5.2.3)
  - Greenhouse Gases and Climate change (2.1.2) and GHG emission (5.3)
- Transportation conformity (2.3, 5.2)
  - Exempt Projects (Appendix E-1)
  - Regional conformity (RTP and TIP) (2.3.2, 2.3.3, 2.3.4, and 5.4.2)
    - MPO
    - Rural areas
    - Regionally significant non-federally funded projects
  - Project Level Conformity
    - CO project level conformity (5.5)
      - FHWA CO Categorical Hot Spot Finding (5.5.7)
      - Qualitative CO (5.5.1)
      - Quantitative CO (5.5.2)
    - PM_{10} and $PM_{2.5}$ project level conformity (5.6)
      - Project of local air quality concern
    - Construction emissions (6)
- General Conformity (non-highway, non-FHWA or non-FTA projects) (2.3.9)

- Indirect Source Construction Permit (ISCP) – this is driven by state and local air quality regulations (2.5 and 5.7)

No federal nexus and not in Lane County =>

NO ANALYSIS NEEDED

4.1 ATTAINMENT AREA DOCUMENTATION REQUIREMENTS

Projects with federal nexus in attainment areas are not subject to conformity but may be subject to MSAT, GHG and climate change analysis or discussion. Review Section 5.1 for additional information on attainment areas and Section 4.2.1 for MSATs and Section 4.2.2 for greenhouse gas and climate change details.

4.2 NEPA

NEPA drives MSAT, GHG emissions, and climate change air quality analyses for environmental documentation that are not specifically required by regulation. MSAT analyses are not location specific but are generally conducted for air sensitive population and high traffic volumes. Review Sections 2.1.1 and 5.2 for MSAT analysis or Sections 2.1.2 and 5.3 for climate change or GHG details. Additionally, the NEPA classification can help determine what kind of a GHG analysis should be included or considered.

AIR SENSITIVE POPULATIONS include people with respiratory ailments, heart conditions or chronic illnesses, pregnant woman, young children, seniors and those who do intense outdoor exercise. Examples of air sensitive population areas are residences, schools, churches, parks, active sports areas, daycares, and hospitals. Analyst should review areas within 500 feet of the project.

If neither sensitive populations nor high traffic volumes are present or will be present in the build project area, then MSAT analysis is not needed but NEPA documentation may be required depending on the NEPA classification.

NEPA documentation is still needed for EA and EIS, even if the project is in an attainment area and does not require an MSAT or GHG analysis. It is not needed for CE.

4.2.1 MSAT ANALYSIS

There are three categories of MSAT analysis which include no potential for MSAT effect (exempt), low potential for MSAT effects and high potential for MSAT effect. These categories are discussed in Section 2.1.1.2. Quantitative MSAT analyses are typically conducted for projects with large build traffic volumes (greater than 140,000 AADT) and which also include a large percent of diesel vehicles (>8%) located near air sensitive populations. Please note that changes to the MSAT national guidance are pending. Once the updated MSAT guidance is published, any changes to the "2018 ODOT Air Quality Manual" will be posted separately on ODOT Air Quality web page[9].

[9] https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Air.aspx

Quantitative MSAT> 140,000 AADT and high % diesel near sensitive populations.

- Exempt: The project is exempt from MSAT analysis. Use prototype language in the Interim MSAT guidance document. (FHWA, 2016). Typically, if a project is exempt from MSAT, the project usually would be exempt from conformity and not require any other air quality analysis.
- Low Potential for MSAT effects: Details about qualitative MSAT analyses are included in Section 5.2.2.
- High Potential for MSAT affect: Details for quantitative MSAT analysis are in Section 5.2.3.
- Other Scenario: the project does not have an AADT greater than 140,000 but it has the potential to substantially increase future MSAT emissions. Consult with ODOT Air Quality Specialist and FHWA division office. Although not required, project with high potential for litigation on air toxics issues may also benefit from a more rigorous quantitative analysis to enhance their defensibility in court.

4.2.2 GREENHOUSE GAS OR CLIMATE CHANGE

Greenhouse gas analyses and climate change discussions are infrequently conducted and not required for categorically excluded projects under NEPA. EA and EIS projects may require a greenhouse gas analysis or climate change discussion. All these analyses are determined on a project by project basis. Review Section 2.1.2. Section 5.3 provides some information about greenhouse gas analysis and Section 2.1.2 provides information on climate change.

Quantitative GHGs emissions are required for EIS projects (some EAs and typically no CEs).

4.3 CONFORMITY

Conformity applies in nonattainment or maintenance areas only

Review Table 3.1 in the manual that lists all the nonattainment and maintenance areas. Nonattainment and maintenance areas are areas that once or currently violate the national air quality standards.

4.3.1 TRANSPORTATION CONFORMITY

Transportation conformity is required by the Clean Air Act section 176(c) (42 U.S.C. 7506(c)) to ensure that federal funding and approval are given to highway and transit projects that are consistent with ("conform to") the air quality goals established by a state air quality implementation plan.

Transportation conformity consists of both regional and project level conformity analysis.

Transportation conformity requires air quality analysis on projects, programs and policies included in transportation plans and improvement programs that are federally funded.

Project listed in Appendix E-1 under 40 CFR 93.126 or 40 CFR 93.128 are exempt from transportation conformity. Projects with auxiliary lanes less than 2 miles in length which remain within existing right-of-way

may be considered exempt. Contact Air Quality Program Coordinator to confirm approach. Projects listed in Appendix E-2 within 40 CFR 93.127 require only project level conformity and do not require regional conformity.

4.3.2 REGIONAL CONFORMITY APPLICABILITY

Projects that are NOT listed in Appendix E (40 CFR 93.126, 127 and 128) need a regional conformity analysis.

MPO Locations: Salem, Eugene-Springfield, Medford-Ashland and Grants Pass

4.3.2.1 MPO AREAS

The MPO performs regional conformity in MPO areas on a regular schedule and the analysis must be referenced in the project level conformity report. Review Section 5.4.2 for regional conformity reporting in project level conformity documentation.

4.3.2.2 RURAL AREAS

ODOT performs regional conformity in rural areas. The analysis is a large level of effort that could take 12-24 months. These analyses are usually identified during the review of projects that are entered or amended into the current STIP. (2.3.4) Interagency consultation should be conducted as soon as a project is identified that could trigger a regional conformity. Review Section 5.4.2 for regional conformity reporting in project level conformity documentation.

Rural areas: Klamath Falls, Oakridge, Lakeview and La Grande

4.3.2.3 REGIONALLY SIGNIFICANT PROJECTS

In nonattainment and maintenance areas, if a project is regionally significant it will require a regional conformity analysis even if it is not federally funded.

4.3.3 PROJECT CONFORMITY APPLICABILITY

Review the following conditions when considering project level conformity analysis.

- Transportation conformity does not apply if the maintenance area that has completed 20 years of maintenance.
- Transportation conformity does not apply if the project is exempt from regional and project level conformity. NEPA documentation should include that the project is listed in 40 CFR 93.126 or 40 CFR 93.128. Review Appendix E-1 for list of exempt projects.
- Transportation conformity applies only at the project level for projects listed in 40 CFR 93.127. Regional conformity is not required for these projects. Include the following language in addition to the project level analysis. “The project is exempt from regional conformity requirements. Separate listing of the project in the RTP, TIP, and regional conformity analyses is not necessary. The project will not interfere with timely implementation of Transportation Control Measures identifies in the applicable SIP and regional conformity analysis.

Note: All transportation projects must be included in STIP. ODOT Air Quality Specialists and FHWA must ensure that the MPOs’ TIPs meet conformity requirements before they can be included in the STIP. This process is performed on the STIP on a 2 to 3 year cycle.

4.3.4 POLLUTANT SPECIFIC PROJECT LEVEL CONFORMITY ANALYSES

Review Table 3.1 of this manual to determine what pollutant should be included in the project level conformity analysis. Project level conformity is done for CO, $PM_{10,}$ and $PM_{2.5}$ in Oregon. The analyses can be qualitative or quantitative and are discussed below.

4.3.4.1 CO PROJECT LEVEL CONFORMITY:

Qualitative CO analysis applies for project with signalized intersections with a LOS of A, B or C or for projects that are not signalized. For NEPA purposes, CO concentrations in attainment areas that were previously CO maintenance areas (e.g. Portland) could be represented by CO concentration included in the most recent CO hot spot analyses performed while the area was under a maintenance plan. Additionally, the report could reference current monitoring data. Refer to Section 5.5.1 for additional information.

Quantitative CO analysis applies for projects with signalized intersection with LOS of D, E or F. Additional projects that qualify for quantitative CO hot spot analysis are listed in Section 5.4. Sections 5.5.2 thru 5.5.6 give the methodology for CO hot spot analysis.

FHWA's CO Categorical Hot-Spot Finding per the transportation conformity rule at 40 CFR 93.123(a) (3) applies for urban highway projects that include one or more intersections in CO maintenance areas. Project sponsors may rely on the categorical hot-spot finding in place of doing their own CO hot-spot analysis as part of a project-level conformity determination in CO maintenance areas. Contact ODOT Air Quality Specialist to confirm eligibility. Additional information is given in Section 5.5.7.

4.3.4.2 PM_{10} OR $PM_{2.5}$ PROJECT LEVEL CONFORMITY:

Projects included in 40 CFR 93.127 or that are non-exempt and determined not to be a "Project of Local Air Quality Concern" (POAQC) which is defined in Section 5.6.1, do not need a project level PM analysis. However, sufficient information about the POAQC evaluation should be provided to justify not doing a hot spot analysis. Most non-exempt projects in Oregon fall into the category of not requiring a hot spot analysis. Additional details are included in the Section 5.6.2.

"Projects of local air quality concern" require quantitative analysis and interagency consultation regarding the inputs. Few projects fall into this category. This quantitative analysis is a significant level of effort. See Section 5.6.3 for more details.

> While there are other criteria, PM_{10} or $PM_{2.5}$ projects of local air quality concern (POAQC) are usually projects that have AADT > 125,000 and % diesel of 8 % or more.

4.3.4.3 CONSTRUCTION EMISSIONS AND CONFORMITY:

For most projects, construction emissions are discussed only qualitatively for conformity purposes. See Section 6.0.

For a few projects, quantitative construction emissions need to be calculated for project level conformity. This requirement falls under 40 CFR 93.123 (c) (5), CO, PM_{10}, and $PM_{2.5}$ hot-spot analyses are not required to consider construction-related activities which cause temporary increases in emissions. Each site which is

affected by construction-related activities shall be considered separately, using established guideline methods.

Temporary increases are defined as those which occur only during the construction phase and last five years or less at any individual site. See Section 6.0.

4.3.5 GENERAL CONFORMITY

Non-highway projects (for example rail) may be subject to general conformity if they receive federal funding or require federal approval. Section 2.3.9 has additional information on general conformity. General conformity can also apply to highway projects if the USCOE has to provide an approval. Usually this happens after NEPA.

General Conformity applies for rail and non-highway projects

- Sometimes, neither transportation conformity nor general conformity apply because the maintenance area has completed 20 years of maintenance or because the project is exempt.

4.4 INDIRECT SOURCE CONSTRUCTION PERMIT (ISCP)

Indirect source construction rules are found in Section 2.5 and the analysis in Section 5.7.

For Lane County review Section 2.5.2 to determine if an ISCP is required for a transportation project.

For Portland, Salem, and Medford DEQ states an "Indirect Sources Rule" applies to parking facilities. If a project involves a parking facility of 1,000 spaces or more in Salem, Medford, or areas of Portland outside the central city, an ISCP is required. Within the Portland central city, an ISCP is required for facilities with 800 or more spaces. Refer to Section 2.5.1 for additional details. (OAR 340-254) Even though, Portland has completed 20 years of its maintenance plan, it is still subject to the indirect source rule.

- Indirect Source Rule applies in Portland, Salem and Medford for parking facilities > 1000 spaces.
  - For Portland central city a stricter condition >800 spaces.

5 AIR QUALITY ANALYSIS (METHODOLOGY)

The NEPA process --"an EIS, an EA, a CE, or a PCE" is the mechanism for documenting air quality effects for all projects. There is a number of underlying air quality programs that must be addressed in a NEPA document. For example, the Transportation Conformity rule outlines criteria and procedures for hot spot analysis of CO, PM_{10}, and $PM_{2.5}$. While MSATs and GHGs analyses for NEPA are based on FHWA guidance which has slightly more flexibility than transportation conformity.

All projects require documentation for each of the programs. However, a quantitative or qualitative analysis is not required for all projects and all programs. The location, size, and complexity of a project will determine the extent of the analysis. Prior to starting an analysis, the regulatory basis of the analysis should be established, and potential exemptions from analysis fully reviewed in light of the specific design and traffic data for the project.

A project level air quality analysis is always based on the project traffic analysis. Data used in the air quality analysis must be consistent with the traffic data analysis for the project. A traffic data request checklist is provided in Appendix C.

ODOT has developed standard Statements of Work and a SOW matrix of analysis requirements for CE, EA and EIS documents to facilitate the hiring of consultants. These documents provide useful information on analysis and documentation requirements. The matrix which is included in Appendix D identifies which tasks are necessary for each area. The standard SOWs for EA/EIS documents and CE documents can be found at the following web link:

http://www.oregon.gov/ODOT/GeoEnvironmental/Pages/GES-SOWs.aspx

Different methodologies may be used for projects but for Transportation Conformity, these alternative methodologies must be approved through interagency consultation process. The methodologies or categories in this section include:

- Attainment Areas
- MSATs
  - Exempt
  - Qualitative
  - Quantitative
- Greenhouse Gases and Climate change-this is driven by NEPA disclosure requirements
- Conformity
  - Exempt Projects
  - Regional conformity
- CO project level conformity
  - Qualitative
  - Quantitative
  - FHWA CO Categorical Hot Spot Finding
- PM_{10} and $PM_{2.5}$ project level conformity
  - Qualitative
  - Project of local air quality concern
- ISCP – this is driven by state and local air quality regulations.

Note: Burden analyses are no longer conducted for ODOT air quality analyses. However, should a Burden Analysis be needed in the future, the analysts can locate the methodology from the 2008 manual the end of Appendix A.

5.1 PROJECTS IN ATTAINMENT AREAS

Projects in attainment areas do not require conformity analyses. However, under NEPA the air quality should still be addressed and MSATs or greenhouse gases can be addressed depending on the NEPA category as discussed below.

5.1.1 ATTAINMENT AREA CATEGORICAL EXCLUSION – CLASS 2 PROJECTS

Air quality needs to be addressed for Class 2 projects. It is important that the scoping and project closeout documents provide sufficient language to address air quality. An example statement for the part 3 is provided below: Refer to the ODOT's NEPA guidance. (This guidance is under development.)

> *"The project area is designated as "attainment" for all criteria pollutants. Therefore conformity requirements do not apply. Temporary increases in pollutant emissions are expected during construction and special provisions for dust control measures, if needed, will be applied. No significant or long-term air quality impacts are expected as a result of this project. An air quality study is not warranted. No additional review or work regarding air quality is required, unless project scope or design changes are proposed."*

5.1.2 ATTAINMENT EA/EIS – CLASS 1 AND 3 PROJECTS

For an area in attainment NEPA requirements apply primarily for Class I and Class 3 projects. The requirements for EA and EIS projects in attainment area are outlined in ODOT's air quality statement of work for EA and EIS projects which are available at the following link under the subheading Forms and Templates.

http://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Air.aspx

5.2 MOBILE SOURCE AIR TOXICS

Mobile Source Air Toxics FHWA developed a tiered approach for analyzing Mobile Source Air Toxics (MSAT) in NEPA documents which places projects into three categories which are: exempt, low potential and high potential for MSAT effects. Section 2.1.1.2 describes the conditions used to separate projects into these categories. Each category is discussed in more detail in the following subsections. Please note that changes to the MSAT national guidance are pending. Once the updated MSAT guidance is published, any changes to the *2018 ODOT Manual* will be posted separately on ODOT Air Quality web page[10].

[10] https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/Air.aspx

5.2.1 PROJECTS EXEMPT FROM MSAT ANALYSIS

A project is usually considered exempt from MSAT analysis because it generates minimal air quality impacts and has not been linked to any MSAT concerns. Projects that are categorically excluded under 23 CFR 771.117(c) or are exempt from conformity requirements under the Clean Air Act Pursuant to 40 CFR 93.126 (See Appendix E-1) and do not require an MSAT analysis. Instead of an analysis, the analysts should include template language for 'exempt project' which can be found in the FHWA interim MSAT guidance document (FHWA 2016a or more recent). This air quality documentation can be used to demonstrate that the project qualifies as a categorical exclusion and/or the exempt project status. A memorandum is not always needed for MSAT exempt projects. Section 7.4.1 provides an outline for an exempt MSAT documentation.

5.2.2 QUALITATIVE MSAT ANALYSIS

Qualitative MSAT analysis is required for projects that fall into the FHWA category of "project with low potential for MSAT effects". Highway project with a low potential for MSAT effects typically include projects that serve to improve operations of highways without adding substantial new traffic capacity and that likely increase MSAT emissions in vicinity of sensitive populations. Sensitive areas include residences, school, churches, parks, active sports area, daycare and other similar locations.

The FHWA anticipates that most highway projects will require a qualitative MSAT analysis. Examples of low potential MSAT project types include minor widening projects (capacity adding), new interchanges, relocating lanes closer to sensitive areas, and expanding an existing intermodal center where design year traffic is projected to be less than 140,000 design year AADT. Consult ODOT Air Quality Specialist for scoping assistance.

A qualitative analysis provides an assessment of MSAT emissions in a narrative form. For example, a qualitative assessment compares traffic volumes, vehicle mix, or routing of traffic between project alternatives and build/no-build scenarios.

The FHWA Interim Guidance contains prototype language covering different project scenarios and appendices that can be used in qualitative analyses. Analysts should use template language to document the qualitative MSAT analysis and tailor the language to the project specific conditions such as traffic data and proximity to sensitive populations. In addition, a NEPA document for this category of projects must include a discussion of information that is incomplete or unavailable for a project specific assessment for MSAT impacts, in compliance with CEQ regulations (40 CFR 1502.22(b)). The discussion should explain how current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts. Appendix C of the FHWA MSAT guidance offers the appropriate language for the NEPA document. Section 7.4.2 gives an outline of a MSAT qualitative report.

5.2.3 QUANTITATIVE MSAT ANALYSIS

The purpose of the quantitative MSAT analysis is to determine the change in MSAT emissions as a result of the proposed project and compare emission between all project alternatives. Quantitative MSAT analysis is only required for projects that fall into the FHWA category of "project with higher potential for MSAT effects" that may have meaningful differences in MSAT emissions among project alternatives. In Oregon, few projects will fall in this category. Note that CE projects typically do not fall into this category; however, unique project scenarios may require this analysis. Contact ODOT Air Quality Specialist to discuss methodology. The criteria used to determine the need for quantitative analysis are given below.

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or

- Create new capacity or add significant capacity to urban highways such as Interstates, urban arterials, or urban collector-distributor routes with traffic volumes where AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year;

And also

- Be proposed to be located in proximity to populated areas.

At this time, Portland is the only area in Oregon with AADT greater than 140,000 that may need a quantitative analysis. FHWA's document titled, "FHWA Frequently Asked Questions for Conducting Quantitative MSAT Analysis for FHWA NEPA Documents[11]", ("MSAT FAQ") gives detailed guidance for performing a quantitative MSAT analysis. Prior to starting the analysis, the analyst should verify the need for the analysis and prepare a methodology memorandum to submit to ODOT for approval and concurrence with FHWA. The modeling methodology should outline how the affected environment for the MSAT analysis was selected using at a minimum the traffic data outlined below. Traffic data needs for a quantitative MSAT analysis are much more detailed and will require additional budget and time for processing the traffic data and running the MOVES model compared to a quantitative CO analysis that is described in section 5.5.

5.2.3.1 IDENTIFY AND DEFINE THE PROJECT AREA

The first step of the MSAT quantitative analysis is to define the project area using the traffic data. FHWA recommends the project area include all segments associated with the project plus those segments expecting meaningful changes in MSAT emissions. A meaningful change in MSAT emissions shall be identified by applying the following traffic conditions from MSAT FAQ when selecting roadway links to be included in affected environment. The analyst should gather data for both the freeway links and the links extending well beyond the project boundaries. The following metrics should be used to identify the project area:

1. Changes of +/- 5% or more in AADT on congested highway links of LOS (level of service) D or worse;
2. Changes of +/- 10% or more in AADT on uncongested highway links of LOS C or better;
3. Changes of +/- 10% or more in travel time; or
4. Changes of +/- 10% or more in intersection delay

[11] https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm

These recommendations are not a substitute for project-specific knowledge and consideration of local circumstances. In particular, when applying the criteria above, it is advisable to disregard links that may show *modeled* changes exceeding the criteria, but are so far removed and/or disconnected from the project corridor that they would not reasonably be affected by the project (i.e., the changes are likely modeling artifacts).

5.2.3.2 TRAFFIC DATA NEEDED FOR MOVES2014B INPUTS FOR MSAT ANALYSIS

Analyst must work with ODOT and applicable agencies to get needed inputs for the MOVES2014b input files. MOVES must be run at county level. It is recommended that the analyst have traffic data meeting with traffic engineer and ODOT prior to processing traffic data request and preparing the MSAT MOVES modeling methodology to better understand what type of traffic data is available for the project. A figure with project links selected for the traffic analysis should be provided to ODOT prior to starting the MOVES analysis.

Below is an example of traffic data fields that were used for a quantitative MSAT analysis performed in the Portland area. Traffic data was collected for existing, design year no build and design year build by link.

1. Link ID
2. MOVES Road Type
3. Link length
4. AADT
5. % Trucks
6. Peak/Off-peak Travel Fractions
7. Peak/Off-peak Travel Speeds

Additionally, some FHWA MSAT case studies are available on FHWA MSAT web page.[12] These studies include emission calculations for the project completion year for both build and no build conditions as well as design year.

5.2.4 EMISSION MODEL – MOVES2014B FOR MSAT ANALYSIS

Transportation emissions are calculated using EPA's most current approved emission model MOVES2014b (EPA, 2015) or more recent version which calculates emission factors or emission inventories for a variety of gasoline and diesel fueled roadway vehicles and non-highway equipment. The model also calculates the effects of electric, compressed natural gas and ethanol vehicles. MOVES2014b accounts for progressively more stringent tailpipe emission standards over the vehicle model years evaluated. The table input files include the applicable climate data by county, fuel characteristics, local vehicle mix and anti-tampering programs, vehicle age distribution and roadway type. For project or county level analyses, model inputs are entered first in a graphical user interface called the "runspec" and then more detailed data is entered in the project tables or county tables.

For MSAT analysis, the MSAT FAQs provide a number of ways to perform the analysis using either the national, county or project scale, however, FHWA recommends that the analysis be performed using county scale. Table 5-1 gives an example of county level runspec for MSAT analysis and Table 5-2 gives an example

[12] https://www.fhwa.dot.gov/environment/air_quality/air_toxics/research_and_analysis/

of county level table inputs. The analyst will also need to determine how many calendar years need to be run and how many scenarios.

5.2.4.1 DEVELOP THE MODELING APPROACH

As stated above, the analyst should coordinate with ODOT's Air Quality Specialist and FHWA on the development of the modeling approach to ensure all the requirements are met. A draft modeling methodology should be submitted to ODOT and FHWA for review prior to starting the analysis. The methodology should address how the traffic will be pre- and post-processed, modeling assumptions, the low-emitting vehicles and zero emitting vehicle program. The methodology should include tables for both the MOVES runspec selections (Table 5-1) and the county data manager inputs (Table 5-2). These tables are examples only and not a template. Tables 5-1 and 5-2 are examples that were used for a MSAT analysis performed in the Portland Area.

Analysts should refer to MSAT FAQs which give specific details on MOVES runspec, data sources, quality assurance steps for input spreadsheets, and specific pollutants. Some examples of key steps in FAQs for MSAT quantitative analysis are:

- MOVES should be run with only running exhaust, crankcase, evaporative permeation and evaporative fuel leaks as those are specific for on the roadway conditions.
- Emissions for all applicable MSAT pollutants listed in the most recent FHWA MSAT guidance should be calculated.
- For major intermodal freight facilities, off-network vehicle activities may need to be characterized differently.
- MSAT MOVES inputs should be updated by importing the Oregon LEV and ZEV database to reflect that the Oregon fleet has adopted the California LEV and ZEV vehicle requirements since 2009. This database can be obtained from ODOT.
- Analyst must properly account for diesel particulate emission by one of two methods outlined in the FAQ MSAT guidance.

TABLE 5-1 EXAMPLE OF MSAT MOVES RUNSPEC SELECTIONS

Input Name	Selection
Scale & Calculation Type	County, Inventory
Time Spans	Analysis Years: existing, design year
	Time Aggregation: All hours, Weekdays
Months of Analysis	Representative for all seasons
Geographic Bounds	Oregon, Multnomah County
Vehicles/Equipment	Diesel Fuel: combination long-haul truck, combination short-haul truck, intercity bus, light commercial truck, passenger car, passenger truck, refuse truck, school bus, single unit long-haul truck, single unit short-haul truck, transit bus

Input Name	Selection
Vehicles/Equipment	Electricity: light commercial truck, passenger car, passenger truck
	Ethanol (E-85): light commercial truck, passenger car, passenger truck
	Gasoline: combination short-haul truck, light commercial truck, motor home, motorcycle, passenger car, passenger truck, refuse truck, school bus, single unit long-haul truck, single unit short-haul truck, transit bus
Road Types	Urban restricted (freeway), urban unrestricted (surface streets)
Pollutants	Acetaldehyde, acrolein, benzene, 1,3-butadiene, diesel particulate matter (DPM) as primary exhaust PM_{10}, ethylbenzene, formaldehyde, naphthalene (gas and particulate), polycyclic organic matter (POM) as 30 specific PAH per FHWA guidance
Processes	MSATs only, roadway emissions only - running exhaust, crankcase running exhaust, evaporative permeation, and evaporative fuel leaks.
Input Data Sets	Oregon LEV data set

TABLE 5-2 EXAMPLE OF MSAT COUNTY DATA MANAGER INPUTS FOR MOVES

MOVES Table Name	Data Source	Source File Name-Date
Vehicle Type VMT	Metro, except for HPMSTYPEYear that was developed for project by year and case for 4 time periods	HPMSTypeYear- project specific
		monthVMTFraction
		dayVMTFraction
		hourVMTFraction
I/M Programs	Metro	Existing year, future year
Road Type Distribution	Metro	RoadTypeDistribution (may be project specific)
Source Type Distribution	Metro	SourceTypeDistribution
Average Speed Distribution	Developed for project by year and case for four daily time periods.	AvgSpeedDistribution
Fuel	Metro	fuelSupply
		fuelFormulation
		fuelUsageFraction
		fuelAVFT_OR
		fuelAVDT_OR_ZEV
Meteorological Data	Metro	zoneMonthHour

5.2.5 PORTLAND AIR TOXICS ASSESSMENT

In 2006, DEQ published the results of an air modeling study called the Portland Air Toxics Assessment (PATA).

The PATA was a computer modeling project designed to estimate and assess the risk from 12 air toxics in the Portland area, including six of the MSATs. It is the first local-scale air toxics modeling project conducted in Oregon as part of the developing state air toxics program. It is based on the 1999 air emissions inventory for the Portland area. The purpose of the assessment is to provide more refined estimates of the most significant air toxics in the Portland area. Such estimates will enable DEQ to better characterize the risks from air toxics, to better understand local patterns of air toxics exposure, and to identify locations with elevated risk. Finally, DEQ can measure changes in emissions and develop emission reduction strategies from the information provided by PATA. The PATA results identify diesel exhaust, motor vehicles, and burning as important sources of air toxics in Portland. In general, the assessment showed widespread risks from three MSATs—benzene, formaldehyde, and diesel exhaust—throughout the Portland-Vancouver region. Higher risks for some pollutants (benzene and formaldehyde) appeared to align to some degree with major highway corridors.

In 2011, DEQ updated the air toxic study to predict concentrations for 19 air toxics for Portland in year 2017. These studies are resources to describe existing conditions and to provide a general understanding of the human health risk associated with MSATs in the Portland area. The study methods are limited in their usefulness for individual project analysis. PATA used state-of-the-art dispersion techniques and provided a useful planning tool for DEQ and the public to identify general levels of health risk and the sources of associated pollutants. However, the methods used in the study are not accurate enough to evaluate the potential health risks associated with individual transportation projects.

The study can be found at the following link:

http://www.oregon.gov/deq/aq/air-toxics/Pages/PATA.aspx

DEQ established air toxics benchmarks as planning goals to protect human health. The 2011 study identified 15 pollutants that are above health benchmarks. Eight of those pollutants cause the most health risks and include 1,3 butadiene, benzene, diesel particulate, 15 PAH, naphthalene, cadmium, acrolein, and formaldehyde. Important sources of these pollutants include exhaust from cars and trucks, wood burning, and industry. Acrolein and formaldehyde form through chemical reactions in the atmosphere. The largest source of air toxics is gasoline and diesel engines. The study showed that most air toxics are found throughout Portland area but higher concentrations are found in densely populated neighborhoods, near busy roads and highways and in areas with business and industrial activity. These general issues regarding accuracy do not negate the usefulness of the PATA as a planning tool, but should be considered when reviewing the data in the context of emissions from individual projects.

5.3 GREENHOUSE GAS EMISSIONS

This section discusses the methodology that can be used to calculate GHG emissions. As stated in Section 2.1.2, quantitative GHG emission analyses should be conducted for all EIS projects and for some EA projects. Some EA project may only require a qualitative discussion or no discussion at all.

Any quantitative analysis of GHG emissions should address the operational, construction, and maintenance components of the project. If a quantitative analysis was performed at the planning level and included GHG emissions with and without the project, this analysis could be referenced within the NEPA document in place of the project-level quantitative analysis. Both planning and project level analysis can be used, but if both were included, the planning-level analysis would be a point of comparison to put the project-level results

into context. If both are used, the project documentation should describe if the planning-level analysis covered the same sources of emissions (exhaust, fuel cycle, construction, maintenance) as the project level analysis. However, if no planning level analysis is available, an analysis should be conducted at the project level. Prior to performing a quantitative analysis for any specific project, interagency coordination between ODOT and FHWA should be conducted to reach agreement on the approach for the GHG emissions analysis and, as appropriate, the modeling methodology. If other emissions are being quantified for the project, this coordination can be completed at the same time.

5.3.1 OPERATIONAL EMISSIONS

Operational emissions are from on-road vehicles. Operational emissions should be calculated using the MOVES2014b (or most recent version) model for tailpipe emissions. Analysts could reference EPA Guidance on using MOVES2014b to calculate GHG emissions, "Using MOVES for Estimating State and Local Inventories of Onroad Greenhouse Gas Emissions and Energy Consumption" (EPA, June 2016 or more recent). Additional operational emissions should be calculated using the FHWA fuel cycle factor of 0.27 (or updated factors available from FHWA), which accounts for emissions released during fuel extraction, refining, and transport prior to use by vehicles. The factor should be applied to the tailpipe emissions calculated with MOVES. In congested areas, or where the project involves operational strategies (e.g., signal timing), the VMT values used in MOVES should reflect the impact of reoccurring and non-reoccurring congestion. While travel demand models capture the former (i.e., capacity limitations) they do not capture the latter (i.e., crashes). To more accurately develop speed profiles for use in MOVES, an assessment could be made as to the need to employ more detailed operational models (e.g., micro-simulation) for both build and no-build scenarios to more accurately reflect the reduction in emissions from the project.

5.3.2 CONSTRUCTION EMISSIONS

Construction emissions include emissions from fuels burned in the construction equipment used to build a project, such as bulldozers, pavers, and rollers. Construction emissions also come from increased traffic congestion caused by construction activities. Construction emissions should be calculated using FHWA Infrastructure Carbon Estimator (ICE) tool (FHWA, 2014[2]). ICE is a spreadsheet tool that incorporates projects features and construction traffic delays to calculate emissions from construction equipment, material, and routine maintenance.

5.3.3 MAINTENANCE EMISSIONS

Maintenance emissions come from fuel combusted in routine maintenance activities like paving. The ICE tool should be used to calculate the maintenance emissions.

Since the effects of GHG emissions are based on cumulative changes of emissions in the atmosphere, and not episodic levels of emissions, it is useful to calculate the cumulative change in emissions over the life of the project, as opposed to reporting base year and design year levels. The calculation of cumulative emissions changes should be a "net" calculation that reflects both any reductions in design year levels resulting from the project, along with the construction and maintenance emissions incurred in providing those reductions.

[2] https://www.fhwa.dot.gov/environment/sustainability/energy/tools/carbon_estimator/

5.4 PROJECT LEVEL CONFORMITY ANALYSIS

The conformity regulations are applicable to projects within nonattainment or maintenance areas. The requirements to demonstrate conformity for a project are twofold. First, the project must be included in a conforming RTP and TIP to address long-term regional impacts. The regional analyses performed for RTPs and TIPs evaluate the total emissions associated with all planned projects to determine whether the projects will cumulatively exceed the emissions budget for on-road mobile sources contained within the air quality SIP. If the emissions are within the budget, then no regional adverse air quality impacts will occur as a result of the planned projects, and the RTP and the TIP are found to conform.

In areas with MPOs, the regional evaluation is performed by the MPO. These areas include Salem (CO), Eugene-Springfield (PM_{10}), Medford- Ashland (PM_{10} and CO), and Grants Pass (PM_{10} and CO). In rural nonattainment and maintenance areas, (Oakridge – PM_{10} and $PM_{2.5}$, Klamath Falls – PM_{10}. $PM_{2.5}$ and CO, Lakeview – PM_{10}, La Grande – PM_{10}) the regional conformity analysis is based on projects for the area included in the STIP and the analysis is performed by ODOT. Regional conformity analyses are performed for regionally significant projects that are not exempt from conformity. Section 3.0 of this manual contains a subsection for each nonattainment or maintenance area with links to the conformity determinations or contacts to obtain the information.

The first part of a project level conformity analysis is that the documentation must show the project comes from a conforming regional analysis. This can be demonstrated by verification that:

1) A project is included in the RTP and TIP,

2) That the project considered in the NEPA document is the same in design and scope as the project included in the RTP and TIP, and

3) That the project will not interfere with implementation of TCMs (Portland is the only area with TCMs and they are not generally of a nature that individual projects will cause interference).

If the final project scope and design do not reflect that included in a conforming regional emissions analysis, the project cannot be found to conform and a final environmental document cannot be approved (cannot obtain a record of decision (ROD), finding of no significant impact (FONSI) or approval of a Part 3 CE) until the plan is revised to reflect the final project design concept and scope and conformity is redetermined.

The second conformity demonstration requirement is that a project cannot create a new violation or exacerbate an existing violation. A project-level hot spot analysis evaluates localized air pollutant concentrations for projects located in CO, PM_{10}, or $PM_{2.5}$ nonattainment or maintenance areas. An air quality analysis is always based on the traffic analysis for a project and must use the latest planning assumptions. Hot spots analysis assumptions used in modeling must be consistent with those in the regional conformity emissions analysis for inputs that are required by both analyses.

5.4.1 EXEMPT PROJECTS IN NONATTAINMENT OR MAINTENANCE AREAS

Some projects in nonattainment and maintenance areas are exempt from conformity analysis requirements. A list of projects exempt from conformity requirements is included in Appendix E. Some types of projects are exempt from both the regional (RTP/TIP) and local analysis (project-level) requirements under 40CFR 93.126 or OAR 340-270 “Table 2 Exempt Projects”, and some projects are exempt only from regional analysis under 40 CFR 93.127 or OAR 340-280 “Table 3 Exempt Projects from Regional Emission Analysis” (refer to

Appendix E-1 and E-2).

5.4.2 REGIONAL CONFORMITY

This section discusses project-level regional conformity analysis requirements. Section 3 includes tables for each individual nonattainment or maintenance area with web links to regional conformity analyses completed by local MPOs in Oregon. For rural areas, ODOT performs the regional conformity analysis for regionally significant projects or nonexempt project.

For projects in MPO areas, the analyst should document that the project is included in a conforming RTP and TIP. It is important to verify that the specific project description and title in the RTP and/or TIP are the same as described in the NEPA project alternatives description. **Insert the following text in environmental document:**

The proposed project is fiscally constrained and is in the [insert title and year] Regional Transportation Plan [include amendment number if applicable] which was found to conform by [insert Metropolitan Planning Organization (MPO)] on [date]. FHWA and FTA issued the air quality conformity finding on [date]. The proposed project is also included in [insert MPO] financially constrained [insert title and year] Transportation Improvement Program [include amendment number if applicable], page(s) [#]. The [insert MPO and year] Regional Transportation Improvement Program was found to conform by FHWA and FTA on [date]. The design concept and scope of the proposed project in this NEPA document is consistent with the project description in the [year] RTP, the [year] TIP and the assumptions in the [MPO's] regional emissions analysis.

For projects in a rural nonattainment or maintenance area, if a regional analysis has not been performed, it will be required before a final environmental document can be approved. The regional analysis will require interagency consultation for agreement on model input parameters and on the projects to be included in the analysis. The ODOT Transportation Planning Analysis Unit (TPAU) will typically complete the regional traffic analysis and emissions estimate. The ODOT Air Quality Specialist should be contacted immediately if a regional analysis is required for a project in a rural nonattainment/maintenance area, or if the design and scope of a project is not consistent with the design and scope described in the RTP and TIP.

Insert the following text in the environmental document for rural nonattainment or maintenance areas.

A regional conformity analysis conducted by [insert either ODOT] covering the [insert name of nonattainment or maintenance area] for [identify pollutant(s)] was carried out that includes this project, and all reasonably foreseeable and financially constrained regionally significant projects for at least 20 years from the date that the analysis was started. The analysis used the latest planning assumptions, and the [name of emission model] and appropriate analysis methods, as determined by Interagency Consultation on [date/s of meeting/s or correspondence]. Based on this analysis, the [insert name of nonattainment area] will conform to the SIP, including this project, based on the [emission budget, project/no project, and/or project/baseline] conformity test(s) and analysis procedures, as described in 40 CFR 93.109(l). The design concept and scope of the proposed project is consistent with the project design concept and scope used in the regional conformity analysis. The project as included in the STIP is included in Appendix [X] of this document. Timely implementation of control measures was reviewed by Interagency Consultation on [date of meeting].

5.5 PROJECT LEVEL CO HOT SPOT AIR ANALYSIS[13]

The purpose of the CO project level local or "hot spot" analysis is to estimate the concentration of CO that a human would be exposed to if they were situated in a location expected to have the highest CO concentrations as a result of the project alternatives. Areas that are subject to this analysis include Salem, Medford, Grants Pass and Klamath Falls. High CO concentrations typically occur near congested intersections. Some CO hot spot analyses are qualitative and some are quantitative. The first step for determining the analysis type or length of analysis is to review the project description and the traffic data.

Quantitative CO hotspot analyses are needed for the following types of projects (40 CFR 93.123(a)):

(i) For projects in or affecting locations, areas, or categories of sites which are identified in the applicable implementation plan as sites of violation or possible violation;
(ii) For projects affecting intersections that are at Level-of-Service D, E, or F, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes related to the project;
(iii) For any project affecting one or more of the top three intersections in the nonattainment or maintenance area with highest traffic volumes, as identified in the applicable implementation plan; and
(iv) For any project affecting one or more of the top three intersections in the nonattainment or maintenance area with the worst level of service, as identified in the applicable implementation plan.

5.5.1 QUALITATIVE CO HOT SPOT ANALYSIS

Qualitative CO hot spot analyses are used for projects not meeting the criteria listed above. The analysis should document any available traffic data such as LOS, delay or vehicle to capacity ratio to support the hot spot finding.

5.5.2 QUANTITATIVE CO HOT SPOT ANALYSIS

The general process used in the CO quantitative hot spot analysis is:

- Eliminate intersections that are 1) not affected by the project, 2) operated at LOS A, B, or C, and 3) are not signalized (these intersections are unlikely to cause air quality issues due to the project).
- For projects which only have intersections with LOS of A, B or C, only a qualitative analysis is needed which discusses the LOS and vehicle capacity ratio and delay if available.
- Rank intersections affected by the project by level of service (LOS) and total entering traffic volumes.
- Select the intersection(s) to be analyzed based on the worst LOS and total entering traffic volume.
- Perform a quantitative analysis for the least number of intersections needed to draw a conclusion regarding the project impacts; this can frequently be a single intersection. Perform a qualitative analysis for other affected intersections, for example, if the worst intersection on an LOS and entering volume basis shows no impacts and there are not substantive geometric differences, other intersections are unlikely to show impacts.
- Contact ODOT Air Quality specialist to obtain emission factors for idle conditions and for speed on free flow links to be used in the dispersion modeling.
- Use EPA's dispersion model CAL3QHC which is still applicable for screening analysis to estimate the 1-hour CO concentrations adjacent to the affected intersections for traffic operations (include

[13] https://www.epa.gov/state-and-local-transportation/project-level-conformity-and-hot-spot-analyses

ambient background concentrations in the 1-hour results). This model is applicable given the relatively low CO background concentrations.

- Use persistence factors to calculate 8-hour concentrations from the 1-hour results which are discussed in Section 5.5.6.

EPA's air dispersion model guidance document referred to as Appendix W was updated in 2016 and CAL3QHC can continue to be used for screening CO analyses. Information on typical CAL3QHC model inputs for CO areas in Oregon is included in Section 5.5.5. These inputs follow EPA's 1992 CO guidance that employs CAL3QHC for CO screening analysis. This technical guidance remains in place as the recommended approach for CO screening until such time that the EPA (1) develops a new CO screening approach based on AERMOD or another appropriate models and (2) updates the Guidelines to include the new CO screening approach. The CAL3QHC guidance document is available at (select "other models" and "CAL3QHC/CAL3QHCR"):

https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models

5.5.3 CO STATEWIDE EMISSION RATES

CO emissions have decreased significantly over recent years and the emission rates calculated with the EPA MOVES model for projects in Oregon and used in dispersion modeling result in project concentrations that are well below the 8 hour CO NAAQs. A statewide emission rates methodology for projects in Oregon requiring CO Hot Spot analysis has been developed and approved by EPA and FHWA (ODOT, 2018). The methodology uses the most conservative inputs from all 4 CO maintenance areas in Oregon to calculate emission rates. ODOT will periodically review and update the methodology in consultation with EPA and FHWA. Analysts should contact ODOT to obtain emission rates for each project level analysis. Emission rates for existing, opening year and build year will be provided by ODOT. The methodology is conservative, so, in the event that a project is shown to violate the standard, then the emission rates would be revisited and ODOT would remodel with an area specific vehicle fleet. These emission rates will be created using the most current version of MOVES.

5.5.4 CO EMISSION RATES WITH EPA MOVES MODEL

In the event that statewide emission rates are too conservative, the analyst can conduct emissions analysis with MOVES as discussed in Appendix B-2 with consensus from ODOT. An introduction to the MOVES emission model was given in the MSAT quantitative analysis Section 5.2.3.3. For CO analysis, MOVES is run at the project level. Input tables are summarized in Appendix B-2 along with additional modeling details.

5.5.5 DISPERSION MODELING WITH CAL3QHC FOR CO HOT SPOT ANALYSIS

In Oregon, CO dispersion modeling uses a screening approach and therefore using EPA's CAL3QHC model is an acceptable approach. However, for PM_{10} and $PM_{2.5}$ analyses, dispersion modeling must use EPA's dispersion model AERMIC MODEL (AERMOD) starting February 2020. Information on typical CAL3QHC model inputs for CO areas in Oregon is included in Table 5-3. The analyst is responsible for verifying that dispersion modeling inputs are current by checking with the appropriate regulatory agencies, typically either DEQ or LRAPA staff. The CAL3QHC guidance document is available at (select "other models" and "CAL3QHC/CAL3QHCR"):

https://www.epa.gov/scram/air-quality-dispersion-modeling-preferred-and-recommended-models

A somewhat outdated resource that is still useful for information on ranking and modeling of intersections is the EPA *Guideline for Modeling Carbon Monoxide from Roadway Intersections*:

http://www.epa.gov/scram001/guidance/guide/coguide.pdf

The calculation of concentrations from the movement and delay of vehicular traffic through dispersion modeling requires inputs describing vehicle emissions, ambient background concentrations, meteorology, site characteristics, and traffic data. The carbon monoxide analysis is typically performed for "worst-case" conditions: low temperatures, low wind speeds and peak hour traffic volumes. Ambient background concentrations and meteorological parameters to be used in Oregon are shown in Table 5-3. Methods for estimating vehicle emissions are discussed in previous sections of this manual. Site characteristics and traffic data are discussed further in the following sections.

5.5.5.1 SITE CHARACTERISTICS

Site characteristics include roadway coordinates, roadway width, and receptor coordinates.

5.5.5.2 ROADWAY COORDINATES AND WIDTH

The dispersion models require the roadway of interest to be divided up into segments referred to as links. These links are input into the dispersion model as coordinates. A new link must be coded when there is a change in width, height, traffic volume, travel speed, or vehicle emission factors. In the CAL3QHC dispersion model there are two types of roadway links: free-flow and queue.

A free flow link is defined as a straight segment of roadway having a constant width, height, traffic volume, and vehicle emission factor where vehicles are moving without experiencing the delays typically associated with intersections. The length of the free-flow link should be the center to center distance from the intersection of interest to the next intersection. A maximum of 1,000 feet for this distance is sufficient. The free flow link width is defined as the width of the traveled roadway (lanes of moving traffic only) plus 10 feet (3 meters) on either side.

A queue link is defined as a straight segment of roadway having a constant width, height, traffic volume, and vehicle emission factor, where vehicles are idling for a specific period of time. The CAL3QHC dispersion model assumes that vehicles will be in an idling mode of operation only during the red phase of the signal cycle.

The length of the queue link is estimated by the dispersion model, based on the volumes and capacity of the approach using a simplified version of the procedures described in the 1985 Highway Capacity Manual for under-saturated conditions, and the Deterministic Queuing Theory procedure for the additional queuing length associated with over-saturated conditions. The coordinate input for the queue links originate at the stop line of the approach.

The queue link width is defined as the width of the traveled roadway (lanes of moving traffic) only. Ten feet is NOT added to the travel lanes, as in the case of the free flow link.

5.5.5.3 RECEPTOR COORDINATES

A receptor is defined as the location at which concentrations are estimated. The dispersion model requires coordinates to be input for receptor locations.

Receptors should be located:

- Ten feet (3 meters) from the near edge of the travel lane
- Five feet (1.8 meters) above ground level
- On sidewalks, if width allows
- On both sides of the road
- At places of expected 1-hour and 8-hour maximum concentrations
- At places where the general public has access (at reasonable sites)
- At 75 feet (25 meters) and 150 feet (50 meters) from intersection and midblock

Receptor reasonableness is defined in terms of proximity to the intersection, but not on the roadway itself. Sidewalks, vacant lots, parking lots, and property lines are all reasonable sites as long as the public has access to them.

5.5.5.4 TRAFFIC DATA

Traffic variables include traffic volumes, speeds, and signal data. Saturated flow rate, signal type, and arrival rate are optional inputs into the dispersion model. It is recommended that traffic variables be obtained from a traffic engineer. A copy of the traffic request form used can be found in Appendix C. To predict peak 1-hour CO concentrations peak hour traffic data is needed.

5.5.5.5 SIGNAL DATA

Signal data is used by the CAL3QHC dispersion model to estimate queue lengths. Signal data includes average signal cycle length, average red time, and clearance lost time.

- The average signal cycle length should be specified for each intersection being modeled.
- The average red time should be specified for each approach at the intersection being modeled.
- The clearance lost time should be specified for each approach at the intersection being modeled.

5.5.5.6 OPTIONAL INPUTS

- The saturation flow rate or the hourly capacity per lane should be 1,800 vehicles per hour unless otherwise specified.

  There are three types of signals. Unless otherwise specified, the CAL3QHC dispersion model will assume the signal to be a pre-timed signal.

  1. Pre-timed,
  2. Actuated, and
  3. Semi-actuated.

There are five options for arrival type:

1. **Worst Progression**: dense platoon at beginning of red
2. **Below Average Progression**: dense platoon during middle of red
3. **Average Progression**: random arrivals
4. **Above Average Progression:** dense platoon during middle of green
5. **Best Progression:** dense platoon at beginning of green

Unless otherwise specified, the CAL3QHC dispersion model will default to average progression (3).

TABLE 5-3 CAL3QHC MODEL INPUTS	
Meteorological Variables	
Averaging Time	60 minutes
Surface Roughness	Select appropriate factor from Table 5-4
Wind Speed	1 meter per second
Wind Angle	0 to 360 degrees in 10-degree increments
Stability Class	4 (D) – Note that all CO maintenance and nonattainment areas in Oregon are "Urban" as defined in the modeling guidelines (population greater than 5,000)
Mixing Height	1,000 meters
Ambient Background 1 Hour CO Concentration	
Eugene-Springfield	1.5 ppm
All other areas of the state	2 ppm
Site Variables	
Receptor Coordinates	At least 3 meters from each traveled roadway on both sides of the street at distances of 3 meters, 25 meters, and 50 meters from the cross street. Receptors to be placed outside of roadway in all cases. Height 1.8 meters.
Note: Background concentrations from the previous manual were retained for all areas as many CO monitors have been discontinued. Recent monitoring conducted in Eugene in years 2015-2017 indicated that 1.5 ppm is still representative of the area.	

TABLE 5-4 SURFACE ROUGHNESS FACTORS	
Type of Surface	z_0 (cm)
Smooth desert	0.03
Grass (5-6 cm)	0.75
Grass (4 cm)	0.14
Alfalfa (15.2 cm)	2.72
Grass (60-70 cm)	11.4
Wheat (60-70 cm)	22.00
Corn (220 cm)	74.00
Citrus Orchard	198.00
Fir Forest	283.00

TABLE 5-4 SURFACE ROUGHNESS FACTORS	
City land-use:	
Single-family Residential	108.00
Apartment Residential	370.00
Office	175.00
Central Business District	321.00
Park	127.00

5.5.6 PERSISTENCE FACTORS AND BACKGROUND CONCENTRATIONS

The CO persistence factor is used to convert 1 hour CO concentration calculated by the dispersion model to 8 hour concentrations. In the 2008 manual, persistence factors were available for each CO maintenance areas; however, that data is outdated. Based on an interagency meeting between the Oregon Transportation Conformity Group, it was decided that the EPA default persistence factor of '0.7' will be used for all CO maintenance areas moving forward (May, 2018).

The revised approach for persistence factors in Oregon CO Maintenance Areas will be for the analyst to use the EPA default persistence of '0.7'. To calculate 8-hour CO concentrations, the analyst must apply this persistence factor to the sum of the 1 hour CO concentration from the dispersion model and the background 1 hour CO concentration.

The advantage of using a persistence factor of 0.7 is that the "FHWA CO Categorical Hot Spot Finding" would be applicable. This methodology is discussed in Section 5.5.7.

Most CO monitors in Oregon were removed because of an agreement between DEQ and EPA to remove pollutant monitors that were far below the standard and of limited value and to shift these resources for pollutant monitors that were near or above the standard. This change resulted in an increase in the number of ozone and $PM_{2.5}$ monitors. This reduction of CO monitors was proposed in DEQ's Annual Network Plan and was approved by EPA. The only remaining CO monitors in Oregon are located in Portland. These monitors are located at the national core site and at the near road site as required by EPA. Because, there are no CO monitors in CO maintenance areas, the background concentrations used in the previous 2008 Air Quality Manual were retained. These background concentrations are given in Table 5-3.

5.5.7 FHWA CO CATEGORICAL HOT SPOT FINDING

On October 25, 2013, FHWA first released their CO Categorical Hot-Spot Finding[14] and then updated the finding in 2017 with new emission rates using MOVES2014b. USDOT in consultation with EPA prepared the "Categorical Hot-Spot Finding" to show that projects meet the requirements in 40 CFR 93.116(a) and that no additional hot-spot analysis for applicable FHWA and FTA projects in CO nonattainment and maintenance areas is required.

In order to rely on the CO Categorical Hot-Spot Finding as part of their project-level conformity determination (40 CFR 93.116(a) and 93.123(a)), a project's parameters must fall within the acceptable range of modeled parameters. This means that for a project with multiple intersections, the project sponsors should follow section 4 in EPA's, "Guideline for Modeling Carbon Monoxide from Roadway Intersections" to

[14] https://www.fhwa.dot.gov/environment/air_quality/conformity/policy_and_guidance/cmcf_2017/index.cfm

select the highest volume and worst level of service intersections for analysis. Once the intersection(s) are identified, the project sponsor will need to look at each approach within the intersection(s) separately to compare to the acceptable ranges to rely on the CO Categorical Hot-Spot Finding.

There are two options for determining if their project falls within the acceptable range: 1) use the table in the appendix of the guidance, "Project Parameters and Acceptable Ranges for CO Categorical Hot-Spot Finding"; or 2) enter project information into FHWA's web based tool. Both options require the same data. All intersections requiring analysis must fall within the acceptable range for all the parameters in order to rely on the CO categorical hot-spot finding. If one or more parameters are outside the acceptable range for any of the intersection approaches analyzed, then the project will not be able to rely on the CO Categorical Hot-Spot Finding.

Traffic Data needed for analysis for opening year and design year:

- Angle of cross streets for intersection (90 degrees)
- Maximum grade for intersection (less than or equal to 2%)
- Number of approach lanes (less than or equal to 4)
- Number of left turn lanes for each approach (less than or equal to 2)
- Peak hour average speed for each approach (greater than or equal to 25 miles per hour)
- Maximum approach volume for each approach (less than or equal to 2640)
- Level of service (A, B,C, D, E)
- Heavy duty diesel trucks percentage (greater than or equal to 5)

Additional Project Parameters:

- Lane width (12 feet)
- Median width (0 feet)
- Persistence factor (less than or equal to 0.7) (applies in all areas)
- Ambient temperature (Greater than or equal to -10 degree F)
- 1-hour background concentration (less than 32.6 ppm)

5.6 PM_{10} AND $PM_{2.5}$ HOT SPOT ANALYSIS

Transportation projects that are located in PM_{10} and $PM_{2.5}$ nonattainment and maintenances areas that are deemed to be projects of local air quality concern (POAQC), as defined in 40 CFR 93.123(b)(1), require a quantitative analysis. The analysis should be performed using the EPA's recommended on-road vehicles emission models (MOVES) and air quality dispersion models (AERMOD/CAL3QHCR). Areas that are subject to this analysis include Eugene-Springfield, Medford-Ashland, Grants Pass, Klamath Falls, Oakridge, Lakeview, and La Grande. One EPA example of a POAQC is a highway with greater than 125,000 AADT and 8% or more of the AADT being diesel truck traffic. Based on this example, quantitative PM_{10} and $PM_{2.5}$ analyses in Oregon where PM_{10} and $PM_{2.5}$ maintenance areas all have AADT well under 125,000 are very unlikely and therefore this manual does not go into extensive detail regarding quantitative PM_{10} and $PM_{2.5}$ hot spot analysis. All projects located in PM areas require a POAQC evaluation to support the classification.

EPA released an updated guidance document for completing quantitative PM hot-spot analyses in 2015 which was titled "*Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Area*" (EPA-420-B-15-084). This guidance provides step by step framework for conducting PM_{10} hot-spot analyses using MOVES for emission modeling and AERMOD or CAL3QHCR for

dispersion modeling. Analysts should check the EPA's Support Center for Regulatory Atmospheric Models (SCRAM) website to ensure that they use the latest MOVES and dispersion model and guidance documents as these are subject to periodic updates.

https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves

5.6.1 PROJECT OF LOCAL AIR QUALITY CONCERN

A Project of Local Air Quality Concern (POAQC) as defined in 40 CFR 93.123(b)(1) is:

(i) New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles;

(ii) Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

(iv)Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and

(v) Projects in or affecting locations, areas, or categories of sites which are identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

5.6.2 PM_{10} AND $PM_{2.5}$ POAQC EVALUATION

A PM_{10} and $PM_{2.5}$ POAQC evaluation is conducted based on the definition given in 5.6.1. Most ODOT projects will not be a POAQC and the primary purpose of the air quality project documentation will be to explain why a quantitative hot spot analysis is not needed. The evaluation should consider the surrounding land use and describe whether the project involves a bus, rail terminal or transfer point. Additionally, traffic data should be used such as AADT traffic data, percent diesel truck (or truck AADT) at the highest volume location in the study area for the year of implementation and design year for both no build and build conditions. If project specific traffic analyses are not available for the study, then data from the MPO or Highway Performance Monitoring System (HPMS) may be used. If available, traffic analyses indicating no build and build level of service at high volume intersections and/or interchanges may be included in discussion. The traffic data should be compared to criteria provided in federal regulation and guidance[15]. If applicable, information on relevant intermodal terminals including peak hour arrivals for trucks and buses may be included. Sections 7.2 and 7.3 include PM_{10} and $PM_{2.5}$ specific bullets that can be used to document the POAQC evaluation in air quality report or memorandum.

If the project is a POAQC then a quantitative analysis is needed and an interagency consultation must be held to confirm that the analysis is needed and to approve the analysis methodology with the interagency consultation group for transportation air quality in Oregon.

[15] https://www.epa.gov/state-and-local-transportation/project-level-conformity-and-hot-spot-analyses#pmguidance

5.6.3 PM_{10} AND $PM_{2.5}$ QUANTITATIVE ANALYSIS

There have been no quantitative PM_{10} or $PM_{2.5}$ analysis with EPA MOVES or AERMOD performed for ODOT projects. AERMOD is the preferred dispersion model used for PM_{10} or $PM_{2.5}$ analysis. The data inputs needed for these analyses are detailed and require additional time and additional traffic data. In addition to traffic data, AERMOD requires meteorological data. Prior to developing the modeling methodology for a PM analysis, the analyst or project sponsor should contact ODOT Air Quality Specialist.

One of the currently approved dispersion models for PM_{10} and $PM_{2.5}$ analyses is AERMOD. CAL3QHCR is also currently approved, however, the grace period for using CAL3QHCR ends on February 16, 2020. The analyst is responsible for verifying that inputs are current by checking with the appropriate regulatory agencies, typically either DEQ or LRAPA staff. This manual will not include more detailed information about PM_{10} and $PM_{2.5}$ modeling as was done for CO modeling since no PM_{10} and $PM_{2.5}$ quantitative analyses have been performed for ODOT projects using MOVES or AERMOD. However, the following list is a brief overview of the key steps for conducting a quantitative PM analysis based on EPA PM_{10} and $PM_{2.5}$ Guidance. The following items follow the flowchart on page 19 in Exhibit 3-1 of the PM Guidance document:

1. Determine the need for a PM hot-spot analysis.
2. Determine approach, models and data to be used.
3. Estimate on-road vehicle emissions using EPA MOVES latest version.
4. Estimate emission from road dust, construction and additional sources. The following emission sources should be discussed during interagency consultation to determine if it is necessary to include in air quality model:
    a. Re-entrained road dust
    b. Construction activities
    c. Other nearby sources affected by the project, if any
5. Select Air Quality Model, Data Inputs, and Receptors:
    a. AERMOD required starting February 2020.
    b. CAL3QHCR can be used through transition period through February 2020.
6. Determine background concentrations based on the appropriate air monitoring data selected during the interagency consultation.
7. Calculate design values which is done by combining the modeled PM concentrations from the project and nearby sources and monitored background PM concentrations which then are compared to the NAAQs to determine conformity
8. Consider Mitigation or CMs if the project has modeled NAAQS violations and remodel until no violations are modeled.
9. Document the results of the analysis.
10. Include the analysis, interagency consultation documentation, and formal conformity determination letter in the environmental document.
11. Public involvement typically done as part of the environmental review process and NEPA.

For re-entrained road dust: The EPA uses "AP-42: Compilation of Air Pollutant Emission Factors" to estimate road dust from paved and unpaved roadways. AP-42 Methods for Estimating Re-Entrained Road Dust from Paved roads 13.2.1 was updated on January 2011 and required for any conformity analysis February 4, 2013**.** The current AP-42 Methods for Unpaved Roads can be found in section 13.2.2 last updated November 2006.

The current EPA approved models for project level dispersion analysis include either AERMOD Version 18081 updated April 24, 2018, or CAL3QHCR Version 13196 updated July 15, 2013.

5.7 INDIRECT SOURCE CONSTRUCTION PERMIT

Indirect sources are defined and the regulations governing them are discussed in Section 2.4 of this document. In the past, many of the ODOT projects required an ISCP, so ISCPs were discussed in some environmental documents. Due to a change several years ago, DEQ dropped the ISCP requirement that would affect most ODOT projects (unless a project involves a parking lot). However, LRAPA decided to keep the ISCP as a requirement affecting highway projects. Thus the requirement for an ISCP in Oregon for highway projects is only applicable in Lane County. However, not all projects in Lane County require an ISCP. An ISCP is generally required in Lane County when average daily traffic volumes on existing highways are predicted to increase by 10,000 or more vehicles per day or 20,000 or more on a new highway within 10 years after project completion. LRAPA rules for Indirect Sources are cited in Section 2.4 of this report and a link is provided to the rules.

The requirement to obtain an ISCP should be identified at the project planning or environmental documentation phase of a project. If an ISCP is required for a project, it is obtained during the design process and must be in hand before construction can commence. Practically, this means the ISCP must be in-hand prior to the final Plan, Specifications, and Estimate (PS&E) date. The project cannot proceed until the ISCP is acquired.

The process to obtain the ISCP, including the application preparation, should be started no later than 8 to 9 months before the PS&E date. This start date is necessary because the ISCP application is required to include dispersion modeling to estimate CO impacts and estimates of gross emissions of CO, volatile organic compounds (VOCs), and oxides of nitrogen (NO_X). If there will be any incremental phasing in the construction of the roadway, the ISCP will authorize successive phases of construction, if required. The ISCP application itself must be submitted to LRAPA at least 90 days in advance of the anticipated start of construction. Within 60 days of receipt of the complete application, LRAPA will disapprove or approve the application with possible conditions. Within the 60 day period, and within 20 days after receipt of a complete application, a 20-day public notice will be issued by LRAPA to allow the opportunity for public comment on the proposed project and permit. A permit being disapproved is only likely if the analysis shows that violations of the ambient air quality standards are predicted. An approved permit may be conditioned to expire if construction is not commenced within 18 months after issuance of the permit. This 18-month limit applies to all construction phase dates described in the application. Permits may be extended if the permittee can demonstrate an extension is justified.

LRAPA should be contacted for the most current permit application and application fee information. The application/processing fee can range from $600 to $2,600 depending on the project. The Region 2 Permits Coordinator is responsible for obtaining the ISCP. The Region normally contracts with a consultant to prepare the application to LRAPA, but Region 2 submits the application with the necessary fees.

A sample report prepared under the LRAPA ISCP regulations can be viewed at the following link (*I-5/Beltline Interchange Project*):

ftp://ftp.odot.state.or.us/techserv/Geo-Environmental/Environmental/Regulatory%20Documentation%20Forms%20and%20Examples/Air%20and%20Noise/AirQualityReport_ISCP_Application.pdf

6 CONSTRUCTION ACTIVITIES AND MITIGATION

During construction CO, PM_{10}, and $PM_{2.5}$ are expected to increase. These increased emissions are due to heavy construction vehicles, lowered traffic speeds, earth excavation, and occasionally open burning. These create temporary impacts on the ambient air quality. Appendix F contains typical wording to be used in describing construction effects and mitigation for NEPA documents.

A project level conformity analysis must consider emission increases from construction related activities only if analyses occur during the construction phase and last more than five years at any individual site. For most projects, construction emissions would not be included in CO, $PM_{2.5}$, or PM_{10} hot spot analyses because construction at an individual location is normally completed in less than five years. ODOT has construction specifications that include standard requirements for control of air pollutant emissions during construction (Section 00290). These specifications should be cited and summarized.

https://www.oregon.gov/ODOT/Business/Pages/Standard_Specifications.aspx

7 DOCUMENTATION

Documentation should be as brief and concise as possible. Typical report outlines are shown in the following sections of this manual. Note that for large, complex projects, there may be additional deliverables prior to the air quality technical report such as an environmental baseline report, or a methodology report.

7.1 SAMPLE REPORTS

Sample reports can be viewed at the following links:

Sample report or memorandum for a CE-level analysis in CO maintenance area (*Air Quality Report: OR-8 Quince Street, Forest Grove, Washington County*, September 2015)

> http://www.oregon.gov/ODOT/GeoEnvironmental/Docs_Environmental/Air_Sample-Quince-Air-Quality-Report.pdf

Sample Report for an indirect source construction permit- *(Indirect Source Construction Permit Application: I-5 at Beltline Interchange, Eugene, Lane County*)

> http://www.oregon.gov/ODOT/GeoEnvironmental/Docs_Environmental/Air_Sample-Report_ISCP-App.pdf

Sample report for a regional emissions analysis in a PM_{10} rural nonattainment or maintenance area (*La Grande Air Quality Conformity Determination*)

> http://www.oregon.gov/ODOT/GeoEnvironmental/Docs_Environmental/Air_Sample-Report_Regional-Analysis-Rural-Area.pdf

7.2 AIR QUALITY TECHNICAL REPORT OUTLINE FOR AN EIS OR EA

SUMMARY

For an EIS/EA level document, the summary should be written as a technical “pull out” piece for inclusion in the EIS or EA. It should generally include:

- A short description of the project and alternatives
- A summary of the regulatory setting
- A list of the methods used – generally that EPA-approved models and normally accepted methods were used
- A brief statement of the characteristics of the affected environment
- A comparison and discussion of the impacts of all alternatives, including the no build
- A statement of any special issues such as ISCP, unusual construction conditions, or special emissions issues

The summary must include a statement of findings for MSAT, GHG if applicable, regional, and hot spot conformity. The conformity statement must include a specific reference to the conforming Regional Transportation Plan/Transportation Improvement Program (RTP/TIP) and a statement that the project described in the conforming RTP/TIP is the same in design and scope as the project described in the proposed alternatives analysis.

INTRODUCTION

- Project location (include figure identifying project location)
- Project purpose and need
- Proposed action

ALTERNATIVES

- Include figures showing project alternatives. Figures should include existing and proposed lane configurations (or describe clearly in narrative).

METHODODOLGY

- Regulations and standards (Criteria Pollutants, NAAQs, Regional and Project Level Conformity, NEPA, MSAT, ISCP)
    - Insert table showing the State of Oregon and Federal standards for criteria pollutants.
- Methods
    - Area of potential effect (include on a figure)
    - Existing land use discussion (proximity to air sensitive populations)
    - Traffic data-
        - Include data sources.
        - Include methodology for selection of roadways and intersections for analysis.
        - Identify signalized intersections warranting CO hot-spot analysis and how they were selected.
        - Provide a table summarizing intersection LOS data for the appropriate study years for the no build and all build alternatives for CO analysis.
        - Provide a table summarizing AADT traffic data, link speed, link length, vehicle miles traveled (VMT) and % diesel vehicles for existing year, opening year and future year for both build and no build scenarios for MSAT, PM_{10} or $PM_{2.5}$.
        - For large traffic volume projects additional traffic data may be needed to run MOVES at the county level.

    - Emission model MOVES –
        - Include methods of calculation.

    - Reference interagency meeting to discuss modeling methodology if performed.
  - Local Impacts (Hot Spot) Dispersion Analysis – dispersion model, cite guidance followed, method for selecting intersections
  - Provide summary tables for MOVES 2014b or newer and CAL3QHC inputs assumptions.
  - Include figures showing modeling locations and DEQ/EPA monitoring stations if nearby. Also include figures showing roadways links modeled, and receptor locations.
  - MSAT impact analysis – follow FHWA interim guidance, for quantitative analysis follow FAQ for MSAT Analysis and include language required by 40 CFR 1502.22(b) regarding incomplete information, and analysis methodology.

AFFECTED ENVIRONMENT

- General climatic and meteorological conditions in the study area
  - Include prevailing winds, valley effects, inland/coastal influences, etc.
- Existing air quality characteristics of local air shed and project area, including:
  - NAAQS Status of area (nonattainment, attainment, or maintenance status of each criteria pollutant)
  - Monitoring data (if available)
  - Include last time a standard was violated in the project area
  - Air quality trends

- Current health effects information

Appendix A contains a brief summary statement for criteria pollutant health effects. Additional current information on air quality monitoring, trends, current health effects of criteria pollutants and climate can be found at the following links:

http://www.oregon.gov/deq/FilterDocs/OrAirQualityAnnualReport2016.pdf

https://www.oregon.gov/deq/aq/Pages/default.aspx

Current health effects information for MSATs should be taken directly from the FHWA MSAT guidance cited in the body of this manual.

ENVIRONMENTAL CONSEQUENCES

- The proposed project must match the design concept and scope of the project as described in the most recent Transportation Improvement Program (TIP) and STIP by the time the Record of Decision is signed.
- Long-Term Effects Results – use tables and summarize findings
  - Local "Hot Spot" analysis (CO, PM_{10} or $PM_{2.5}$) – each pollutant discussed more below.

- **CO Quantitative Hot-Spot** *(CO maintenance areas include Salem, Medford UGB, Grants Pass CBD and Klamath Falls UGB.)*
  - Provide table identifying MOVES 2014b or newer emission factors used for each speed and analysis year if applicable. (if too large, electronic files should be part of submittal)
  - Comparative discussion of CO concentrations, by intersection and alternative; (Report CO concentrations to the tenth part per million e.g.: 4.5 ppm).

- Provide a table summarizing the results of the hot spot analysis for each intersection analyzed as follows:
  - Table columns: Intersection name, alternative, analysis year, LOS, 1-hour CO concentration and 8-hour CO concentration (to the tenths of a ppm)
- Include figures illustrating intersections analyzed in hot spot analysis. Figures should include existing and proposed lane configurations (or describe clearly in narrative) and receptor locations. Identify the prediction site location where the highest CO concentration is expected (in figure or in the narrative).
- Specifically identify all exceedances of the CO standard and exceeding intersections.

- **CO Qualitative Hot-Spot (If quantitative hotspot analysis not required)** *(CO maintenance areas include Salem, Medford UGB, Grants Pass CBD and Klamath Falls UGB.)*

  - Analysis based on using intersection LOS information and delay and v/c if available.
  - Qualitative discussion of traffic volumes and speeds.

- **PM POAQC Evaluation (required only if project located in PM_{10} and/or $PM_{2.5}$ area** *(PM_{10} maintenance areas of Medford/Ashland (AQMA), Eugene/Springfield (UGB), Grants Pass (UGB), Lakeview (UGB), La Grande (UGB), Oakridge (UGB) or Klamath Falls (UGB) or EPA designed $PM_{2.5}$ nonattainment area of Klamath Falls and Oakridge.)*

  - Compare AADT volumes, percent diesel vehicles and speeds for each alternative;
  - Compare project AADT and % diesel vehicles to thresholds presented in Appendix B of PM_{10} and $PM_{2.5}$ guidance document.
  - Determine if the project can be classified as a POAQC? (Refer to 40CFR93.123 (b)(1) and EPA's Transportation Conformity Guidance for Quantitative Hot-spot Analysis in PM_{10} and $PM_{2.5}$ Nonattainment and maintenance areas dated November 2015[16].
  - If applicable make the statement, "This project is not a local air quality project of concern and the requirements of the CAAA and 40 CFR 93.116 are met without requiring a hot-spot analysis."
  - If project is a POAQC, provide same types of documentation as for CO quantitative analysis for the PM_{10} or $PM_{2.5}$ quantitative analysis in addition to emission model bullets included below for the MSAT quantitative analysis. Additional bullets would be needed if the AERMOD or CAL3QHCR model were used for dispersion model which should be determined in consultation with ODOT Air Quality Specialist.

- **MSAT Analysis**

  <u>For Exempt and Qualitative MSAT Analysis</u>

  - Follow FHWA MSAT interim guidance date October 18, 2016 (or more recent) for exempt and qualitative analysis.
  - Include tables summarizing and comparing traffic data

[16] http://www3.epa.gov/otaq/stateresources/transconf/documents/420b15084.pdf

- Include exempt or qualitative MSAT Discussion using prototype language in FHWA MSAT guidance and adjust language for project. The qualitative discussion should include potential effects of alternatives, including no build, on traffic volumes, vehicles mix, and traffic routing.

For Quantitative MSAT Analysis

- Follow FHWA "Frequently Asked Questions (FAQ) for Conducting Quantitative MSAT Analysis" for FHWA NEPA documents for Quantitative MSAT
  - Include discussion of interagency coordination of modeling methodology
  - Include figure showing roadway links selection for analysis
  - Traffic information (VMT, roadway length, speed, AADT, % diesel vehicles for existing, no build and build scenarios) (See Section 5.2.3.4)
- Emission Model
  - Include tables of runspec input and database manager inputs for moves
  - Include assumptions and data sources
  - Discussion of the MSAT emission processes that were modeled in MOVES (e.g. running exhaust, crankcase running exhaust, etc.)
  - Describe preprocessing and post processing methodology.
  - Describe quality control methodology
  - Discussion of geographic area considered in the analysis and any sensitive land use
  - Discussion of the general analysis approach used and the analysis years considered for the project
  - Discussion of the project specific data used in the analysis.
- Environmental Consequences
  - Tables and/or figures that compare the differences in total MSAT emission for each priority MSAT between the base year, opening year no-build/build, and design year no-build/build scenarios.

AIR QUALITY CONFORMITY FINDING

- Provide a regional conformity and project level conformity statement unless the project is exempt (see 40 CFR 93.126 - 93.128) or is located in an attainment area.
- Provide all electronic modeling input and output files

SHORT-TERM (CONSTRUCTION) EFFECTS

ODOT has construction specifications that include standard requirements for control of air pollutant emissions during construction (Section 00290). These specifications should be cited and summarized.

https://www.oregon.gov/ODOT/Business/Pages/Standard_Specifications.aspx

INDIRECT EFFECTS

- Typical language for indirect effects: the forecast traffic volumes used to analyze the air quality impacts of the Project alternatives are based on the future expected land use and employment information for the project area. These analysis methodologies include expected traffic from development in the region and project area and traffic related air quality impacts shown in this report include expected development.

CUMULATIVE EFFECTS

- Typical language for cumulative effects: the forecast traffic volumes used to analyze the air quality impacts of the Project alternatives include traffic from all sources. Background concentrations representing the cumulative emissions of other sources in the area are added into the predicted local concentrations for CO at intersections. Because of these inclusive analysis methodologies, the impacts shown throughout this report represent cumulative air quality impacts.

SUMMARY OF PERMITS REQUIRED

- Address requirement and schedule for obtaining an ISCP if needed, otherwise typical language is:

Stationary sources such as asphalt and concrete mix plants would generally be required to obtain air contaminant discharge permits from the DEQ (or LRAPA, as appropriate). [Note: add the following sentence for large projects only] A project of this magnitude would likely result in the operation of one or more such stationary sources which would likely require air quality contaminant discharge permits (ACDP), if they are not existing permitted facilities. The permits would be the responsibility of the operator or contractor. ODOT is not required to obtain any permits related to air quality.

MITIGATION

- Short-Term (Construction) Impacts – typical language for short-term impacts mitigation is included on the last page of this appendix.
- Long-Term Impacts – because air quality impacts are not allowed to occur, it is unusual to have long-term impacts or for mitigation of long-term impacts to be required. This would only occur if the project team made a decision to include intersection modifications needed to mitigate impacts here as opposed to modifying the design of the project (the more typical approach).

CONTACTS AND COORDINATION

REFERENCES

LIST OF PREPARERS

APPENDICES

- Regional conformity documentation showing that project is included in TIP or STIP.
- Tables of traffic data used for the analysis if feasible (for example county level traffic data is too large to provide in appendix as tables).
- Modeling methodology interagency documentation
- Tables summarizing MOVES2014b or more recent and CAL3QHC input assumptions, output files, and traffic data.
- List of all input and output modeling files for MOVES and CAL3QHC if quantitative
- Electronic copies of all files used for the analysis if quantitative. For MOVES, this includes the database, the runspec files, the excel inputs into the data manager for MOVES tables listed in Table 5-2, output data and spreadsheets used to calculate the end product. The reviewer should be able to recreate the results with the data provided.
- MSAT Health Effects- include incomplete and/or unavailable information regarding the human and environmental health impacts from MSAT exposure found in the MSAT interim guidance.

- MSAT Mitigation Strategies – include applicable information from Appendix E of the interim guidance.

7.3 AIR QUALITY TECHNICAL REPORT OUTLINE FOR A CATEGORICAL EXCLUSION

INTRODUCTION

- Project description (include figure identifying project location)

TRAFFIC ANALYSIS

- Comparative discussion of peak hour traffic volumes, speeds, and LOS for each alternative
- Identification of signalized intersections warranting CO hot-spot analysis with discussion of how intersections were selected.
- Provide a table summarizing intersection LOS data for the appropriate study years for the no build and all build alternatives for CO analysis.
- For MSAT, PM_{10}, or $PM_{2.5}$, provide a table summarizing AADT traffic data, link speeds, and % diesel vehicles for existing year, opening year and future year for both build and no build scenarios.
- For large traffic volume projects additional traffic data may be needed to run MOVES at the county level.

EXISTING AIR QUALITY

- Identify status of area with respect to NAAQS (e.g. nonattainment/maintenance for CO, PM_{10} or $PM_{2.5}$and identify its boundary: UGB, AQMA, etc.)

REGULATORY SETTING

- Discuss the regulatory requirements with regards to National Environmental Policy Act (NEPA and Transportation conformity)
- Is the project exempt from regional conformity?
- Specify which 23CFR771.117(c) category the project falls under.

LOCAL AIR POLLUTANT EMISSIONS/DISPERSION ANALYSIS

(NOTE: CONTACT ODOT FOR CO EMISSION FACTORS)

A. CO Quantitative Hot-spot (For LOS of D, E or F) *(CO maintenance areas include Salem, Medford UGB, Grants Pass CBD and Klamath Falls UGB.)*

a. Methodology discussion (MOVES2014b or newer, CAL3QHC, worst-case intersections)
   i. Provide CAL3QHC input assumptions.
   ii. Provide table identifying MOVES2014b or newer emission factors used for each speed and analysis year. Include discussion from AQPM regarding methodology for CO emission rates.

b. Comparative discussion of CO concentrations, by intersection and alternative; (Report CO concentrations to the tenth part per million e.g.: 4.5 ppm).

c. Provide a Table summarizing the results of the hot spot analysis for each intersection analyzed as follows:

i. Table columns: intersection name, alternative, analysis year, LOS, 1-hour CO concentration and 8-hour CO concentration (to the tenths of a ppm)

d. Include Figures illustrating intersections analyzed in hot spot analysis. Figures should include existing and proposed lane configurations (or describe clearly in narrative) and receptor locations. Identify the prediction site location where the highest CO concentration is expected (in figure or in the narrative).
e. Specifically identify all exceedances of the CO standard and exceeding intersections.

B. CO Qualitative Hot-Spot (If quantitative hotspot analysis not required, e.g. LOS of A, B, or C or other non-intersection project) *(CO maintenance areas include Salem, Medford UGB, Grants Pass CBD and Klamath Falls UGB.)*

a. Analysis based on using intersection LOS information and delay and v/c if available.
b. Qualitative discussion of traffic volumes and speeds.

C. FHWA CO Categorical Hot Spot Finding. *(CO maintenance areas include Salem, Medford UGB, Grants Pass CBD and Klamath Falls UGB.)*

a. Include documentation of how this method is applicable.

D. PM Analysis (required only if project located in PM_{10} and/or $PM_{2.5}$ area and is required for the project) *(PM_{10} maintenance areas of Medford/Ashland (AQMA), Eugene/Springfield (UGB), Grants Pass (UGB), Lakeview (UGB), La Grande (UGB), Oakridge (UGB) or Klamath Falls (UGB) or EPA designed $PM_{2.5}$ nonattainment area of Klamath Falls and Oakridge.)*

a. Compare AADT volumes, percent diesel vehicles and speeds for each alternative;
b. Compare project AADT and % diesel vehicles to thresholds presented in Appendix B of PM_{10} and $PM_{2.5}$ guidance document.
c. Determine if the project can be classified as a project of local air quality concern? (Refer to 40CFR93.123 (b)(1) and EPA's Transportation Conformity Guidance for Quantitative Hot-spot Analysis in PM_{10} and $PM_{2.5}$ Nonattainment and Maintenance Areas dated November 2015[17].
d. If applicable make the statement, "This project is not a local air quality project of concern and the requirements of the CAAA and 40 CFR 93.116 are met without requiring a hot-spot analysis."
e. If project is a POAQC, provide same types of documentation as for CO quantitative analysis.

E. MOBILE SOURCE AIR TOXICS

a. Follow FHWA interim guidance date October 18, 2016 for exempt and qualitative analysis. (See Section 7.4.1 and 7.4.2)

CONSTRUCTION MITIGATION

Include a general discussion of air pollutant emissions expected during construction and any construction mitigation measures that should be included in the memorandum. (See Appendix F for sample language.)

[17] http://www3.epa.gov/otaq/stateresources/transconf/documents/420b15084.pdf

PROJECT CONFORMITY WITH THE STATE IMPLEMENTATION PLAN

State whether project is regionally significant or if it is a Table 3 project of the conformity Rule.

- Conformity determination statement
  - Is the project in a conforming STIP/RTP/TIP (include dates of planning period)?
  - Does the project cause or contribute to any new hot spot violations of the NAAQS?
  - Does the project increase the severity and frequency of an existing NAAQS violation or standard?
  - Does the project delay timely attainment of NAASs, TCM, or a regulation?

INDIRECT SOURCE CONSTRUCTION PERMIT REQUIREMENTS (only if project is located in Lane County)

- State whether an ISCP is required for the project and provide supporting data.

APPENDIX

- Regional conformity documentation showing that project is included in TIP or STIP.
- Tables of traffic data used for the analysis.
- Tables summarizing MOVES2014b or more recent emission rates and CAL3QHC input assumptions, output files, and traffic data.
- List of all input and output modeling files for MOVES and CAL3QHC if quantitative
- If FHWA CO categorical hot spot finding was used, tables of project data in the FHWA web tool.
- Electronic copies of all files used for the analysis if quantitative.
- For qualitative and quantitative MSAT analyses use "incomplete and/or unavailable MSAT information and MSAT Health Effect Discussion" prototype language is available in FHWA's Interim Guidance in Appendix C and D.

7.4 AIR QUALITY REPORT OUTLINES FOR MSAT ANALYSES

FHWA interim MSAT Guidance (10/18/16) includes example language for a qualitative analysis and quantitative analysis. The documentation for all types of MSAT projects will be listed separately and follows FHWA guidance FAQ for MSAT analysis provided by FHWA released in 2016.

7.4.1 QUALITATIVE MSAT MEMORANDUM OUTLINE FOR "EXEMPT PROJECTS"

This memorandum is not necessary but if a project needed some documentation as to why the project was exempt the following language could be included with the project file.

- Brief project description
- Regional conformity status
- Project level conformity status
- Explanation of why project should be considered exempt from MSAT analysis
- Appendix A language from MSAT Interim Guidance

7.4.2 QUALITATIVE MSAT MEMORANDUM OUTLINE FOR "LOW POTENTIAL PROJECTS"

- Introduction/background information on MSATs and figure of FHWA's MSAT emission trends.
- Project description and figure showing project alternatives

- Statement on attainment status of area
- Existing sensitive land use discussion including figure
- Traffic Information (VMT, roadway length, speed, AADT, % diesel vehicles for existing, no build and build scenarios)
- Tables summarizing and comparing traffic data
- Qualitative MSAT discussion using prototype language in MSAT guidance adjusted for project. The qualitative discussion should include potential effects of alternatives, including no build, on traffic volumes, vehicles mix and traffic routing.
- General brief discussion of construction emissions and mitigation
- Conclusion and discussion of any differences in MSAT emissions between build scenarios based on VMT.
- Statement and documentation showing inclusion of project in STIP.
- MSAT Health Effects- include incomplete and/or unavailable information regarding the human and environmental health impacts from MSAT exposure found in Appendix C and D of the MSAT interim guidance.

7.4.3 QUANTITATIVE MSAT ANALYSIS REPORT OUTLINE FOR "HIGH POTENTIAL PROJECTS"

- Executive Summary
- Introduction/
    - Project location (Include figure)
    - Project purpose and need
    - Background information on MSATs and FHWA's MSAT emission trends figure
    - Attainment status of the area

- Project description and design figures
- Regulatory Setting (Criteria pollutants, mobile source air toxics, other regulatory setting)
- Attainment Status of Area
- Methodology
    - Discussion of interagency coordination of modeling methodology
    - Area of Potential Impact (5.2.3.1) (Include figure showing roadway links selected)
    - Traffic Information (VMT, roadway length, speed, AADT, % diesel vehicles for existing, no build and build scenarios) (See Section 5.2.3.4)
    - Emission Model
        - Include tables of runspec input and database manager inputs for moves
        - Include assumptions and data sources
        - Discussion of the MSAT emission processes that were modeled in MOVES (e.g. running exhaust, crankcase running exhaust, etc.)
        - Describe preprocessing and post processing methodology.
        - Describe quality control methodology
        - Discussion of geographic area considered in the analysis and any sensitive land use
        - Discussion of the general analysis approach used and the analysis years considered for the project
        - Discussion of the project specific data used in the analysis.
- Environmental Consequences

    - Tables and/or figures that compare the differences in total MSAT emission for each priority MSAT between the base year, opening year no-build/build, and design year no-build/build scenarios.
- Construction emissions and mitigation discussion
- Conclusion and discussion of any differences in MSAT emissions between build scenarios.
- MSAT Health Effects- include incomplete and/or unavailable information regarding the human and environmental health impacts from MSAT exposure found in Appendix C and D of the MSAT interim guidance.

8 REFERENCES

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APPENDIX A

APPENDIX A1 - NATIONAL AND OREGON AMBIENT AIR QUALITY STANDARDS

TABLE A-1 FEDERAL AND STATE PRIMARY AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Violation Determination	Federal (NAAQS)	Oregon (SAAQS)
Carbon Monoxide	8-hour	Not to be exceeded more than once/year	9 ppm	9 ppm
	1-hour	Not to be exceeded more than once/year	35 ppm	35 ppm
Lead	Calendar Quarter	rolling 3-month average not to be exceeded	0.15 $\mu g/m^3$	0.15 $\mu g/m^3$
Ozone	8-hour	3-year average of the annual 4^{th} highest daily maximum 8-hr average concentration	0.07 ppm	0.07 ppm
Nitrogen Dioxide	Annual Arithmetic Mean	Annual arithmetic mean	0.053 ppm	0.053 ppm
	1-hour	1-hour 3-year average 98^{th} percentile	100 ppb	0.10 ppm
Sulfur Dioxide	Annual Arithmetic Mean	Not to be exceeded more than once/year	none	0.02 ppm
	24-hour	Not to be exceeded more than once/year	none	0.10 ppm
	3-hour	Not to be exceeded more than once/year	0.50 ppm	0.50 ppm
	1-hour	3-year average annual 99^{th} percentile	0.075 ppm	0.075 ppm
PM_{10}	24-hour Average	The expected number of days per calendar year with a 24-hr average concentration above 150 µg/m3 is equal to or less than 1 over a 3-year period	150 $\mu g/m^3$	150 $\mu g/m^3$
$PM_{2.5}$	Annual average	3-year Average of Annual Arithmetic Mean	12 $\mu g/m^3$	12 $\mu g/m^3$
	24 hour	3-year Average of 98^{th} Percentile of 24-hour	35 $\mu g/m^3$	35 $\mu g/m^3$

		concentrations		
Sources: Environmental Protection Agency (EPA) Office of Air Quality Planning and Standards (OAQPS) https://www.epa.gov/criteria-air-pollutants/naaqs-table ; Oregon Administrative Rule (OAR) 340-202-0050 through -0130 https://secure.sos.state.or.us/oard/displayDivisionRules.action?selectedDivision=1530 Note: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; PM_{10} = particulates with an aerodynamic diameter of less than or equal to 10 micrometers; $PM_{2.5}$ = particulate with an aerodynamic diameter of less than or equal to 2.5 micrometers.				

TABLE A-2 DESCRIPTION OF AIR POLLUTANTS

POLLUTANT	WHAT IS IT?	WHERE IT COMES FROM	WHAT DAMAGE IT CAUSES
Fine Particulate Matter (PM_{10} (10 micron or less)& $PM_{2.5}$ (2.5 microns or less))	A mixture of solid particles and liquid droplets found in air. Some particles, such as dust, dirt, soot, or smoke, are large or dark enough to be seen with naked eye.	Most particles form in atmosphere from complex chemical reactions. Some come from combustion sources, cars industrial emissions, residential wood burning, fugitive dust, field and slash burning; and natural sources, such as ocean spray, wind-raised dust, and volcanic eruptions.	Particulate matter contains microscopic solids or liquid droplets that can be inhaled and cause serious health problems. Particles less than 10 micrometers in diameter pose the greatest problems, because they can get deep into your lungs, and some may even get into your bloodstream. Causes material damage, soiling and visibility reduction.
Sulfur Dioxide	A colorless, pungent, irritating gas.	Mainly Oil and Coal combustion and industrial emissions. Smaller sources: industrial processes such as extracting metal from ore; natural sources such as volcanoes; and locomotives, ships and equipment that burn high sulfur fuel.	Short-term exposures to SO_2 can harm the human respiratory system and make breathing difficult. Children, the elderly, and those who suffer from asthma are particularly sensitive to effects of SO_2. Is corrosive to metals and marble; and causes plant damages.
Carbon Monoxide	A colorless, odorless gas that replaces oxygen in the blood stream.	Incomplete combustion sources, mostly cars and woodstoves.	Interferes with the bloods ability to carry oxygen, causing heart difficulties in those with chronic diseases; reduces lung capacity; and impairs mental abilities.
Ozone	A toxic gas, associated with photochemical smog.	Photochemical reactions in the atmosphere between oxides of nitrogen and hydrocarbons in the presence of direct sunlight and warm temperatures.	Causes eye irritation; damage to lung tissue and lung function; and material and plant damage.
Nitrogen Dioxide	A reddish brown gas, toxic in high concentrations.	Formed by conversion of nitric oxide (from autos and combustion sources), and from industrial sources	Increases chronic bronchitis and irritates lungs.
	A large family of	Autos, fuel evaporation,	Causes plant damage and

POLLUTANT	WHAT IS IT?	WHERE IT COMES FROM	WHAT DAMAGE IT CAUSES
Non-Methane Hydrocarbons	compounds consisting of hydrogen and carbon.	industry and combustion processes.	contributes to formation of ozone.
Lead	A gray metal derived from ore bearing minerals.	Cars burning leaded fuel and some industrial sources.	Interferes with the operation of the blood forming (hematopoietic), nervous & renal (kidney) systems. Sensitive populations include infants and expectant mothers.

APPENDIX A2 - BURDEN ANALYSIS

As a policy decision, a project area burden analysis (emission estimate) for regionally significant projects in nonattainment and maintenance areas for EIS and EA level projects are no longer required and considered optional on a project by project basis. The purpose of this analysis is to provide information useful to the public and decision-makers in evaluating the effects of project alternatives. The burden analysis is typically performed for existing conditions and design year conditions for all project alternatives including the no-build.

A regionally significant project is defined as a transportation project that serves regional transportation needs (such as access to and from the region, major activity centers in the region, major planned developments such as new retail malls, sports complexes, or transportation terminals, as well as most terminals themselves). Such projects would normally be included in an MPO's transportation network, including all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel.

The burden analysis should include the major transportation criteria pollutants of concern: CO, volatile organic compounds (VOCs), nitrogen oxides (NO_X), PM_{10}, and $PM_{2.5}$. Because the burden analysis is for comparison purposes and is not required by conformity regulations, some flexibility can be used in the modeling approach. Cost, availability of data, and the complexity and size of the project can all be considered in determining the methods to be used for the burden analysis. Where Moves2014b input parameters are available from conformity modeling for pollutants, consistent inputs should be used for the burden analysis. Examples of simplifications that could reasonably be made for some projects would be:

- Comparing pollutant emissions for a single season (summer day) basis as opposed to modeling different pollutants with different seasonal parameters, and
- Using regional average traffic volumes and speeds if these data are available as model outputs

The general methodology for an area wide analysis consists of multiplying the Vehicle Miles Traveled (VMT) for each road link by the link length and the EPA Moves2014b generated emission factor for all links in the area affected by the project.

APPENDIX B

APPENDIX B-1 PM10 EMISSION FACTORS FOR PAVED AND UNPAVED ROADS

RVMPO has used EPA Moves2014b to calculate input parameters for transportation conformity analysis. PM10 exhaust, tire and brake wear emission factors were derived from this model. AP-42 was used for unpaved and paved road dust as given in the attachment.

RVMPO Planning webpage:

https://www.rvmpo.org/

Air Quality Conformity Determination

For the

2017-2042 Regional Transportation Plan

&

2018-2021 Transportation Improvement Program

Adopted March 28, 2017
Revised June 27, 2017

RVMPO

Rogue Valley Metropolitan Planning Organization

The RVMPO is staffed by the Rogue Valley Council of Governments

completed by the analysis year. So the 2017 network consists of the base network and projects completed between 2010 and 2016.

No expansion of the transit network or transit service has been assumed. Transit route and scheduling information was provided by transit provider Rogue Valley Transportation District.

Emissions Factors

Total On-Road Emissions – Carbon Monoxide
(Not applicable due to LMP status)

Total On-Road Emissions – PM_{10}

As required by 40 CFR 93.111, the EPA-approved MOVES2014a model was used to produce local PM_{10} tailpipe, tire and break wear emission factors for each analysis year. Additionally for PM_{10}, the January 2011 revised AP-42 method was used to determine emission factors for paved road dust. The method's silt loading factors (sL) were obtained from the Medford-Ashland PM_{10} maintenance plan, for each area identified in the maintenance plan as shown on Table 10 on page 18. The factor for dust from unpaved roads was set in the maintenance plan, and was used in this analysis. Environmental and program parameter values for MOVES were provided to RVMPO by ODEQ. These factors were used to compute emissions per vehicle mile traveled (VMT) by facility type.

In producing emission factors for PM_{10}, locally representative data were used where they were available. For example, local (Jackson County) vehicle registration data was used to generate the most accurate emissions estimates possible. RVMPO consulted with ODEQ, and developed and used the most recent available county level vehicle registration data (2016 calendar year). Where local data was not available, MOVES national defaults were used. Details about the development of MOVES inputs, MOVES modeling workflow and fugitive dust calculations (for PM_{10}) are described in the following sub-sections.

Summary of Input Data Sources

Local data was used where available for the MOVES modeling inputs and the fugitive dust calculations. The primary sources of data were provided by ODEQ, the Oregon Department of Motor Vehicles (DMV) and the Oregon Department of Transportation (ODOT) Transportation Planning and Analysis Unit (TPAU). Key inputs and sources are listed in Table 8. Where applicable the use of model default values is stated.

Table 9: Overview of MOVES Inputs and Fugitive Dust Parameters	
Model Parameter	Data Source and Description
PM_{10} Fugitive Dust, Paved Roads	ODOT & ODEQ: - Link-level travel activity used. - Silt loadings provided by ODEQ. - Calculation formula EPA AP-42, Latest Paved Road Dust Methodology (Jan. 2011)
PM_{10} Fugitive Dust, Unpaved Roads	ODEQ: - Activity data provided by ODEQ. - Emission factors from ODEQ 2013 AQCP. - Calculation formula EPA AP-42, Latest Unpaved Road Dust Methodology (Nov. 2006)
Analysis/Planning Area	ODEQ: - PM_{10}: Medford/Ashland Air Quality Maintenance Area - ArcGIS shape files provided by ODEQ to apportion link-level outputs to PM_{10} planning areas.
MOVES Input, California LEV Emission Rates*	EPA: - Utilize alternative emission rate data table prepared by EPA/OTAQ to replace selected MOVES default emission rates to reflect Oregon's adoption of California LEV vehicle emission certification standards - Utilize model's "Manage Input Dataset" function to overlay alternative California LEV emission rates for model year 2009 and later light-duty vehicles
MOVES Input - Fleet VMT by HPMSVType	ODOT: - Annual VMT calculated from link-level travel activity separately for each analysis year and transit scenario - Shapefiles provided by ODEQ to extract PM_{10} planning area data - Source-specific VMT calculated from state-wide fractions provided by ODOT.
MOVES Input - Vehicle Populations by Source Type	ODEQ/DMV: - Passenger vehicle populations were developed from DMV registrations, circa 2016, provided by ODEQ - All other vehicle source types were generated using MOVES default splits - Vehicle populations scaled from Jackson County to PM_{10} area
MOVES Input - Fleet Age Distributions	ODEQ: - Vehicle age distributions were developed for passenger vehicle source types from DMV registrations, circa 2016, provided by ODEQ - MOVES defaults were used for other vehicle source types
MOVES Input - Road Type VMT Distributions	ODOT: - Link-level vehicle VMT was used to develop year-specific and transit scenario-specific road type distributions for PM_{10} area
MOVES Input - Vehicle Speed Distributions	ODOT: - Link-level hourly average vehicle speeds and vehicle hours traveled (VHT) were used to develop road type specific speed distributions by analysis year and transit scenario - Link-level peak hour distributions for 5:00 to 6:00 PM were used.
MOVES Input - Temporal VMT Allocations (Monthly, Daily, Hourly)	MOVES Defaults: - MOVES default monthly, daily and hourly VMT temporal allocations used
MOVES Input - Fuels/Properties	MOVES Defaults: - MOVES default fuel supply and formulation confirmed to match data from ODEQ and used
MOVES Input - Meteorology	MOVES Defaults: - MOVES default meteorology values for Jackson County
MOVES Input - I/M	ODEQ: - MOVES I/M inputs provided by ODEQ for 2012 and adapted for 2015, 2020, 2028, 2038 years based on Oregon I/M program description
MOVES Input - Ramp Fractions	ODOT: - Developed from link-level travel model outputs

Preparation of MOVES Inputs

The local data received from ODEQ and ODOT was processed to conform to MOVES model input requirements. These data and their processing are described in this sub-section.

Transportation Model Data – Travel model link-level activity was provided by ODOT for 2017, 2027, 2037, and 2042 for one scenario with existing transit services and a second scenario without existing transit services. Average daily activity and peak hour activity outputs were included. Separate activity totals were extracted for links within the PM_{10} planning area. ArcGIS boundary files supplied by ODEQ were used to determine the links within each of the planning areas. Activity data for the PM_{10} area was used in both the fugitive dust calculations and creation of MOVES inputs.

MOVES Local Inputs Processing – The local data received from sources in Table 8 were translated into MOVES model compatible inputs over all modeling years, scenarios and planning areas. The transportation model outputs were processed into annual vehicle type VMT, road type VMT distributions, ramp fractions, and average speed distributions. DMV registration data formed the basis for the vehicle source type populations and age distribution inputs for five different vehicle classes: motorcycle, passenger car, passenger truck, school bus, and motor home. MOVES default vehicle source type splits were used to calculate the source type population of all other vehicle types and to scale vehicle types to future years. The population totals in Table 9 were used to scale vehicle populations from the county level to the PM_{10} planning area. MOVES defaults were used for the age distributions except for the passenger vehicle fleet where DMV data was used.

Alternative base emission rates reflecting Oregon's adoption of the California light-duty vehicle emission standards were supplied to MOVES during execution via the model's "Manage Input Datasets" feature and developed using published EPA guidance[1] and emission rate tables.

Inspection maintenance program inputs were adapted from data received from ODEQ. Fuel supply and formulation defaults were comparable to data provided by ODEQ. All other MOVES inputs were set to default values.

Table 10: Population Scaling Factors for Planning Areas

Location	Population	Population Scaling
Jackson County	204,654	1.000
PM_{10} Area	171,114	0.836

[1] "Instructions for Using LEV and NLEV Inputs for MOVES2014, U.S. Environmental Protection Agency, Report No. EPA-420-B-14-060a, October 2014.

MOVES Modeling Run Configuration

Across the PM_{10} modeling area, the MOVES model "RunSpec" options were configured following EPA's guidance[2] for the use of MOVES in modeling of emissions inventories for Statewide Implementation Plan or Conformity Modeling. This included selection of the County-Scale inventory calculation option.

MOVES2014a was executed in the "Inventory" calculation mode to develop estimates of on-road vehicle fleet exhaust (and brake/tire wear) emissions (in tons/year) within the Medford AQMA PM_{10} planning area. A total of eight model runs will be generated (4 calendar years × 2 transit scenarios).

Time aggregation was set to "Hour" with all months selected for PM_{10} runs. Both weekend and weekdays were simulated for all hours of the day. In the Geographic Bounds panel, "Oregon - Jackson County" was selected. (The Medford/Ashland Air Quality Maintenance Area planning area is a subset of Jackson County). Customized input databases were created for each modeled year for PM_{10} for both the "transit" and "no transit" scenarios. All gasoline and diesel vehicle categories were selected as well as all road types. For the PM_{10} RunSpecs, the following pollutants were selected for all processes listed below:

- Primary Exhaust $PM_{2.5}$ – Total;
- Primary Exhaust $PM_{2.5}$ – Species;
  - Aluminum;
  - Ammonium (NH4);
  - Calcium;
  - Chloride;
  - CMAQ5.0 Unspeciated (PMOTHR);
  - Composite - NonECPM;
  - Elemental Carbon;
  - H20 (aerosol);
  - Iron;
  - Magnesium;
  - Nitrate (NO_3);
  - Non-carbon Organic Matter (NCOM);
  - Organic Carbon;
  - Potassium;
  - Silicon;
  - Sodium;
  - Sulfate Particulate; and
  - Titanium
- Primary $PM_{2.5}$ – Brakewear Particulate;
- Primary $PM_{2.5}$ – Tirewear Particulate; and
- Primary Exhaust PM_{10} – Total;
- Primary PM_{10} – Brakewear Particulate;
- Primary PM_{10} – Tirewear Particulate;
- Total Energy Consumption.

[2] "MOVES2014 and MOVES2014a Technical Guidance: Using MOVES to Prepare Emission Inventories for State Implementation and Transportation Conformity," U.S. Environmental Protection Agency, Report No. EPA-420-B-15-093, November 2015.

(MOVES2014a requires the modeling of $PM_{2.5}$ emissions from various processes when PM_{10} is modeled because of the way it performs internal calculations. However, the $PM_{2.5}$ outputs were not used for this analysis.)

MOVES output units were set to grams, joules, and miles for mass, energy, and distance, respectively. Distance traveled, source hours, population, and starts were chosen for activity outputs. Emissions were aggregated by "Year" at the county level and split into road type, source use type, fuel type, and emission process. All other model options were left at default values.

MOVES Emissions Outputs

The MOVES calculations were executed in the county-scale inventory mode as described in the "Modeling Run Configuration" subsection. Model outputs were exported to spreadsheets, processed, and reviewed. On-road vehicle exhaust emissions are summarized for PM_{10} in Table 10. They represent on-network activity and starting emissions for both the "With Transit" and "Without Transit" scenarios in analysis years 2017, 2027, 2037, and 2042.

Detailed MOVES input and output files are available via CD upon request.

Table 11: MOVES Model PM10 Emissions Totals for Transit and No Transit Scenarios for 2017, 2027, 2037, and 2042

	2017	2027	2037	2042
Total PM_{10} w/ Transit (tons/year)	**186.4**	**135.9**	**134.8**	**141.9**
Running Exhaust, Tire & Brake On-Network (tons/year)	163.0	125.7	139.2	137.2
Exhaust Idling and Starts (tons/year)	23.5	10.1	5.6	4.7
Total PM_{10} w/o Transit (tons/year)	**186.9**	**136.2**	**135.2**	**142.2**
Running Exhaust, Tire & Brake On-Network (tons/year)	163.4	126.1	129.5	137.5
Exhaust Idling and Starts (tons/year)	23.5	10.1	5.6	4.7

PM_{10} Fugitive Road Dust Calculations

The most current AP-42-based methods were used to calculate fugitive dust emissions on unpaved and paved roads within the PM_{10} planning area and are described separately below.

Unpaved Road Dust - Details on unpaved dust mileage, ADT and emission factors were provided by ODEQ. The emission factors were calculated from the November 2006 version of AP-42 unpaved road dust methodology[3]. The aggregate length of unpaved roads within the planning area estimated at a constant 85 miles over the entire analysis horizon. The average daily traffic was from the traffic estimated on unpaved roads developed by RVMPO. Unpaved road dust emission calculations are shown in Table 11.

[3] "Rogue Valley Metropolitan Planning Organization Rogue Valley Metropolitan Planning Organization Air Quality Conformity Determination for 2013-2038 Regional Transportation Plan 2012-2015 Metropolitan Transportation Improvement Program, 2012-2015 Metropolitan Transportation Improvement Program, as Amended," Rogue Valley Council of Governments, March 26, 2013.

Table 12: Unpaved Fugitive Dust Emissions				
	2017	2027	2037	2042
Miles	85	85	85	85
ADT	26.0	29.5	33.0	34.8
VMT	2213.9	2510.8	2807.6	2956.0
Emission Factor (g/mi)	521.6	521.6	521.6	521.6
Days in Year	365	365	365	365
Emissions (tons/year)	**464.7**	**526.9**	**589.2**	**620.4**

Paved Road Dust - Fugitive dust calculations used the January, 2011 publication of AP-42's paved road dust methodology:

$$EF = k * (sL)^(0.91) * (W)^1.02;$$

where

EF is the emission factor (g/mi),
k is the particle size multiplier (g/mi)
sL is the road surface silt loading (g/m^2), and
W is the average vehicle weight (tons).

The size multiplier k was set to 1.00 g/mi for PM_{10} per Table 13.2.1-1 of AP-42[4]. RVCOG supplied average vehicle weight information for Interstate 5, White City, and remaining roads at 3.18 tons, 2.26 tons and 2.02 tons respectively. Silt loading values were applied from the 2013 RVCOG AQCD[5] as listed below in Table 12.

Table 13: Paved Roadway Silt Loading Factors	
Location	**Silt Loading (g/m^2)**
Interstate 5	0.015
White City High ADT	1.350
White City Low ADT	3.400
White City Industrial Ave G	11.000
Remaining High ADT	0.190
Remaining Low ADT	0.540

Vehicle activity was extracted from the link-level travel model outputs for each of the six silt loading-specific locations. The model provides a forecast of average daily travel on defined roadway links. The daily traffic volume forecast for each link is multiplied by the link's length to yield VMT for each link. VMT is multiplied by PM_{10} emission factors for re-suspended road dust to estimate paved and unpaved road dust emissions. Emissions estimates were subsequently

[4] US EPA, 2011. Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Vol. I: Stationary, Point and Area Sources. Section 13.2.1: Paved Roads January 2011 and Section 13.2.2: Unpaved Roads November 2006. (http://www.epa.gov/ttn/chief/ap42/ch13/index.html)

[5] "Rogue Valley Metropolitan Planning Organization Rogue Valley Metropolitan Planning Organization Air Quality Conformity Determination for 2013-2038 Regional Transportation Plan 2012-2015 Metropolitan Transportation Improvement Program, 2012-2015 Metropolitan Transportation Improvement Program, as Amended," Rogue Valley Council of Governments, March 26, 2013.

APPENDIX B-2 EMISSION MODEL METHODOLOGY FOR CO EMISSIONS USING EPA MOVES GUIDANCE FOR CO HOT SPOT ANALYSIS.

In the event, that statewide emission rates are too conservative, the analyst may conduct emissions analysis with MOVES as discussed in this section with consensus from ODOT.

An introduction to the MOVES emission model was given in the MSAT quantitative analysis Section 5.2.3.3. For CO analysis, MOVES is run at the project level. Table B2-1 summarizes the example run spec inputs and Table B2-2 summarized the example table inputs. The table input files include the applicable climate data by county, fuel characteristics, local vehicle mix and anti-tampering programs, vehicle age distribution and roadway type. Since only one hour is run at a time, the analyst needs to determine which hour/s present the highest concentration based on the traffic data. Different months of the year can be selected to ensure the worst case hour is modeled. CO emissions are calculated based on a typical winter day, because colder temperatures result in higher CO concentrations. The analyst will also need to determine how many model years need to be run and how many scenarios. If available use the design speed for all links in the analysis. For each model year free flow emission factors will be calculated by speed. However, idle emission factors on the other hand, are not a function of vehicle speed but are affected by other transportation variables such as operating mode and vehicle class mix. The idling emission factor is used for queue links only.

Follow EPA guidance documents for modeling CO with Moves2014b.

TABLE B2-1 EXAMPLE MOVES2014B RUN SPEC INPUTS FOR CO

Input Name	Include Scenario name, no build or build and analysis year
Scale	Project level required for transportation conformity. NEPA analysis may use county level.
Calculation Type	Inventory for CO
Time Span	Hour, analysis year (opening & design years), January, weekday, Peak traffic hour
Geographic Bounds	Example: Oregon, Multnomah County (consistent with MPO/DEQ regional conformity analysis)
Vehicles/Equipment	Used all gasoline, E85 and diesel vehicles
Road Types	Specific to project
Pollutants and Processes[a]	Running exhaust and crankcase running as given in EPA guidance
Data Set	Oregon LEV data set
Output	Selected distance traveled and population and grams, miles
Note: [a] Using MOVES2014 in Project-level Carbon Monoxide Analyses, March 2015. EPA-420-B-15-028	

Table input files must be created at the project level for each model run. Some data files may be available from an MPO, however some will need to be developed for the projects and some default data may be applicable. Fuel supply, fuel formulation, inspection and maintenance program, meteorological and source

type age distribution are usually available for an MPO if they do an emission budget review with their regional conformity. Please contact ODOT Air Quality Program Specialist to confirm MOVES inputs prior to modeling.

TABLE B2-2 EXAMPLE MOVES CO PROJECT LEVEL DATA MANAGER INPUTS

MOVES Table Name	Data Source
Fuel Supply and Fuel Formulation	Default data verified with DEQ
Fuel Fraction Usage and Alternative Vehicles Fuels and Technologies	Default Moves2014b except AVFT that must include the Zero Emission Vehicle (ZEV) Oregon program.
Meteorology	Use same data as MPO, otherwise default data is sufficient.
Inspection and Maintenance Coverage	Use same data as MPO if in Portland or Medford. Otherwise there is no I/M
Source Type Age Distribution	Use same data as MPO or contact DMV for age distribution for passenger vehicles.
Project Links	Project specific. E.g. One link per roadway project speed. The specific roadway length and types will be characterized in dispersion model.
Link Source Type Hour	Project specific. E.g. for CO: The link source type data was developed based on the vehicle miles traveled by each vehicle type in the MOVES database roadway type.

Note that with some updates to the MOVES emission model, there may be a two-year transportation conformity grace period. MOVES modeling files from regional conformity analysis if available are listed in Section 3 for each area. However, areas that are under limited maintenance plans do not have to run regional emission analysis and therefore there are not any readily available MOVES emission inputs.

The analyst is responsible for verifying that MOVES inputs are current by checking with the appropriate planning and regulatory agencies, typically either the MPO or the DEQ or LRAPA staff. Additional information about using MOVES for CO hot spot for DOT projects is given in 5.6.3 and in the MSAT section in 5.2.2. The MOVES guidance documents are available at:

https://www.epa.gov/moves

APPENDIX B-3 INFORMATIONAL--CO MONITORS IN PORTLAND

Currently, there are only 2 remaining permanent CO monitors in Oregon and they are both located in the Portland area. One monitor is representative of highway traffic and the second is representative of a local intersection. When the CO persistence factors were calculated for both locations, the resulting persistence factors were identical. The updated persistence factors for Portland are given in Table 5-5.

TABLE B3-1 PORTLAND CO PERSISTENCE FACTORS

CO Area	Period	CO Monitoring Site	Persistence Factor
Portland	2014-2016	Tualatin, Bradbury Court (I-5 site), EPA # 410670005	0.8
Portland	2014-2016	SE 57th and SE Lafayette EPA # 410510080	0.8

Source: Oregon DEQ, 2017 and EPA[18]

[18] https://www.epa.gov/outdoor-air-quality-data

APPENDIX C - TRAFFIC DATA REQUEST CHECKLIST

Air Quality Analysis Traffic Data Requirements Check List			
Project			
Highway			
County			
Key #			
Data Needed			
	MSAT Analysis Years and Cases:	Existing Year	
		Project Completion Year	
		20-year Projection Year	
		Existing AADT	
		No-Build AADT	
		Build AADT	
1	Design Year Build AADT		
	If project is located in proximity to populated area and the AADT is greater than 140,000 or creates significantly high levels of diesel particlate , a detailed MSAT analysis will be required. Links with volume changes of 5% or more will need to be included. Traffic volumes in peak and off peak blocks or hourly over a 24-hour period may be needed. Methodology should be reviewed with FHWA. TPAU and air analysts should meet to discuss MSAT methodology.		
2	For Qualitative MSAT Analysis		
	Regional Annual VMT and average regional speed,or average daily traffic and average speeds on links		
3	**Quantitative MSAT- Contact ODOT Air Quality Specialist to discuss methodology**		
	Example of Additional Data needed for MSAT Quantitative Analysis		
	Traffic Data needed for each link		
	Link id		
	Length of link		
	AADT		
	Roadway type (arterial or highway)		
	AM peak speed		
	PM peak speed		
	Off peak day speed		
	Off peak night speed		
	% (# of hours) of day in AM peak		
	% (# of hours) of day in PM peak		
	% (# of hours) of day in off peak daytime		
	% (# of hours) of day in off peak nighttime		

	Analysis Years and Cases - Local CO:			Existing Year				
		Local CO is based on peak hour data.		Project Completion Year				
				20-year Projection Year				
1	Ranking of intersections affected by the project by LOS/delay and total entering volume							
		for project completion year and 20-year projection for Build cases only.				By Intersection		
					LOS	Delay	Total Volume	
				Build Project Completion Year				
				Build 20 year Project				
2	For selected intersections (from ranking), synchro sheets showing:							
		Lane configurations						
		Type of Signal (pre-timed, actuated, or semi-actuated)						
		Saturated flow (permitted and protected as appropriate)						
		Traffic volumes by lane (each link) (veh/hr)						
		Total cycle length (s)						
		Effective green time						
		Yellow time (s)						
		Average red time length (each approach) (s)						
		Signal cycle timing for each movement						
		Clearance lost time (s)						
3	Free flow speeds for links at the selected intersections (mi/hr)							
4	Arrival type for links at the selected intersections (1 to 5 for best to worst progression)							

	Analysis Years and Qualitative Data - Local PM10 or PM2.5:	Project Completion Year			
		20-year Projection Year			
		Existing AADT			
		Project completion year No Build AADT			*if available*
		Project completion year Build AADT			*if available*
		Design year No Build AADT			
		Design year Build AADT			
1	If a PM10 or PM2.5 analysis is required				
	Use highest ADT on links in project limits				
	Design speed if available				
	Posted speed				
	% of diesel vehicles				

Contact ODOT Air Quality Specialist if a PM10 or PM2.5 Quantitative Analysis is Needed. An interagency consultation is needed to approve methodology

FHWA Categorical Analysis

1	Traffic data needed for project completion year and design year	Completion Year	Design Year
	Angle of cross streets for intersection (90 degrees)		
	Maximum grade for intersection (less than 2%)		
	Number of through lanes (less than or equal to 4)		
	Peak hour average speed for each approach		
	Maximum approach volume for each approach		
	Level of service (A,B,C, D, E)		
	Heavy duty diesel trucks percentage (greater than or equal to 5)		

APPENDIX D - STATEMENT OF WORK MATRIX

ODOT Consultant SOW Analysis Requirements Checklist for EIS or EA work

Required SOW tasks based on project location and project type.

Project Location	**Task 5.1[1]**	**Task 5.2[1]**	**Task 5.3[2], 5.4**	**Task 5.5a ,b[3]**	**Task 5.7[4]**	**Task 5.8a, b**	**Task 5.9**
"Attainment" areas							
Attainment or at the end of their 20 years of their maintenance plan	☒	☐	☐	☐	☒	☒	☒
Region 1							
Portland (METRO boundary)	☒	☐	☐	☐	☒	☒	☒
"Nonattainment" or "Maintenance" areas:							
Region 2							
Salem-Keizer (SKATS (CO): Salem-Keizer Area Transportation Study)	☐	☒	☒	☐	☒	☒	☒
Eugene-Springfield (AQMA (PM_{10}): Air Quality Maintenance Area UGB)	☐	☒	☐	☒	☒	☒	☒
Oakridge (UGB: (PM_{10} and $PM_{2.5}$))	☐	☒	☐	☒	☐	☒	☒
Region 3							
Medford (UGB: (CO))	☐	☒	☒	☐	☒	☒	☒
Medford-Ashland (AQMA: Air Quality Maintenance Area) but outside the UGB (PM_{10})	☐	☒	☐	☒	☐	☒	☒
Medford-Ashland (UGB and AQMA) within both boundaries (CO and PM_{10})	☐	☒	☒	☒	☒	☒	☒
Grants Pass (CBD: Central Business District (CO))	☐	☒	☒	☒	☐	☒	☒
Grants Pass (UGB: (PM_{10}) but outside CBD boundary	☐	☒	☐	☒	☐	☒	☒
Grants Pass (CBD and UGB) within both of these boundaries (CO and PM_{10}))	☐	☒	☒	☒	☐	☒	☒
Region 4:							
Klamath Falls (UGB: (CO and PM_{10}))	☐	☒	☒	☒	☐	☒	☒
Klamath Falls ($PM_{2.5}$ Nonattainment Area	☐	☒	☐	☒	☐	☒	☒

Boundary)							
Lakeview (UGB: (PM_{10}))	☐	☒	☐	☒	☐	☒	☒
Region 5:							
La Grande (UGB: Urban Growth Boundary (PM_{10}))	☐	☒	☐	☒	☐	☒	☒

UGB- Urban Growth Boundary

Task #	TASK DESCRIPTION
5	**Prepare an air quality analysis and technical report**
5.1	General Air Analysis for projects in areas that are "in attainment" of the NAAQS
5.2	General Air Analysis for projects in areas that are in "nonattainment or maintenance" of the NAAQS
5.3	CO Hot-Spot Analysis Determination and "qualitative" analysis
5.4	Quantitative CO Hot-Spot Analysis (CONTINGENCY)
5.5a	Qualitative PM_{10} or $PM_{2.5}$Hot-Spot Analysis Determination
5.5b	Quantitative PM_{10} or $PM_{2.5}$ Hot Spot Analysis for Project of Local Air Quality Concern (CONTINGENCY)
5.7	Indirect Source Construction Permit Determination
5.8a	Qualitative Mobile Source Air Toxic Analysis
5.8b	Quantitative Mobile Source Air Toxic Analysis (CONTINGENCY)
5.9	Prepare an Air Quality Technical Report

Instructions:

1. Verify if the project's location is within one of the nonattainment or maintenance boundaries listed above. If the project is located outside all of these boundaries, then the project location is considered to be "in attainment" of the National Ambient Air Quality Standards (NAAQS).
2. After you have determined the project's location and its designation status (attainment or nonattainment/maintenance area) you can determine the necessary tasks based on boxes checked for that area.

TABLE FOOTNOTES Be sure to follow the footnotes assigned on the tasks and compare this to your project description. The checked boxes above DO NOT necessarily reflect all project types. The checked boxes reflect various regulatory or agency requirements based on project location. The checked boxes indicate the "maximum" level of analysis that would be required based on the project location:

[1]Task 5.1 OR Task 5.2 must always be included in every SOW, NEVER both tasks. Exempt Mobile Source Air Toxics (MSATs) analysis is also covered in General Analysis Tasks 5.1 and 5.2.

[2] Task 5.3 CO hot spot analysis task should be included if project is located in one of the following CO areas: Salem-Keizer (SKATS), Medford (UGB), Grants Pass (CBD) or Klamath Falls (UGB) Quantitative analysis may be required and is done as Contingency Task 5.4. When Task 5.3 is included in the SOW, always include Task 5.4 as a contingency task

[3] Task 5.5a PM_{10} or $PM_{2.5}$ hot spot analysis determination is required if the project is located within the PM_{10} boundary of Eugene-Springfield (AQMA) , Medford-Ashland (AQMA), Grants Pass (UGB), Klamath Falls (UGB or PM2.5 Nonattainment Boundary), Lakeview (UGB), La Grande (UGB), or Oakridge (UGB). If the consultant determines that a PM_{10} of $PM_{2.5}$ analysis is required, contingency task 5.5b should occur.

[4] Task 5.7 Indirect Source Construction Permit Determination is required if the project is located in Lane County. For projects in areas outside of Lane County, an ISCP Determination is required only if the project includes a new parking facility or modification of an existing parking facility AND is located within the CO boundary of Portland (METRO), Salem-Keizer (SKATS) , Medford (UGB), or other CO areas where populations are 50,000 or more.

APPENDIX E

APPENDIX E-1. PROJECTS EXEMPT FROM CONFORMITY

TABLE E-1 PROJECTS EXEMPT FROM CONFORMITY REQUIREMENTS

Safety	Mass Transit	Air Quality	Other
Railroad/highway crossing. Hazard elimination program. Safer non-Federal-aid system roads. Traffic control devices and operating assistance other than signalization projects. Shoulder improvements. Increasing sight distance. Safety improvement program. Railroad/highway crossing warning devices. Guardrails, median barriers, crash cushions. Pavement resurfacing and/or rehabilitation. Pavement marking demonstration. Emergency relief (23 U.S.C. 125). Fencing. Skid treatments. Safety roadside rest areas. Adding medians. Truck climbing lanes outside the urbanized area. Lighting improvements. Widening narrow pavements or reconstructing bridges (no additional travel lanes). Emergency truck pullovers.	Operating assistance to transit agencies. Purchase of support vehicles. Rehabilitation of transit vehicles.[1] Purchase of office, shop, and operating equipment for existing facilities. Purchase of operating equipment for vehicles (e.g., radios, fareboxes, lifts, etc.). Construction or renovation of power, signal, and communications systems. Construction of small passenger shelters and information kiosks. Reconstruction or renovation of transit buildings and structures (e.g., rail or bus buildings, storage and maintenance facilities, stations, terminals, and ancillary structures). Rehabilitation or reconstruction of track structures, track, and trackbed in existing rights-of-way. Purchase of new buses and rail cars to replace existing vehicles or for minor expansions of the fleet.[1] Construction of new bus or rail storage/maintenance facilities categorically excluded in 23 CFR 771.	Continuation of ride-sharing and van-pooling promotion activities at current levels. Bicycle and pedestrian facilities.	Specific activities which do not involve or lead directly to construction such as: Planning and technical studies. Grants for training and research programs. Planning activities conducted pursuant to titles 23 and 49 U.S.C. Federal-aid systems revisions. Engineering to assess social, economic, and environmental effects of the proposed action or alternatives to that action. Noise attenuation. Emergency or hardship advance land acquisitions (23 CFR 710.503). Acquisition of scenic easements. Plantings, landscaping, etc. Sign removal. Directional and informational signs. Transportation enhancement activities (except rehabilitation and operation of historic transportation buildings, structures, or facilities). Repair of damage caused by natural disasters, civil unrest, or terrorist acts, except projects involving substantial functional, locational or capacity changes.
Source: Oregon Administrative Rule (OAR) 340 Division 252-0270 “Table 2 Exempt Projects.” https://www.oregon.gov/deq/Rulemaking%20Docs/div340-252table.pdf as modified by 40 CFR 93.126			

Safety	Mass Transit	Air Quality	Other
Note: A project is not exempt if the Metropolitan Planning Organization, in consultation with other agencies, determines that it has potentially adverse effects. This would be an unusual circumstance.			
[1] In PM_{10} and $PM_{2.5}$ nonattainment or maintenance areas, such projects are exempt only if they are in compliance with control measures in the applicable implementation plan. See Table D-2 for a summary of PM control measures and links to the full text of the PM maintenance plans.			

APPENDIX E-2. PROJECTS EXEMPT FROM REGIONAL EMISSIONS ANALYSES

In addition to the projects listed in Table E-1, which are exempt from the conformity requirements, the following projects are exempt from only the regional emissions analysis component of conformity (OAR 340 Division 252-0280 "Table 3 Exempt Projects."):

- 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.

Project-level conformity still applies to the projects listed above.

APPENDIX F

APPENDIX F-1 TYPICAL WORDING FOR CONSTRUCTION IMPACTS AND MITIGATION

Short Term Construction Impacts Mitigation – typical wording [Note: modify wording appropriately for the magnitude of the project and the planned project construction activities – this is typical language for a large project, cut out non-pertinent information when addressing impacts for a small project]

Construction impacts would result from the generation of dust from site clearing, excavation, and grading, direct emissions from construction vehicles, and impacts to traffic flow in the project area. Traffic congestion increases idling times and reduces travel speeds resulting in increased vehicle emission levels. Construction of concrete structures may have associated dust-emitting sources, such as concrete mixing operations. Asphalt mix plants could also be associated with construction and could have particulate, hazardous air pollutant and combustion source emissions. Stationary sources such as concrete and asphalt mix plants are generally required to obtain air permits from DEQ (or LRAPA) and to comply with regulations to control dust and other pollutant emissions.

Construction contractors are required to comply with Division 208 of OAR 340 which addresses visible emissions and nuisance requirements. Subsection 210 of OAR 340-208 places limits on fugitive dust that causes a nuisance or violates other regulations. [Note: modify the references to DEQ regulations appropriately if project is in Lane County and under the jurisdiction of LRAPA] Violations of the regulations can result in enforcement action and fines. The regulation provides a list of reasonable precautions be taken to avoid dust emissions:

- Use of water or chemicals where possible for the control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land;
- Application of asphalt, oil, water, or other suitable chemicals on unpaved roads, materials stockpiles, and other surfaces which can create airborne dusts;
- Full or partial enclosure of materials stockpiles in cases where application of oil, water, or chemicals are not sufficient to prevent particulate matter from becoming airborne;
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;
- Adequate containment during sandblasting or other similar operations;
- When in motion, always covering open-bodied trucks transporting materials likely to become airborne;
- The prompt removal from paved streets of earth or other material that does or may become airborne.

In addition, contractors are required to comply with ODOT standard specifications. Section 290 of the specifications has requirements for environmental protection, which include air pollution control measures. These control measures, designed to minimize vehicle track-out and fugitive dust, would be documented in the pollution control plan that the contractor is required to submit prior to the pre-construction conference [Note: verify that the preceding sentence is appropriate to the project being analyzed – small projects may not have this measure]. To reduce the effect of construction delays on traffic flow and resultant emissions, road or lane closures should be restricted to non-peak traffic periods when possible.

APPENDIX F-2 OREGON 2018 STANDARD SPECIFICATIONS 290[19]

Note: Specifications are updated from time to time, be sure to verify that the latest specification is being referenced.

Environmental Protection
00290.30 Pollution Control
00290.30(c) Air Pollution Control Measures - Comply with ORS 468, ORS 468A, OAR 340-014, OAR 340-200 through OAR 340-268, and all other applicable Laws.

(1) Vehicle and Equipment Idling - Establish truck staging areas for diesel-powered vehicles located where truck emissions have a minimum impact on sensitive populations, such as residences, schools, hospitals and nursing homes. Limit idling of trucks and other diesel powered equipment to 5 minutes, when the equipment is not in use or in motion, except as follows:

- When traffic conditions or mechanical difficulties, over which the operator has no control, force the equipment to remain motionless.
- When operating the equipment's heating, cooling or auxiliary systems is necessary to accomplish the equipment's intended use.
- To bring the equipment to the manufacturer's recommended operating temperature.
- When the outdoor temperature is below 20 °F.
- When needed to repair equipment.
- Under other circumstances specifically authorized by the Engineer.

(2) Dust Control and Permitting - Prevent airborne dust and fugitive dust emissions from construction activities including rock, concrete, and asphalt crushing operations and obtain permits according to 00160.70. Do not use oil, waste, waste water, or other illegal materials as dust suppressants.

(3) Burn Restrictions - Burn wastes only if open burning is allowed by State, LRAPA, and local burning Laws. Obtain and comply with all required permits including DEQ permits required by OAR 340-264-0010 through OAR 340-264-0020, LRAPA permits, and local fire district permits. Provide copies of all permits to the Engineer prior to burning. Do not conduct burning within riparian areas. Conduct burning at locations where existing structures will not be damaged and where smoke will not impact traffic. Do not burn the following materials onsite:

- Rubber products
- Tires
- Plastic
- Wet garbage
- Petroleum and petroleum treated materials
- Asphalt or industrial waste
- Any material that creates dense or noxious odors
- Painted materials
- Asbestos, mercury or PCB containing materials or equipment
- Hazardous wastes
- Scrap wiring or electrical equipment
- Painted or treated wood

[19] https://www.oregon.gov/ODOT/Business/Pages/Standard_Specifications.aspx

Buildings intended for demolition may be burned by the local fire department for training purposes provided that all hazardous substances have been removed from the building before burning. Contact the local fire department for applicable restrictions.

APPENDIX G - DEFINITIONS

Air Quality Nonattainment Area: A region that exceeds the National Ambient Air Quality Standards for a criteria pollutant.

Area Source: A group of adjacent sources which individually may not contribute significantly to a community's air pollution problem, but collectively can become a major pollution problem.

Background Concentration: Represents the concentration of carbon monoxide (CO) that would be found in the atmosphere within the project area due to area wide mobile and stationary sources of emissions.

CAL3QHC: An interrupted flow dispersion model used to predict CO concentrations.

Categorical Exclusion An action that does not individually or accumulatively have significant impact on the environment.

Clean Air Act: A series of Congressional acts and amendments passed in an effort to improve air quality. The last amendment was made in 1990.

Conformity Rule: State OAR that requires Regional Transportation Plans (RTP), Transportation Improvement Programs (TIP), transportation projects that receive funding or require approval from Federal Highway Administration (FHWA) or Federal Transit Authority (FTA), and regionally significant projects - regardless of funding source- to conform to the *purpose* of a State Implementation Plan (SIP).

Control Measures: measures that are applied to address all sources of emissions and can affect transportation facilities.

Dispersion Model: Model used to predict how pollutant emissions will spread out through the air from their source based on meteorological, site, traffic, and emission variables.

Emission Budget: Total allowable emissions within an area. It is defined to attain/maintain air quality standards and is based on a revision to the applicable implementation plan.

Emission Factor: A factor that describes the amount of pollutant emitted from a transportation source, usually expressed in grams per mile.

Environmental Assessment: An assessment of an action where the significance of an impact is not clearly established.

Environmental Impact Statement: An assessment of an action where the impact will be significant to the environment.

Finding of No Significant Impact: A federal action when the EA concludes that there will be no significant negative impact on the environment.

Free-Flow Link: A link(s) of roadway where vehicles are moving without experiencing the delays typically associated with intersections.

Hot-Spot Analysis: An estimation of likely future localized CO and PM_{10} pollutant concentrations and a comparison of those concentrations to the National Ambient Air Quality Standards.

Idle Emission Factor: Defined as an emission factor that accounts for vehicles idling at an intersection.

Indirect Source: A facility, building, structure, or installation or any combination of these, which indirectly causes vehicular activity that results in emissions of air pollutants.

Indirect Source Construction Permit: A permit that is issued by the lead air quality agency for the construction of indirect sources.

Intermodal Surface Transportation Efficiency Act: A Congressional Act that changed the focus from building out of transportation troubles to getting as much out of what is already in place.

Maintenance Period: The time after EPA redesignates an area to attainment. During this time control strategies are required to maintain the attainment of the standards.

Regional Analysis: An analysis of emissions in a maintenance or nonattainment area. Usually done to demonstrate plan and program conformity.

Area/project level Analysis: Small scale to address local effects of a project. Usually done to demonstrate project conformity.

National Ambient Air Quality Standards: The standards for pollutants developed in response to the 1970 CAAA.

National Environmental Policy Act: A broad based environmental legislation requiring that an Environmental Impact Statement be prepared to examine the social, economic and environmental effects of major Federal actions that significantly affect the quality of human environment.

Persistence Factor: A factor that is applied to predicted 1-hour concentrations to obtain 8-hour concentrations. It is pollutant specific.

Primary Standards: Standards established to protect human health.

Queue Link: A straight segment of roadway having a constant width, traffic volume, and vehicle emission factor where vehicles are idling for a specific period of time.

Receptor: The location at which concentrations are estimated.

Regional Transportation Plan: The official intermodal metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area.

Secondary Standards: Standards established to protect human welfare.

Sensitive Populations: People with respiratory ailments, heart conditions or chronic illnesses, pregnant woman, young children, seniors and those who do intense outdoor exercise. Examples of air sensitive population areas are residences, schools, churches, parks, active sports areas, daycares, and hospitals. Analyst should review areas within 500 feet of the project.

State Implementations Plan: A federally enforceable state law which specifies measures to be used in attainment and maintenance of National Ambient Air Quality Standards (NAAQS).

Transportation Control Measures: Any measure that is specifically identified and committed to in the applicable implementations plan that is either one of the types listed in δ 108 of the CAA or measures for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions.

Transportation Improvement Program: A staged, 3-year (updated every 2 years), intermodal program of transportation projects covering a metropolitan planning area which is consistent with the metropolitan transportation plan.

APPENDIX H - ACRONYMS

AADT	Annual Average Daily Traffic
AERMOD	Atmospheric Dispersion Modeling
AQMA	Air Quality Maintenance Area
AVFT	Advance Vehicle Fuel Technologies
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CALQHC	EPA's Line Source Dispersion Model
CBD	Central Business District
CE	Categorical Exclusion
CEQ	Council of Environmental Quality
CM	Control Measure
CO	Carbon monoxide
DE	Diesel Exhaust
DEQ	Department of Environmental Quality
EA	Environmental Assessment
EIS	Environmental Impact Statement
EMIT	Easy Mobile Inventory Tool
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
ISCP	Indirect Source Construction Permit
LEV	Low Emitting Vehicles
LOS	Level-of-Service
LRAPA	Lane Regional Air Protection Agency
MOVES	EPA's Motor Vehicles Emissions Simulator Model
Mph	Miles per Hour
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
MRMPO	Middle Rogue Metropolitan Planning Organization
MWVCOG	Mid-Willamette Valley Council of Government

NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NOx	Nitrogen oxides
OAR	Oregon Administrative Rule
ODOT	Oregon Department of Transportation
PCE	Programmatic Categorical Exclusion
PM_{10}	Particulate matter of less than, or equal to a nominal 10 micrometers in diameter
$PM_{2.5}$	Particulate matter of less than, or equal to a nominal 2.5 micrometers in diameter
POAQC	Project of air quality concern
PPM	Parts per million
ROD	Record of Decision
RTP	Regional Transportation Plan
RVMPO	Rogue Valley Metropolitan planning agency
SIP	State Implementation Plan
SKATS	Salem-Keizer Area Transportation Study Boundary
SO2	Sulfur Dioxide
SOW	Statement of Work
STIP	State Transportation Improvement Program
TCM	Transportation Control Measures
TIP	Transportation Improvement Program
TPAU	Transportation Planning Analysis Unit
UGB	Urban Growth Boundary
VOC	Volatile Organic Compound
VMT	Vehicle Miles Traveled
ZEV	Zero Emission Vehicle

APPENDIX I - LIST OF TABLES