Air Quality Report

US 26: Outer Powell Transportation Safety Project

SE Powell Boulevard from SE 99th Avenue to SE 176th Avenue

Oregon Department of Transportation

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Acronyms

AADT	annual average daily traffic
ADT	average daily traffic
API	area of potential impact
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Oregon Department of Environmental Quality
Diesel PM	diesel particulate matter plus diesel exhaust organic gases
EA	Environmental Assessment
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
FR	Federal Register
FTA	Federal Transit Administration
LOS	level of service
MOVES	Mobile Vehicle Emission Simulator
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxics
MTIP	Metropolitan Transportation Improvement Program
NAAQS	National Ambient Air Quality Standard(s)
NOx	oxides of nitrogen
O3	ozone
OAR	Oregon Administrative Rules
ODOT	Oregon Department of Transportation
PM2.5	particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers
PM10	particulate matter with an aerodynamic diameter less than or equal to 10 micrometers
PPB	parts per billion
PPM	part per million
RTP	Regional Transportation Plan
SIP	state (air quality) implementation plan
SO2	sulfur dioxide
VMT	vehicle miles traveled
VOC	volatile organic compound

Executive Summary

The Outer Powell Transportation Safety Project (OPTSP) is located in Portland, Oregon at the northern end of the Willamette Valley. The Willamette Valley is prone to periods of poor air dispersion, and during these periods high concentrations of carbon monoxide (CO) and particulate matter from automobiles and home heating emissions can occur.

The Portland area was designated a nonattainment area for CO in the early 1990s. Portland now meets the National Ambient Air Quality Standards (NAAQs) for CO. The area of potential impact (API) is located in Portland that is close to completing their second 10-year CO maintenance plan. Transportation conformity applies for the CO NAAQS during the CAA section 175(a) maintenance planning period. For CO in Portland, this period extends 20 years from the effective date of EPA's approval of the first 10-year maintenance plan and redesignation of the area to attainment. This occurred on October 2, 1997 via FR notice on September 2, 1997 (68 FR 2891). The 20-year maintenance planning period is effective until October 2, 2017 (71 FR 3768). Transportation conformity for CO ceases to apply after that date. The CO budget for 2017 on-road mobile sources is 1,181,341 pounds of CO per winter day.

Portland is in attainment for all other criteria pollutants.

The project is subject to conformity requirements imposed by the Federal transportation conformity rules (40 Code of Federal Regulations (CFR) part 93 Subpart A), and Oregon's transportation conformity rules (Oregon Administrative Rule (OAR) 340-252). These rules stipulate the following requirements:

- Inclusion of the project in the conforming *Regional Transportation Plan* (RTP) (Metro 2014b) and Metropolitan Transportation Improvement Program (MTIP) (Metro 2014c).
- A determination of whether the project would produce any new violations of the NAAQs, or worsen any existing violation.
- A determination whether or not the project would delay timely attainment of any standard.

The project is included in the conforming 2040 RTP and MTIP 2015-2018. The general scope of work for the project is the same as within the RTP and MTIP. The project will not create any new violations, worsen the existing violation or delay the timely attainment of any standard. Air quality impacts were assessed for the project and are presented in this document.

Summary of Impacts

For CO, concentrations at affected intersections were modeled. The results indicate the project would not cause any new violations of the NAAQs or increase the severity of any existing violations. The project would not delay timely attainment of the NAAQs. Therefore, the project would conform with the purpose of the *State Implementation Plan* (SIP) and the requirements of the Clean Air Act (DEQ 2004b). All other criteria pollutants are in attainment and the project area Mobile Source Air Toxic emissions are expected to decrease in the future relative to existing conditions. Consequently, there are negligible impacts of this project on air quality.

Direct Impacts

Air emissions from mobile sources would decline over the life of this project because of the impact of new technology and the phasing out of older, more polluting vehicles. Additionally, increased traffic in the future would be offset by reductions from the cleaner burning fuels.

Results of the air quality analysis show that CO concentrations at the poorest performing intersections of concern would be below the CO NAAQs in 2020 (opening year) and 2040 (design year). The NAAQs and Oregon standard for 1-Hour CO is 35 parts per million (ppm) and 9 ppm for the 8-Hour CO standard. For all alternatives, predicted CO 1-Hour and 8-Hour concentrations would be equal or less than 2.6 and 2.0 ppm, respectively, at all intersections in 2040. Concentrations for the Build Alternative would either be identical to the No-Build Alternative or only 0.1 ppm higher or lower than No-Build. Additionally, concentrations for the Build Alternative would decline from existing even with a background concentration of 2.0 ppm. Table 1 summarizes the estimated project CO concentrations for 2020 and 2040 for the two poorest performing intersections of the Outer Powell Transportation Safety project.

Table 1. Carbon Monoxide Concentrations for the Two Poorest Performing Intersections of the Outer Powell Transportation Safety Project

	1-Hour Concentration (ppm)		8-Hour Concentration (ppm)	
Alternative	SE 112th & Powell	SE 174th & Powell	SE 112th & Powell	SE 174th & Powell
Existing	2.7	3.2	2.1	2.4
No-Build Alternative (2020)	2.5	2.8	1.9	2.1
Build Alternative (2020)	2.6	2.7	2.0	2.1
No-Build Alternative (2040)	2.4	2.6	1.8	2.0
Build Alternative (2040)	2.4	2.6	1.8	2.0
	1-Hour NAAQs 35 ppm		8-Hour NAAQs 9 ppm	

Concentrations include background of 2 ppm and persistence factor of 0.76 to convert 1-Hour to 8-Hour
ppm – parts per million

The project area Mobile Source Air Toxic (MSAT) emissions are expected to decrease in the future relative to existing conditions. MSAT emissions were addressed qualitatively in this document as recommended in Federal Highway Administration (FHWA) guidance. (FHWA 2012)

Construction impacts to air quality would be temporary and would not continue after project construction was complete. Construction emissions were not quantified for this effort but are addressed qualitatively in this document.

Mitigation

Construction

The Oregon Department of Environmental Quality (DEQ) enforces air quality regulations, including those for controlling fugitive dust in the State of Oregon (OAR 340-208-0210). Construction contractors are required to comply with Division 208 of OAR 340, which addresses visible emissions and nuisance requirements. Subsection of OAR 340-208 places limits on fugitive dust that causes a nuisance or violates other regulations.

In addition, contractors are required to comply with ODOT standard specifications Section 290 that has requirements for environmental protection, which include air-pollution control measures. These control measures, which include vehicle and equipment idling limitations, are designed to minimize vehicle track-out and fugitive dust. These measures would be documented in the erosion and sediment control plan that the contractor is required to submit for approval prior to the pre-construction conference. To reduce the impact of construction delays on traffic flow and resultant emissions, road or lane closures should be restricted to non-peak traffic periods when possible.

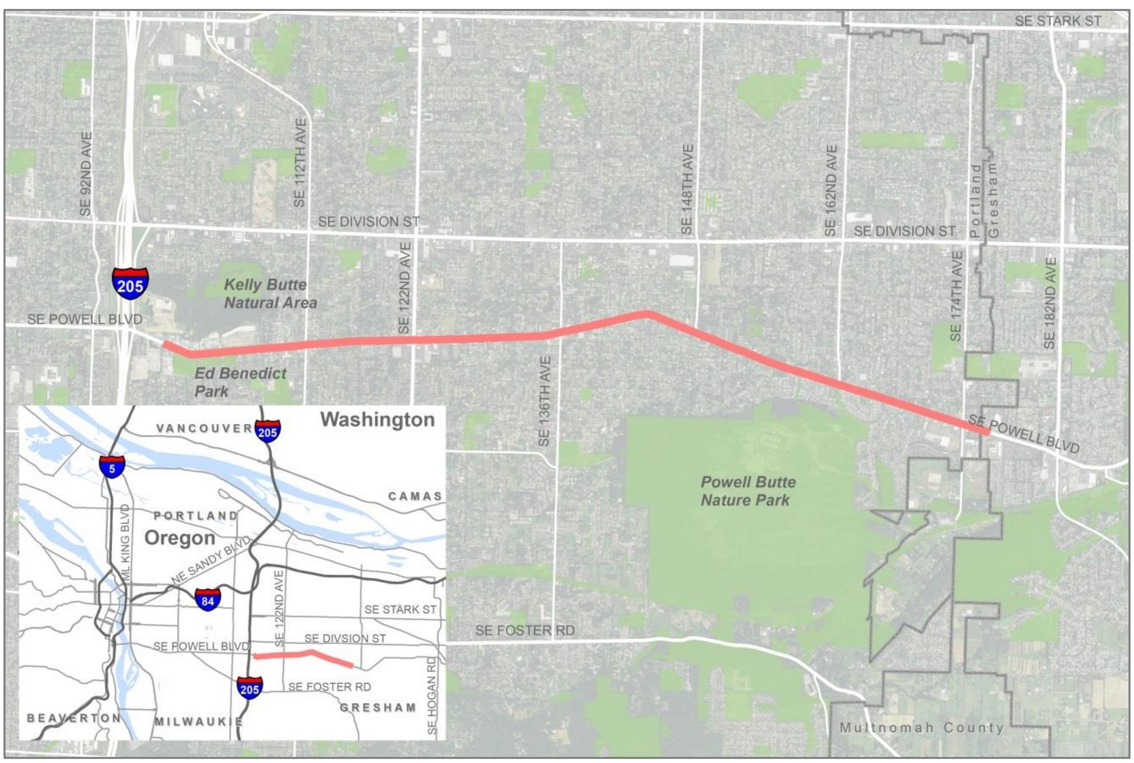
1 Introduction

The Oregon Department of Transportation (ODOT) proposes improvements to SE Powell Boulevard (U.S. Highway 26) in Southeast Portland to address safety deficiencies that people who walk, bicycle, use mobility devices, use transit, and drive between SE 99th Avenue and SE 176th Avenue regularly experience. Improvements within the overall corridor area may occur in phases over a period of time. A first project phase from SE 122nd Avenue to SE 136th Avenue has been identified. This technical report provides environmental analysis for the entire project area and evaluates full construction of project improvements.

1.1 Project Location

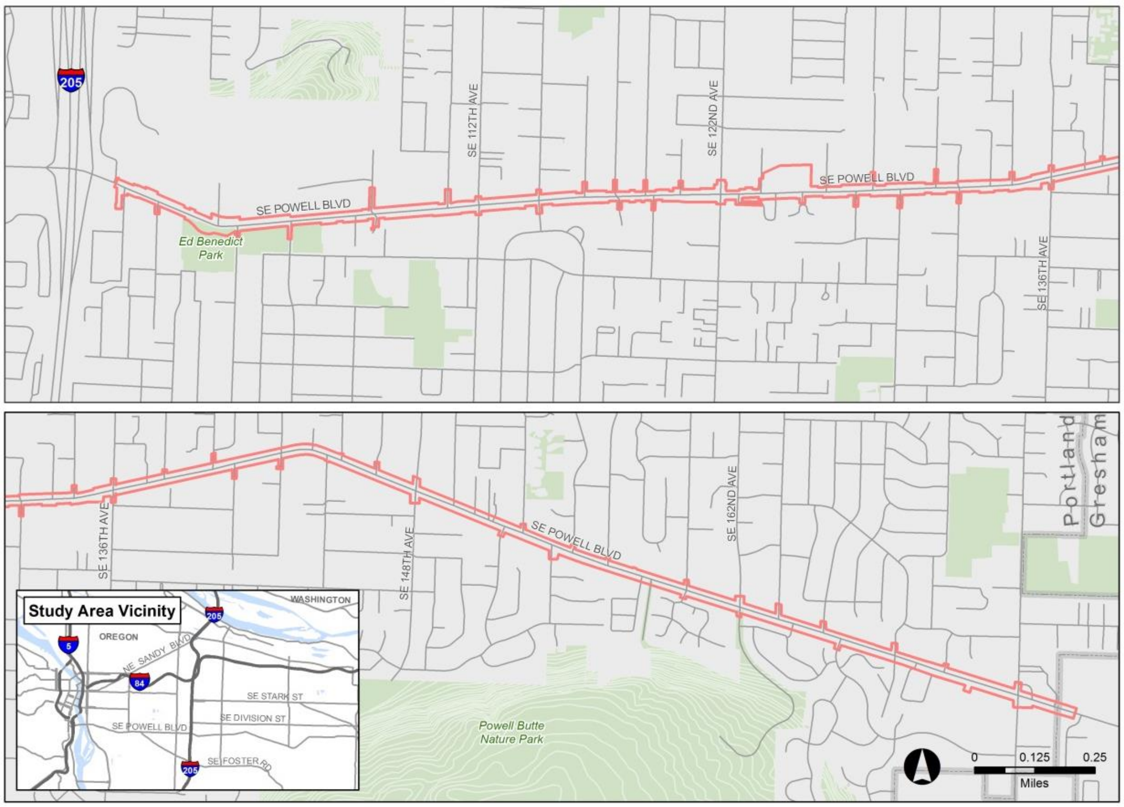
The proposed US 26: Outer Powell Transportation Safety Project corridor is over 4 miles long and located within the City of Portland, except for transition at the east end of the project area into the existing five-lane section of East Powell Boulevard in the City of Gresham. The project area extends from approximately 1,000 feet west of SE 99th Avenue (east of Interstate 205) to approximately 830 feet east of SE 174th Avenue near the Portland and Gresham city limits. Figure 1 shows the project vicinity and location. The extent of the project area is shown in red.

Figure 1. Vicinity Map for Outer Powell Transportation Safety Project



The project area of potential impact (API) has also been initially defined to extend north and south of SE Powell Boulevard at various distances to encompass portions of adjacent properties and connecting streets. The API is the estimated area within which permanent modifications to adjacent parcels from the proposed improvements may occur and where potential temporary impacts could result from construction activities (see Figure 2).

Figure 2. API for US 26: Outer Powell Transportation Safety Project



1.2 Project Purpose

The purpose of the US 26: Outer Powell Transportation Safety Project is to reduce the frequency and severity of collisions, and reduce potential conflicts between vehicles, pedestrians, transit, and bicyclists, while providing a continuous through facility for safe travel by all of these modes in the project area on SE Powell Boulevard, approximately between SE 99th Avenue and the Portland city limits at SE 176th Avenue. In achieving its purpose, the project also will support the creation of healthy and connected complete neighborhoods in the project area.

1.3 Project Needs

The proposed action will address the following primary needs:

- **Increasing Corridor Safety**: Safety Priority Index System (SPIS) data from 2009-2013 shows that eight of the top 10 percent of ODOT safety priority location sites are in the project area. The 2009-2013 SPIS data establish that there were 1,024 collisions in the corridor. While the statewide average collision rate for this type of facility is 2.37 crashes per million vehicle miles, this corridor averaged 6.34 crashes per million vehicle miles. SE Powell Boulevard at SE 122nd Avenue and SE 174th Avenue has been among the state's top 5 percent SPIS sites since 2003.
- **Reducing Modal Conflicts:** There are numerous conflicts between motor vehicles, pedestrians, and bicyclists along the corridor. During 2009–2013 there were 26 reported collisions involving vehicles and pedestrians and 10 involving vehicles and bikes. Two pedestrians were killed crossing or walking along SE Powell Boulevard between the fall of 2013 and the fall of 2014. Marked pedestrian crossings along SE Powell Boulevard in the project area are generally limited to 11 signalized intersections that include a pedestrian signal, and four midblock crossings with pedestrian-triggered rectangular rapid flashing beacons (RRFBs). Section 13.5.1 of the ODOT *Highway Design Manual* (HDM) states that, "Developed, urban state highways should provide a safe and convenient pedestrian crossing no less frequent than every quarter-mile." Compared to this quarter-mile, or 1,320-foot distance, the typical distance between marked pedestrian crossings within the project area is 1,700 feet. Pedestrians wanting to cross to reach transit, businesses, or residences often cross at unmarked locations, resulting in unfavorable conditions for pedestrians.
- **Reducing Turning Movement Crashes:** Seventy-five percent of corridor collisions from 2009 to 2013 occurred within 500 feet of one of the nine signalized intersections in the corridor. Eighty-five percent, or 874 of the 1,024 collisions, were rear-end or turning-movement-related collisions. Most of the existing roadway corridor on SE Powell Boulevard, between SE 99th Avenue and the Portland city limits, does not provide left-turn refuge for vehicles. In these areas, vehicles waiting to turn left from the highway will stop in the through lane, while motorists following behind them may pull onto the bike/pedestrian lane and shoulder to pass illegally, creating a hazardous situation for people walking, biking, or waiting for transit adjacent to the motor vehicle lanes.
- **Increasing Pedestrian Safety:** Most of the existing roadway corridor on SE Powell Boulevard between SE 99th Avenue and the Portland city limits lacks sidewalks on both sides of the highway. Pedestrians use the paved bike/pedestrian lanes or unpaved shoulders along the roadway. People using mobility devices (such as wheelchairs, walkers, and scooters) have to navigate the bike/pedestrian lane or dirt shoulders. Due to the lack of sidewalks with standard curbs, gutters, and drainage facilities, localized flooding and ponding of water occurs in places along the highway. Pools of water are particularly difficult to traverse for pedestrians and individuals who use mobility devices, as well as bicyclists traveling the highway.

- **Increasing Bicycle Safety:** Currently, there is a 5-foot-wide striped combination bike/pedestrian lane provided on both shoulders of SE Powell Boulevard through the project corridor. The corridor lacks continuous sidewalks and a center-turn lane. Modal conflicts arise as a result, with pedestrians and bicyclists both using the bike/pedestrian lane in the absence of a sidewalk. Meanwhile, vehicles regularly illegally use the bike/pedestrian lane to pass to the right of left-turning traffic. The existing bike/pedestrian lane treatments do not include colored pavement to denote conflict areas or provide a buffer to better separate modes.
- **Increasing Safety for Transit Riders:** Many transit stops along the corridor are not conveniently located for transit users and lack basic amenities. Throughout most of the project area, pedestrian transit users have to travel an inconveniently long (more than 0.25 mile) distance to cross SE Powell Boulevard more safely at a marked crosswalk or intersection. Many bus stop locations lack curbed sidewalk placement, accessible boarding areas for people with disabilities, lighting, and shelter, resulting in uncomfortable waiting areas for transit users.

2 Project Alternatives

This technical report describes potential effects of no action (No-Build Alternative) and the proposed action (Build Alternative).

2.1 No-Build Alternative

NEPA requires evaluation of the No-Build Alternative to provide a baseline for comparison with the potential impacts of the proposed action. The No-Build Alternative consists of existing conditions and planned actions with committed funding in or near the US 26: Outer Powell Transportation Safety Project study area.

SE Powell Boulevard, within the project area, typically consists of two motor vehicle travel lanes and paved shoulders with striped bicycle lanes. Wider sections are present at some intersections to accommodate motor vehicle turn pockets and pedestrian amenities. Continuous curbs and sidewalks are not present along the majority of the corridor. The roadway is uncurbed through the majority of the project area, typically with left-turn lanes only at signalized intersections.

There are many turning conflict points on SE Powell Boulevard. More than 390 driveways occur within the project area and most sections of SE Powell Boulevard do not have curbs with defined locations for vehicles to enter driveways and parking lots. Many of the cross-street approaches are offset from each other on the north and south sides of SE Powell Boulevard. Five-foot-wide striped bicycle lanes run the entire length of SE Powell Boulevard, except through the SE 122nd Avenue signalized intersection where the striped bike lanes disappear and right-turn lanes for motorized vehicles are provided. People who walk and use mobility devices share the bike lanes along the corridor where no sidewalks exist.

Under the No-Build Alternative, the corridor would remain with existing limited sidewalks and curb ramps. Long stretches of the corridor provide no signalized or otherwise enhanced crossings to assist pedestrians and bicyclists in crossing the street. Additionally, segments of head-in parking would remain along the corridor, which results in drivers backing out onto the highway.

The No-Build Alternative includes actions in specific locations within the project area with dedicated funding identified for their implementation through 2040. These actions are stand-alone projects that are programmed and will be funded by sources separate from the US 26: Outer Powell Transportation Safety Project. Each of these other projects will accommodate the needs of motorists, bicyclists, pedestrians, and transit users at specific locations. They include several projects identified in East Portland in Motion (EPIM), which is an implementation strategy for active transportation in East Portland, and projects identified under the City of Portland's Outer Powell Boulevard Design Concept Plan. Both were adopted by Portland City Council in 2012. Several of these projects are funded through different sources.

The 130's Neighborhood Greenway is one of the key EPIM projects that is funded and in the design stage, led by the City of Portland. This 4.8-mile north-south route will extend between the I-84 multiuse path on the north end and the Springwater Corridor on the south end and is planned to connect east-west bikeways in East Portland. It includes a project that will provide a safe facility for pedestrians and bicyclists to be separated from motorized vehicle traffic by means of a detached facility on the north side of SE Powell Blvd between SE129th and SE 130th Avenues, as well as a new RRFB located at SE 130th Avenue. This project is part of the East Portland Access to Transit project funded by the Metro Regional Flexible Funds Allocation in the 2014–2015 cycle. The local funding match is provided by the City of Portland.

The 100’s Neighborhood Greenway and 150’s Neighborhood Greenway are two other key projects that are identified in EPIM. These projects are included under the East Portland Access to Employment and Education Multimodal Improvements funded by the Metro Regional Economic Opportunity Fund in the 2016–2018 cycle. The City of Portland is leading and providing the local funding match for these projects that include 6 miles of development along the north-south 100’s and 150’s Neighborhood Greenway routes.

- The 100’s Neighborhood Greenway extends from NE Klickitat Street near I-84 to SE Bush Street. It includes a crossing treatment at SE Powell Boulevard, likely a median island and new RRFB. The crossing location will be either at SE 108th Avenue or SE 111th Avenue and will utilize the bike facilities along SE Powell Boulevard to travel to SE 104th Avenue or SE 112th Avenue, where existing signals will provide a protected crossing for people to continue south to SE Bush Street, an Existing Neighborhood Greenway.
- The 150’s Neighborhood Greenway extends from NE Halsey Street to SE Powell Boulevard. It includes a crossing treatment at SE Powell Boulevard and 157th Avenue, likely a median island and new RRFB.

The following improvements are part of the Powell-Division Safety and Access to Transit Project led by TriMet and funded with an ODOT STIP Enhance grant in the 2016-2018 cycle. The local funding match is provided by TriMet and the City of Portland. The improvements include:

- 122nd Intersection and Stop Improvements
- 136th Intersection and Stop Improvements
- 145th Enhanced Pedestrian Crossing
- 151st Enhanced Pedestrian Crossing

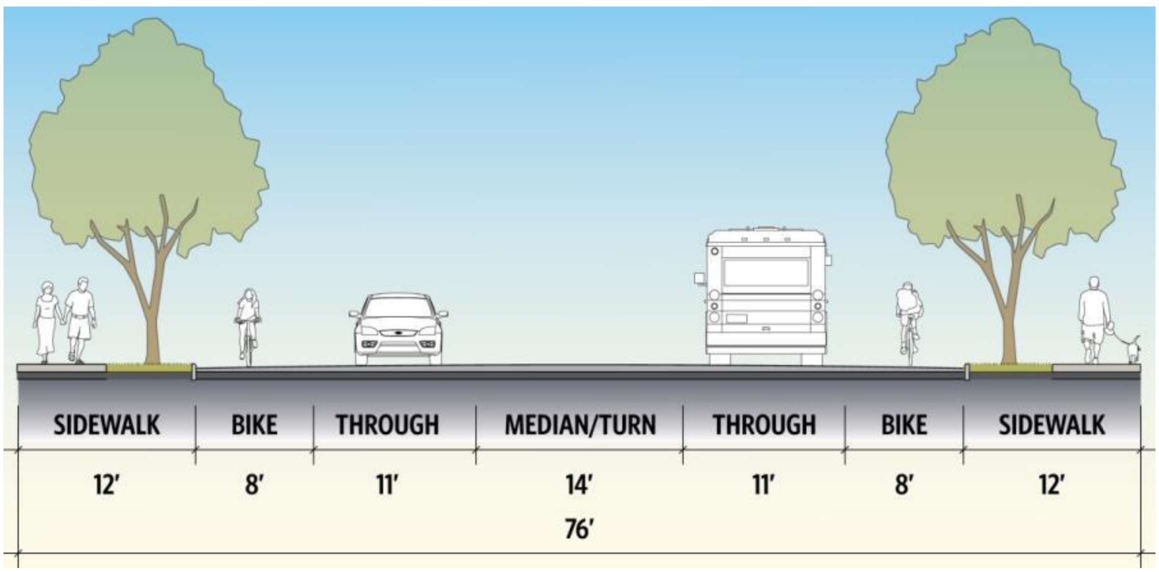
These funded improvements will allow TriMet to continue its major short-term priority for the US 26: Outer Powell Transportation Safety Project corridor to provide frequent service of 15 minutes or better most of the day every day on Line 9 and the MAX Light Rail Green Line. TriMet plans to improve bus line 71 to make bus arrival times more predictable.

2.2 Proposed Action (Build Alternative)

The 2012 City-adopted Outer Powell Conceptual Design Plan defined improvements to be provided within a typical 76-foot-wide cross-section of the highway right-of-way. Within this public right-of-way width, the proposed project was planned to provide two 11-foot-wide travel lanes (one lane in each direction) and one 14-foot-wide center lane, possibly including a raised median along some portions of the corridor.

ODOT has developed the proposed action through refinement of the Conceptual Design Plan, resulting in identification of 8-foot-wide bicycle lanes and 12-foot-wide sidewalks and landscape area adjacent to the travel lanes, in each direction, throughout most of the project corridor. The sidewalk area will provide for an 8-foot-wide sidewalk and 4-foot-wide landscaping and/or stormwater treatment area, with trees, shrubs, or other features. The bike facility may include buffered bike lanes or a mountable raised bike path. This decision will be made during the final design process. The bike facility selected will fall within the allotted bike facility space analyzed in this document. Illumination will consist of new roadway light poles. Light fixtures may also be installed in as-yet-to-be-determined locations to provide pedestrian-level sidewalk lighting. The proposed typical street section is shown in Figure 3.

Figure 3. The Outer Powell Transportation Safety Project Typical Cross-Section



The proposed 76-foot-wide typical section between major intersections will remain constant for much of the project area, except at 13 key locations where ODOT recommends changing the overall project width either to minimize negative impacts to adjacent properties, or to accommodate an additional vehicle travel lane or turn lanes in some locations. These 13 key locations and proposed cross sections are shown in Figure 4 and Figure 5. The typical cross-section is represented in orange in these figures.

Figure 4. Proposed Cross-Sections: SE 99th Avenue to SE 136th Avenue

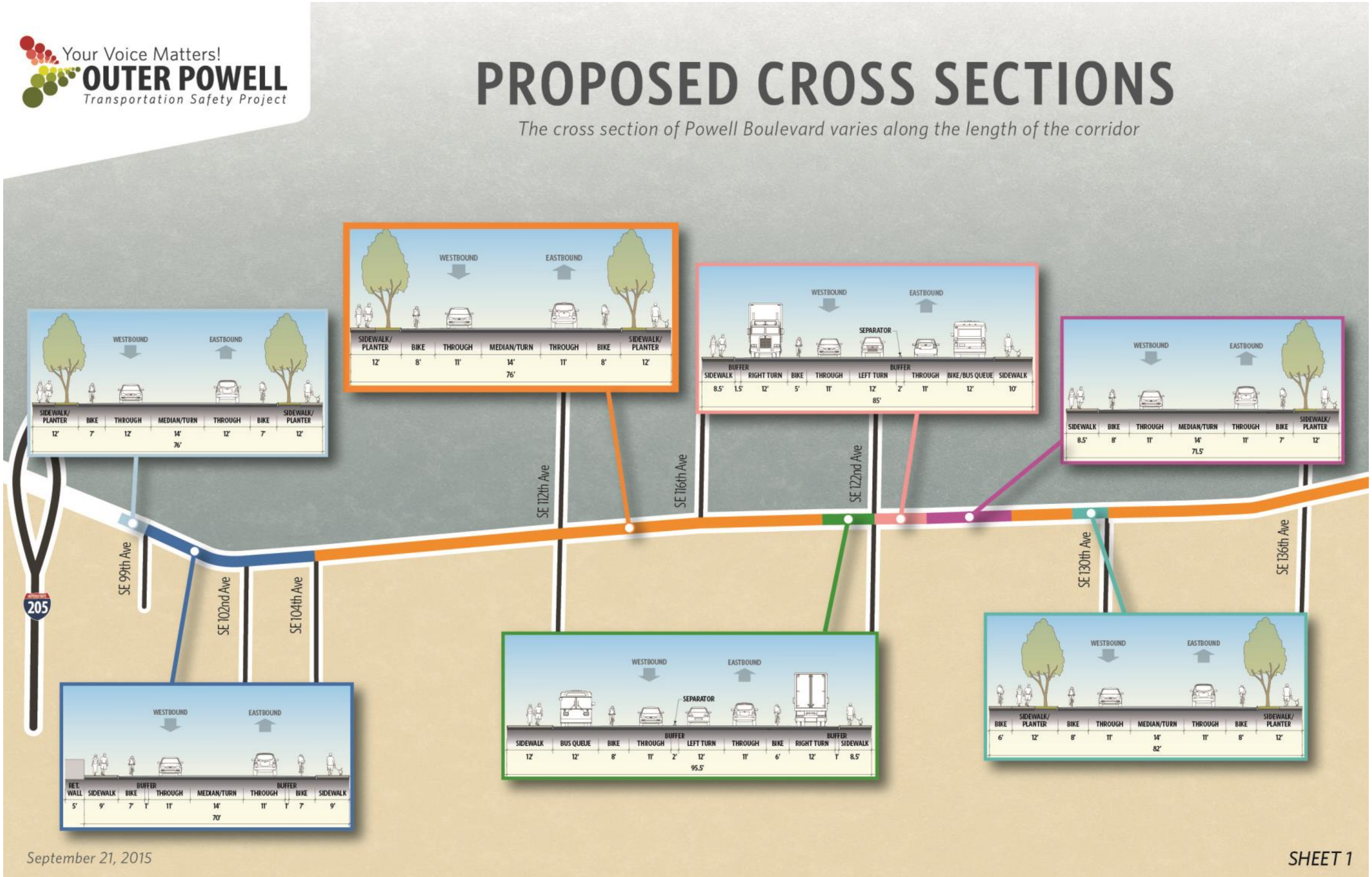
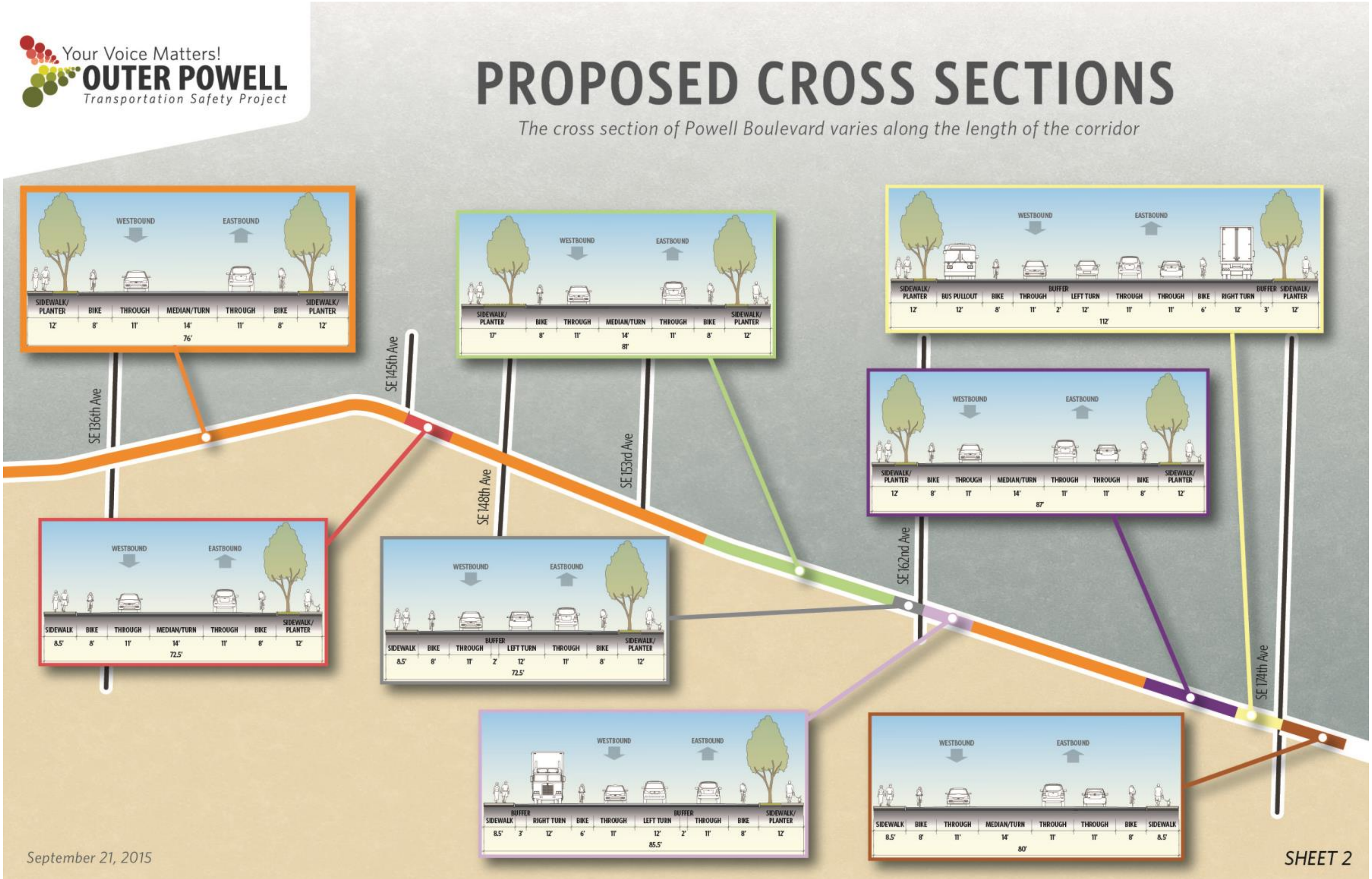


Figure 5. Proposed Cross-Sections: SE 136th Avenue to SE 176th Avenue



Throughout the corridor, all of the features proposed as safety improvements will be constructed (i.e., travel lanes, bike lanes, sidewalks, and center median features). In these 13 key locations, the proposed width will vary from the typical 76-foot cross-section described above. Cross-section figures with dimensions of the proposed improvements at these 13 key locations are provided in Figure 4 and Figure 5.

At the west end of the project area, from the signalized intersection of the TriMet bus garage driveway to SE 99th Avenue, the proposed right-of-way width will be 76 feet but with 12-foot wide vehicle travel lanes that are consistent with the existing section west of the project area and are needed to accommodate large buses turning within this area. The striped bike lane in this area would be reduced by 1 foot to 7 feet in width.

As shown on Figure 4 and Figure 5, the proposed right-of-way cross section width will be reduced from the 76-foot wide Conceptual Design Plan width at four locations – between SE 99th Avenue and SE 104th Avenue, between SE 124th Avenue and SE 127th Avenue, just east of SE 145th Avenue, and just west of SE 162nd Avenue - due to constraints that are described below.

Between SE 99th Avenue and SE 104th Avenue, the proposed cross section will be reduced to 70 feet in width to minimize the need to acquire additional right-of-way from Ed Benedict Park on the south side of SE Powell Boulevard and to minimize property and access impacts to a large trailer business on the north side of the highway.

Between SE 124th Avenue and SE 127th Avenue, the proposed cross section width will be reduced to 71.5 feet to minimize the need to acquire additional right-of-way from adjacent commercial properties and to avoid the need to displace businesses. In particular, multiple commercial buildings on the south side of SE Powell Boulevard are situated within 10 feet of the property boundary.

Just east of SE 145th Avenue and just west of SE 162nd Avenue, the proposed cross section width will be reduced to 72.5 feet. At SE 145th Avenue, the reduced width is proposed to avoid the need to displace multifamily residences on the north side of SE Powell Boulevard. The reduced cross section proposed just west of 162nd Avenue will minimize impacts to residences located on the north and south sides of SE Powell Boulevard, including a historic dairy property at the southwest quadrant of the SE Powell Boulevard at SE 162nd Avenue.

The proposed cross section will be wider than the typical cross section at eight locations shown in Figure 4 and Figure 5 and listed below to accommodate existing or proposed facilities. These locations consist of:

- Just west of SE 122nd Avenue to accommodate an eastbound right-turn lane and a westbound bus queue lane;
- Just east of SE 122nd Avenue to accommodate a westbound right-turn lane;
- Between SE 129th Avenue and SE 130th Avenue to accommodate a 6-foot wide cycle track on the north side of SE Powell Boulevard, which is an approved City of Portland action that is part of its 130’s Greenway project;

- Between SE 155th Avenue and just west of SE 162nd Avenue, a right-of-way width of 81 feet is proposed to accommodate a proposed southward alignment shift of SE Powell Boulevard and to maintain the right-of-way boundary that exists on the north side of the highway through most of this section. The additional width would be used for sidewalk and planter facilities on the north side of SE Powell Boulevard;
- Just east of SE 162nd Avenue, the width would be increased to accommodate a new westbound right-turn lane;
- From SE 170th Avenue east through the east end of the project area, the width would be increased to accommodate an additional eastbound vehicle travel lane that is consistent with the existing cross section of SE Powell Boulevard directly east of the project area in the City of Gresham. Within this section, just west of SE 174th Avenue, the proposed right-of-way width is 112 feet to accommodate an additional eastbound right-turn lane and a westbound bus pullout lane.

In some instances, where adjacent constraints cannot otherwise be avoided, the proposed landscaping area may not be provided.

Stormwater management will be provided by using new or existing underground facilities beneath the roadway and stormwater planters adjacent to the sidewalk area. Existing on-street parking will be eliminated along SE Powell Boulevard and, in some locations, existing driveways or other access points may be removed or relocated.

New sidewalks will be provided along both sides of SE Powell Boulevard. Except as noted above for portions of the project area, these sidewalks will be 8 feet wide, and include a 4-foot landscaping/stormwater planter area between the edge of the roadway and the sidewalk.

New enhanced pedestrian crossings as part of this US 26: Outer Powell Transportation Safety Project are proposed in the vicinity of the following locations: east of SE 108th Avenue, between SE 110th Avenue and SE 111th Avenue, at SE 116th Avenue, at SE 126th Avenue, at SE 130th Avenue, east of SE 132nd Avenue, east of SE 138th Avenue, west of SE 147th Avenue, west of SE 151st Avenue, and at SE 166th Avenue/SE Naegeli Drive. The following existing enhanced crossings might be relocated to the following locations:

- SE 141st Avenue shifted from the east to west leg of the intersection
- SE 156th Avenue shifted to SE 157th Avenue

The specific treatment type for these proposed enhanced crossings requires more detailed analysis and approval by a State of Oregon Traffic Engineer. The specific types of enhanced crossings at these locations will be resolved during the final design phase of this project.

New two-way left-turn lanes, raised medians, or extended left-turn pockets will be provided for the entire length of the project. This will improve current conditions at most intersections on the project corridor, with the exception of intersections that already have a two-way left-turn lane or left-turn pocket. The intersections that already have left-turn pockets include: SE 104th Avenue, SE 112th Avenue, SE 122nd Avenue, SE 136th Avenue, SE 148th Avenue, SE 160th Avenue, SE 162nd Avenue, SE 168th Avenue, SE 170th Avenue, and SE 174th Avenue.

The center raised median may consist of either concrete or landscaping. If landscaped, maintenance responsibility, including funding, would have to be established. The median will provide space separation between eastbound and westbound travel lanes and will create an additional margin of safety at nonsignalized crossing areas. In a few locations, short retaining walls may be needed to accommodate the new roadway grade.

3 Air Quality Methodology

The methodology used for a hot spot analysis is defined in the ODOT *Air Quality Manual* (ODOT 2008).

3.1 Affected Environment

The project area of potential affect is identified in Section 4. The regulatory setting of the area is discussed with regards to the NAAQs status for each criteria pollutant in Section 4. The project is located in the Portland Carbon Monoxide (CO) maintenance area. Existing air quality was analyzed by reviewing local climate, recent monitoring data and air quality trends and the most recent violation of the standard is referenced.

3.2 Regulatory Setting

3.2.1 Criteria Pollutants

The Clean Air Act as amended in 1990 is the Federal law that governs air quality. This law sets standards for the quantity of pollutants that can be in the air. These standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO_2). A region is a nonattainment area when designated by the US EPA when one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have met the standard are called maintenance areas.

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to the State Implementation Plan (SIP). Conformity with the Clean Air Act takes place at the regional level and at the project level. Any build alternative must conform at both levels to be approved.

3.2.2 Regional Conformity

Regional level conformity in Oregon is concerned with how well the region meets the standards set for carbon monoxide (CO), ozone (O_3), and particulate matter (PM). Oregon is not designated non-attainment for the other criteria pollutants. At the regional level, Metropolitan Planning Organizations (MPOs) develop Regional Transportation Plans (RTP) that include all of the transportation projects planned for that region over at least the next 20 years. Based on the projects included in the fiscally constrained RTP, an EPA air quality model is used to determine whether or not the implementation of those projects meets the emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If all requirements for regional conformity are met, the Federal Highway Administration and the Federal Transit Administration jointly make a conformity determination that the RTP conforms to the SIP for achieving the goals of the Clean Air Act. MPOs are also required to develop a Transportation

Improvement Program (TIP), which includes projects that will be funded and implemented in the near term. Both RTPs and TIPs are required to meet regional conformity requirements.

3.2.3 Project Level Conformity

In addition to meeting regional-scale conformity requirements, individual Federal projects must meet certain project-level conformity requirements. Federal projects are required to be in a conforming RTP and TIP, and the design concept and scope of the project need to be consistent with those analyzed in the RTP and TIP. Conformity at the project-level also requires consideration of “hot spot” analysis, which is an analysis of localized pollutant concentrations, when an area is classified as nonattainment or maintenance for carbon monoxide (CO) and/or particulate matter (PM). In general, pollutant concentrations due to building the project either need to be below the NAAQS, or lower than the concentrations associated with not building the project (the no-build alternative).

The project is located in a CO maintenance area and needed a project level hot spot analysis. The level of detail of the analysis depended on the traffic data. Intersections that are not affected by the project or operate at LOS A, B or C or are not signalized were not be analyzed. Intersection selection for analysis was based on the intersection with the worst level of service (LOS) and the highest traffic volume. A quantitative analysis was performed on two worst performing intersections to draw a conclusion regarding the project impacts. Qualitative analysis was conducted for all other affected intersections.

Traffic data was used to calculate emission rates by using the Environmental Protection Agency (EPA) MOVES emission model and then these emissions were used to calculate concentrations using EPA’s CAL3QHC dispersion model. Background concentrations were added to the calculated project concentrations and the combined concentrations are compared to the NAAQs. The background concentrations recommended in the *ODOT Air Manual* (ODOT 2008) were used. The project conforms to the SIP because the concentrations are below the NAAQs and the project is included in the RTP and TIP, and the project level conformity statements apply to the project.

3.2.4 MSAT

In addition to the criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS), EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries). A qualitative MSAT analysis was conducted based interim guidance provided by Federal Highway Administrative (FHWA) (FHWA 2012).

3.3 Construction Impacts, Indirect Impacts

A discussion of construction and indirect impacts is included in Section 5.

4 Affected Environment

This section defines the air quality study area and addresses the topics of climate and existing monitoring concentrations of air pollutants in the study area.

4.1 Study Area

The study area extends from 1000 feet west of SE 99th Avenue (east of I-205) to 830 feet east of SE 176th Avenue near the Portland and Gresham city limits. The project is located in Portland, Oregon and includes all the intersections and roadways that were considered in the *OPTSP Transportation Technical Report* (HDR 2015). The study area is larger than the area of potential impacts where project impacts were evaluated. The project is located in an urban setting with mixed residential, commercial and recreational use. Figure 6 shows the project location and Figure 7 at the end of this section shows all intersections included in the air quality analysis.

4.2 Climate

The study area is situated at the northern end of the Willamette Valley in Portland, Oregon. The Willamette Valley is bounded by the low-elevation Coast Range to the west and the higher-elevation Cascade Mountain Range to the east. The Willamette Valley is prone to periods of poor air dispersion because of physical and climatic conditions that retard the dispersal of air pollutants. The Coast Range and Cascade Mountains confine air movement, and westerly winds are not generally strong enough to disperse pollution eastward. Between storms in late fall and winter, much of the Portland metropolitan area is blanketed with a relatively stable air mass that inhibits both vertical and horizontal atmospheric mixing (NWS 1999). High concentrations of CO, PM_{10} and $PM_{2.5}$ can result from automobile and home heating emissions.

4.3 Air Monitoring Data

DEQ operates a network of ambient air monitoring stations throughout the Portland metropolitan area. The Southeast Lafayette Street monitor is closest to the project site and is located in a residential neighborhood similar to the project site. See Figure 8 for the location of this monitor. Table 2 lists the existing measured pollutant levels for this project area, measured from 2010 to 2014 (DEQ 2015). Compliance with air quality standards is based on a statistical summary of concentrations, which varies by pollutant and averaging time. The criteria used to determine a standards' violation are included in Table 2.

All monitoring concentrations at the SE Lafayette Street monitor are well below amounts that would exceed state and national standards, as shown in Table 2. Exceeding these standards does not necessarily constitute a violation of the standards. The criteria used to determine a standard's violations are included in Table 2. For example, the ozone standard is attained when the fourth-highest 8-hour concentration in a year, averaged over 3 years is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 micrograms per cubic meter (µg/m^3) is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

Table 2.Summary of Ambient Air Monitoring levels Near Project Area

Pollutant	Averaging Time	2010	2011	2012	2013	2014
Carbon Monoxide (ppm)	8-Hour[a]	2.4	2.4	2.2	1.8	1.3
Ozone (ppm)	8-Hour[b]	0.054	0.057	0.061	0.053	0.055
Nitrogen Dioxide (ppb)	1-Hour[c]	33	33	36	33	35
	Annual Arithmetic Mean	9	9	9	10	8
Sulfur Dioxide (ppb)	1-Hour[d]	8	9	10	5	3
	3-Hour[e]	8	6	5	6	4
PM_{10} (µg/m^3)	24-Hour[a]	31	51	34	43	30
$PM_{2.5}$(µg/m^3)	24-Hour[c]	17	36	23	36	15
	Annual Arithmetic Mean	6.3	8.3	7.4	8.7	6.3

DEQ monitor is located at 5824 SE Lafayette Street, Portland, Oregon
Source: 2014 Oregon Air Quality Data Summaries, DEQ July, 2015

[a] 2nd highest

[b] 4th highest

[c] 98th percentile

[d] 99th percentile of 1-hour daily

[e] secondary standard

4.4 Traffic Data

Operational impacts to air quality from transportation projects are generally directly related to the changes in motor vehicle traffic. The traffic analysis was reviewed to identify where, and to what extent changes would occur. The traffic analysis provided by HDR included 13 signalized intersections (HDR 2015). The worst-case scenario in terms of air quality was selected based on the level of service (LOS), delay, volume to capacity ratio (V/C) and the sum of approaching volumes for the Build alternative for opening year 2020 and design year 2040.

Year 2040 had the worst performing intersection compared to year 2020. For design year 2040, only two intersections have a LOS of F and they were selected as representative of worst case scenarios. The intersections are located at Powell Boulevard and SE 112th Avenue and Powell Boulevard and SE 174th Avenue. The intersection at SE 112th Avenue has the worst delay and the intersection at SE 174th has the highest volume.

Table 3 compares LOS, total approaching volumes, V/C and intersection delay for the Build Alternative in 2040 for peak PM hour for the 13 intersections analyzed and the two intersections selected for hot spot analysis. A complete table of operation traffic summary for all years for No-Build and Build is included in Appendix A.

Table 3. Outer Powell Operation Traffic Summary Data for 2040 PM

Cross-Street Name	Total Approaching Volumes	Volume to Capacity Ratio	Delay (seconds)	Level of Service
East side of I-205	3,123	0.59	16	B
West side of I-205	2,963	0.90	45	D
TriMet Garage	1,654	0.58	15	B
SE 104th Avenue	1,758	0.66	12	B
SE 112th Avenue	2,753	0.97	108	F
SE 116th Avenue	1,660	0.54	3	A
SE 122nd Avenue	4,117	1.01	64	E
SE 136th Avenue	2,978	1.05	65	E
SE 148th Avenue	2,354	0.73	33	C
SE 162nd Avenue	2,645	1.08	66	E
Bi-Mart/Meadowland	2,382	0.66	9	A
SE 174th Avenue	4,153	1.16	87	F
SE Highland Avenue	4,571	0.91	52	D

Note: Bolded intersections were analyzed quantitatively

Traffic data files provided by HDR (2015).

4.5 Hot Spot Analysis

A hot spot analysis must demonstrate that the highest Build CO concentration is below the CO NAAQs and the project conforms to the SIP for the Portland Area Carbon Monoxide Maintenance Plan. The hot spot analysis includes determining the vehicular emission rates and then using those emission rates in a dispersion model to predict the highest CO concentration. If the modeled worst case intersection scenario does not cause a violation of the NAAQs, then it is assumed all other project intersection scenarios would also not cause a violation of the NAAQs.

4.5.1 Emission Model

The EPA approved model MOVES2010b (EPA 2012) calculates emission factors for a variety of gasoline and diesel fueled roadway vehicles. MOVES2010b accounts for progressively more stringent tailpipe emission standards over the vehicle model years evaluated. The MOVES2010b input files include the applicable climate data, fuel characteristics, local vehicle mix and anti-tampering programs for the project area. Emissions were calculated based on a typical winter day because colder temperatures result in higher CO concentrations. The afternoon hour was selected as the worst-case scenario based on LOS, V/C ratio and vehicle volume. MOVES peak hour 16:00-16:59 was used to represent the afternoon peak hour of 4:00 to 5:00 p.m. The model was run for 2014, 2020 and 2040 for roadway speeds within the project area.

MOVES2010b input files were developed by ODOT using database files provided by DEQ and Metro (DEQ 2013 and Metro 2014a). The databases from Metro include fuel supply, fuel formulation, inspection and maintenance program and source type age distribution (Metro 2014a). DEQ provided the meteorology database (DEQ 2013). Using the MOVES2010b database provided by Metro ensures consistency between project level and regional conformity analyses. The grace period for using MOVES2014 ends October 7, 2016, after that date MOVES2014 will be required for project level hot spot analysis. Two project specific databases were developed by ODOT based on the vehicle speeds by link, and also the vehicle type distribution for the project area. Table 4 and Table 5 summarize the MOVES runspec inputs and MOVES database sources.

Table 4. MOVES Runspec Selections

Input Name	Selection
Scale	Project
Calculation Type	Inventory
Time Span	Hour, analysis year (2014, 2020 & 2040), January, weekday, 4:00 to 5:00 p.m.
Geographic Bounds	Oregon, Multnomah County (consistent with Metro regional conformity analysis)
Vehicles/Equipment	Used same vehicle/fuel types used by Metro in regional conformity analysis
Road Types	Urban unrestricted specific to project
Pollutants and Processes	Running exhaust and crankcase running as given in EPA guidance[a]
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 5. ODOT MOVES Project Level Data Manager Inputs

MOVES Database Name	Data Source
Fuel Supply and Fuel Formulation	Provided by Metro
Meteorology	Provided by DEQ
Inspection and Maintenance Coverage	Provided by Metro
Source Type Age Distribution	Provided by Metro
Project Links	Developed by ODOT
Link Source Type Hour	Developed by ODOT
Low Emitting Vehicle	Provided by Metro

Using professional judgment and consultation with Jeff Houk at FHWA, ODOT developed the link and link source type databases. The link database was developed based on the posted vehicle speeds for project roadways. The link source type data was developed based on the vehicle miles traveled by each vehicle type in the MOVES database for urban unrestricted roadways.

The emission rates calculated by MOVES2010b are shown in Table 6.

Table 6. CO Emission Rates used in CAL3QHC Modeling

Vehicle Speed	2014	2020	2040
	(grams/hour)		--
Idle	41.54	18.30	8.01
(miles/hour)	(grams/vehicle-mile)		--
30	6.72	4.73	3.37
35	6.09	4.31	3.12

4.5.2 Dispersion Model

The CO project concentrations were calculated using the EPA-approved CAL3QHC dispersion model (version 95221, Environmental Protection Agency (EPA) 1992 and 1995) for Existing year (2014), the opening year 2020 and design year 2040. Inputs into the dispersion model include traffic volumes, signal timing, intersection geometry and receptor locations. Traffic information was taken from SYNCHRO files provided by HDR (HDR 2015). CAL3QHC inputs were selected by using the guidance provided in the ODOT Air Quality Manual (ODOT 2008) and EPA *Guideline for Modeling Carbon Monoxide from Roadway Intersections* (EPA 1992). Table 7 summarizes CAL3QHC model inputs.

Table 7. CAL3QHC Model Inputs

Meteorological Variables	
Averaging Time	60 minutes
Surface Roughness	108 (Single Family Residential)
Wind Speed	1 meter per second
Wind Angle	0 to 360 degrees in 10-degree increments
Stability Class	4 (D) neutral
Mixing Height	1,000 meters
Ambient Background Concentration	
Portland	2 parts per million
Persistence Factor	0.76
Site Variables	
Receptor Coordinates	10 feet from each traveled roadway on both sides of the street at distances of approximately 82.5 feet (25m) and 164 feet (50 m) from the cross street. Height 6.0 feet

The maximum 1-Hour CO concentration for each model run was added to the ambient background CO concentration of 2 ppm as recommended in the ODOT Air Quality Manual, (ODOT 2008). The 1-Hour CO concentrations were converted to the 8-Hour concentrations using a persistence factor of 0.76 which was also recommended by ODOT Manual. These resulting concentrations were compared to the applicable 1-Hour and 8-Hour CO NAAQs.

4.6 Existing Modeled CO Concentrations for Project Area

The maximum 1-Hour and maximum 8-Hour CO concentrations were modeled for the intersections of SE Powell Boulevard and SE 112th Avenue and SE Powell Boulevard and SE 174th Avenue, because these intersections represent worst-case conditions as described in Section 4.5. The maximum modeled 1-Hour CO concentration of 3.2 ppm occurs at the intersection of Powell Boulevard and SE 174th Avenue. The maximum modeled 8-Hour CO concentration of 2.4 ppm also occurs at the same intersection.

Table 8 shows the 1-Hour and 8-Hour CO concentrations for the two worst-case intersections. The modeled concentrations are well below the 1-Hour and 8-Hour NAAQS for existing conditions. Appendix B lists all the electronic modeling files used for the analysis.

Table 8. Existing 1-Hour and 8-Hour Carbon Monoxide Concentrations (ppm)

Averaging Period	112th & Powell	174th & Powell
1-Hour	2.7	3.2
1-Hour NAAQs (ppm)	35	
8-Hour	2.1	2.4
8-Hour NAAQs (ppm)	9	

Note: Concentration includes background of 2 ppm
Note: Persistence factor of 0.76 was used to convert 1-Hour concentrations to 8-Hour concentrations

Figure 6. Project Location Map

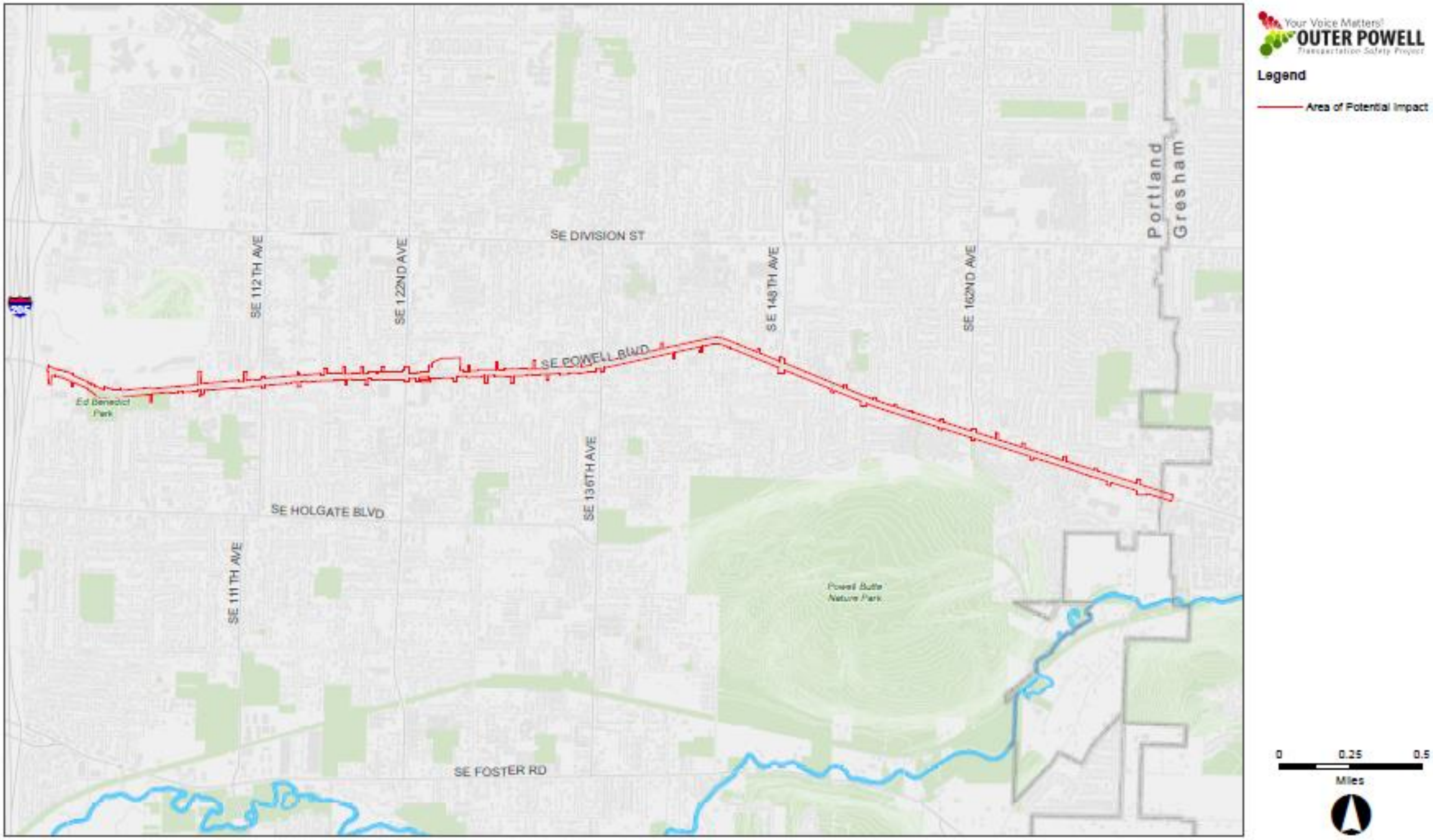


Figure 7. Signalized Project Intersections Included in Air Quality Analysis

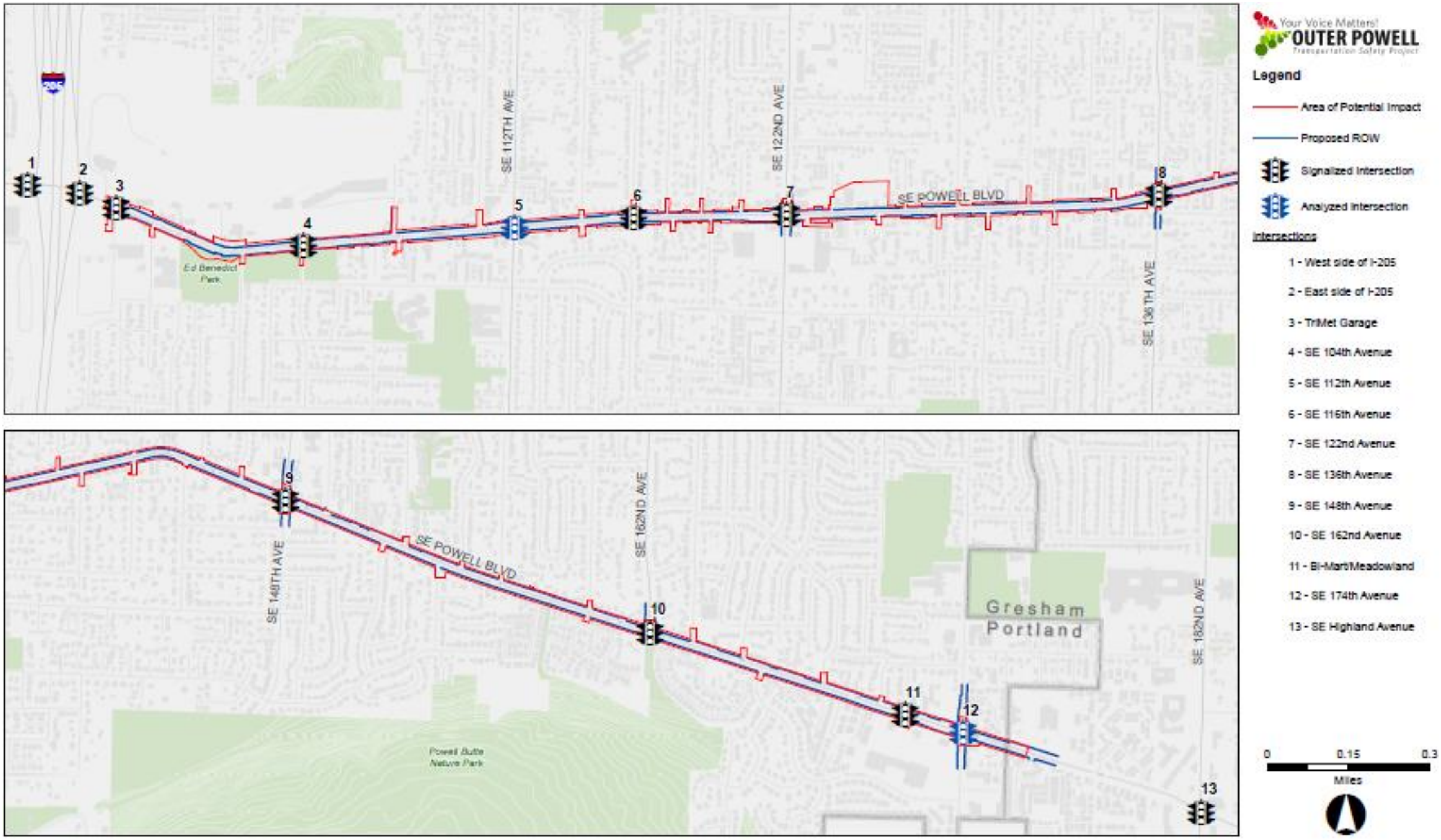
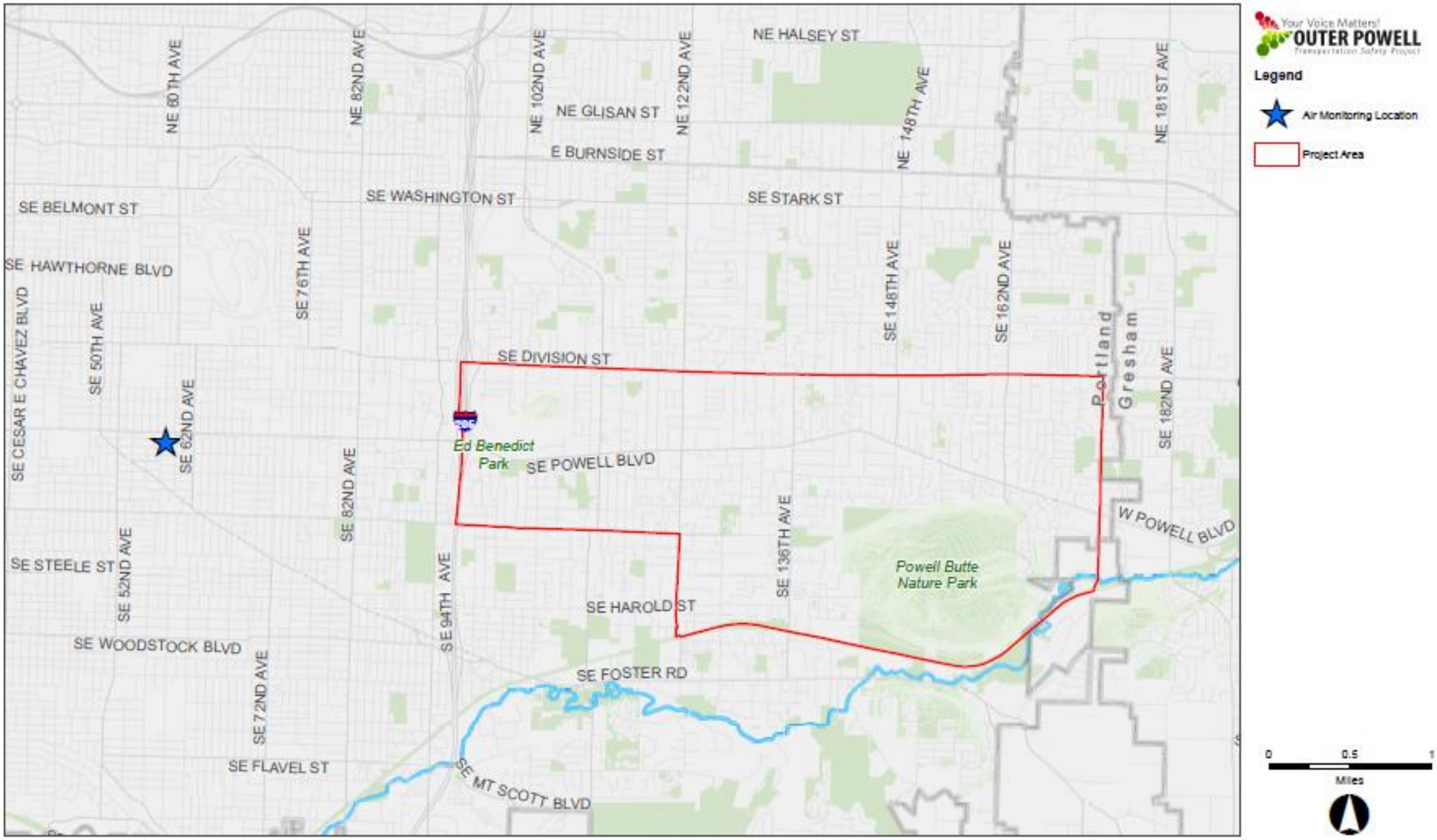


Figure 8. Southeast Lafayette Street Air Monitoring Location



5 Environmental Consequences

This section presents the evaluation of impacts, a summary of the conformity determination, and proposed mitigation measures.

5.1 No-Build Alternative

5.1.1 Short-Term (Construction) Impacts

Construction impacts would not occur under the No-Build Alternative.

5.1.2 Long-Term and Operational Impacts

A CO hot spot analysis at selected intersections was used to determine whether the No-Build Alternative would contribute to an exceedance of the CO NAAQs. For the No-Build Alternative, the same two intersections identified in Section 4 (SE112th Avenue and 174th Avenue, at SE Powell Boulevard) were modeled for the No-Build Alternative (for opening year 2020 and design year 2040).

The modeled intersections represent worst-case conditions as described in Section 4.5. The maximum modeled 1-Hour CO concentration of 2.8 ppm occurs in 2020 at the intersection of Powell Boulevard and SE 174th Avenue. The maximum modeled 8-Hour CO Concentration of 2.1 ppm also occurs in 2020 at the same intersection. Other intersections in the study area were not modeled and were assumed to have lower CO concentrations than the intersections analyzed consistent with the hot spot analysis described in Section 4.5, as delay and traffic volumes at all other intersections were lower than the intersections selected for quantitative analysis.

Table 9 and Table 10 summarize the 1-Hour and 8-Hour CO concentrations for the two worst-case intersections. The modeled concentrations are well below the 1-Hour and 8-Hour NAAQS for the No-Build Alternative. Appendix B lists all the electronic modeling files used for the analysis.

Table 9. No-Build Alternative 1-Hour Carbon Monoxide Concentrations (ppm)

Intersection	112th & Powell	174th & Powell
No-Build Alternative (2020)	2.5	2.8
No-Build Alternative (2040)	2.4	2.6
1-Hour NAAQs (ppm)	35	

Note: Concentration includes background of 2 ppm

Table 10. No-Build Alternative 8-Hour Carbon Monoxide Concentrations (ppm)

Intersection	112th & Powell	174th & Powell
No-Build Alternative (2020)	1.9	2.1
No-Build Alternative (2040)	1.8	2.0
8-Hour NAAQs (ppm)	9	

Note: Persistence factor of 0.76 was used to convert 1-Hour concentrations to 8-Hour concentrations

5.1.3 Cumulative Impacts

The forecast traffic volumes used to analyze the air quality impacts of the No-Build Alternative include traffic from all sources and reasonably foreseeable future projects. Background concentrations representing the cumulative emission of sources in the area were added into the predicted local concentrations for CO at intersections. In the future, without the proposed SE Powell improvements, air quality concentrations are expected to decrease as compared to existing conditions.

5.2 Build Alternative

5.2.1 Short-Term (Construction) Impacts

Construction impacts to air quality would be temporary and would not continue after project construction is completed. Impacts would be localized and would vary throughout the construction process. For conformity purposes, emissions from construction activities were addressed qualitatively since construction activities will occur for less than a five year period.

Construction air quality impacts would include the release of particulate emissions generated by excavation, grading, hauling and various other activities. Emissions from construction equipment also are anticipated and would include CO, NOx, volatile organic compounds (VOCs), directly-emitted particulate matter (PM_{10} and $PM_{2.5}$), and toxic air contaminants such as diesel exhaust particulate matter.

Construction-related effects on air quality are greatest during the site preparation phase because most engine emissions are associated with the excavation, handling and transport of soils to and from the site. If not properly controlled, these activities would generate temporary emissions of PM_{10}, $PM_{2.5}$ and small quantities of CO, SO_2, NO_x and VOCs.

In addition to fugitive dust, heavy trucks and construction equipment would generate exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase slightly while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site and are not expected to exceed any air quality standards.

Construction of concrete structures may have associated dust-emitting sources, such as concrete mixing operations.

5.2.2 Long-Term Operational Impacts

For the Build Alternative, the same two intersections identified in Section 5.1.2 (SE112th Avenue and SE 174th Avenue, at SE Powell Boulevard) were modeled for the No-Build Alternative (for opening year 2020 and design year 2040) and were also modeled for the Build Alternative (for opening year 2020 and design year 2040).

The maximum modeled 1-Hour CO Build concentration of 2.7 ppm occurs in 2020 at the intersection of SE Powell Boulevard and SE 174th Avenue. The maximum modeled 8-Hour Build CO concentration of 2.1 ppm occurs in 2020 at the same intersection. Table 11 and Table 12 summarize the 1-Hour and 8-Hour CO concentrations for the two worst-case intersections. The No-Build concentrations are included for comparison purposes. The modeled Build concentrations are well below the 1-Hour and 8-Hour NAAQS. No-Build and Build Alternative concentrations are very similar and sometimes higher for the Build Alternative, and other times higher for the No-Build Alternative by 0.1 ppm. All concentrations in 2020 and 2040 are lower than existing concentrations because of the anticipated impacts of new technology and phasing out of older, more polluting vehicles. Additionally, increased traffic in the future would be offset by reductions from cleaner burning fuels.

Appendix B lists all the electronic modeling files used for the analysis.

Table 11. Build Alternative Compared to No-Build Alternative 1-Hour Carbon Monoxide Concentrations (ppm)

Intersection	112th & Powell	174th & Powell
No-Build Alternative (2020)	2.5	2.8
Build Alternative (2020)	2.6	2.7
No-Build Alternative (2040)	2.4	2.6
Build Alternative (2040)	2.4	2.6
1-Hour NAAQs (ppm)	35	

Note: Concentration includes background of 2 ppm

Table 12. Build Alternative Compared to No-Build Alternative 8-Hour Carbon Monoxide Concentrations (ppm)

Intersection	112th & Powell	174th & Powell
No-Build Alternative (2020)	1.9	2.1
Build Alternative (2020)	2.0	2.1
No-Build Alternative (2040)	1.8	2.0
Build Alternative (2040)	1.8	2.0
8-Hour NAAQs (ppm)	9	

Note: Persistence factor of 0.76 was used to convert 1-Hour concentrations to 8-Hour concentrations

5.2.3 Mobile Source Air Toxics Effects

A qualitative analysis provides a basis for identifying and comparing the potential difference among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled “A Methodology for Evaluating Mobile Source Air Toxic Emissions among Transportation Project Alternatives” (FHWA 2005). This project falls into the category of low potential MSAT effects since the project’s Annual Average Daily Traffic (AADT) averaged over the corridor is 22,014 vehicles which is well below 140,000 AADT threshold that would require a quantitative MSAT analysis.

For both the No-Build and Build Alternatives in this report, the quantity of MSAT emitted would be proportional to the vehicle miles traveled (VMT), assuming that other variables such as fleet mix are the same for each alternative. The VMT estimated for the Build Alternative is the same for the No-Build Alternative. Table 13 summarizes the increase in VMT from Existing year 2014 to Build year 2040 over 9 segments that span the project alignment. This increase in VMT would lead to higher MSAT emissions for the Build year along the highway corridor compared to the Existing year. The emissions increase over time is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT pollutants decrease as speed increases. Because the estimated VMT under the No-Build Alternative and the Build Alternative are the same, it is expected that there would be no appreciable difference in overall MSAT emissions in the year 2040, with or without the proposed Outer Powell improvements.

Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

The additional eastbound travel lane which starts at left-turn pocket before 174th Avenue signal and continues eastbound to SW Junction Place will have the effect of moving some traffic closer to nearby homes, and businesses. Therefore, under the Build Alternative there may be localized areas where ambient concentrations of MSAT could be higher than the No-Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced near the intersection of SE 174th Avenue and SE Powell Boulevard where an additional eastbound thru lane will be added. However, the magnitude and the duration of these potential increases compared to the No-Build Alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts.

In summary, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT emissions will be lower in other locations when traffic shifts away from these homes or businesses. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

Table 13. Vehicle Miles Traveled (VMT) for Existing (2014), No-Build and Build Alternatives along Powell Boulevard Segments

Segment Number	Start Mile Post	End Mile Post	2014 Existing VMT	2040 No-Build and Build VMT
Segment 1	5.70	5.97	5,306	6,372
Segment 2	5.97	6.71	13,125	15,763
Segment 3	6.71	6.83	2,104	2,527
Segment 4	6.83	7.21	6,702	8,048
Segment 5	7.21	7.90	13,004	15,616
Segment 6	7.90	8.26	6,784	8,148
Segment 7	8.26	8.40	2,596	3,118
Segment 8	8.40	9.35	17,233	20,696
Segment 9	9.35	9.96	11,004	13,215
		Overall	77,859	93,503

Note: These are mile points along US 26 which is also called Powell Boulevard.
Source: ODOT Traffic Volume and Vehicle Classification Tool (ODOT 2015)

5.2.4 Conformity Determination

The project level hot spot analysis predicted that the highest 1-Hour and 8-Hour CO Build Alternative concentrations will be well below the NAAQs in 2020 (opening year) and 2040 (design year).

The proposed project is included in the 2014 Regional Transportation Plan (RTP) and the amended 2015-2018 Metropolitan Transportation Improvement Program (MTIP) which were both adopted by Metro on July 17, 2014. The air quality conformity finding for this RTP and MTIP was issued by FHWA and FTA on May 20, 2015. The design concept and scope of the proposed project in this report is consistent with the project description in the RTP, the MTIP, and the assumptions in the Metro's regional emissions analysis.

The proposed project will be in conformance with SIP for the *Portland Area Carbon Monoxide Maintenance Plan* (DEQ 2004a) and the project will not:

- Cause or contribute to any new violations of any standard,
- Increase the frequency or severity of any existing violation or any standard, or
- Delay timely attainment of NAAQs.

The project area Mobile Source Air Toxic (MSAT) emissions are expected to decrease in the future relative to existing conditions.

5.2.5 Cumulative Impacts

Similar to the No-Build Alternative, the forecast traffic volumes used to analyze the air quality impacts of the Build Alternative include traffic from all sources and reasonably foreseeable future projects. Background concentrations representing the cumulative emission of sources in the area were added into the predicted local concentrations for CO at the intersections analyzed. Because of these inclusive analysis methodologies, the impacts shown throughout this report represent cumulative air quality impacts. In the future, with the proposed SE Powell improvements, future traffic volumes would increase, however, air quality CO concentrations are expected to similar as compared to No-Build.

5.2.6 Past, Present and Reasonably Foreseeable Future Actions

Cumulative effects are those environmental effects that result from the incremental effect of the proposed action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes those other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. (40 CFR § 1508.7)

For the US 26: Outer Powell Transportation Safety Project, the following effects from the past, present and reasonably foreseeable future actions were considered in assessing cumulative effects.

- Past actions: Urban development in the project corridor, including:
    - Transition from rural/agricultural to relatively high density residential and business land uses.
    - Development of the transportation system including SE Powell Boulevard, I-205, and the minor arterials and neighborhood streets, including ODOT's 2012-2013 Outer Powell pavement and safety improvements between SE 111th Avenue and SE 174th Avenue.
    - Construction, maintenance, and upgrade of utilities, including water, sewer, electric and telecommunications.
    - Development of Ed Benedict and Powell Butte parks.
- Present actions:
    - On-going operation and maintenance of existing infrastructure and land uses.
    - Portland Water Bureau's Powell Butte Reservoir project within Powell Butte Park, which involves construction of 50 million gallon underground water storage reservoir.
- Reasonably foreseeable future actions considered include the following planned and programed in the project area and immediate surroundings. The following proposed projects are described in Section 2.1.
    - SE 130th Avenue Neighborhood Greenway
    - Sidewalk improvements at SE 112th Ave, SE 136th Ave, and SE 162nd Avenue
    - Intersection and crossing improvements at:
        - SE 116th Avenue Signal and ADA Ramps Upgrade
        - SE 122nd Avenue Intersection and Stop Improvements
        - SE 136th Avenue Intersection and Stop Improvements
        - SE 145th Avenue Enhanced Pedestrian Crossing
        - SE151st Avenue Enhanced Pedestrian Crossing
        - Tri-Met plans bus stop improvements at each of the above listed locations.
- Coordination with City of Portland (Water Bureau, Parks and Recreation, and Bureau of Planning and Sustainability) did not indicate planned capital projects or substantial planned land use changes in the study area.

5.2.7 Conclusion

The API is located in a CO maintenance area which is subject to transportation conformity until October 2, 2017. All other criteria pollutants are in attainment of the NAAQs. An air quality analysis was performed which calculated CO concentrations at the two worst performing signalized intersections and qualitatively compared concentrations at all other intersections. The analysis finds the Build Alternative would not create any new violations of the NAAQs or increase the frequency or severity of an existing violation of the CO standard. The project would not delay timely attainment of the NAAQs. The Build Alternative conforms with the purpose of the current SIP and the Federal Clean Air Act. Additionally, the project area MSAT emissions are expected to decrease in the future relative to existing conditions.

Construction impacts to air quality would be temporary and would not continue after project construction is completed. Impacts would be localized and would vary throughout the construction process and be mitigated following the constructions specifications.

There will be negligible impacts to air quality for the proposed project.

6 Avoidance, Minimization, and Mitigation Measures

There will be no long-term air quality impacts from building the project, so there are no proposed measures to avoid, minimize or mitigate future air quality. There will be measures to address short-term construction impacts which are considered temporary in nature.

6.1 Construction Mitigation

Construction contractors are required to comply with Division 208 of OAR 340, which addresses visible emissions and nuisance requirements. Subsection of OAR 340-208 places limits on fugitive dust that causes a nuisance or violates other regulations. Violations of the regulations can result in enforcement action and fines. The regulation provides that the following reasonable precautions be taken to avoid dust emissions (OAR 340-208, Subsection 210):

- 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 dust;
- Full or partial enclosure of materials stockpiled 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 cover 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 that has requirements for environmental protection, which include air-pollution control measures. These control measures, which include vehicle and equipment idling limitations, are designed to minimize vehicle track-out and fugitive dust. These measures would be documented in the erosion and sediment control plan that the contractor is required to submit before the pre-construction conference. To reduce the impact of construction delays on traffic flow and resultant emissions, road or lane closures should be restricted to non-peak traffic periods when possible.

7 Contacts and Coordination

Contact Name	Organization	Date of Communication	Items Discussed
Michelle Eraut	Federal Highway Administrative	March 9, 2015	Air Quality Methodology
Jeff Houk	Federal Highway Administrative	June 8, 2015	MOVES data
Miranda Wells and Chengxin Dai	HDR	Multiple email communications March to July, 2015	Traffic data for modeling

8 Preparers

Name	Education	Years of Experience
Natalie Liljenwall	B.S. and M.S. Environmental Engineering	18
Carole Newvine (Reviewer)	B. A., Arts and Letters and M.S. Environmental Science.	30

9 References

Federal Highway Administration (FHWA)

2005 "A Methodology for Evaluating Mobile Source Air Toxic Emissions among Transportation Project Alternatives." 2005.

2012 "*Interim Guidance on Air Toxic Analysis in NEPA Documents*." Memorandum from Cynthia J. Burbank, Associate Administrator for Planning, Environment and Realty. December 6, 2012.

HDR Engineering, Inc. (HDR)

2015 *Transportation Technical Report*. July, 2015

Metro

2014a MOVES2010b database files from Metro Regional Conformity Analysis performed in 2014. June, 2014.

2014b *Regional Transportation Plan*. Website: http://www.oregonmetro.gov/regional-transportation-plan July 17, 2014.

2014c 2015-2015 Metropolitan Transportation Improvement Program. December 2014.

NWS

1999 *Climate of Portland, Oregon*. Prepared by Clinton C. D. Rockey. National Weather Service, October, 1999.

Oregon Department of Environmental Quality (DEQ)

2004a *Portland Area Carbon Monoxide.*

2004b *Maintenance Plan, State Implementation Plan, Volume 2, Section 4.58*. December 10, 2004.

Oregon Administrative Rules, Division 252. "*Transportation Conformity".*

2013 MOVES2010b Meteorological data for Portland area. May, 2013.

2015 2014 Oregon Air Quality Data Summaries. June 2015

Oregon Department of Transportation (ODOT)

2008 ODOT *Air Quality Manual*. September, 2008.

2015 ODOT Traffic Volume and Vehicle Classification Tool. Accessed July, 2015.

U.S. Environmental Protection Agency (EPA)

U.S. Code of Federal Regulations. 40 CFR Part 93, Subpart A. *Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Developed, Funded or Approved Under Title 23 U.S.C. or the Federal Transit Laws.*

1992 *Guideline for Modeling Carbon Monoxide from Roadway Intersections*, EPA-454/R-82-005. November, 1992

1995 *User's Guide to CAL3QHC Version 2.0.* EPA 454-R-92-006R. 1995.

2015 *Using MOVES in Project- Level Carbon Monoxide Analysis.* EPA-420-B-10-041. March, 2015.

Appendix A. Operational Traffic Data

Table 1 Continued - Outer Powell Operation Summary Traffic Data

	Intersection Name	Future Year 2040 No Build *				Future Year 2040 Build *			
		In Volume	v/c	Delay	LOS	In Volume	v/c	Delay	LOS
	East side of I-205	3,123	0.59	16	B	3,123	0.59	16	B
	West side of I-205	2,963	0.90	44	D	2,963	0.90	45	D
	TriMet Garage	1,654	0.58	15	B	1,654	0.58	15	B
	SE 104th Avenue	1,758	0.66	12	B	1,758	0.66	12	B
	SE 112th Avenue	2,753	0.96	42	D	2,753	0.97	108	F
4-5 p.m.	SE 116th Avenue	1,660	0.54	3	A	1,660	0.54	3	A
PM Peak	SE 122nd Avenue	4,117	1.01	64	E	4,117	1.01	64	E
	SE 136th Avenue	2,978	0.94	35	D	2,978	1.05	65	E
	SE 148th Avenue	2,354	0.73	32	C	2,354	0.73	33	C
	SE 162nd Avenue	2,645	1.17	98	F	2,645	1.08	66	E
	Bi-Mart/Meadowland	2,382	0.66	9	A	2,382	0.66	9	A
	SE 174th Avenue	4,153	1.31	132	F	4,153	1.16	87	F
	SE Highland Avenue	4,571	0.91	52	D	4,571	0.91	52	D

	Intersection Name	Future Year 2040 No Build *				Future Year 2040 Build *			
		In Volume	v/c	Delay	LOS	In Volume	v/c	Delay	LOS
	East side of I-205	2,438	0.44	13	B	2,438	0.44	13	B
	West side of I-205	2,355	0.85	38	D	2,355	0.85	38	D
	TriMet Garage	1,320	0.55	13	B	1,320	0.54	13	B
	SE 104th Avenue	1,331	0.55	10	A	1,331	0.55	10	A
	SE 112th Avenue	1,890	0.70	23	C	1,890	0.78	33	C
8-9 a.m.	SE 116th Avenue	1,224	0.43	1	A	1,224	0.43	1	A
AM Peak	SE 122nd Avenue	3,186	0.81	41	D	3,186	0.81	41	D
	SE 136th Avenue	2,224	0.84	44	D	2,224	0.90	110	F
	SE 148th Avenue	1,725	0.61	22	C	1,725	0.61	21	C
	SE 162nd Avenue	1,985	0.99	49	D	1,985	0.77	23	C
	Bi-Mart/Meadowland	1,854	0.71	6	A	1,854	0.71	6	A
	SE 174th Avenue	3,235	0.96	56	E	3,235	0.95	51	D
	SE Highland Avenue	3,596	0.81	42	D	3,596	0.81	42	D

All data from HCM 2000 Signalized Intersection Capacity Analysis Report generated by Synchro 8 models.
* Existing, Opening Year and Future Year Synchro models provided by HDR Engineering

Table 1 Continued - Outer Powell Operation Summary Traffic Data

	Intersection Name	Future Year 2040 No Build *				Future Year 2040 Build *			
		In Volume	v/c	Delay	LOS	In Volume	v/c	Delay	LOS
	East side of I-205	3,123	0.59	16	B	3,123	0.59	16	B
	West side of I-205	2,963	0.90	44	D	2,963	0.90	45	D
	TriMet Garage	1,654	0.58	15	B	1,654	0.58	15	B
	SE 104th Avenue	1,758	0.66	12	B	1,758	0.66	12	B
	SE 112th Avenue	2,753	0.96	42	D	2,753	0.97	108	F
4-5 p.m.	SE 116th Avenue	1,660	0.54	3	A	1,660	0.54	3	A
PM Peak	SE 122nd Avenue	4,117	1.01	64	E	4,117	1.01	64	E
	SE 136th Avenue	2,978	0.94	35	D	2,978	1.05	65	E
	SE 148th Avenue	2,354	0.73	32	C	2,354	0.73	33	C
	SE 162nd Avenue	2,645	1.17	98	F	2,645	1.08	66	E
	Bi-Mart/Meadowland	2,382	0.66	9	A	2,382	0.66	9	A
	SE 174th Avenue	4,153	1.31	132	F	4,153	1.16	87	F
	SE Highland Avenue	4,571	0.91	52	D	4,571	0.91	52	D

	Intersection Name	Future Year 2040 No Build *				Future Year 2040 Build *			
		In Volume	v/c	Delay	LOS	In Volume	v/c	Delay	LOS
	East side of I-205	2,438	0.44	13	B	2,438	0.44	13	B
	West side of I-205	2,355	0.85	38	D	2,355	0.85	38	D
	TriMet Garage	1,320	0.55	13	B	1,320	0.54	13	B
	SE 104th Avenue	1,331	0.55	10	A	1,331	0.55	10	A
	SE 112th Avenue	1,890	0.70	23	C	1,890	0.78	33	C
8-9 a.m.	SE 116th Avenue	1,224	0.43	1	A	1,224	0.43	1	A
AM Peak	SE 122nd Avenue	3,186	0.81	41	D	3,186	0.81	41	D
	SE 136th Avenue	2,224	0.84	44	D	2,224	0.90	110	F
	SE 148th Avenue	1,725	0.61	22	C	1,725	0.61	21	C
	SE 162nd Avenue	1,985	0.99	49	D	1,985	0.77	23	C
	Bi-Mart/Meadowland	1,854	0.71	6	A	1,854	0.71	6	A
	SE 174th Avenue	3,235	0.96	56	E	3,235	0.95	51	D
	SE Highland Avenue	3,596	0.81	42	D	3,596	0.81	42	D

All data from HCM 2000 Signalized Intersection Capacity Analysis Report generated by Synchro 8 models.
* Existing, Opening Year and Future Year Synchro models provided by HDR Engineering

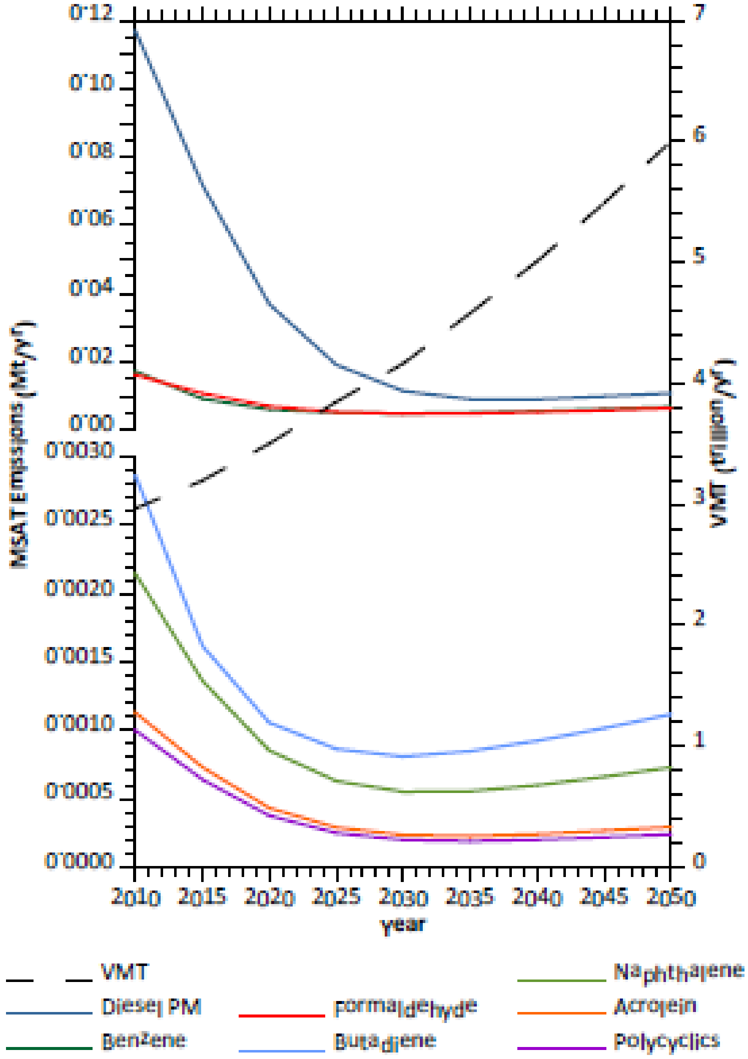
Appendix B. Modeling File Summary

The CAL3QHC and MOVES electronic modeling files are available on request.

File Name	Type of File	Analysis Year	Notes
112_exist_14.in2/.ou2	Cal3qhc in and output files	2014	112th & Powell Exist
112_b20.in2/.ou2		2020	112th & Powell Build
112_nb20.in2/.ou2		2020	112th & Powell No-Build
112_b40.in2/.ou2		2040	112th & Powell
112_nb40.in2/.ou2		2040	112th & Powell
174_exist_14.in2/.ou2		2014	174th & Powell
174_b20.in2/.ou2		2020	174th & Powell
174_nb20.in2/.ou2		2020	174th & Powell
174_b40.in2/.ou2		2040	174th & Powell
174_nb40.in2/.ou2		2040	174th & Powell
Fuelformulation_or.csv	Moves database	NA	Metro
Fuelsupply_2012+_or.csv		NA	Used for all analysis years
Imcoverage_2014_OR.csv		All years analyzed	Additional files for year 2020 & 2040
Links.xls		NA	Same for all years
Linksourcetype.xls		NA	Same for all years
Multnomah_meterology_input.xls		NA	Same for all years
Sourcetypeagedistribution_2014_or.csv		All years analyzed	Additional files for year 2020 & 2040
LEV_or_in			Low emission vehicle database
Powell2014.mrs	MOVES Runspec	2014	Input
Powell2020.mrs	MOVES Runspec	2020	Input
Powell204.mrs	MOVES Runspec	2040	input
Co_emissionfactors14.csv	MOVES output	2014	Emission rates
Co_emissionfactors20.csv	MOVES output	2020	Emission rates
Co_emissionfactors40.csv	MOVES output	2040	Emission rates
NA- Not Applicable			

Appendix C. MSAT Incomplete information

Figure 1:
PROJECTED NATIONAL MSAT EMISSION TRENDS 2010 – 2050
FOR VEHICLES OPERATING ON ROADWAYS
USING EPA's MOVES2010b MODEL



Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors

CEQ Provisions Covering Incomplete or Unavailable Information (40 CFR 1502.22)

Sec. 1502.22 INCOMPETE OR UNAVAILABLE INFORMATION

When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.

(a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.

(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:

1. A statement that such information is incomplete or unavailable;
2. A statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment;
3. A summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; and
4. The agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts that have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

(c) The amended regulation will be applicable to all environmental impact statements for which a Notice to Intent (40 CFR 1508.22) is published in the Federal Register on or after May 27, 1986. For environmental impact statements in progress, agencies may choose to comply with the requirements of either the original or amended regulation.

INCOMPLETE OR UNAVAILABLE INFORMATION FOR PROJECT-SPECIFIC MSAT HEALTH IMPACTS ANALYSIS

In FHWA’s view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, C-2 would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The U.S. Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is “a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects” (EPA https://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA’s Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are; cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, http://pubs.healtheffects.org/view.php?id=282) or in the future as vehicle emissions substantially decrease (HEI, http://pubs.healtheffects.org/view.php?id=306).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (http://pubs.healtheffects.org/view.php?id=282). As a result, there is no national C-3 consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

Due to the limitations cited, a discussion such as the example provided in this Appendix (reflecting any local and project-specific circumstances), should be included regarding incomplete or unavailable information in accordance with Council on Environmental Quality (CEQ) regulations [40 CFR 1502.22(b)]. The FHWA Headquarters and Resource Center staff Victoria Martinez (787) 766-5600 X231, Bruce Bender (202) 366-2851, and Michael Claggett (505) 820-2047, are available to provide guidance and technical assistance and support. (http://www.epa.gov/risk/basicinformation.htm#g) and the HEI (http://pubs.healtheffects.org/getfile.php?u=395) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.