Air Quality
Conformity Analysis

2010-2013 Regional Transportation Improvement Program

September 3, 2009
Air Quality Conformity Analysis for the 2010-2013 Regional Transportation Improvement Program

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Introduction

This paper documents the positive air quality findings of the 2010-2013 Regional Transportation Improvement Program (TIP) for conformity with the State Implementation Plan (SIP). The TIP includes federally funded transportation projects, Washington State Department of Transportation projects using state funds, and all "regionally significant" projects, regardless of funding source. Required under the federal Clean Air Act, a SIP provides a blueprint of how maintenance and nonattainment areas will meet the National Ambient Air Quality Standards (NAAQS). TIP conformity analyses and a positive finding of conformity are required by the federal Clean Air Act (CAA), the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and the Clean Air Washington Act. Positive conformity findings will allow the region to proceed with implementation of transportation projects in a timely manner.

Transportation conformity is a mechanism for ensuring that transportation activities -- plans, programs and projects -- are reviewed and evaluated for their impacts on air quality prior to funding or approval. The intent of transportation conformity is to ensure that new projects, programs and plans do not impede an area from meeting and maintaining air quality standards. Specifically, regional transportation plans, improvement programs and projects may not cause or contribute to new violations, exacerbate existing violations, or interfere with the timely attainment of air quality standards or the required interim emissions reductions towards attainment. Meeting conformity requirements takes the collective participation of all jurisdictions and agencies that implement transportation projects and programs within the central Puget Sound region.

Air Quality Status

In 1978, the central Puget Sound region was classified as a nonattainment area by the U.S. Environmental Protection Agency (EPA) for carbon monoxide (CO) and ground-level ozone (O3). In 1987, the industrial areas of the Seattle Duwamish River, Kent Valley and Tacoma Tideflats were classified as nonattainment areas for particulate matter less than 10 microns in diameter (PM10). The Seattle and Tacoma industrial areas include the ports of both those cities. Areas designated as nonattainment have exceeded the National Ambient Air Quality Standards (NAAQS) for those pollutants. In 1996, having met the federal standards for several years, the region was redesignated by the EPA as a maintenance area for CO and O3. The three PM10 areas have also met the federal standards for the past several years, and were redesignated as maintenance areas effective May 14, 2001.

As required by the CAA, the Puget Sound region has a maintenance plan for each of the areas described above. Approval of the CO maintenance plan occurred on October 11, 1996, and approval of the O3 maintenance plan occurred on November 25, 1996. Both of these plans were updated and approved by the EPA on September 7, 2004. Approval of the PM10 maintenance plan occurred in December 2000, with the plan becoming effective May 14, 2001. Figure 1 shows the location of the maintenance area boundaries.

In June 2004 the EPA officially designated areas to a new ground-level ozone standard, and in April 2005 to a new particulate matter standard. The original ground-level ozone standard for which the Central Puget Sound region was in maintenance was based on a 1-hour concentration; the new standard is based on an 8-hour average concentration and replaced the

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1-hour standard as of June 15, 2005. The new particulate matter standard is based on particulate matter less than 2.5 microns in diameter; this standard is in addition to, and does not
Figure 1

Central Puget Sound Region Designated Maintenance Areas

Criteria Pollutants

- Former 1-Hour Ozone Maintenance Area
- Carbon Monoxide and Former 1-Hour Ozone Maintenance Areas
- Particulate Matter (PM10), Carbon Monoxide and Former 1-Hour Ozone Maintenance Areas*

* The region's current status for the 8-hour ozone and PM10 standards is "attainment." However, both standards have recently been violated, and the redesignation process has begun.
replace, the PM$_{10}$ standard. The region is designated as Unclassifiable/Attainment for both the new 8-hour ground-level ozone and the PM$_{2.5}$ standards, and therefore demonstrations of conformity for these standards are not required. While both of these standards are currently being maintained, existing programs and efforts must continue to ensure the region remains in compliance.

Consultation Process

Federal Clean Air Act regulations, as identified in the federal conformity rule (40 CFR Part 93), and Clean Air Washington Act regulations defined in the state conformity rule (WAC 173-420-070), require formal consultation procedures for conducting conformity analyses. The consultation procedures for the conformity analysis of the 2010-2013 Regional TIP are consistent with the Regional Council's Public Participation Plan, which is in compliance with the federal Statewide and Metropolitan Planning regulations (23 CFT Part 450) as well as the above conformity regulations. The Public Participation Plan may be obtained by contacting the Regional Council’s Information Center ((206) 464-7532), or through the Regional Council’s web site (www.psrc.org).

A major task identified under the consultation procedures requirements is the presentation of key staff assumptions on the process for conducting conformity analyses. Consistent with past practice, the Regional Council held a scoping meeting with federal, state and local agencies to present the staff interpretation of conformity tests that are required and key analytical assumptions involved in the conformity analysis of the 2010-2013 Regional TIP. This scoping meeting met the formal consultation requirements of the federal and state clean air acts.

The scoping meeting was held on August 5, 2009. Notification of the meeting was made through a public announcement in *The Seattle Times*. Those invited to the meeting included representatives from the following agencies (referred to as the Regional Council’s air quality partner agencies): the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), EPA, the Washington State Department of Transportation (WSDOT), the Washington State Department of Ecology (Ecology), and the Puget Sound Clean Air Agency (PSCAA). A summary of the August 5, 2009 Scoping Meeting is contained in Appendix A.

Status of Transportation Control Measures

According to the federal conformity rule, transportation plans must provide for the timely implementation of Transportation Control Measures (TCMs) from an applicable maintenance plan (§93.113). TCMs are projects, programs or actions that will aid in the elimination or reduction of the severity or number of violations of the NAAQS, and help expeditiously attain and maintain those standards. TCMs can be strategies to increase the efficiency of existing transportation facilities, reduce travel demand, or lower the amount of emissions in vehicles leading to measurable vehicle emissions reductions. Expected emissions reductions, or credits, from these TCMs are included in maintenance plan inventories and attainment/maintenance demonstrations.

Control measures identified in the CO maintenance plan relating to on-road mobile sources include the continuation of the existing vehicle Inspection and Maintenance (I/M) program administered by Ecology, and the development and implementation of a program sponsored by PSCAA to prevent exceedances of the NAAQS for CO through congestion management activities in locations with high measured CO values. Both of these programs have been implemented and are still in place, however no emissions reduction credit from the congestion
A management program was included in the maintenance plan inventory. Control measures identified in the O₃ maintenance plan relating to on-road mobile sources include a public smog awareness program which is triggered by weather conditions which could result in elevated ozone levels, and which is designed to encourage voluntary changes in behavior which would reduce emissions. This program has also been implemented and is still currently in place, however no emissions reduction credits from the program were included in the maintenance plan inventory. There are no control measures in the PM₁₀ maintenance plan relating to on-road mobile sources.

Conformity Analysis Requirements

Section 93.109 of the federal conformity rule identifies the applicable criteria and procedures for determining conformity of transportation plans. The following paragraphs summarize the sections of the final conformity rule containing the criteria and procedures required for conformity tests for each maintenance area.

Plan Conformity Criteria - All Pollutants and Periods

Section 93.110: The conformity determination must be based on the latest planning assumptions.²

Section 93.111: The conformity determination must be based on the latest emissions estimation model available.

Section 93.112: The MPO must make the conformity determination according to consultation procedures identified in the conformity rule.

Section 93.113: The Plan must provide for the timely implementation of Transportation Control Measures (TCMs) from the applicable SIP.

Section 93.118: The Plan must be consistent with the motor vehicle emissions budget in the applicable SIP or submitted SIP revision.

Technical Analysis Procedures

The federal conformity rule includes procedures for estimating regional emissions for transportation plan conformity analyses (§93.122). The process for estimating regional emissions for the conformity analysis of the 2010-2013 Regional TIP involves the integration of the Regional Council’s land use and travel demand modeling with EPA’s emissions factor models. Figure 2 provides an overview of the models used in the Regional Council’s transportation and air quality analysis process.

Figure 2

Overview of Models Used in PSRC Transportation Planning to Prepare Mobile Source Emissions

- U.S. FORECAST (DR1) → STEP Econometric Model
- JURISDICTIONAL REVIEW
- EMPAL™ Employment Allocation
- DRAM™ Population/Household Allocation
- EXPAND TO TAZ
- TRIP GENERATION
- TRIP DISTRIBUTION
- MODE CHOICE
- FOUR-COUNTY REGION
- FORECAST ANALYSIS ZONES (FAZ)
- COMPRESS FROM TAZ
- TRANSPORTATION ANALYSIS ZONES (TAZ)

- HIGHWAY NETWORKS
- TRANSIT NETWORKS
- MOBILE (EPA) emission factors by vehicle speed (grams per vehicle per mile)

- ASSIGNMENTS
- INTERZONAL ACCESSIBILITIES

- TOTAL EMISSIONS
  - *summed by measurement area selected for analysis
  - *used in analysis for conformity determination

revised 5/19/01
The conformity analysis must include modeling of all regionally significant projects. As defined by the conformity rule, a regionally significant project is:

"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) and 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 conformity analysis includes all modelable projects and programs submitted for the 2010-2013 Regional TIP. These projects were coded into the Regional Council's travel demand model networks for their respective years of implementation. In addition, the conformity analysis includes all modelable projects and programs that are currently in the TIP, as well as all modelable projects and programs in the long-range plan, Destination 2030. Appendix B provides a listing of the projects submitted for the 2010-2013 Regional TIP.

Modeling Assumptions

The conformity analysis of the 2010-2013 Regional TIP is based on the most current socioeconomic, travel and emissions information (as required under Section 93.110 of the federal conformity rule and further detailed in the January 2001 FHWA/EPA Memorandum, “Use of Latest Planning Assumptions in Conformity Determinations”).

The Regional Council’s current long-range population and employment forecasts, and subsequent land use allocations, were last developed in 2006, replacing the forecasts prepared in 2002/2003. Major updates to the forecasts included the incorporation of a more current US long range economic forecast, and adding a number of additional in-progress development projects to the first 10-20 years of the forecast period to better capture extensive construction activity in areas such as South Lake Union and Downtown Bellevue. Compared to the 2003 forecasts, the updated 2006 version calls for slightly more people in the region in 2010 (0.7 percent higher) but slightly fewer jobs (3.8 percent lower), reflecting observed trends from 2000 to 2005. Further information on the regional forecasts is available through the Regional Council’s web site (http://www.psrc.org/data/forecasts/index.htm) or by calling the Information Center ((206)464-7532).

The Regional Council’s travel demand model was used for this analysis, which analyzes for five time periods. The conformity analysis is based on a definition of High Occupancy Vehicle (HOV) as 2-plus persons per vehicle, due to a lack of legally binding assurances in state policies regarding when the HOV occupancy level will be increased. Further information on the Regional Council’s travel demand modeling procedures is available through the Regional Council’s web site (www.psrc.org) or by calling the Information Center ((206)464-7532).

The emissions for each of the analyses currently required under conformity – CO and PM$_{10}$ – were generated by output from the Regional Council’s travel demand model and EPA’s MOBILE6.2 vehicle emissions modeling software. The model settings were coordinated with the Regional Council’s air quality partner agencies, using the same procedures used by PSCAA to develop the emissions inventories in each of the respective maintenance plans. The most
current vehicle registrations and I/M settings were used for each analysis. The PM$_{10}$ analyses also include estimates of future heavy truck volumes serving the ports of Seattle and Tacoma, derived from forecasts of total port activity. Appendix C contains the MOBILE6.2 input files used in the analysis.

Results

The conformity analysis must show that the total regional emissions produced by projects in the 2010-2013 Regional TIP, plus activity on the existing travel network, do not exceed the motor vehicle emissions budget identified in the maintenance plan for each respective criteria pollutant. The emissions budget is a ceiling of total emissions that cannot be exceeded. Emissions are calculated on an individual link basis, based on the vehicle miles traveled (VMT) and speed of each link. This calculation is performed separately for each of five time periods (a.m. peak, midday, p.m. peak, evening and nighttime). Emissions are calculated for both intrazonal and interzonal trips. The calculated emissions of individual links are then summed for each of the five time periods, which in turn are summed for the total daily emissions in each maintenance area.

Tables 1 and 2 identify the motor vehicle emissions budget for each criteria pollutant, and display the analysis results. Pursuant to Section 93.118(b) of the federal conformity rule, analyses were conducted for each year for which a motor vehicle emissions budget has been established, the horizon year of Destination 2030 and intermediary years such that the analyses are no more than 10 years apart. The CO maintenance plan identifies a motor vehicle emissions budget for the horizon year of 2016; the PM$_{10}$ maintenance plan identifies motor vehicle emissions budgets out to a horizon year of 2010. Under consultation with the Regional Council’s air quality partner agencies and consistent with standard practices (Section 93.118(b)(2)(ii) of the federal conformity rule), these budgets were carried forward in this analysis as the budgets for 2020 and 2030, which is the horizon year of Destination 2030.

<table>
<thead>
<tr>
<th>TABLE 1 – CO Analysis Results</th>
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<tbody>
<tr>
<td>Maintenance Area VMT (miles per day)</td>
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<tr>
<td>Emissions Budget (all years)*</td>
</tr>
<tr>
<td>2010</td>
</tr>
<tr>
<td>2016</td>
</tr>
<tr>
<td>2020</td>
</tr>
<tr>
<td>2030</td>
</tr>
</tbody>
</table>

*Central Puget Sound Region Maintenance Plan for the National Ambient Carbon Monoxide Standard, 2004
^ The updated CO maintenance plan, effective September 7, 2004, extended the horizon year from 2010 to 2016; the 2016 emissions estimation, therefore, was derived from an interpolation between the 2010 and 2020 modeled analyses, per consultation with the Regional Council’s air quality partner agencies and consistent with Section 93.118(d)(2) of the federal conformity rule.
## TABLE 2 – PM$_{10}$ Analysis Results

<table>
<thead>
<tr>
<th></th>
<th>Kent</th>
<th>Duwamish</th>
<th>Tacoma</th>
</tr>
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<tbody>
<tr>
<td>VMT (miles/day)</td>
<td>PM$_{10}$ (lbs./day)</td>
<td>VMT (miles/day)</td>
<td>PM$_{10}$ (lbs./day)</td>
</tr>
<tr>
<td>Emissions Budget*</td>
<td>n/a</td>
<td>231.5</td>
<td>n/a</td>
</tr>
<tr>
<td>2010</td>
<td>589,892</td>
<td>114.05</td>
<td>2,285,165</td>
</tr>
<tr>
<td>2020</td>
<td>642,401</td>
<td>103.35</td>
<td>2,540,361</td>
</tr>
<tr>
<td>2030</td>
<td>782,714</td>
<td>114.48</td>
<td>2,615,808</td>
</tr>
</tbody>
</table>

*Central Puget Sound Region Maintenance Plan for the National Particulate Matter (PM$_{10}$) Standard (Seattle, Kent and Tacoma), 2001

Note: The highlighted values represent the motor vehicle emissions budget for each pollutant, as identified in the appropriate maintenance plan. All other values represent modeled emissions.

As shown in the above tables, the emissions levels from the projects and programs in the 2010-2013 Regional TIP for each of the analysis years are below the established daily motor vehicle emissions budgets for the criteria pollutants of CO and PM$_{10}$, as identified in their respective maintenance plans. The analysis for both CO and PM$_{10}$ indicates a decrease in emissions between 2010 and 2020, followed by a gradual increase in emissions between 2020 and 2030. A decrease in emissions from motor vehicles is expected between 2010 and 2020, due to new regulations and technologies taking effect. Between 2020 and 2030 emissions from motor vehicles will continue to decrease but at a less dramatic rate; coupled with the growth in VMT during this time period, overall emissions will gradually increase.

### Conclusions

This analysis provides sufficient basis for the Regional Council to determine that the 2010-2013 Regional Transportation Improvement Program conforms to the CO and PM$_{10}$ maintenance plans as required by the federal Clean Air Act and the state Clean Air Washington Act.

In addition, since this analysis includes all modelable projects and programs identified in the long-range plan, Destination 2030, this analysis reconfirms the conformity finding of Destination 2030.
Appendix A

Scoping Meeting Summary
Scoping Meeting
Air Quality Conformity Analysis for the 2010-2013 Regional Transportation Improvement Program (TIP)
August 5, 2009

Meeting Summary

The meeting was convened by Puget Sound Regional Council staff to clarify with the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Environmental Protection Agency (EPA), the Washington State Department of Ecology, the Washington State Department of Transportation (WSDOT) and the Puget Sound Clean Air Agency (PSCAA) the assumptions and methodologies to be used for the air quality conformity analysis of the 2010-2013 Regional Transportation Improvement Program. Additionally, the meeting was intended to allow other interested representatives of the public to provide input. This consultation prior to entering into a plan or program conformity analysis meets the requirements of the State (WAC 173-420-070) and Federal (40 CFR Part 93) Conformity Rules.

Attendance: Cliff Hall, Jim Laughlin, Karin Landsberg, Tim Sexton-WSDOT; Paul Carr-PSCAA; Sidney Stecker-FHWA; Ned Conroy-FTA; Claudia Vaupel–EPA; Sally Otterson-Ecology; Kelly McGourty-Puget Sound Regional Council.

1. CALL TO ORDER

Kelly McGourty called the meeting to order and the attendees introduced themselves. Kelly began the meeting by stating that the purpose of the scoping meeting was to discuss and clarify the assumptions and procedures for the conformity analysis of the 2010-2013 Regional Transportation Improvement Program (TIP) as required by state and federal laws.

2. PUBLIC COMMENT

An opportunity was provided for public comment; none was received.

3. INTRODUCTION TO THE REGIONAL TIP

Kelly gave an overview of the Regional TIP and the conformity requirements. Specifically, that under SAFETEA-LU a four-year TIP is now required by federal law; that transportation projects must have an identifiable funding source (secured or reasonably expected to be secured); and that projects must be in, or consistent with, the long-range Metropolitan Transportation Plan, Destination 2030. In addition, the Regional TIP contains the following projects:

- federally funded projects
- WSDOT projects
- non-federally funded “regionally significant” projects
- major changes to project scope, design or timing for projects in the current TIP

Kelly then explained that transportation conformity ensures that plans, programs and projects are evaluated for their impacts on air quality prior to funding or approval. Specifically, they may not cause or contribute to new violations, exacerbate existing violations, or interfere with the timely attainment of air quality standards. The conformity legislation includes:
Kelly explained that the Central Puget Sound region contains maintenance areas for carbon monoxide (CO) and particulate matter less than 10 microns in diameter (PM$_{10}$) in the industrial areas of the Duwamish River in Seattle, the Kent Valley and the Tacoma Tideflats. A map was presented showing the locations and boundaries of each of the maintenance areas. The region is designated “Unclassifiable/Attainment” for the 8-hour ozone and PM$_{2.5}$ standards, and since the 1-hour ozone standard was revoked as of June 15, 2005, conformity to that standard is no longer required.

4. SUMMARY OF ASSUMPTIONS FOR ANALYSIS

Kelly outlined four key requirements of conformity analyses, based on the federal and state conformity rules:

A. Latest Planning Assumptions
B. Latest Emissions Estimation Model Available
C. Consultation
D. Consistency with the Motor Vehicle Emissions Budget

A. Latest Planning Assumptions

**Transportation Model Assumptions**

The transportation modeling will include the latest planning assumptions, such as the most recent population and employment forecasts and future operating conditions and transit service levels. The Regional Council’s travel demand modeling procedures are outlined in Land Use and Travel Demand Forecasting Models, which can be found on the Regional Council’s website at www.psrc.org, or by calling the Regional Council’s Information Center at (206)464-7532.

**Transportation Networks**

The transportation networks for the conformity modeling include the following:

- the existing transportation network
- projects and programs submitted for the 2010-2013 Regional TIP
- projects and programs currently in the TIP
- projects and programs in the long-range metropolitan transportation plan, Destination 2030

**Selecting TIP Projects to be Modeled**

Projects which are on, or affect, the Metropolitan Transportation System (MTS) are included in the transportation model. These include roadway projects that result in new links, capacity changes on an existing link or changes in average speed on existing links. Also included are
non-roadway projects such as park and ride lots, increased transit service, etc. Regional Council staff will determine the modelability of all projects.

B. Latest Emissions Estimation Model Available

**Emissions Model Assumptions**

EPA’s MOBILE6.2 model will be used, with the most current vehicle registrations and Inspection and Maintenance (I/M) settings obtained from Ecology. Additional Port truck traffic in the Duwamish and Tacoma Tideflats Industrial Areas, based on cargo forecasts, will be included for the PM$_{10}$ analyses. The analysis for both pollutants will follow the same procedures used in each of their respective maintenance plans.

C. Consultation

Both interagency consultation procedures to discuss methodologies and assumptions, and public consultation such as this scoping meeting, are required under federal and state conformity rules. The Regional Council’s air quality consultation partners include representatives from the following agencies:

- Federal Highway Administration
- Federal Transit Administration
- Environmental Protection Agency
- Washington State Department of Ecology
- Washington State Department of Transportation
- Puget Sound Clean Air Agency

D. Consistency with the Motor Vehicle Emissions Budget

The emissions budget for the CO maintenance area is 2,512 tons per winter day for all years, and the horizon year of the CO maintenance plan is 2016. The emissions budgets for the PM$_{10}$ maintenance areas are 383 kilograms per day in the Duwamish River Industrial Area, 105 kilograms per day in the Kent Valley Industrial Area and 209 kilograms per day in the Tacoma Tideflats Industrial Area. The PM$_{10}$ maintenance plan has a horizon year of 2010.

**Conformity Tests**

Kelly described the conformity tests that will be applied for the analysis of the 2010-2013 Regional TIP:

**CO**
- 2010, 2020, 2030 modeled daily emissions vs. motor vehicle emissions budget
- 2016 interpolated daily emissions vs. motor vehicle emissions budget

**PM$_{10}$**
- 2010, 2020, 2030 modeled daily emissions vs. motor vehicle emissions budgets

Since the maintenance plans for each pollutant will have a horizon year of either 2010 or 2016, under consultation and consistent with Section 93.118(b)(2)(ii) of the federal conformity rule, these emissions budgets will be carried forward as de facto 2020 and 2030 budgets. Also,
consistent with Section 93.118(d)(2) of the federal conformity rule and under consultation, analyses for those years for which budgets are identified but for which a regional model does not exist shall be performed based on interpolation.

5. OVERVIEW OF SCHEDULE

The schedule for the 2010-2013 Regional TIP is as follows:

- Air Quality Conformity Scoping Meeting: August 5, 2009
- Air Quality Conformity Modeling: August 5-22, 2009
- Public Review and Comment: September 10-October 8, 2009
- Transportation Policy Board Recommendation: October 8, 2009
- Executive Board Approval/Submittal to Governor: October 22, 2009
- State and Federal Approvals: December 2009

The air quality conformity documentation released for public review will include a summary of the August 5, 2009 scoping meeting, summaries of the methodology and analysis, and findings and conclusions. The documentation will be available on the Regional Council’s web site, [www.psrc.org](http://www.psrc.org), or by calling the Information Center at (206)464-7532.
Appendix B

Projects Submitted for the 2010-2013 Regional TIP
<table>
<thead>
<tr>
<th>Sponsor</th>
<th>Title</th>
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<tbody>
<tr>
<td>Arlington</td>
<td>67th Ave Reconstruction Phase III</td>
</tr>
<tr>
<td>Auburn</td>
<td>15th St SW at A St.</td>
</tr>
<tr>
<td>Bainbridge Island</td>
<td>N. Madison Bike Lanes/Sidewalk (SR305 to Day Rd)</td>
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<tr>
<td>Bainbridge Island</td>
<td>Rockaway Beach Rd Stabilization</td>
</tr>
<tr>
<td>Bellevue</td>
<td>120th Ave. NE</td>
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<tr>
<td>Bellevue</td>
<td>124th Ave</td>
</tr>
<tr>
<td>Bellevue</td>
<td>East King County Bicycle Wayfinding</td>
</tr>
<tr>
<td>Bothell</td>
<td>Bothell Crossroads</td>
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<tr>
<td>Bothell</td>
<td>SR 527 Improvements (240th St SE to 228th St SE)</td>
</tr>
<tr>
<td>Bremerton</td>
<td>Pacific Ave from 6th Street to 11th St</td>
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<tr>
<td>Bremerton</td>
<td>SR 303 : 11th &amp; Warren Intersection</td>
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<tr>
<td>Bremerton &amp; Kitsap Transit</td>
<td>Opticom® for Emergency Vehicles</td>
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<td>Burien</td>
<td>1st Ave S</td>
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<td>Community Transit</td>
<td>ADA Paratransit Operations</td>
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<td>SWIFT Bus Rapid Transit Operations</td>
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<td>Edmonds</td>
<td>Edmonds Interurban Trail</td>
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<td>Everett</td>
<td>36th St/BNSF Rail Line Crossing Improvements</td>
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<td>Everett Transit</td>
<td>Parking Structure at Everett Station</td>
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<td>Everett Transit</td>
<td>Transit Coach / Paratransit Vehicle Replacement</td>
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<td>Everett Transit</td>
<td>Transit Coach Replacement</td>
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<td>I-5 South Bound Ramp @ S 320th Street</td>
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<td>Fife</td>
<td>70th Ave E R/W, 20th Street Intersection to 2900 Block</td>
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<td>Fircrest</td>
<td>S 19th /Columbia St Grind &amp; Overlay</td>
</tr>
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<td>Issaquah</td>
<td>SR 900 Regional Trail</td>
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<td>Kent</td>
<td>Daniel Elementary</td>
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<td>Kent</td>
<td>Horizon Elementary</td>
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<td>Bicycle Locker Expansion and Operational Improvements at Park and Ride Lots, Sounder and Link Stations</td>
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<td>S. Star Lake Road Pedestrian Improvements</td>
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<td>Trolley Simplification in the City Center: S. Washington &amp; Fifth Avenue S.</td>
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<td>Urban Centers Access Project</td>
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<td>King County Ferry District</td>
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<td>Burien Transit Oriented Development (TOD) Facility</td>
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<td>Bus Acquisition</td>
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<td>Vehicle Maintenance</td>
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<td>Kitsap County</td>
<td>Lake Flora Intersection Improvements</td>
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<td>Kitsap County</td>
<td>Southworth Drive Bridge @ Curley Creek: Reconstruction</td>
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<tr>
<td>Kitsap Transit</td>
<td>Bremerton Transportation Center Bike / Walkways</td>
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<td>Kitsap Transit</td>
<td>North Base Construction Documents</td>
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<td>Kitsap Transit</td>
<td>North Kitsap Base</td>
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<td>Kitsap Transit</td>
<td>Purchase of Small Buses</td>
</tr>
<tr>
<td>Lake Forest Park</td>
<td>NE 178th St Roadway Improvement</td>
</tr>
<tr>
<td>Lakewood</td>
<td>100th St Gravelly Lake Dr to 59th Ave</td>
</tr>
<tr>
<td>Lakewood</td>
<td>Bridgeport Way - Steilacoom Blvd to 83rd St</td>
</tr>
<tr>
<td>Lynnwood</td>
<td>35th/36th Ave W (Maple Rd to SR 99) Improvement Project</td>
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<td>Lynnwood</td>
<td>Poplar Way Extension Bridge</td>
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<tr>
<td>Maple Valley</td>
<td>Witte Road</td>
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<tr>
<td>Newcastle</td>
<td>Traffic Signal, Newcastle Way @ 129th Ave SE</td>
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<tr>
<td>Normandy Park</td>
<td>1st Ave South Roadway Improvement</td>
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<tr>
<td>North Bend</td>
<td>Park and Ride</td>
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<tr>
<td>Pierce County</td>
<td>Orville Road E - Orting Kapowsin Highway to BR #5175-C</td>
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<td>Pierce County</td>
<td>Transportation Options</td>
</tr>
<tr>
<td>Pierce Transit</td>
<td>ADA Service</td>
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<td>Pierce Transit</td>
<td>Preventive Maintenance</td>
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<tr>
<td>Pierce Transit</td>
<td>Shuttle Vehicle Replacement</td>
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<tr>
<td>Port of Seattle</td>
<td>Manufacturing and Industrial Centers Commute Trip Reduction and Way finding Project</td>
</tr>
<tr>
<td>Port Orchard</td>
<td>Tremont Widening</td>
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<tr>
<td>Poulsbo</td>
<td>Poulsbo Elementary/Noll Road</td>
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<tr>
<td>Puget Sound Regional Council</td>
<td>Regional Transportation Planning and Programming</td>
</tr>
<tr>
<td>Puget Sound Regional Council</td>
<td>Rural Town Centers and Corridors Program Set Aside</td>
</tr>
<tr>
<td>Renton</td>
<td>Highlands to Landing</td>
</tr>
<tr>
<td>Renton</td>
<td>Rainier Avenue S</td>
</tr>
<tr>
<td>SeaTac</td>
<td>Lake to Sound</td>
</tr>
<tr>
<td>SeaTac</td>
<td>South 154th St</td>
</tr>
<tr>
<td>Seattle</td>
<td>Burke Gilman</td>
</tr>
<tr>
<td>Seattle</td>
<td>Mount Baker Nonmotorized</td>
</tr>
<tr>
<td>Seattle</td>
<td>Rainier Ave/Jackson St Transit Priority Corridor Improvements</td>
</tr>
<tr>
<td>Seattle</td>
<td>Seattle Monorail Train Safety Improvements</td>
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<tr>
<td>Seattle</td>
<td>South Lake Union Streetcar</td>
</tr>
<tr>
<td>Seattle</td>
<td>South Lake Union, Uptown Mercer Corridor Improvements East Segment</td>
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<tr>
<td>Seattle</td>
<td>South Lake Union, Uptown Mercer Corridor West Segment</td>
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<td>Shoreline</td>
<td>Aurora Avenue N</td>
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<td>Snohomish County</td>
<td>Corridor Transportation Demand Strategies for 164th St SE, 128th St SW/Airport Road, 20th St SE</td>
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<tr>
<td>Snoqualmie</td>
<td>Meadowbrook Way Overlay</td>
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<tr>
<td>Sound Transit</td>
<td>Commuter Rail Project: Tacoma/Lakewood</td>
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<tr>
<td>Sound Transit</td>
<td>East Link</td>
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<tr>
<td>Sound Transit</td>
<td>Extend Light Rail from SeaTac/Airport to South 200th Street</td>
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<tr>
<td>Sound Transit</td>
<td>Lakewood-Tacoma Commuter Rail (D to M St New Track and Signal)</td>
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<td>Sound Transit</td>
<td>Lynnwood to Northgate Light Rail Extension - Begin Environmental Review</td>
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<td>Sound Transit</td>
<td>Mountlake Terrace Freeway Station</td>
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<tr>
<td>Sound Transit</td>
<td>North Link (UW Station to Brooklyn Station/45th St)</td>
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<td>Sound Transit</td>
<td>North Link: Extend Light Rail from University of Washington to Northgate Transit Center (ROW Phase)</td>
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<tr>
<td>Sound Transit</td>
<td>Tukwila Commuter Rail Station</td>
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<tr>
<td>Sultan</td>
<td>US-2 And Sultan Basin Road Realignment Phase III</td>
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<td>Sumner</td>
<td>East Valley Highway Resurfacing</td>
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<td>Sumner</td>
<td>Traffic Fryar Avenue &amp; Main Street Intersection Improvements</td>
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<td>Tacoma</td>
<td>2011 Sidewalk Reconstruction Project</td>
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<td>Tacoma</td>
<td>Historic Water Ditch Trail</td>
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<td>Tacoma</td>
<td>Puyallup Bridge Replacement Project</td>
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<td>Tacoma</td>
<td>Portland Ave from E. 38th St. to E. 56th St.</td>
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<td>Tacoma</td>
<td>So Tacoma Way Corridor Multimodal Improvement Project</td>
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<td>Tacoma</td>
<td>Stadium Way</td>
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<tr>
<td>Tacoma / PSCAA</td>
<td>Puget Sound Local Haul Truck Diesel Retrofit Program</td>
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<tr>
<td>University Place</td>
<td>Mildred/67th Avenue Improvements</td>
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<tr>
<td>WA State Ferries</td>
<td>WSF Systemwide Vessel Preservation</td>
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<tr>
<td>WSDOT</td>
<td>I-5/164th St SW Southbound Off Ramp Channelization</td>
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<tr>
<td>WSDOT</td>
<td>I-5/SR 526 South Bound On Ramp Sidewalk</td>
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<tr>
<td>WSDOT</td>
<td>SR 525 Spur/Paine Field Blvd - Trail Improvements</td>
</tr>
<tr>
<td>WSDOT</td>
<td>SR99/Lincoln Way Vic. To Airport Rd Vic. SB Sidewalk</td>
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<tr>
<td>WSDOT / PSCAA</td>
<td>WSF Diesel Engine Retrofits</td>
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</tbody>
</table>
Appendix C

MOBILE6.2 Input Parameters

The following files are included in this appendix:

MOBILE6.2 input file for CO analysis
MOBILE6.2 input file for PM$_{10}$ analysis

Current vehicle registrations and current I/M program settings were provided by Ecology.
MOBILE6 Input File for CO

*************** Header Section ***************

MOBILE6 INPUT FILE

SPREADSHEET :  
POLLUTANTS : CO

PARTICULATES : SO4 OCARBON ECARBON GASPM LEAD BRAKE TIRE

RUN DATA

*************** Run Section ***************

REG DIST : c:\mobile6\mobile6\run\reg2008.txt
FUEL PROGRAM : 1
NO REFUELING :

*************** Scenario Section ***************

SCENARIO RECORD : PS_winter,no_IM,Freeway
CALENDAR YEAR : 2010 (2020, 2030)
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.0 50.0
ABSOLUTE HUMIDITY : 20.0
FUEL RVP : 14.3
PARTICLE SIZE : 10.0
DIESEL SULFUR : 15
PARTICULATE EF : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
AVERAGE SPEED : 3.0 Freeway 92.0 0.0 0.0 8.0
(3.0 to 65.0 mph)

END OF RUN

*************** Run Section ***************

REG DIST : c:\mobile6\mobile6\run\reg2008.txt
FUEL PROGRAM : 1
NO REFUELING :

*************** Scenario Section ***************

SCENARIO RECORD : PS_winter,no_IM,Arterial
CALENDAR YEAR : 2010 (2020, 2030)
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.0 50.0
ABSOLUTE HUMIDITY : 20.0
FUEL RVP : 14.3
PARTICLE SIZE : 10.0
DIESEL SULFUR : 15
PARTICULATE EF : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
AVERAGE SPEED : 3.0 Arterial
(3.0 to 65.0 mph)

END OF RUN

*************** Run Section ***************

REG DIST : c:\mobile6\mobile6\run\reg2008.txt
FUEL PROGRAM : 1
NO REFUELING :
I/M DESC FILE : c:\mobile6\mobile6\run\im2006.ps1

*************** Scenario Section ***************

SCENARIO RECORD : PS_winter,IM1,Freeway
CALENDAR YEAR : 2010 (2020, 2030)
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.0 50.0
ABSOLUTE HUMIDITY : 20.0
FUEL RVP : 14.3
PARTICLE SIZE : 10.0
DIESEL SULFUR : 15
PARTICULATE EF : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
AVERAGE SPEED : 3.0 Freeway 92.0 0.0 0.0 8.0
(3.0 to 65.0 mph)
END OF RUN
*************** Run Section ***************
REG DIST : c:\mobile6\mobile6\run\reg2008.txt
FUEL PROGRAM : 1
NO REFUELING :
I/M DESC FILE : c:\mobile6\mobile6\run\im2006.ps1

*************** Scenario Section ***************
SCENARIO RECORD : PS_winter,IM1,Arterial
CALENDAR YEAR : 2010 (2020, 2030)
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.0 50.0
ABSOLUTE HUMIDITY : 20.0
FUEL RVP : 14.3
PARTICLE SIZE : 10.0
DIESEL SULFUR : 15
PARTICULATE EF : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
AVERAGE SPEED : 3.0 Arterial
(3.0 to 65.0 mph)

END OF RUN
*************** Run Section ***************
REG DIST : c:\mobile6\mobile6\run\reg2008.txt
FUEL PROGRAM : 1
NO REFUELING :
I/M DESC FILE : c:\mobile6\mobile6\run\im2006.ps2

*************** Scenario Section ***************
SCENARIO RECORD : PS_winter,IM2,Freeway
CALENDAR YEAR : 2010 (2020, 2030)
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.0 50.0
ABSOLUTE HUMIDITY : 20.0
FUEL RVP : 14.3
PARTICLE SIZE : 10.0
DIESEL SULFUR : 15
PARTICULATE EF : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
AVERAGE SPEED : 3.0 Freeway 92.0 0.0 0.0 8.0
(3.0 to 65.0 mph)

END OF RUN
*************** Run Section ***************
REG DIST : c:\mobile6\mobile6\run\reg2008.txt
FUEL PROGRAM : 1
NO REFUELING :
I/M DESC FILE : c:\mobile6\mobile6\run\im2006.ps2

*************** Scenario Section ***************
SCENARIO RECORD : PS_winter,IM2,Arterial
CALENDAR YEAR : 2010 (2020, 2030)
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.0 50.0
ABSOLUTE HUMIDITY : 20.0
FUEL RVP : 14.3
PARTICLE SIZE : 10.0
DIESEL SULFUR : 15
PARTICULATE EF : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV
AVERAGE SPEED : 3.0 Arterial
(3.0 to 65.0 mph)
MOBILE6 Input File for PM$_{10}$

*************** Header Section ***************
MOBILE6 INPUT FILE

SPREADSHEET :
POLLUTANTS :
PARTICULATES : SO4 OCARBN ECARBN GASPM LEAD BRAKE TIRE
RUN DATA

*************** Run Section ***************
REG DIST : c:\mobile62\mobile6\run\reg2008.txt
FUEL PROGRAM : 1
NO REFUELING :

*************** Scenario Section ***************
SCENARIO RECORD : PS_winter,no_IM,Areawide
CALENDAR YEAR : 2010 (2020, 2030)
EVALUATION MONTH : 1
MIN/MAX TEMP : 34.0 50.0
ABSOLUTE HUMIDITY : 20.0
FUEL RVP : 14.3
PARTICLE SIZE : 10.0
DIESEL SULFUR : 15
PARTICULATE EF : PMGZML.CSV PMGDR1.CSV PMGDR2.CSV PMDZML.CSV PMDDR1.CSV PMDDR2.CSV

END OF RUN

Additional Inputs for PM$_{10}$ Emissions Calculations

2010 Port VMT:
Kent   Duwam   Tacoma
0 27364   16837

2020 Port VMT:
Kent   Duwam   Tacoma
0 35544   24097

2030 Port VMT:
Kent   Duwam   Tacoma
0 46170   28408

VMT Adjustment Factors:
FT   Kent   Duwam   Tac
1   0.716   0.876   0.889
2   0.716   0.876   0.889
3   0.710   0.829   0.940
4   0.710   0.829   0.940
5   0.492   1.311   1.472
6   0.710   0.829   0.940
7   2.441   2.731   2.787

Road Dust Emission Factors
0.004
0.059
0.143
0.206