APPENDIX 3

air quality conformity

Introduction

This paper documents the positive air quality findings for the analysis of *Destination 2030*, the long-range Metropolitan Transportation Plan of the central Puget Sound region, for conformity with the State Implementation Plan (SIP). Required under the federal Clean Air Act, the SIP provides a blueprint of how maintenance and nonattainment areas will meet the National Ambient Air Quality Standards (NAAQS). Plan conformity analyses and a positive finding of conformity are required by the federal Clean Air Act (CAA), the Transportation Equity Act for the 21st Century (TEA-21) 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

The central Puget Sound region is currently designated by the U.S. Environmental Protection Agency (EPA) as a maintenance area for particulate matter less than 10 microns in diameter (PM_{10}), carbon monoxide (CO) and ground level ozone (O_3). Map 3-1 shows the location of the maintenance area boundaries.

In 1978, the central Puget Sound region was classified as a nonattainment area by the U.S. Environmental Protection Agency (EPA) for CO and O_3. In 1987, the industrial areas of the Seattle Duwamish River, Kent Valley and Tacoma Tideflats were classified as nonattainment areas for PM_{10}. 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 O_3. The three PM_{10} areas have also met the federal standards for the past several years, and were redesignated as maintenance areas effective May 14, 2001. Map 3-1 displays designated maintenance areas for criteria pollutants – carbon monoxide, 0zone and particulate matter.

As required by the CAA, the Puget Sound region has a maintenance plan for the three PM_{10} areas and for the CO and O_3 maintenance areas. All of these plans have been approved by the EPA. Approval of the CO maintenance plan occurred on October 11, 1996; approval for the O_3 maintenance plan occurred on November 25, 1996; and approval of the PM_{10} maintenance plan occurred in December, 2000, with the plan becoming effective May 14, 2001.

Consultation Process

Federal Clean Air Act regulations, as identified in the federal conformity rule (40 CFR Parts 51 and 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 *Destination 2030* are consistent with the Regional Council's Public Participation Plan, which is in compliance with the Statewide and Metropolitan Planning regulations 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 (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 *Destination 2030*. This scoping meeting met the formal consultation requirements of the federal and state clean air acts.

The scoping meeting was held on June 13, 2000. Notification of the meeting was made through public announcements in local newspapers and PSRC's web site (psrc.org). Those invited to the meeting included representatives from 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 June 13, 2000 Scoping Meeting is contained in Appendix 3A. In addition, the Regional Council held working group sessions with these air quality partner agencies after the June 2000 scoping meeting to further discuss and refine modeling procedures and inputs. These meetings were held on September 12, 2000 and December 11, 2000.

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 (40 CFR §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 emis-

MAP 3-1. **Designated Maintenance Areas for Criteria Pollutants — Carbon Monoxide, Ozone and Particulate Matter**

PLEASE REFER TO MAP INDEX TO VIEW MAP

sions 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 management program was included in the maintenance plan inventory. Control measures identified in the O_3 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 PM_{10} 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 which contain 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.

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.

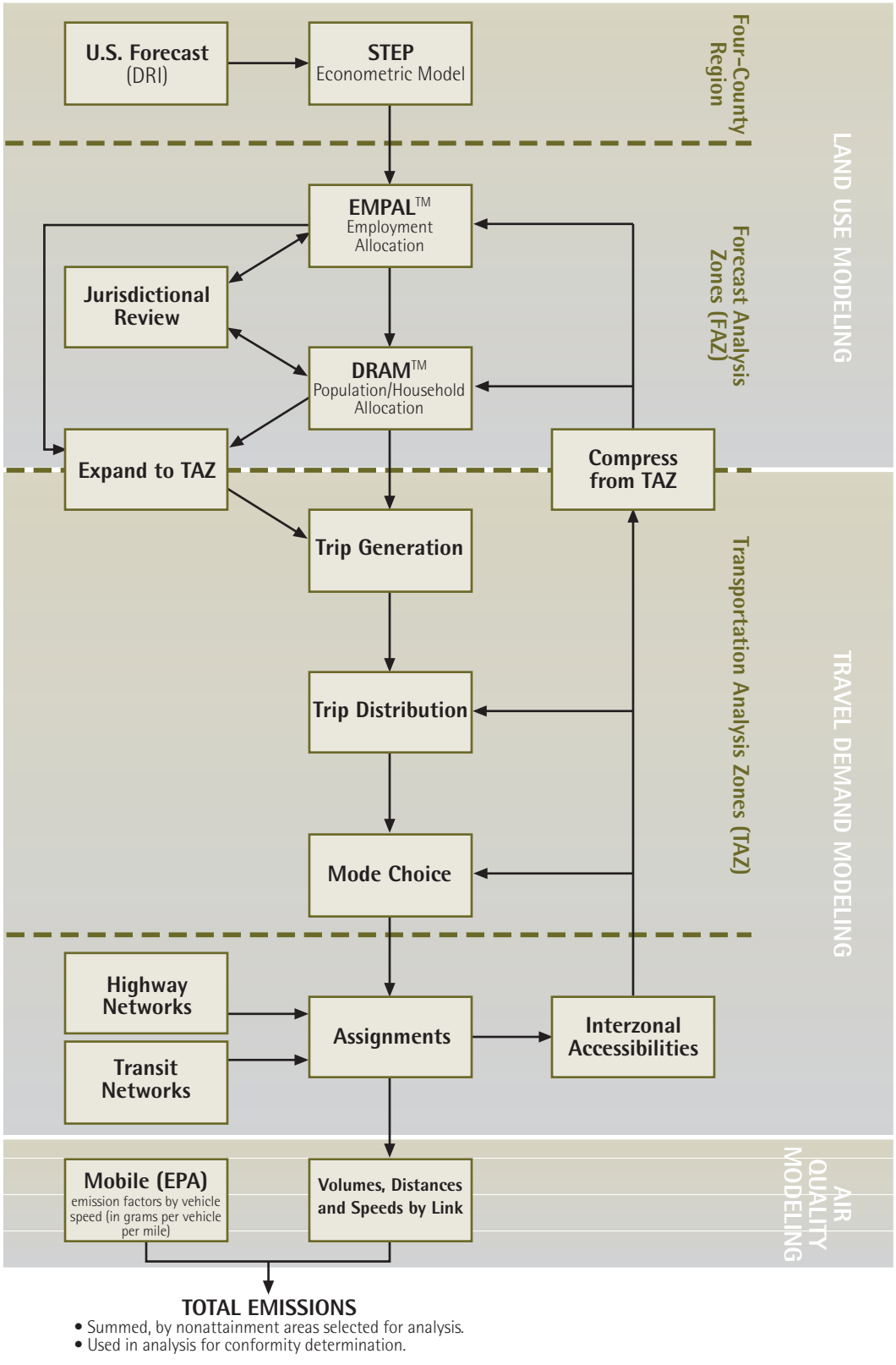
Section 93.113 The Plan must provide for the timely implementation of Transportation Control Measures (TCMs) from the applicable SIP.

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 (§93.112). The process for estimating regional emissions for the conformity analysis of *Destination 2030* involves the integration of the Regional Council's land use and travel demand modeling with EPA's MOBILE5 emissions factor model. Figure 1 provides an overview of the models used in the Regional Council's transportation and air quality analysis process. For a more detailed description of the transportation and air quality analysis conducted by the Regional Council, consult the *Metropolitan Transportation Plan: Technical Report*, (MTP-12), available through the Puget Sound Regional Council's Information Center (206-464-7532).

FIGURE 1: **Overview of Models Used in PSRC Transportation Planning to Prepare Mobile Source Emissions**



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 in *Destination 2030*. These projects were coded into the Regional Council's travel demand model networks for their respective years of implementation. *Destination 2030* Appendix 9, along with the Supplemental *Destination 2030* Project List, provide listings of all of the projects in the plan that were modeled for air quality purposes.

Modeling Assumptions

The conformity analysis of *Destination 2030* is based on the most current socioeconomic, travel and emissions information.

The conformity analysis is based on the most recent population and employment forecasts consistent with the 1998 MTP Progress Report, using national and regional data. The regional population and employment forecasts were updated in 1997. The land use allocations of these forecasts were updated in 2000. The next update of the regional population and employment forecasts is expected to be in late 2001. The land use allocations of these forecasts are updated annually.

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. All other assumptions in the analysis followed the Regional Council's travel demand modeling procedures, which are certified every three years by FHWA and FTA. These procedures are detailed in *Land Use and Travel Demand Models: Current Model Documentation*, prepared for the PSRC by Cambridge Systematics, Inc., June 30, 2001. The document is available through the Puget Sound Regional Council's Information Center (206) 464-7532.

The emissions for the CO and O_3 analyses were generated by output from the Regional Council's travel demand model and the EPA-required MOBILE5 emissions factor model. The model settings were coordinated with the Regional Council's air quality partner agencies. The most current vehicle registrations and I/M settings were used. The analysis for CO was performed using version MOBILE5b, with region-specific adjustment factors for the Tier II Gasoline/Sulfur Rule. The O_3 analysis was performed using version MOBILE5a, with nationwide adjustment factors for the Tier II Gasoline/Sulfur Rule. Both sets of adjustment factors were provided to the Regional Council by EPA.

The PM_{10} analysis was performed using the same procedures that were used by PSCAA to develop the emissions inventories in the PM_{10} maintenance plan. The analysis was performed using EPA's particulate emissions factor model, PART5, with the most current vehicle registrations. The mobile-source emissions totals were based on the total road dust and vehicle exhaust emissions for arterials and freeway road segments within the three respective PM_{10} maintenance areas, and for heavy trucks serving the ports of Seattle and Tacoma. Future Port truck volumes were derived from forecasts of total port activity. See Appendix 3B.

Results

The conformity analysis must show that the total regional emissions produced by projects in *Destination 2030*, 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 the a.m. peak, p.m. peak and off-peak periods. Emissions are calculated for both intrazonal trips and interzonal trips. The calculated emissions of individual links are then summed for each of the three time periods, which in turn are summed for the total daily emissions in each maintenance area.

Tables 1, 2 and 3 identify the motor vehicle emissions budget for each criteria pollutant, and display the *Destination 2030* analysis results. All emissions totals are given in metric tons per day for CO and O_3, and pounds per day for PM_{10}. The CO, O_3 and PM_{10} maintenance plans each identify motor vehicle emission budgets out to the year 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 2010 motor vehicle emissions budgets were carried forward in this analysis as the budgets for 2020 and 2030.

TABLE 1. Destination 2030 CO Analysis Results

	MAINTENANCE AREA VMT (MILES PER DAY)	CO (TONS PER DAY)
Emissions Budget	n/a	1,497.0*
2010	74,084,544	860.4
2020	82,257,088	718.5
2030	87,398,768	734.6

TABLE 2. Destination 2030 O_3 Analysis Results

	MAINTENANCE AREA VMT (MILES PER DAY)	VOCS (TONS PER DAY)	NOX (TONS PER DAY)
Emissions Budget	n/a	248.2*	263.0*
2010	89,212,336	163.7	206.4
2020	99,309,440	171.3	199.4
2030	109,163,632	201.8	217.0

TABLE 3. Destination 2030 PM_{10} Analysis Results

	KENT		DUWAMISH		TACOMA	
	VMT (MILES/DAY)	PM_{10} (LBS./DAY)	VMT (MILES/DAY)	PM_{10} (LBS./DAY)	VMT (MILES/DAY)	PM_{10} (LBS./DAY)
Emissions Budget	n/a	231.5*	n/a	844.4*	n/a	460.8*
2010	729,010	138.9	2,683,766	509.7	1,611,698	308.8
2020	777,858	140.1	2,744,899	488.7	1,800,226	320.7
2030	841,860	150.6	2,878,424	520.7	1,958,689	364.4

* 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 previous tables, the emissions levels from the projects and programs in *Destination 2030* for each of the analysis years are below the established daily motor vehicle emissions budgets for the criteria pollutants of CO, O_3 (consisting of the precursor pollutants, VOCs and NO_x) and PM_{10}, as identified in their respective maintenance plans. The analysis for VOCs and PM_{10} in Kent and Tacoma indicates that emissions will gradually increase from 2010 to 2030, while still remaining below their respective budgets. The analysis for CO, NO_x and PM_{10} in the Duwamish area indicates that emissions will decline between 2010 and 2020, and then gradually increase again by 2030. The CO and NO_x values can be explained by the fact that there will be a large decrease in the emissions of these pollutants from motor vehicles between 2010 and 2020 when new regulations and technologies take effect. Between 2020 and 2030 the 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. The explanation for why PM_{10} values in the Duwamish area follow a different pattern than PM_{10} values in the Kent and Tacoma areas lies in the fact that while PM_{10} emissions from motor vehicles will decrease from 2010 to 2020, the growth in VMT is large enough in the Kent and Tacoma industrial areas to result in an overall increase in emissions in these two areas. The growth in VMT in the Duwamish industrial area is more gradual, so the effect of lower emissions from motor vehicles between 2010 and 2020 results in a drop in overall emissions in this area during this time period. PM_{10} emissions from motor vehicles between 2020 and 2030 remains stagnant, while VMT continues to grow in all three areas, resulting in an increase in overall emissions during this time period.

Conclusions

The projects included in this analysis meet the conformity tests as identified in the federal and state conformity regulations. The analysis provides sufficient basis for the Regional Council to determine that the long-range metropolitan transportation plan, *Destination 2030*, conforms to the CO, O_3 and PM_{10} maintenance plans as required by the federal Clean Air Act and the state Clean Air Washington Act.

Appendix 3A. June 13, 2000 Scoping Meeting Summary

SCOPING MEETING: AIR QUALITY CONFORMITY ANALYSIS FOR THE 2001 UPDATE TO THE METROPOLITAN TRANSPORTATION PLAN — JUNE 13, 2000

MEETING SUMMARY

The meeting was convened by Puget Sound Regional Council staff with the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA) and the Washington State Departments of Ecology and Transportation to clarify the assumptions to be used and procedures to be followed in the process to conduct the air-quality conformity analysis for the 2001 Update to the Metropolitan Transportation Plan. Additionally, the meeting was intended to allow the Environmental Protection Agency (EPA), the Puget Sound Clean Air Agency (PSCAA) and 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 Parts 51 and 93) Conformity Rules.

Attendance: Paul Carr - Ecology; Janelle Hitch - WSDOT; John Anderson, Kwami Agyei - PSCAA; Vernon Mickelsen - FHWA; - FTA; Karen Richter, Larry Blain, Robin Rock, Kelly McGourty - Puget Sound Regional Council.

1. ***Call to Order***

   Kelly McGourty called the meeting to order and the attendees introduced themselves. Kelly said the purpose of the scoping meeting was to discuss and clarify the assumptions and procedures for the conformity analysis of the 2001 Update to the Metropolitan Transportation Plan (MTP) as required by state and federal laws.

2. ***Public Comment Period***

   An opportunity was provided for public comment. None was received.

3. ***Summary of Assumptions for Analysis***

   Larry Blain presented the summary of assumptions for the analysis. A handout was distributed summarizing all of the information presented.

   A. Projects Eligible for Regional TIP Modeling

      I. Candidate projects to be considered for air quality modeling include:
      - All federally funded non-exempt projects
      - WSDOT projects
      - Non-federally funded regionally significant projects and
      - Projects from the current TIP with major changes to project scope, design or timing.

      II. Criteria for Selecting Transportation Projects to be Modeled

      The criteria used for selecting which projects will be modeled include:
      - a project screening for functionally classified minor arterials and above (PSRC staff will determine the "modelability" of projects).
      - highway projects that result in new links, capacity changes on an existing link or change in average speed on existing link will be included in analysis.
      - PSRC staff will determine the modelability of non-highway projects and submit modelable projects for analysis.

Note: All projects must have an identified funding source or sources and must be consistent with VISION 2020 and the Metropolitan Transportation Plan to be included in the TIP and modeled for conformity.

B. Areas and Pollutants to be Analyzed

Larry reviewed the boundaries of the three types of nonattainment or maintenance areas in the region, and the types of pollutants to be tested for each area. The carbon monoxide (CO) maintenance area encompasses the federal urbanized area including Seattle, Everett and Tacoma. The ozone (O_3) maintenance area encompasses all of Pierce County, most of King County, and the southwestern portion of Snohomish County. The precursor pollutants of ozone, hydrocarbons (HC) and oxides of nitrogen (NO_x), will be individually tested. There are three small particulate matter nonattainment areas in the region: the Duwamish River Industrial area in Seattle, the Kent Valley area, and the Tacoma Tideflats area.

C. Conformity Tests

I. The test to be applied for carbon monoxide area: TIP vs. Emissions Budget

II. The test to be applied for the ozone area: TIP vs. Emissions Budget

III. The tests to be applied for the particulate matter area: TIP vs. 1990 Baseline
TIP vs. Emissions Budget

D. Emissions Budgets

The emissions budget identified in the Carbon Monoxide Maintenance Plan is the 1993 on-road emissions levels. The Ozone Maintenance Plan has separate on-road precursor emissions budget levels (NO_x and HC) for each analysis year between 1995 and 2010. 2010 emissions levels will be used for 2020 horizon year budget test. For the particulate matter SIP budget test, on-road emissions levels from 1991 SIPs will be used.

E. Analysis Years

The analysis years for carbon monoxide and ozone will be: 2000, 2010 and 2020 (the horizon year of the MTP). For particulate matter, 1990 (baseline year), 2000, 2010 and 2020 will be the analysis years.

F. Transportation Model Assumptions

Larry said the Regional Council's travel demand forecasts will be used, including the latest planning assumptions and based on the MTP as refined in 1998. He said the 2010 analysis will be based on the 6-year Action Strategy travel network. There have been no significant changes in transportation model assumptions since adoption of the maintenance plans. Recent refinements include modeling of park and ride lots, grade separations, and queuing at ferries.

G. Emissions Model Assumptions

Larry described the emissions model assumptions. For the CO and O_3 analyses, EPA's MOBILE5a model will be used, with settings obtained from the CO and O_3 Maintenance Plans. There will be no wintertime oxygenated fuels included and the vehicle fleet age mix is based on dynamic registration, which was used to develop the CO and O_3 Maintenance Plan emissions inventories. A discussion was held on using the vehicle fleet age mix as assumed in the Maintenance Plan, or using the existing vehicle fleet age mix which is slightly older. Analysis of the existing fleet based on information pro-

vided by Ecology indicates that even though the fleet is older, the actual emissions are comparable to the emissions predicted by Mobile5a for the fleet assumed for the Maintenance Plan. Therefore, it was decided to continue to use the vehicle fleet age mix as assumed in the Maintenance Plan, with documentation of the analysis just mentioned. For the PM_{10} analysis, the procedure used in previous TIP and MTP conformity analyses, which is consistent with the development of the Particulate Matter SIPs, will be used.

H. Procedures and Time Periods to be Analyzed

For carbon monoxide, ozone and particulate matter, daily estimates will be tested. These are the same as the maintenance plan and SIP inventories.

4. *Documentation for Public Review*

Documentation will be released for public review at the August 12, 1999 Transportation Policy Board meeting. Karen said the following documentation would be available for public review at the PSRC Information Center:

A. This summary of the June 7, 1999 Scoping Meeting.

B. Summaries of methodology and analysis.

C. Findings and conclusions.

5. *Overview of Schedule*

Karen gave a brief overview of the schedule for the major amendment to the 2000-2002 Regional TIP, including the conformity analysis, public review, and TIP adoption. Copies of the schedule were made available. The travel demand and air quality modeling will be conducted in July. Assuming that the initial findings are positive, the analysis results will be prepared and a conformity finding will be released for public review in early August. The Transportation Policy Board is scheduled to act on the proposed TIP and conformity analysis at its regularly scheduled September meeting, with Executive Board approval scheduled two weeks later. The TIP and conformity finding will then be transmitted for approval by the Governor. Final approval of the State TIP (and regional conformity finding) is expected in December or early January.

6. *Adjourn*

The meeting was adjourned at 11:00 a.m.

Appendix 3B. MOBILE5 and PART5 Input Parameters

The following files are included in this appendix: **MOBILE5A INPUT FILE FOR O_3 ANALYSIS**
MOBILE5B INPUT FILE FOR CO ANALYSIS
PART5 INPUT FILE FOR PM_{10} ANALYSIS

The Tier II Gasoline/Sulfur Rule adjustment factors supplied by EPA are applied to the outputs resulting from these MOBILE5 input files. For further information on these adjustment factors, please contact Kelly McGourty of the Puget Sound Regional Council at 206-464-7892.

MOBILE5A INPUT FILE FOR 2010 O_3 (1982 IM PROGRAM)

```
1       PROMPT  - no prompting, vertical format
Puget Sound (2010) Typical Day Summertime Ozone, orig I/M Program, 2000 reg/rates
1       TAMFLG  - M4.1 tampering rates
1       SPDFLG  - one speed for all vehicle types
1       VMFLAG  - M4.1 VMT mix
3       MYMRFG - user supplied reg. dist., M4.1 mileage accumulation rate
1       NEWFLG  - M4.1 basic exhaust emission rates
2       IMFLAG  - I/M program
1       ALHFLG  - no additional correction factors
1       ATPFLG  - no anti-tampering program
5       RLFLAG  - zero out refueling emissions
2       LOCFLG  - one local area parameter record for all scenarios
1       TEMFLG  - calculate exhaust temperatures
6       OUTFMT  - spreadsheet format
1       PRTFLG  - calculate factors for HC
(3      PRTFLG  - calculate factors for NOx)
1       IDLFLG  - no idle emission factors
3       NMHFLG  - calculate VOC hydrocarbons
1       HCFLAG  - print sum of VOC components
.045  .056  .056  .059  .055  .061  .055  .060  .051  .057  LDGV, MY 1-10
.054  .052  .047  .044  .039  .034  .027  .017  .012  .011  LDGV, MY 11-20
.010  .013  .011  .008  .067                                LDGV, MY 21-25
.034  .047  .045  .055  .042  .046  .058  .047  .042  .045  LDGT1, MY 1-10
.046  .050  .042  .038  .045  .036  .033  .023  .018  .019  LDGT1, MY 11-20
.017  .025  .022  .020  .104                                LDGT1, MY 21-25
.034  .047  .045  .055  .042  .046  .058  .047  .042  .045  LDGT2, MY 1-10
.046  .050  .042  .038  .045  .036  .033  .023  .018  .019  LDGT2, MY 11-20
.017  .025  .022  .020  .104                                LDGT2, MY 21-25
.029  .040  .031  .032  .025  .034  .032  .027  .024  .025  HDGV, MY 1-10
.029  .034  .031  .026  .027  .029  .028  .017  .014  .015  HDGV, MY 11-20
.015  .047  .057  .051  .280                                HDGV, MY 21-25
.045  .056  .056  .059  .055  .061  .055  .060  .051  .057  LDDV, MY 1-10
.054  .052  .047  .044  .039  .034  .027  .017  .012  .011  LDDV, MY 11-20
.010  .013  .011  .008  .067                                LDDV, MY 21-25
.034  .047  .045  .055  .042  .046  .058  .047  .042  .045  LDDT, MY 1-10
.046  .050  .042  .038  .045  .036  .033  .023  .018  .019  LDDT, MY 11-20
.017  .025  .022  .020  .104                                LDDT, MY 21-25
```

.067	.084	.052	.057	.049	.062	.052	.043	.039	.040	HDDV, MY 1-10
.057	.045	.039	.034	.034	.037	.028	.016	.017	.018	HDDV, MY 11-20
.017	.021	.015	.012	.063						HDDV, MY 21-25
.056	.066	.054	.043	.042	.036	.034	.034	.024	.020	MC, MY 1-10
.021	.569	.000	.000	.000	.000	.000	.000	.000	.000	MC, MY 11-20
.000	.000	.000	.000	.000						MC, MY 21-25

82 30 86 05 04 09 095 112 2222 2212 220. 1.20 999. I/M
p:\airquality\m5a\imdata.d
_____ 60. 92. 8.2 8.2 20 1 1 1 1 LAP
1 20 3.0 81.0 20.6 27.3 20.6 7 SCENARIO RECORDS
1 20 4.0 81.0 20.6 27.3 20.6 7 Puget Sound - (20)
1 20 5.0 81.0 20.6 27.3 20.6 7 Ozone - Typical Day
... Speeds from 2.5 to 65 mph
... in 1 mi. increments

IM record for 1993 IM area:
93 30 86 05 04 09 095 112 2222 2212 220. 1.20 999.

I/M record outside 1982 and 1993 IM area:
(none)

Changes to IM record for 2020:
82 (93) 30 96 15 04 09 095 112 2222 2212 220. 1.20 999.

Changes to IM record for 2030:
82 (93) 30 06 20 04 09 095 112 2222 2212 220. 1.20 999.

MOBILE5B INPUT FILE FOR 2010 CO (1982 IM PROGRAM)

1 PROMPT - no prompting, vertical format
Puget Sound (2010) Typical Day Wintertime CO, orig I/M Program, 2000 reg/rates
1 TAMFLG - M4.1 tampering rates
1 SPDFLG - one speed for all vehicle types
1 VMFLAG - M4.1 VMT mix
3 MYMRFG - user supplied reg. dist., M4.1 mileage accum. rate
1 NEWFLG - M4.1 basic exhaust emission rates
6 IMFLAG - I/M program
1 ALHFLG - no additional correction factors
1 ATPFLG - no anti-tampering program
5 RLFLAG - zero out refueling emissions
2 LOCFLG - one local area parameter for all scenarios
1 TEMFLG - calculate exhaust temperatures
6 OUTFMT - spreadsheet format
2 PRTFLG - CO factors only
1 IDLFLG - no idle emission factors
1 NMHFLG - only calculating CO factors
1 HCFLAG - only calculating CO factors

.045	.056	.056	.059	.055	.061	.055	.060	.051	.057	LDGV, MY 1-10
.054	.052	.047	.044	.039	.034	.027	.017	.012	.011	LDGV, MY 11-20
.010	.013	.011	.008	.067						LDGV, MY 21-25

.034 .047 .045 .055 .042 .046 .058 .047 .042 .045 LDGT1, MY 1-10
.046 .050 .042 .038 .045 .036 .033 .023 .018 .019 LDGT1, MY 11-20
.017 .025 .022 .020 .104 LDGT1, MY 21-25
.034 .047 .045 .055 .042 .046 .058 .047 .042 .045 LDGT2, MY 1-10
.046 .050 .042 .038 .045 .036 .033 .023 .018 .019 LDGT2, MY 11-20
.017 .025 .022 .020 .104 LDGT2, MY 21-25
.029 .040 .031 .032 .025 .034 .032 .027 .024 .025 HDGV, MY 1-10
.029 .034 .031 .026 .027 .029 .028 .017 .014 .015 HDGV, MY 11-20
.015 .047 .057 .051 .280 HDGV, MY 21-25
.045 .056 .056 .059 .055 .061 .055 .060 .051 .057 LDDV, MY 1-10
.054 .052 .047 .044 .039 .034 .027 .017 .012 .011 LDDV, MY 11-20
.010 .013 .011 .008 .067 LDDV, MY 21-25
.034 .047 .045 .055 .042 .046 .058 .047 .042 .045 LDDT, MY 1-10
.046 .050 .042 .038 .045 .036 .033 .023 .018 .019 LDDT, MY 11-20
.017 .025 .022 .020 .104 LDDT, MY 21-25
.067 .084 .052 .057 .049 .062 .052 .043 .039 .040 HDDV, MY 1-10
.057 .045 .039 .034 .034 .037 .028 .016 .017 .018 HDDV, MY 11-20
.017 .021 .015 .012 .063 HDDV, MY 21-25
.056 .066 .054 .043 .042 .036 .034 .034 .024 .020 MC, MY 1-10
.021 .569 .000 .000 .000 .000 .000 .000 .000 .000 MC, MY 11-20
.000 .000 .000 .000 .000 MC, MY 21-25
1 1 2 1
82 30 86 05 04 09 095 112 2222 2212 220. 1.20 999. I/M
p:\airquality\m5b\imdata4.d
_____ 34. 50.0 12.8 12.8 20 1 1 1 LAP
1 10 3.0 45.0 20.6 27.3 20.6 SCENARIO RECORDS
1 10 4.0 45.0 20.6 27.3 20.6
1 10 5.0 45.0 20.6 27.3 20.6 Puget Sound - (10)
... CO - Typical Day
... Speeds from 2.5 to 65 mph
... in 1 mi. increments

IM record for 1993 IM area:
93 30 86 05 04 09 095 112 2222 2212 220. 1.20 999.

I/M record outside 1982 and 1993 IM area:
(none)

Changes to IM records for 2020:
82 (93) 30 96 15 04 09 095 112 2222 2212 220. 1.20 999.

Changes to IM records for 2030:
82 (93) 30 06 25 04 09 095 112 2222 2212 220. 1.20 999.

PART5 INPUT FILE FOR 2010

2010, 2000 registrations, 2010 maintenance plan VMT mix and HDDT/Buses
2 :VMFLAG (alternate VMT mixes)
3 :MYMRFG (alternate mileage accumulation rates and registration)
2 :IMFLAG (Inspection and maintenance)
1 :RFGFLG (2 to apply reformulated gasoline effects, 1 not to)
3 :OUTFMT (indicates type of output format)
2 :IDLFLG (2 to print idle emissions, 1 not to print them)
2 :SO2FLG (2 to print Gaseous SO2 emissions, 1 not to print them)
1 :PRTFLG (determines which pollutants to print out)
2 :BUSFLG (determines which alternative bus cycles to print out

.045	.056	.056	.059	.055	.061	.055	.060	.051	.057	LDGV, MY 1-10
.054	.052	.047	.044	.039	.034	.027	.017	.012	.011	LDGV, MY 11-20
.010	.013	.011	.008	.067						LDGV, MY 21-25
.034	.047	.045	.055	.042	.046	.058	.047	.042	.045	LDGT1, MY 1-10
.046	.050	.042	.038	.045	.036	.033	.023	.018	.019	LDGT1, MY 11-20
.017	.025	.022	.020	.104						LDGT1, MY 21-25
.034	.047	.045	.055	.042	.046	.058	.047	.042	.045	LDGT2, MY 1-10
.046	.050	.042	.038	.045	.036	.033	.023	.018	.019	LDGT2, MY 11-20
.017	.025	.022	.020	.104						LDGT2, MY 21-25
.029	.040	.031	.032	.025	.034	.032	.027	.024	.025	HDGV, MY 1-10
.029	.034	.031	.026	.027	.029	.028	.017	.014	.015	HDGV, MY 11-20
.015	.047	.057	.051	.280						HDGV, MY 21-25
.056	.066	.054	.043	.042	.036	.034	.034	.024	.020	MC, MY 1-10
.021	.569	.000	.000	.000	.000	.000	.000	.000	.000	MC, MY 11-20
.000	.000	.000	.000	.000						MC, MY 21-25
.045	.056	.056	.059	.055	.061	.055	.060	.051	.057	LDDV, MY 1-10
.054	.052	.047	.044	.039	.034	.027	.017	.012	.011	LDDV, MY 11-20
.010	.013	.011	.008	.067						LDDV, MY 21-25
.034	.047	.045	.055	.042	.046	.058	.047	.042	.045	LDDT, MY 1-10
.046	.050	.042	.038	.045	.036	.033	.023	.018	.019	LDDT, MY 11-20
.017	.025	.022	.020	.104						LDDT, MY 21-25
.035	.040	.036	.040	.044	.063	.053	.053	.048	.055	2BHDDT, MY 1-10
.059	.049	.031	.044	.039	.043	.052	.037	.028	.015	2BHDDT, MY 11-20
.020	.024	.021	.014	.057						2BHDDT, MY 21-25
.035	.040	.036	.040	.044	.063	.053	.053	.048	.055	LHDDT, MY 1-10
.059	.049	.031	.044	.039	.043	.052	.037	.028	.015	LHDDT, MY 11-20
.020	.024	.021	.014	.057						LHDDT, MY 21-25
.035	.040	.036	.040	.044	.063	.053	.053	.048	.055	MHDDT, MY 1-10
.059	.049	.031	.044	.039	.043	.052	.037	.028	.015	MHDDT, MY 11-20
.020	.024	.021	.014	.057						MHDDT, MY 21-25
.035	.040	.036	.040	.044	.063	.053	.053	.048	.055	HHDDT, MY 1-10
.059	.049	.031	.044	.039	.043	.052	.037	.028	.015	HHDDT, MY 11-20
.020	.024	.021	.014	.057						HHDDT, MY 21-25
.030	.060	.059	.058	.057	.055	.054	.053	.052	.050	BUSES, MY 1-10
.050	.049	.047	.046	.045	.044	.044	.043	.042	.010	BUSES, MY 11-20
.008	.007	.006	.005	.025						BUSES, MY 21-25

1 2010 2 55.0 : region, year, speed cycle, speed
05.7 0.02 1 : unpaved silt%, ind. silt g/mˆ2, WHEELFLG
153 1 : number of precip. days
Seatl 2010, 2000 registration/rates
10.00 — Particle size cutoff
6000 : fleet average vehicle weight
0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"
1 2010 2 55.0 : region, year, speed cycle, speed
05.7 0.02 1 : unpaved silt%, ind. silt g/mˆ2, WHEELFLG
153 1 : number of precip. daysTaco1 2010, 2000 registration/rates
10.00 — Particle size cutoff
6000 : fleet average vehicle weight
0.6478 0.1689 0.0849 0.0175 0.0054 0.0042 : VMT MIX
0.0019 0.0107 0.0000 0.0139 0.0431 0.0018 : VMT MIX "Seat 1"
1 2010 2 55.0 : region, year, speed cycle, speed05.7 0.02 1 : unpaved silt%, ind. silt g/mˆ2, WHEELFLG
153 1 : number of precip. Days
Kent3 2010, 2000 registration/rates
10.00 — Particle size cutoff
6000 : fleet average vehicle weight
0.6552 0.1708 0.0858 0.0245 0.0055 0.0043 : VMT MIX
0.0019 0.0108 0.0000 0.0159 0.0232 0.0020 : VMT MIX "Seat 1"
1 2010 2 55.0 : region, year, speed cycle, speed
05.7 0.02 1 : unpaved silt%, ind. silt g/mˆ2, WHEELFLG
153 1 : number of precip. days
2010,55mph,Silt=0.02,cruis (Freeways)
10.00 — Particle size cutoff
6000 : fleet average vehicle weight
0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"
1 2010 2 35.0 : region, year, speed cycle, speed
05.7 0.40 1 : unpaved silt%, ind. silt g/mˆ2, WHEELFLG
153 1 : number of precip. days
2010,35mph,Silt=0.4,cruis (Highways)
10.00 — Particle size cutoff
6000 : fleet average vehicle weight
0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"
1 2010 2 35.0 : region, year, speed cycle, speed
05.7 1.45 1 : unpaved silt%, ind. silt g/mˆ2, WHEELFLG
153 1 : number of precip. days
2010,35mph,Silt=1.45,cruis (Collectors)
10.00 — Particle size cutoff
6000 : fleet average vehicle weight
0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"
1 2010 2 25.0 : region, year, speed cycle, speed
05.7 2.50 1 : unpaved silt%, ind. silt g/mˆ2, WHEELFLG

153 1 : number of precip. days
2010,35mph,Silt=2.5,cruis (Local)
10.00 — Particle size cutoff
6000 : fleet average vehicle weight
0.6440 0.1679 0.0843 0.0269 0.0054 0.0042 : VMT MIX
0.0019 0.0106 0.0000 0.0173 0.0205 0.0170 : VMT MIX "Seat 1"

ADDITIONAL INPUTS FOR PM_{10} EMISSION CALCULATIONS

	KENT	DUWAMISH	TACOMA
2010 PORT VMT			
	0	27364	16837
2020 PORT VMT			
	0	35544	24097
2030 PORT VMT			
	0	46170	28408
2010 VMT ADJUSTMENT FACTORS			
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
2020 AND 2030 VMT ADJUSTMENT FACTORS			
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
2010 PM2 PT EMISSION FACTORS (EXHAUST, BRAKE AND TIRE)			
	0.0520	0.0542	0.0586
	0.421	0.421	0.421
	0.004		
	0.059		
	0.143		
	0.206		
2020 AND 2030 PM_{10} EMISSION FACTORS (EXHAUST, BRAKE AND TIRE)			
	0.0463	0.0481	0.0512
	0.311	0.4311	0.311
	0.004		
	0.059		
	0.143		
	0.206