FINE PARTICLES (PM 2.5) STANDARDS AIR QUALITY CONFORMITY ASSESSMENT

Supplement to the Air Quality Conformity Determination of the 2005 Constrained Long Range Plan and FY2006-2011 Transportation Improvement Program for the Washington Metropolitan Region

December 21, 2005

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NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS

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I. INTRODUCTION

This report documents the results of the fine particles (PM2.5) standards air quality conformity assessment of the 2005 Constrained Long Range Plan (CLRP) and the FY2006-2011 Transportation Improvement Program (TIP). This supplements the technical report**,** Air Quality Conformity Determination Of The 2005 Constrained Long Range Plan And The FY2006-2011 Transportation Improvement Program For The Washington Metropolitan Region (October 19, 2005), which addressed carbon monoxide and the 8-hour ozone standard. As assessment criteria for the fine particles standards include the analysis of the same milestone years previously analyzed for the ozone and carbon monoxide standards (2002, 2010, 2020 and 2030), travel demand technical methods and results developed in that earlier work are applied directly to this analysis. Major differences associated with the fine particles conformity assessment include estimation of direct PM2.5 emissions and NOx emissions as a precursor to PM2.5, for a revised nonattainment geography (see Figure 1), on a yearly, instead of daily, basis. Tasks for this supplemental analysis included: translation of the previously reported annual average weekday travel (AAWDT) estimates into average daily (ADT) values by season, estimation of environmental inputs and PM2.5 direct and precursor NOx emissions rate outputs for each season, the subsequent calculation of emissions for each season, and tabulation to yearly totals.

II. BACKGROUND

On December 17, 2004 the Environmental Protection Agency (EPA) designated 224 counties, as well as the District of Columbia, that exceeded the health-based standards for fine particles (PM2.5) as nonattainment areas. PM2.5 standards refer to particulate matter less than or equal to 2.5 micrometers in diameter. The Washington, DC-MD-VA area (consisting of the Washington metropolitan statistical area, excluding Stafford County, Virginia, and Calvert County, Maryland) was designated nonattainment for PM2.5 (see map), and is required to attain clean air as soon as possible but no later than 2010.

As published in the January 5, 2005 Federal Register, these PM2.5 nonattainment designations became effective on April 5, 2005. Nonattainment areas are required by early 2008 to submit to EPA a state implementation plan (SIP) to define the expected methods for reducing the fine particulate matter level in the air and emissions of PM2.5 precursors. However, the new standards affect transportation conformity planning requirements immediately: areas have a 1 year grace period starting April 5, 2005 in which to demonstrate conformity of transportation plans and programs to the new standards. If a plan or TIP which conforms to the new standards is not in place (including both TPB and federal approvals) by April 5, 2006, the conformity status lapses.

Since EPA had not issued its necessary second set of PM2.5 transportation conformity regulations at the time of the TPB's annual plan / program update cycle, staff prepared a draft work scope for the air quality conformity assessment of the 2005 CLRP and FY2006-2011 TIP, to address only ozone season and winter carbon monoxide requirements. This scope was released for public comment in February and adopted by the TPB at its April 20, 2005 meeting. This timing required TPB staff to prepare a "supplemental" scope of work (Attachment A) for the PM2.5 component of the conformity assessment of the 2005 CLRP and FY2006 – 11 TIP. The TPB released that scope of work for public comment on June 15, 2005, and approved it along with response to comment at its July 20, 2005 meeting. This report documents the results of

performing those work activities and the air quality conformity findings.

III. WORK ACTIVITIES

Technical work activities for the supplemental conformity assessment of the 2005 CLRP and FY2006-2011 TIP included the preparation of direct PM2.5 and precursor nitrogen oxide (NOx) emissions inventories for the 2002, 2010, 2020, and 2030 analysis years. This involved use of the following technical inputs: Round 7.0 Cooperative Forecasts; the Version 2.1D Travel Demand Model utilizing this year's project submissions to the CLRP and TIP; EPA's Mobile6.2 Emissions Factor Model; and a refined Mobile Emissions Post-Processor using latest travel demand and mobile emissions planning assumptions. This report presents the results of the supplemental conformity analysis, as follows.

Travel Modeling Process

The travel demand estimation for AAWDT prepared in the ozone / carbon monoxide conformity assessment provided the starting point for this work. However, since estimates of annual travel and emissions are required for fine particles assessment, the application of seasonal travel adjustment factors was therefore required. Since seasonal travel totals have to include weekend travel as well as weekday travel, staff prepared adjustment factors to represent ADT occurring in each season of the year. The upper table in Exhibit 1 shows the AWDT VMT estimates for the PM2.5 nonattainment area for each of the analysis years; the lower table presents the seasonal adjustment factor necessary to develop ADT VMT for each season.

Emissions Factors

COG/TPB staff, in conjunction with COG Department of Environmental Programs staff and with the consultant assistance of E.H. Pechan and Associates, developed the PM2.5 direct and precursor NOx motor vehicle emissions factors through the use of EPA's Mobile6.2 emissions factor model. The development of these factors involved interaction with MWAQC's Technical Advisory Committee and its Emissions Inventory Work Group, in a series of meetings and conference calls over the August to October time period, to finalize the emissions factor modeling approach and to develop the necessary environmental inputs to EPA's Mobile6.2 emissions factor model. The basic approach, which initially considered application of hourly inputs of temperature and humidity, involved the use of seasonal average daily minimum / maximum temperatures and associated default humidity values.

Similarly, data periods of analysis under consideration included annual, seasonal and monthly. After a lengthy effort involving tests of different levels of aggregation, including task orders to TPB's consultant to modify the existing software which provides an interface between the Mobile model and TPB's emissions calculation software, it was finally decided to conduct the emissions factor analysis on a seasonal basis, consistent with the travel demand approach. Environmental data inputs to the modeling process are shown in Exhibit 2 for the 2002 and 2010 analysis years.

Exhibit 3 presents Mobile model output emissions rates for direct PM2.5, using District of Columbia data as an illustration. This table shows the component pollutants and rates, as well as

the total PM2.5 rates for 2002. Exhibit 4 shows how direct PM2.5 rates vary through time, as well as by season of the year. While Winter rates are noticeably higher than the other seasons, the rates show a significant decrease through time, primarily due to the impacts of having cleaner vehicles in the fleet. These gram / mile rates are shown in a bar chart, unlike the familiar line graphs seen with NOx, since they do not vary by vehicle speed.

Exhibit 5 shows precursor NOx rates through time; these steep reductions in emissions rates in the future are similar to the trends seen with direct PM2.5 and in previous analyses of NOx as a precursor pollutant to ozone. Exhibit 6 shows precursor NOx rates by season, which exhibit similar characteristics to direct PM2.5, i.e., higher Winter season rates.

Emissions Calculations

Emissions calculations are performed in a software package called the emissions 'postprocessor', which was modified by TPB staff to accommodate the new PM2.5 pollutants and geography, utilizing the seasonal approach. Once travel demand and emissions factors were developed they were applied in the emissions postprocessor to yield the direct PM2.5 emissions and precursor emissions, shown in Exhibits 7 and 8, respectively. Arrayed to show values by travel component, by season, through time and yearly totals, the tables indicate dramatic reductions through time in each component of travel. Emissions are also seen to vary by season, according to VMT changes and emissions factor changes occurring throughout the year. Documentation of the emissions calculations for each of these travel components is contained in Attachments C – E.

IV. EMISSIONS ANALYSES

As there are no mobile source emissions budgets for fine particles at this point, the relevant emissions test is that direct PM2.5 and precursor NOx emissions in each plan and program action scenario (forecast year) are not greater than base year 2002 emissions. As shown in the Exhibits 7 and 8 summary tables and graphically in Exhibit 9, this criterion is met handily for each analysis year.

V. SUMMARY

This report documents the technical methods and results of plan and program conformity analysis with respect to the fine particles standards. The analytical results described in this air quality assessment provide a basis for a determination by the TPB of conformity of the 2005 CLRP and the FY2006-2011 TIP, with the July 2004 and May 2005 transportation conformity regulations, and all other requirements of the Clean Air Act Amendments of 1990.

Following: Map
Exhibits 1-9
Attachments A-F

Washington DC-Maryland-Virginia
PM 2.5 Nonattainment Area

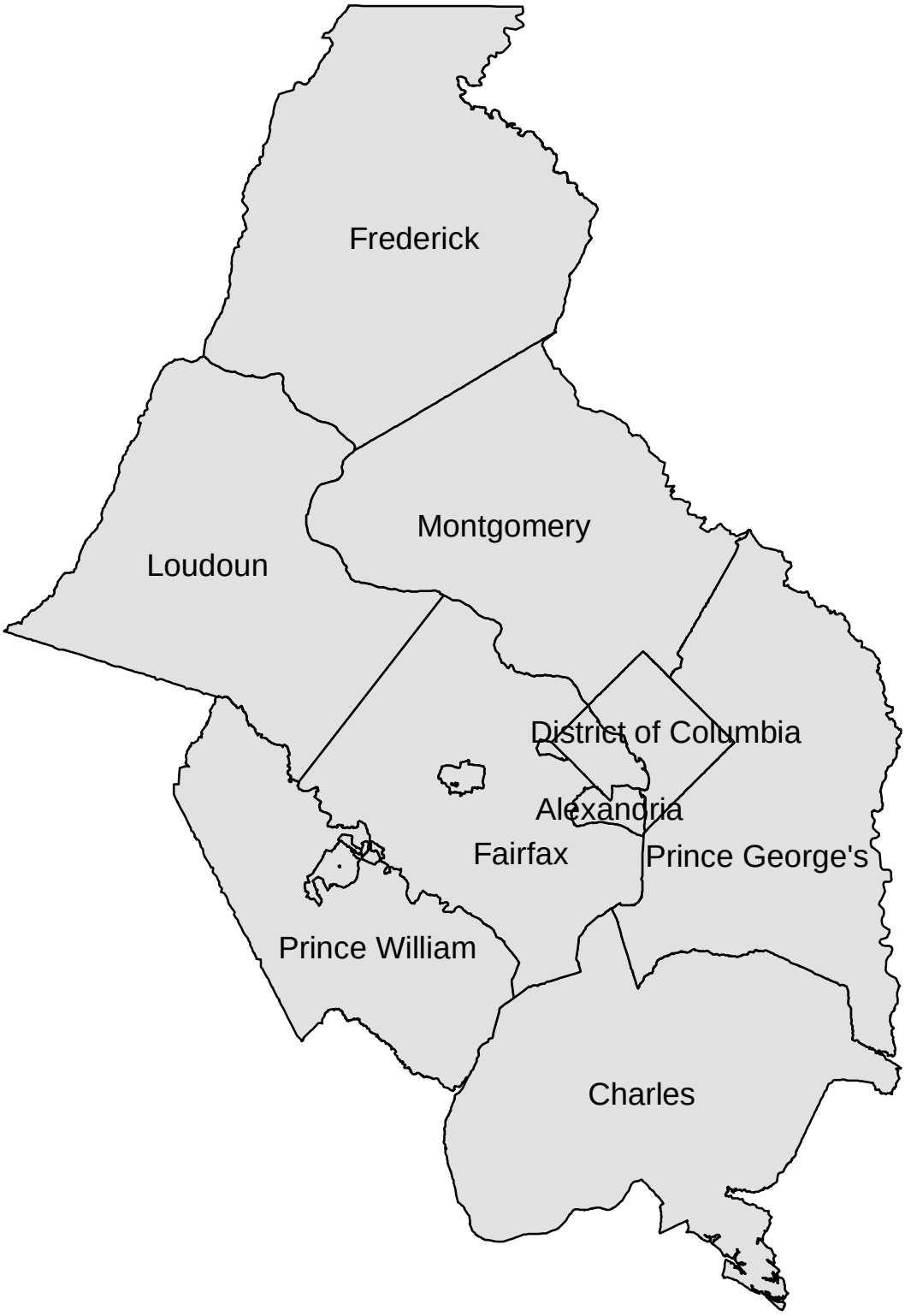

EXHIBIT 1

Travel Demand Summary

PM2.5 NonAttainment Modeled Area AAWDT Vehicle Miles Traveled (millions)

	2002	2010	2020	2030
VMT	107.5	121.0	136.6	147.5

Adjustment Factors to Convert AAWDT to ADT By Season

Season	Factor
Winter (Dec- Feb)	0.903
Spring (March-May)	0.957
Summer (June-Aug)	0.998
Fall (Sept-Nov)	0.944

EXHIBIT 2

2002 Inputs for Mobile 6.2 Particulate Matter 2.5 Modeling: Seasonal

Fuel program: 4*

						Sulfur				Oxy. Fuel	
Season	Months	Temperature (^{0}F)		RVP (psi)		Gasoline (ppm)	Diesel (ppm)			Ether. %	Ethanol %
		Min	Max	Regional	Humidity	Regional	DC	MD	Va		
Winter	Dec										
	Jan	27.2	44.1	12.9	Default	279-1000	324	302	330	1.5	3.5
	Feb										
Spring	Mar										
	Apr	45.7	66.1	6.7	Default	129-1000	326	308	344	2.1	N/A
	May										
Summer	Jun										
	Jul	66.7	84.7	6.7	Default	129-1000	329	315	357	2.1	N/A
	Aug										
Fall	Sep										
	Oct	49.5	67.5	12.9	Default	279-1000	326	308	344	1.5	3.5
	Nov										

2010 Inputs for Mobile 6.2 Particulate Matter 2.5 Modeling: Seasonal

Fuel Program:4*

						Sulfur		Oxy. Fuel	
Season	Months	Temperature (^{0}F)		RVP (psi)		Diesel (ppm)	Gasoline (ppm)	Ether. %	Ethanol %
		Min	Max	Regional	Humidity	Regional	Regional		
Winter	Dec								
	Jan	27.2	44.1	12.9	Default	43 ppm	30-80	1.5	3.5
	Feb								
Spring	Mar								
	Apr	45.7	66.1	6.8	Default	43 ppm	30-80	2.1	N/A
	May								
Summer	Jun								
	Jul	66.7	84.7	6.8	Default	11 ppm	30-80	2.1	N/A
	Aug								
Fall	Sep								
	Oct	49.5	67.5	12.9	Default	11 ppm	30-80	1.5	3.5
	Nov								

Temperature values from DEP summarized at National and Dulles Airports
Gasoline Sulfur from EPA guidance
Diesel Sulfur from EPA guidance
* Fuel program '4' is used due to Mobile6.2 program bug identified with use of fuel program '2S'

EXHIBIT 3

2002 Emission Rates for Direct PM

for the District of Columbia

Components of PM25		gm/mile
	Lead:	0.0000
	GASPM:	0.0054
	ECARBON:	0.0120
	OCARBON:	0.0060
	SO4:	0.0050
Total	**Exhaust PM:**	**0.0284**
	Brake:	0.0053
	Tire:	0.0023
	Total PM:	**0.0360**

Exhibit 4
DIRECT PM2.5 EMISSION RATES FOR DISTRICT OF COLUMBIA (MAJOR ROADS NETWORK)

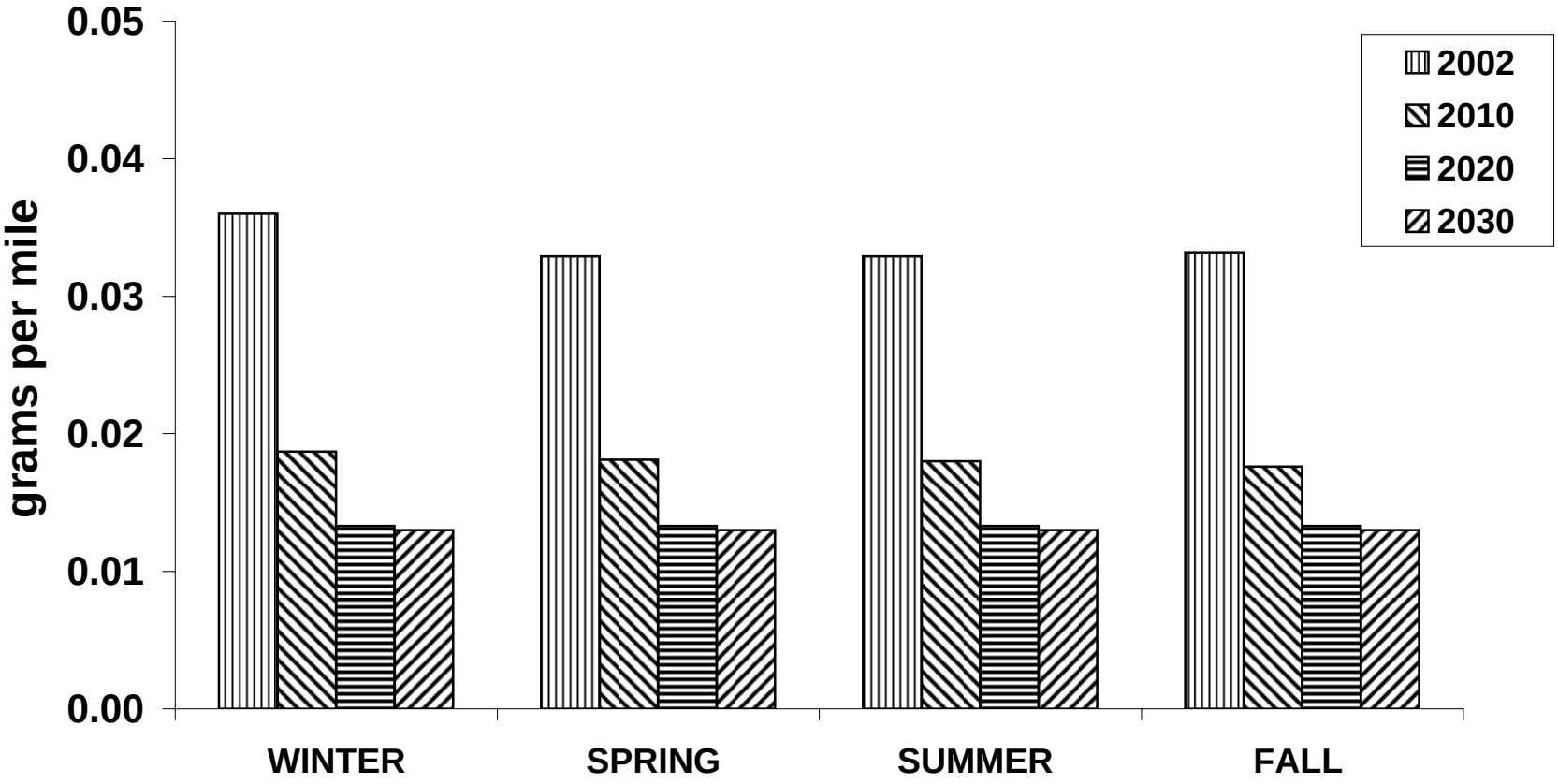

Exhibit 5
PRECURSOR NOx MOBILE6.2 RUNNING EMISSION RATES FOR DISTRICT OF COLUMBIA (SPRING SEASON)
FREEWAY

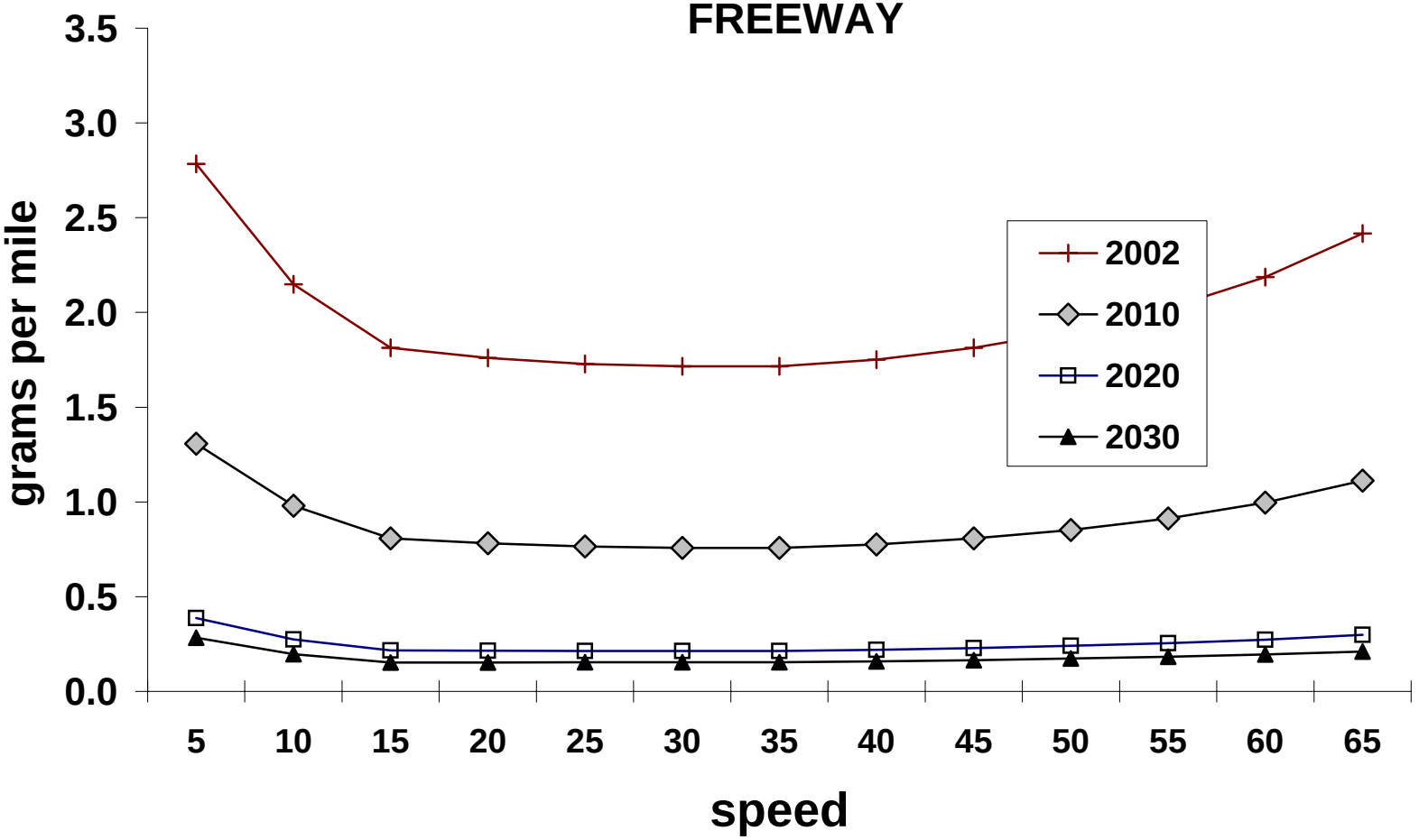

Exhibit 6
2002 SEASONAL PRECURSOR NOx MOBILE6.2 RUNNING EMISSION RATES FOR DISTRICT OF COLUMBIA
FREEWAY

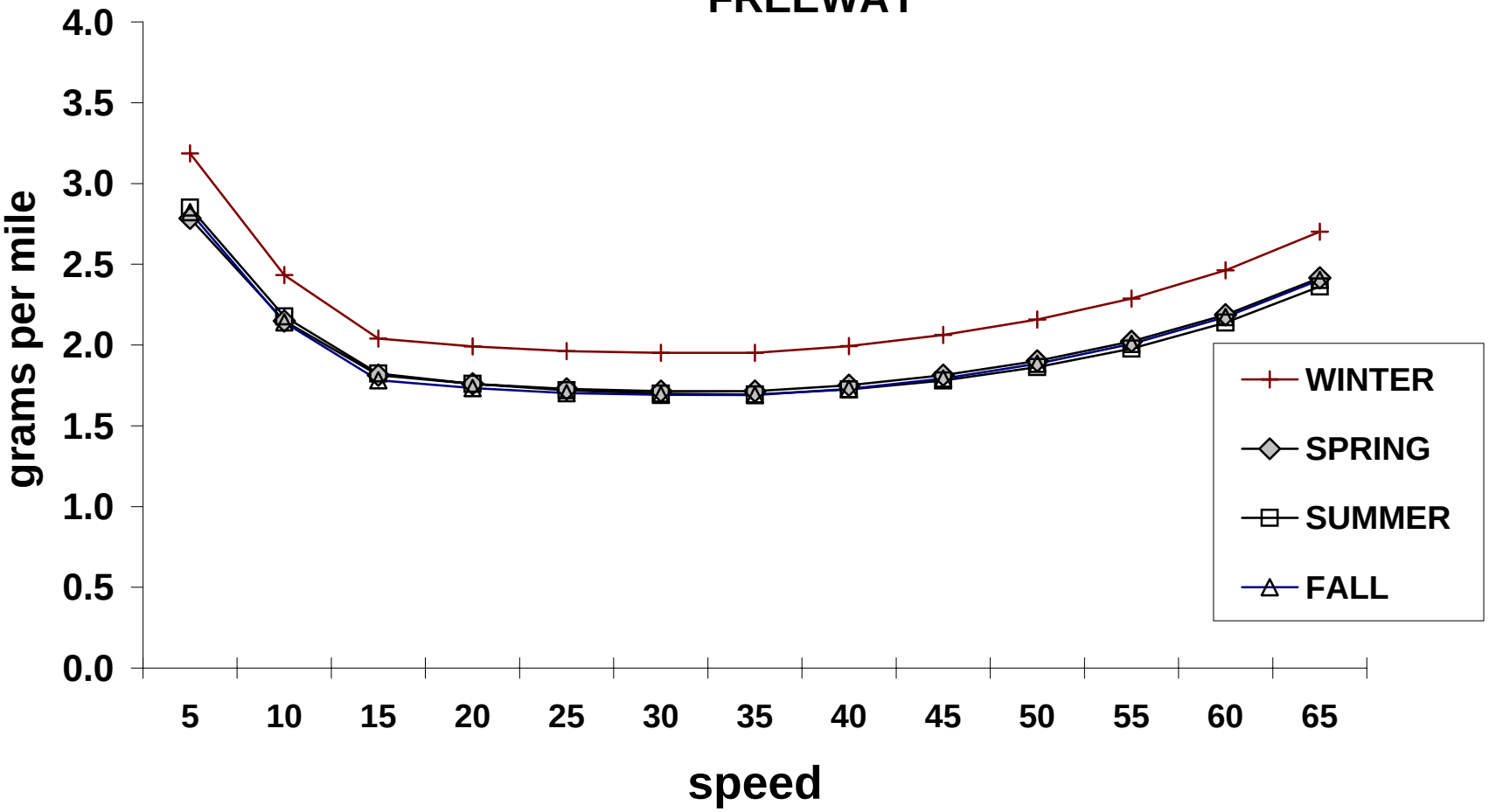

EXHIBIT 7

AIR QUALITY CONFORMITY SUMMARY TABLE

Direct PM2.5 Emissions

Mobile Source Emissions Inventories for 2005 CLRP and FY 2006-2011 TIP

(Tons)

			Direct PM2.5							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
WINTER	Major Roads	90	3.93	353.34	2.30	206.55	1.83	164.88	1.91	172.08
	Local Roads	90	0.17	15.66	0.12	11.16	0.12	11.16	0.13	12.06
	School Buses	58	0.34	19.64	0.06	3.60	0.02	1.37	0.02	1.13
	Transit Buses	90	0.27	23.87	0.04	3.80	0.02	1.92	0.02	1.57
	Auto Access	65	0.01	0.84	0.01	0.68	0.01	0.78	0.01	0.85
	Total (Daily)		4.72		2.53		2.01		2.10	
	SEASON TOTAL			413.35		225.78		180.11		187.69
SPRING	Major Roads	92	3.84	353.37	2.37	217.58	1.93	177.56	2.03	186.39
	Local Roads	92	0.17	15.27	0.13	12.05	0.13	12.24	0.14	12.88
	School Buses	58	0.33	18.90	0.06	3.47	0.02	1.36	0.02	1.13
	Transit Buses	92	0.26	23.64	0.04	3.78	0.02	1.94	0.02	1.60
	Auto Access	66	0.01	0.79	0.01	0.71	0.01	0.84	0.01	0.91
	Total (Daily)		4.60		2.61		2.12		2.22	
	SEASON TOTAL			411.98		237.59		193.93		202.91
SUMMER	Major Roads	92	4.02	369.38	2.45	225.40	2.02	185.38	2.11	194.49
	Local Roads	92	0.17	15.82	0.13	12.33	0.14	12.70	0.15	13.62
	School Buses	40	0.33	13.05	0.06	2.35	0.02	0.92	0.02	0.78
	Transit Buses	92	0.26	23.68	0.04	3.68	0.02	1.94	0.02	1.60
	Auto Access	66	0.01	0.81	0.01	0.73	0.01	0.86	0.01	0.94
	Total (Daily)		4.78		2.69		2.21		2.31	
	SEASON TOTAL			422.74		244.49		201.80		211.42
FALL	Major Roads	91	3.84	348.99	2.27	206.21	1.91	173.99	2.00	181.73
	Local Roads	91	0.17	15.65	0.13	11.56	0.13	12.01	0.14	12.74
	School Buses	58	0.28	16.51	0.05	3.16	0.02	1.22	0.02	1.13
	Transit Buses	91	0.23	21.30	0.04	3.35	0.02	1.78	0.02	1.58
	Auto Access	65	0.01	0.83	0.01	0.68	0.01	0.81	0.01	0.88
	Total (Daily)		4.54		2.49		2.10		2.19	
	SEASON TOTAL			403.28		224.96		189.81		198.07
	ANNUAL TOTAL			**1,651.35**		**932.82**		**765.65**		**800.09**

EXHIBIT 8

AIR QUALITY CONFORMITY SUMMARY TABLE

PM2.5 Precursor Emissions: NOx

Mobile Source Emissions Inventories for 2005 CLRP and FY 2006-2011 TIP

(Tons)

			NOx							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
WINTER	Major Roads-Starts	90	18.09	1627.83	7.95	715.32	3.56	320.49	2.76	247.95
	Major Roads-VMT	90	223.72	20135.07	107.47	9672.39	35.14	3162.24	26.75	2407.14
	Local Roads	90	11.06	995.04	5.69	512.01	2.44	219.60	2.06	185.40
	School Buses	58	5.63	326.26	3.61	209.25	0.69	39.96	0.27	15.93
	Transit Buses	90	6.30	566.79	4.22	379.88	1.15	103.55	0.34	30.45
	Auto Access	65	1.94	126.23	0.91	59.41	0.42	27.41	0.37	23.80
	Total (Daily)		266.73		129.85		43.40		32.54	
	SEASON TOTAL			23,777.22		11,548.26		3,873.25		2,910.66

			NOx							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
SPRING	Major Roads-Starts	92	15.34	1411.46	7.20	662.77	3.31	304.43	2.62	240.86
	Major Roads-VMT	92	209.27	19252.75	101.03	9294.30	33.98	3126.34	26.43	2431.28
	Local Roads	92	9.82	903.07	5.25	483.00	2.33	214.36	2.02	185.84
	School Buses	58	5.56	322.53	3.43	198.91	0.67	38.66	0.27	15.89
	Transit Buses	92	6.24	574.22	4.06	373.68	1.12	102.75	0.34	31.12
	Auto Access	66	1.65	108.62	0.82	54.33	0.40	26.16	0.35	23.20
	Total (Daily)		247.88		121.79		41.80		32.03	
	SEASON TOTAL			22,572.65		11,066.99		3,812.69		2,928.19

			NOx							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
SUMMER	Major Roads-Starts	92	13.85	1274.29	6.63	609.96	3.05	280.14	2.41	221.81
	Major Roads-VMT	92	214.72	19754.42	103.20	9494.31	34.86	3207.49	27.26	2507.46
	Local Roads	92	10.38	955.33	5.48	504.07	2.49	229.08	2.19	201.48
	School Buses	40	5.56	222.39	3.43	137.18	0.67	26.66	0.27	10.96
	Transit Buses	92	6.24	574.22	4.06	373.68	1.12	102.75	0.34	31.12
	Auto Access	66	1.61	106.23	0.81	53.14	0.39	25.96	0.35	23.26
	Total (Daily)		252.37		123.60		42.58		32.82	
	SEASON TOTAL			22,886.89		11,172.34		3,872.08		2,996.09

			NOx							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
FALL	Major Roads-Starts	91	15.93	1449.27	6.68	607.88	3.10	282.37	2.54	230.69
	Major Roads-VMT	91	208.43	18967.13	91.87	8359.81	32.43	2950.77	25.57	2326.60
	Local Roads	91	10.27	934.75	4.85	441.08	2.21	201.11	1.96	178.36
	School Buses	58	5.48	318.00	3.16	183.43	0.56	32.36	0.27	15.89
	Transit Buses	91	6.02	548.07	3.81	346.87	1.04	94.65	0.34	30.79
	Auto Access	65	1.75	113.43	0.76	49.24	0.37	24.32	0.34	22.11
	Total (Daily)		247.88		111.12		39.71		31.01	
	SEASON TOTAL			22,330.64		9,988.30		3,585.59		2,804.43

ANNUAL TOTAL			91,567.40		43,775.88		15,143.61		11,639.37

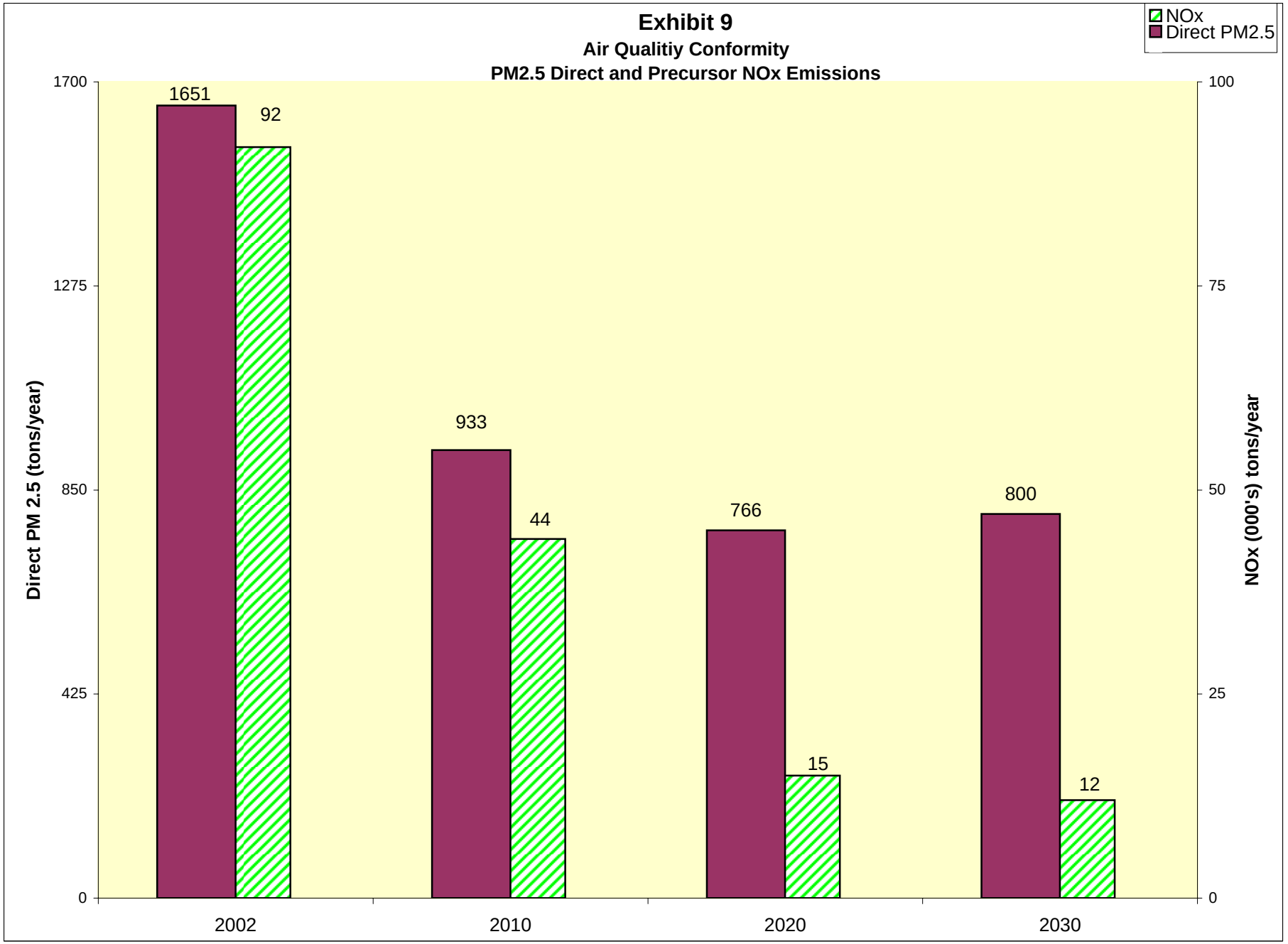
Exhibit 9
Air Qualitiy Conformity
PM2.5 Direct and Precursor NOx Emissions
NOx
Direct PM2.5
Direct PM 2.5 (tons/year)
NOx (000's) tons/year
1700
1275
850
425
0
100
75
50
25
0
1651
92
933
44
766
15
800
12
2002
2010
2020
2030

ATTACHMENT A

5-31-05

FINE PARTICLES (PM2.5) STANDARDS
AIR QUALITY CONFORMITY ASSESSMENT

SCOPE OF WORK

Supplement to the Air Quality Conformity Assessment of the 2005 Constrained Long Range Plan Amendments and FY2006-2011 Transportation Improvement Program

I. INTRODUCTION

On December 17, 2004 the Environmental Protection Agency (EPA) designated 224 counties, as well as the District of Columbia, that exceeded the health-based standards for fine particles (PM2.5) as nonattainment areas. PM2.5 standards refer to particulate matter less than or equal to 2.5 micrometers in diameter. The Washington, DC-MD-VA area (consisting of the Washington metropolitan statistical area, excluding Stafford County, Virginia, and Calvert County, Maryland) was designated nonattainment for PM2.5 and is required to attain clean air as soon as possible but no later than 2010.

As published in the January 5, 2005 Federal Register, these PM2.5 nonattainment designations became effective on April 5, 2005. Nonattainment areas are required by early 2008 to submit to EPA a state implementation plan (SIP) to define the expected methods for reducing the fine particulate matter level in the air and emissions of PM2.5 precursors. However, the new standards affect transportation conformity planning requirements immediately: areas have a one year grace period starting April 5, 2005 in which to demonstrate conformity of transportation plans and programs to the new standards. If a plan and TIP which conform to the new standards are not in place (including both TPB and federal approvals) by April 6, 2006, the conformity status lapses.

This scope of work presents an outline of the work tasks, including preparation of both direct particles and precursors, to address the conformity requirements of the fine particles standards. It supplements the ongoing TPB work activities directed at the 8-hour ozone and Winter carbon monoxide (CO) standards, to ensure that all requirements are addressed in performing the Air Quality Conformity Assessment of the 2005 CLRP and FY2006-2011 TIP.

II. REQUIREMENTS AND APPROACH

A. **Criteria** (See Exhibit 1)

As described in the 1990 Clean Air Act Amendments, conformity is demonstrated if transportation plans and programs:

1. Are consistent with most recent estimates of mobile source emissions,

2. Provide expeditious implementation of TCMs, and

3. Contribute to annual emissions reductions.

B. Approach

1. Analytical: The analytical approach outlined here supplements the current conformity assessment efforts underway to analyze the 2005 CLRP and FY2006-2011 TIP with respect to 8-hour ozone and Winter CO standards. Specifically, travel demand estimates for each analysis year being prepared as part of that work will be utilized in conjunction with the development and application of PM2.5 emissions rates to yield required PM2.5 emissions levels. (I.E. Round 7 Cooperative Forecasts, and all network inputs and technical methods approved by the TPB at its April 20, 2005 meeting, are therefore relevant to this PM2.5 analysis.) Emissions will be inventoried for yearly totals instead of on a daily basis.

2. Evaluation: Criteria and procedures for demonstrating conformity with respect to PM2.5 in the interim period before state implementation plans (SIPs) are filed differ from ozone or wintertime carbon monoxide assessments in that there are no existing budgets which can be applied. In a case such as this EPA provides two options for regional emissions analysis to be used until motor vehicle emissions budgets are established in the SIP. For both PM2.5 directly emitted particles and precursors, one of the following requirements must be met:

   Option 1. "The emissions predicted in the "Action" scenario are not greater than the emissions predicted in the "Baseline" scenario, and this can be reasonably expected to be true in the periods between the analysis years; or

   Option 2. The emissions predicted in the "Action" scenario are not greater than 2002 emissions."

   A SIP has not yet been prepared to inventory point, area and mobile categories to define the extent of the problem by source in the Washington area. However, since base year 2002 on-road mobile source direct and precursor PM2.5 emissions are necessary for the SIP, it is recommended that option 2, reductions from the base 2002 inventory, be utilized as the relevant regional emissions test for conformity. The MOBILE6.2 model will be used to generate emissions factors for PM2.5 direct particles and NOx precursors.

III. CONSULTATION

1. Execute TPB consultation procedures as outlined in the consultation procedures report adopted by the TPB on May 20, 1998.

2. Participate in meetings of MWAQC, its Technical Advisory Committee and its Conformity Subcommittee to discuss the scope of work activities, TERM development process, and other elements as needed; discuss at TPB meetings or forums, as needed, the following milestones:

   - Project solicitation
   - Scope of work
   - TERM proposals
   - Project submissions: documentation and comments
   - Analysis of TERMs, list of mitigation measures
   - Conformity assessment: documentation and comments
   - Process: comments and responses

IV. WORK TASKS

1. Prepare 2002 base conditions

   - Develop and apply Mobile6.2 emission factors for PM2.5 direct particles and NOx precursors
   - Calculate yearly (not daily) emissions for total PM2.5 and NOx precursors using latest seasonal traffic adjustments

2. Prepare 2010 emissions estimates

   - Develop and apply Mobile6.2 emission factors
   - Calculate emissions as above

3. Prepare 2020 emissions estimates

   - As in year 2010 tasks

4. Prepare 2030 emissions estimates

   - As in year 2010 tasks

5. Analyze results of above technical analysis

- Reductions from 2002 base
- With review by the Travel Management Subcommittee, the Technical Committee and the TPB, identify and recommend additional measures should the plan or program fail the regional emissions test in any year and incorporate

6. Assess conformity and document results in a report

- Document methods
- Draft conformity report
- Forward to technical committees and policy committees
- Make available for public and interagency consultation
- Receive comments
- Address comments and present to TPB for action
- Finalize report and forward to FHWA and FTA

V. SCHEDULE

The schedule for the execution of these work activities is shown in Exhibit 2, attached. This schedule shows the adoption of the PM2.5 conformity determination by the TPB in October 2005, which allows sufficient time for distribution, review and final approval by federal agencies in order to meet the April 5, 2006 deadline for avoiding a conformity lapse.

Exhibit 1

Conformity Criteria

All Actions at all times:

Sec. 93.110	Latest planning assumptions.
Sec. 93.111	Latest emissions model.
Sec. 93.112	Consultation.

Transportation Plan:

Sec. 93.113(b)	TCMs.
Sec. 93.118 or Sec. 93.119	Emissions budget or Emission reduction.

TIP:

Sec. 93.113(c)	TCMs.
Sec. 93.118 or Sec. 93.119	Emissions budget or Emission reduction.

Project (From a Conforming Plan and TIP):

Sec. 93.114	Currently conforming plan and TIP.
Sec. 93.115	Project from a conforming plan and TIP.
Sec. 93.116	CO and PM10 hot spots.
Sec. 93.117	PM10 control measures.

Project (Not From a Conforming Plan and TIP):

Sec. 93.113(d)	TCMs.
Sec. 93.114	Currently conforming plan and TIP.
Sec. 93.116	CO and PM10 hot spots.
Sec. 93.117	PM10 control measures.
Sec. 93.119	Interim emissions in areas without motor vehicle emissions budgets

---

Sec. 93.110 Criteria and procedures: Latest planning assumptions.

The conformity determination must be based upon the most recent planning assumptions in force at the time of the conformity determination.

Sec. 93.111 Criteria and procedures: Latest emissions model.

The conformity determination must be based on the latest emission estimation model available.

Sec. 93.112 Criteria and procedures: Consultation.

Conformity must be determined according to the consultation procedures in this subpart and in the applicable implementation plan, and according to the public involvement procedures established in compliance with 23 CFR part 450.

Sec. 93.113 Criteria and procedures: Timely implementation of TCMs.

The transportation plan, TIP, or any FHWA/FTA project which is not from a conforming plan and TIP must provide for the timely implementation of TCMs from the applicable implementation plan.

Sec. 93.114 Criteria and procedures: Currently conforming transportation plan and TIP.

There must be a currently conforming transportation plan and currently conforming TIP at the time of project approval.

Sec. 93.115 Criteria and procedures: Projects from a plan and TIP.

The project must come from a conforming plan and program.

Sec. 93.116 Criteria and procedures: Localized CO and PM10 violations (hot spots).

The FHWA/FTA project must not cause or contribute to any new localized CO or PM10 violations or increase the frequency or severity of any existing CO or PM10 violations in CO and PM10 nonattainment and maintenance areas.

Sec. 93.117 Criteria and procedures: Compliance with PM10 control measures.

The FHWA/FTA project must comply with PM10 control measures in the applicable implementation plan.

Sec. 93.119 Criteria and procedures: Interim emissions in areas without motor vehicle budgets

The FHWA/FTA project must satisfy the interim emissions test(s).

NOTE: See EPA's May 6, 2005 conformity regulations for the full text associated with each section's requirements.

Exhibit 2

PROPOSED PM2.5 STANDARD SUPPLEMENT TO THE YEAR 2005 CLRP AND FY 2006-2011 TIP AIR QUALITY CONFORMITY SCHEDULE

June 3, 2005	TPB Technical Committee Reviews Draft Work Scope for the Air Quality Analysis
*June 15, 2005	TPB Releases Draft Work Scope for Public Comment and Inter-Agency Review
*July 20, 2005	TPB Reviews Public Comments, Approves Draft Scope of Work
September 9, 2005	TPB Technical Committee Reviews Draft Conformity Report
September 15, 2005	Draft Conformity Report Released for Public Comment and Interagency Review
*September 21, 2005	TPB Receives Briefing on Draft Air Quality Conformity Determination
*October 19, 2005	TPB Reviews Public Comments on Draft Document, Approves Responses to Comments, and Adopts the PM 2.5Air Quality Conformity Determination

*TPB Meeting

WORK SCOPE ATTACHMENT A

POLICY AND TECHNICAL INPUT ASSUMPTIONS
PM2.5 STANDARDS CONFORMITY ASSESSMENT

1. Land Activity
   - Round 7 Cooperative Forecasts

2. Policy and Project Inputs

   - Highway, HOV and transit projects and operating parameters
   - Financially constrained project submissions advanced by the TPB on 4/20/2005

3. Travel Demand Modeling Methods

   - 'Version 2.1 D #50' Travel Model
   - All HOV facilities at HOV-3 in 2010
   - Transit "capacity constraint" procedures (2010 constrains later years)

4. Emission Factors

   - Emission factors methods as developed and applied in the SIP and in the 2004 CLRP conformity process: MOBILE6.2, 2002 registration data, VMT mix specific to each analysis year
   - Enhanced I/M in DC, MD, and VA, using state-specified standards
   - Refinements based upon EPA's Mobile6.2 guidance
   - PM2.5 factors for total directly emitted particles and NOx precursors

5. Emissions Modeling Methods / Credits

   - Updated post-processor methods to reflect EPA guidance associated with Mobile6.2 model release updates for local road speed profiles in rural areas
   - Yearly PM2.5 emissions (total PM2.5 and NOx precursors) using latest seasonal traffic adjustments
   - Offline emissions analyses

6. Conformity Assessment Criteria

   - 5/6/05 EPA's "*Transportation Conformity Rule Amendments for the New PM2.5 National Ambient Air Quality Standard: PM2.5 Precursors*"
   - Analysis years: 2010, 2020, 2030

ATTACHMENT B

Metropolitan Washington Air Quality Committee

Suite 300, 777 North Capitol Street, N.E. Washington , D.C. 20002-4239 202-962-3358 Fax: 202-962-3203

July 13, 2005

Honorable Phil Mendelson, Chair
National Capital Region Transportation Planning Board
777 North Capitol Street, NE
Washington, D.C. 20002

Dear Chair Mendelson:

Thank you for soliciting input on the scope of work for the Fine Particles (PM2.5) Standards Supplemental Air Quality Conformity Assessment of the 2005 CLRP and the FY2006-2011 TIP. According to EPA guidance, the Washington region is required to conduct a conformity determination for direct emissions and precursors of fine particulate pollution ($PM_{2.5}$) by April 6, 2006 to avoid a conformity lapse. As proposed in TPB's scope of work, the TPB intends to complete the $PM_{2.5}$ conformity determination as a supplement to the on-going work to assess conformity for the 8-hour ozone standard in October 2005.

EPA's Transportation Conformity Rule Amendments provide two options for conformity determination during the interim period prior to the SIPs development in the new $PM_{2.5}$ non-attainment areas and the establishment of mobile budgets for $PM_{2.5}$ pollution and its precursors. The two options are (1) build no greater than no-build, or (2) build no greater than 2002. The TPB proposes to use Option 2, the build no greater than 2002 budget test in this year's conformity analysis. We note that both options provide an interim test until the state air agencies develop mobile emissions budgets for $PM_{2.5}$ and its precursor pollutants. For this year's analysis, we support the TPB's choice of interim method because it makes the best use of available resources and supports the budget concept. For any $PM_{2.5}$ conformity analysis in the coming years of the interim period, MWAQC urges TPB and the state air agencies to work together to determine which option is most appropriate for conformity analysis.

For the current $PM_{2.5}$ conformity cycle, we support the TPB proposed approach of emissions analysis and conformity determination only for direct $PM_{2.5}$ and for precursor NOx. We are urging the TPB and the three state air agencies to work together to determine which of the other precursors of $PM_{2.5}$ (VOCs, SOx, ammonia etc.) contribute significantly for possible inclusion in the analysis for the next conformity cycle and beyond.

EPA is expected to release additional guidance on $PM_{2.5}$ conformity. The proposed scope of work may change when this new additional guidance becomes available later this year. The MWAQC Technical Advisory Committee is available to work with TPB staff for making any needed changes in the work scope and to develop any other new inputs required to complete the analysis.

Meeting the $PM_{2.5}$ standard is expected to require continuation of all mobile and non-mobile emission reduction commitments, and possibly new ones in the near future. States and local governments are urged to maintain their commitments to TERMs and other emission reduction measures, regardless of whether implementation of these measures is currently critical for conformity determination during the interim period.

Thank you for the opportunity to comment on the $PM_{2.5}$ conformity assessment scope of work. We look forward to working closely with you on making further improvements to the region's air quality to meet the new PM2.5 standard.

Sincerely,

Hon. T. Dana Kauffman, Chair
Metropolitan Washington Air Quality Committee

ATTACHMENT C

MEMORANDUM

TO: Files

FROM: Ronald Milone

DATE: November 10, 2005

SUBJECT: Mobile Emissions PM 2.5 Post Processor Description and Results

1.0 Introduction

This memorandum accompanies earlier documentation of the TPB mobile emissions post processor[1] and describes a newly developed process for estimating the amount of fine particulates (PM2.5) generated by mobile sources. The PM2.5 emissions post processor involves a series of TP+ scripts that are quite similar, and in some cases, identical to the existing process used to calculating mobile emissions in the TPB's annual Conformity Determination work. Like the existing post processor, the PM2.5 post processor combines EPA Mobile6-based emission rates with network link volumes and trip tables generated by the regional travel model. However, the PM2.5 post processor is different in the pollutants considered, the development of the emission rates, and the treatment of seasonal VMT adjustments.

The existing post processor addresses VOC, CO, and NOx pollutants. The Mobile6 based emission rates associated with these pollutants are developed on the basis of average seasonal conditions. VOC and NOx rates are reflective of a 'worst-case' condition during the ozone (summertime) season while CO rates are associated with a 'worst-case' wintertime condition. Since the network VMT generated by the travel model reflects average annual weekday traffic (AAWDT), network link volumes are factored to reflect weekday conditions for the time of year that is appropriate for the emissions calculation. The post processor is designed to calculate emissions using average *seasonal* weekday travel (ASWDT). With that said, the following distinguishing features of the PM2.5 post processor can be made.

1) Mobile6-based emission rates supporting the PM2.5 post processor relate to PM2.5 and NOx emissions only. NOx emissions are considered in the overall PM2.5 calculation since they indirectly contribute to particulate levels in the atmosphere. The PM2.5 rates currently generated by the Mobile model are VMT-based while NOx emissions are associated with trip-starts as well as miles traveled.

2) The PM2.5 post processor ultimately produces an *annualized* estimate of PM2.5 and NOx emissions for the Washington, D.C. MSA. The annual tonnage is estimated by first computing the *average daily* emissions on a seasonal basis. The daily emission result is then multiplied by the number of days of each respective season. Calculating emissions on a seasonal basis therefore requires the provision of seasonal PM2.5/NOx emission

[1] See 9/16/05 Memorandum from Milone to Files on the subject: Mobile Emissions Post Processor Description and Results.

rates from Mobile6, and network link VMT that reflects average seasonal travel for each season of the year. Table 1 lists VMT factors that are used to convert AAWDT volume to average daily seasonal traffic (ASDT). The number of days in each season is also displayed.

Table 1: Seasonal Parameters Used in the PM2.5 Emission Calculation

Season	Months	AAWDT to ASDT Factor	No. of Days
Winter	December – February	0.9028	90
Spring	March – May	0.9570	92
Summer	June-August	0.9984	92
Fall	September– November	0.9445	91

3) The PM2.5 reporting is based on a modified definition of the Washington MSA area with respect to earlier reporting. The PM2.5 MSA report is based on a ten-jurisdiction area comprised of the District of Columbia, Montgomery County, Prince George's County, Arlington County, the City of Alexandria, Fairfax County, Loudoun County, Prince William County, Frederick County, and Charles County. Previous MSA reports included the above jurisdictions with Stafford and Calvert Counties added.

2.0 Mobile6 Emission Rate Processing

PM2.5 and NOx emission rates used in the PM2.5 post processor are prepared on a county-specific basis, as shown Table 2. The table indicates that emission rates are explicitly modeled (using Mobile6) for 16 of the 27 jurisdictions. The remaining 11 jurisdictions are assigned 'borrowed' rates from neighboring modeled jurisdictions.

The Mobile6 model generates PM2.5 and NOx rates by jurisdiction in separate batch executions. PM2.5 Mobile6 listing files are produced for each of the 16 modeled jurisdictions. Each listing contains emission rate summaries for 8 scenarios: stabilized network rates by season (Winter, Spring, Summer, and Fall), and stabilized local road rates by season. The PM2.5 emission rates generated by Mobile6 do not vary by speed, in contrast to NOx rates which are sensitive to highway speed. The emission rate listings are processed by a Fortran program (M6RATESPM.EXE) so that PM rates are consolidated onto a machine readable text file. A single file is created for each jurisdiction and is assigned a special name that is referenced by the batch file (Seasonal_Emiss.bat) that executes the post processor.

Since NOx emission rates vary by operating mode and by speed, the number of Mobile6 seasonal emission scenarios is considerably larger than the PM2.5 scenarios. Table 3 indicates that 716 Mobile6 scenarios are executed, resulting in a lengthy listing file for each modeled jurisdiction. Another program named M6RATESS.EXE is used to convert each listing into six machine readable files containing seasonal NOx rates for stabilized network arterials, stabilized network freeway non-ramps, stabilized freeway ramps, local hot and cold starting rates, local stabilized rates, and stabilized/local arterial rates. All files contain per-mile rates by speed (if relevant) that are arrayed by season (Winter, Spring, Summer, and Fall). The cold/hot starting rates, however, are converted into per-trip rates. The six files are assigned special names that are referenced by

the batch file that executes the post processor. The reader should consult the above referenced 9/16/05 memorandum for computation details of the M6RATESS program (which are identical to those of the documented M6RATES program).

Table 2: Jurisdictional Emission Areas

Emission Area System Number	Jurisdiction / External Area	File-name code	MSA Member Yes/No	Mobile Rates Modeled/Borrowed
1	Washington, DC	Dc	Yes	Modeled
2	Montgomery County	Mc	Yes	Modeled
3	Prince George's County	Pg	Yes	Modeled
4	Howard County	-	No	Borrowed (Prince George's Co.)
5	Anne Arundel County	-	No	Borrowed (Prince George's Co.)
6	Carroll County	-	No	Borrowed (Prince George's Co.)
7	Baltimore Area Externals	-	No	Borrowed (Prince George's Co.)
8	Calvert County	Ca	Yes	Modeled
9	Charles County	Ch	Yes	Modeled
10	Frederick County	Fr	Yes	Modeled
11	Frederick Co. Externals	-	No	Borrowed (Frederick Co.)
12	Arlington	Ar	Yes	Modeled
13	Fairfax County	Fx	Yes	Modeled
14	Loudoun County	Ld	Yes	Modeled
15	Prince William County	Pw	Yes	Modeled
16	Stafford County	St	Yes	Modeled
17	City of Alexandria	Al	Yes	Modeled
18	St. Mary's County	Sm	No	Modeled
19	Washington Co. Externals	We	No	Modeled
20	Clarke County	Cl	No	Modeled
21	Fauquier County	-	No	Borrowed (Clarke Co.)
22	Jefferson Co, WVA	-	No	Borrowed (Clarke Co.)
23	Western External Area	-	No	Borrowed (Clarke Co.)
24	Spotsylvania County	Sp	No	Modeled
25	King George County	-	No	Borrowed (Spotsylvania Co.)
26	City of Fredericksburg	-	No	Borrowed (Spotsylvania Co.)
27	Southern External Area	-	No	Borrowed (Spotsylvania Co.)

Table 3: Sequence of NOx Emission Mobile Scenarios Generated for each Jurisdiction

MOBILE6 'Scenarios'	Operating Mode	Facility Type	Speed Specifications
Winter: 1- 65	Stabilized	Arterial	1 to 65 mph in 1 mph increments
66-130	Stabilized	Freeway, Non-Ramp	1 to 65 mph in 1 mph increments
131	Stabilized	Freeway Ramp	Single speed / 35.0 mph
132	Cold	Local	Single speed / 12.9 mph
133	Hot	Local	Single speed / 12.9 mph
134	Stabilized	Local	Single speed / 12.9 mph
135-179	Stabilized	Arterial(w/ Rural VMT Mix)	1 to 45 mph in 1 mph increments
Spring: 180-244	Stabilized	Arterial	1 to 65 mph in 1 mph increments
245-309	Stabilized	Freeway, Non-Ramp	1 to 65 mph in 1 mph increments
310	Stabilized	Freeway Ramp	Single speed / 35.0 mph
311	Cold	Local	Single speed / 12.9 mph
312	Hot	Local	Single speed / 12.9 mph
313	Stabilized	Local	Single speed / 12.9 mph
314-358	Stabilized	Arterial(w/ Rural VMT Mix)	1 to 45 mph in 1 mph increments
Summer: 359-423	Stabilized	Arterial	1 to 65 mph in 1 mph increments
424-488	Stabilized	Freeway, Non-Ramp	1 to 65 mph in 1 mph increments
489	Stabilized	Freeway Ramp	Single speed / 35.0 mph
490	Cold	Local	Single speed / 12.9 mph
491	Hot	Local	Single speed / 12.9 mph
492	Stabilized	Local	Single speed / 12.9 mph
493-537	Stabilized	Arterial(w/ Rural VMT Mix)	1 to 45 mph in 1 mph increments
Fall : 538-602	Stabilized	Arterial	1 to 65 mph in 1 mph increments
603-667	Stabilized	Freeway, Non-Ramp	1 to 65 mph in 1 mph increments
668	Stabilized	Freeway Ramp	Single speed / 35.0 mph
669	Cold	Local	Single speed / 12.9 mph
670	Hot	Local	Single speed / 12.9 mph
671	Stabilized	Local	Single speed / 12.9 mph
672-716	Stabilized	Arterial(w/ Rural VMT Mix)	1 to 45 mph in 1 mph increments

Thus, the PM2.5 post processor requires 112 emission rate files containing seasonal emission rates: 16 PM2.5 emission rate files (one for each modeled jurisdiction) and 96 NOx emission rate files (6 rate files for each of the 16 jurisdictions). Table 4 describes the files that are developed for each jurisdiction as inputs to the PM2.5 post processor.

Table 4: Emission Rates PM2.5 Post Processor Input File Descriptions

Filename	File Description	Notes
M6<Yr>PM<Jr>.N_L	Stabilized/PM Netwok/Local rates	A one-line text file containing nine items: a speed value and 8 PM2.5 rate values(gm./mi): network rates by season (Win.,,Spr.,,Sum.,Fall) and local rates by season (Win.,,Spr.,,Sum.,Fall)
M6<Yr>Nx<Jr>.R_A	Stabilized/Arterial Running NOx rates	A 65-line text file containing five items: speed, NOx rates (all gm/mi) by season (Win.,,Spr.,,Sum.,Fall).
M6<Yr>Nx<Jr>.R_F	Stabilized/Freeway non-ramp Running NOx rates	A 65-line text file containing five items: speed, NOx rates (all gm/mi) by season (Win.,,Spr.,,Sum.,Fall).
M6<Yr>Nx<Jr>.RAM	Stabilized/Freeway ramp Running NOx rates	A one-line text file containing five items: speed, NOx rates (all gm/mi) by season (Win.,,Spr.,,Sum.,Fall).
M6<Yr>Nx<Jr>.STT	Cold/Hot start rates	A one-line text file containing five items: speed, NOx Cold start rates rates (all gm/trip) by season (Win.,,Spr.,,Sum.,Fall), and Hot start rates by season (Win.,,Spr.,,Sum.,Fall).
M6<Yr>Nx<Jr>.LCL	Stabilized/Local Running NOx rates	A one-line text file containing five items: speed, NOx rates (all gm/mi) by season (Win.,,Spr.,,Sum.,Fall).
M6<Yr>Nx<Jr>.R_R	Stabilized/Arterial Running/Rural NOx rates	A 45-line text file containing five items: speed, NOx rates (all gm/mi) by season (Win.,,Spr.,,Sum.,Fall).

Note: <Yr> relates to year, e.g., '02', '10', '30' etc./ <Jr> relates to a two-digit juris code(see Table 2)

5.0 PM2.5 Post-Processor Program Steps

The PM2.5 post processor may be executed with the provision of: 1) travel demand output files, 2) emission rate files by jurisdiction as described above, and 3) a small text file containing jurisdiction level VMT information. The travel demand output files include the final iteration loaded highway network (I6HWY.NET) and three vehicle trip tables corresponding to the AM, PM, and off peak periods (I6AM.VTT, I6PM.VTT, I6OP.VTT). The jurisdictional VMT file (Base_Juris_VMT.txt) is a pre-existing file containing base year estimates of network-based VMT, local (or off-network) VMT, and the estimated proportion of network VMT that is urban and rural. This information is used to develop future year local VMT that is urban and local. All VMT information corresponds only to jurisdictions within the MSA as defined above.

The TP+ scripts used to execute the PM2.5 post-processor are described below in order of execution. The computations are identical to those documented in the above referenced 9/16/05 memorandum, except that:

- VOC and CO emissions generation has been removed
- PM emissions generation has been added
- The batch file executing the post processor has been modified so that it executes four times, for each modeled season

- The summary routines have been modified so that *seasonal* emission totals are listed out at jurisdiction level and at the MSA level, in addition to *daily* emission totals.

The five steps are summarized below. (Associated TP+ script names are in parenthesis):

1) Trip Table Formatting (AQTRIPS.S): AM, PM, and off-peak trip tables produced by the travel demand model are read. The program produces zonal trip-ends for each of the three time periods. It also produces a file containing the proportion of daily vehicle trips from/to each of the 27 emission areas. Since the trip proportions are developed with daily trips, the proportion in the *i/j* direction is generally the same as that in the *j/i* direction.

2) Time-of-Day Trip-Ends Program (ZONESPRD.S): The program reads the zonal origins and destinations, described above, and apportions them among discrete hourly periods.

3) VMT Formating Program (Pre_Local.S): The program summarizes modeled VMT at the jurisdiction level and writes a summary file to be used in the LOCAL.S program.

4) Time-of-Day VMT and speeds program (PEAK_SPREAD_Seasonal_Nx.S): The program reads the AM, PM, and off-peak network link volumes produced by the travel demand model. It produces hourly volumes, VMT, and restrained speed for each highway link. The hourly VMT and highway speeds are sensitive to seasonal adjustment factors.

5) Running Emissions Program (RUNNING_Seasonal_Nx.S): The program computes hot stabilized emissions on a link-by-link and hour-by-hour basis. It reads 1) the hourly link VMT and highway speed files developed above, 2) MOBILE6-based running emission rates which are provided on the basis of speed, and 3) the county level trip proportions file. PM2.5 and NOx running emissions result from the program.

6) Start/Soak Emissions Program (STRT_SKR_Seasonal_Nx.S): The program applies emission rates to the trip- ends to compute start-up and soaking emissions on a zone-by-zone and hour-by-hour basis. The program reads: 1) hourly trip-ends, 2) the MOBILE6-generated cold/hot starting rates, and 3) the county-level trip proportions file. NOx starting emissions result from the program. Note that trip tables are not affected by seasonal adjustments.

7) Local Emissions Program (LOCAL_Seasonal_Nx.S): The program computes hot stabilized emissions on a link-by-link and hour-by-hour basis. It reads 1) a file containing forecasted local/urban and local/rural VMT at the jurisdiction level and 2) PM2.5 and Arterial NOx stabilized rates specially developed for local roads. PM2.5 and NOx rates are produced.

A batch file (Seasonal_Emiss.Bat) is normally used to facilitate the execution the above scripts in a 'command prompt' window. The batch file defines the input file locations, defines global environment variables that are referenced by the scripts (the modeled year, the seasonal VMT adjustment, the number of days in each season, and text labels), and then executes the scripts. After executing steps 1-3, steps 4-7 are excecuted four times, i.e., for each of the four seasons. The batch file ultimately produces three small text files containing jurisdiction level running,

starting, and local emissions at the jurisdiction and MSA levels, by season (Winter, Spring, Summer, and Fall). The files are named:

- **<year>_running.txt**
- **<year>_strt_skr.txt**
- **<year>_local.txt**

The following attachments include program and script listings for the procedures discussed above.

Attachment 1
- M6RatesS Program Files
- M6RatesS.f90
- M6RateS.ctl

Attachment 2
- M6RatesPM Program Files
- M6RatesPM.f90
- Run_M6RatesPM.bat

Attachment 3
- Post Processor Batch File & TP+ Scripts
- Seasonal_Emiss.Bat
- AQTRIP.S
- ZONESPRD.S
- Pre_Local.S
- Peak_Spread_Seasonal_Nx.S
- Running_Seasonal_Nx.S
- Strt_Skr_Seasonal_Nx.S
- Local_Seasonal_Nx.S

Attachment 4
- Example Post Processor Output Listings
- 2002_Strt_Skr.txt
- 2002_Running.txt
- 2002_Local.txt

Attachment 1

M6Rates Program Files

M6RatesS.f90

```
          program M6RATESS
! ---------------------------------------------------------------------
!      compile command:            LF95    m6ratesS.f90
!      program execution command:  m6ratesS ?????.ctl
! ---------------------------------------------------------------------

! corrections made based on comments from m mullen(E.H. PECHAN)10/29/02


! This program is used to read a Mobile6 listing and to compute/write
! out 'final' running and start-up emissions used in MWCOG's
! mobile emissions calculation process.  This program is designed
! to read SEASONAL Mobile listing
!
! The Mobile6 Listing file MUST be in Mobile5b Format
! The sequence of scenarios MUST be as follows:
!
!                   (START)
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Winter
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 1
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Spring
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 2
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Summer
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 3
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Fall
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 4
!      .
!      .
!      .
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 65.0   Season: Winter
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 257
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 65.0   Season: Spring
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 258
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 65.0   Season: Summer
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 259
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 65.0   Season: Fall
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 260
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Winter
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Non-Ramp     SCENARIO: 261
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Spring
!* File 1, Run 1, Scenario 262.
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Non-Ramp     SCENARIO: 262
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Summer
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Non-Ramp     SCENARIO: 263
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Fall
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Non-Ramp     SCENARIO: 264
!      .
!      .
!      .
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 65.0   Season: Winter
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Non-Ramp     SCENARIO: 517
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 65.0   Season: Spring
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Non-Ramp     SCENARIO: 518
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 65.0   Season: Summer
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Non-Ramp     SCENARIO: 519
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 65.0   Season: Fall
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Non-Ramp     SCENARIO: 520
!
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 34.6   Season: Winter
!*FV FILE: FV4.FV     OPMODE: Stable       FACILITY: Fwy Ramp     SCENARIO: 521
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 34.6   Season: Spring
!*FV FILE: FV4.FV     OPMODE: Stable       FACILITY: Fwy Ramp     SCENARIO: 522
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 34.6   Season: Summer
!*FV FILE: FV4.FV     OPMODE: Stable       FACILITY: Fwy Ramp     SCENARIO: 523
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 34.6   Season: Fall
!*FV FILE: FV4.FV     OPMODE: Stable       FACILITY: Fwy Ramp     SCENARIO: 524
!
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Winter
!*FV FILE: FV3.FV     OPMODE: Cold         FACILITY: Local        SCENARIO: 525
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Winter
!*FV FILE: FV3.FV     OPMODE: Hot          FACILITY: Local        SCENARIO: 526
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Winter
!*FV FILE: FV3.FV     OPMODE: Stable       FACILITY: Local        SCENARIO: 527
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Spring
!*FV FILE: FV3.FV     OPMODE: Cold         FACILITY: Local        SCENARIO: 528
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Spring
!*FV FILE: FV3.FV     OPMODE: Hot          FACILITY: Local        SCENARIO: 529
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Spring
!*FV FILE: FV3.FV     OPMODE: Stable       FACILITY: Local        SCENARIO: 530
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Summer
!*FV FILE: FV3.FV     OPMODE: Cold         FACILITY: Local        SCENARIO: 531
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Summer
!*FV FILE: FV3.FV     OPMODE: Hot          FACILITY: Local        SCENARIO: 532
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Summer
!*FV FILE: FV3.FV     OPMODE: Stable       FACILITY: Local        SCENARIO: 533
!
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Fall
!*FV FILE: FV3.FV     OPMODE: Cold         FACILITY: Local        SCENARIO: 534
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Fall
!*FV FILE: FV3.FV     OPMODE: Hot          FACILITY: Local        SCENARIO: 535
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 12.9   Season: Fall
!*FV FILE: FV3.FV     OPMODE: Stable       FACILITY: Local        SCENARIO: 536
!* # # # # # # # # # # # # # # # # # # # # # # # # #
```

```
!
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Winter
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 537
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Spring
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 538
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Summer
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 539
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 1.00   Season: Fall
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 540
!      .
!      .
!      .
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 45.0   Season: Winter
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 713
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 45.0   Season: Spring
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 714
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 45.0   Season: Summer
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 715
!* # # # # # # # # # # # # # # # # # # # # # # # # #
!*  St & Cnty: 11001   MY: 2005   Speed: 45.0   Season: Fall
!*FV FILE:    .FV     OPMODE: Stable       FACILITY: Arterial     SCENARIO: 716
!                  (END)
!  ----------------
!  Notes:
! -The 'control' file contains Avg daily trips and VMT
!  figures by 5 veh.types (i.e., ldgv,ldgt1,ldgt2,hdgv,mc)
!  so as to compute per-veh. Hot soak, Diurnal, and Resting Loss rates.
!  These where supplied from the database output by M. Mullen/EF Pechan
! -The M6 listing provides stabilized rates from 5 to 65 mph.
!  There is no extrapolation of values for 70 mph (as in earlier versions)
!  ----------------
!  Updates:
! - 12/10/02
! - added inquire statement to abort if input m6 file does not exist.
! - 12/11/02 added vehicle 'starts' params in control card.  Updated
!   the cold hot start-up calculation per M. Mullen's 12/11  email
! - 12/13/02 addressed 0 divide possibility in the hot soak/cold-hot
!   start calculation(miles/trip-ends and miles/trip starts)
! - 5/31/05 Scenarios 135 - 145 added.  These are Arterial rates for
!    rural VMT mix by 1-45mph- for computing rural/local emissions.
! - 8/1/05  Above version modified from MS Fortran to Leahy Fortran
! - 8/4/05  put a reference speed of '13.' mph in first 3 columns of
!                        the local (*.lcl) rate file
! - 10/27/05 Seasonal Program Made  M6RATESS.F90
! ------------------------------------------------------------------
! ------------------------------------------------------------------
!  variable declarations
! ------------------------------------------------------------------

      character(len=10)     date,time,zone
      INTEGER ::            dt(8)
      character(len=132) :: line
      character(len=9)   :: scnflg
      character(len=6)   :: spdflg,seaind
      character(len=3)   :: sea_
      character(len=5)   :: scnind,scn_,spdind,spd_
      character(len=7)   :: modflg,modind,mod_,seaflg
      character(len=9)   :: facflg,facind,fac_


      character(len=20)  :: v1
      character(len=80)  :: utitle
      character(len=10)  :: uyear
      character(len=30)  :: ujur
      character(len=10)  :: v2,v3,v4,v5,v6,v7,v8,v9,v10,v11
      integer  ::  scenario,sea_no,ispeed, etype,i,j
      real     ::  vmtdst(10),hcstrt(10),hctotx(10),costrt(10),Speed
      real     ::  cototx(10),nxstrt(10),nxtotx(10),hotskl(10)
      real     ::  diurnl(10),crankl(10),restgl(10),runngl(10)

      real     ::  hdgv_t,lddt_t,lddv_t,ldgt12_t,ldgt34_t,ldgv_t,mc_t
      real     ::  hdgv_m,lddt_m,lddv_m,ldgt12_m,ldgt34_m,ldgv_m,mc_m
      real     ::  hdgv_s,lddt_s,lddv_s,ldgt12_s,ldgt34_s,ldgv_s,mc_s

      real     ::  totalvmt,pctlgv,pctlgt12,pctlgt34,pcthdgv,pctmc
      real     ::  pctlddv,pctlddt
      real     ::  ldgvmt,ldgt12mt,ldgt34mt,hdgvmt,mcmt
      real     ::  ldgvms,ldgt12ms,ldgt34ms,lddvms,lddtms,mcms
      real     ::  comp_hc(7,65,4),  comp_co(7,65,4),  comp_nx(7,65,4)
      real     ::  comp_hs,  comp_wd,  comp_cc
      real     ::  comp_rn,  comp_rg
      real     ::  comp_hcc(7,65,4), comp_coc(7,65,4), comp_nxc(7,65,4)
      real     ::  comp_hch(7,65,4), comp_coh(7,65,4), comp_nxh(7,65,4)
!
      logical  ::  exists
!
      character(len=60) ::  listing,mob6_fil
      character(len=60) ::  artrun,fwyrun,start,local,ramp,artrural
      character(len=120)::  ctl_file



! ////////////////////////////////////////////////////////////
! //////  Establish control file information here ////////////////
      namelist /descr/                                                  &
      utitle,uyear,ujur
      namelist /files/                                                  &
      listing,mob6_fil,artrun,fwyrun,start,local,ramp,artrural
      namelist /params/                                                 &
               hdgv_t,lddt_t,lddv_t,ldgt12_t,ldgt34_t,ldgv_t,mc_t,   &
               hdgv_m,lddt_m,lddv_m,ldgt12_m,ldgt34_m,ldgv_m,mc_m,   &
               hdgv_s,lddt_s,lddv_s,ldgt12_s,ldgt34_s,ldgv_s,mc_s

! ////////////////////////////////////////////////////////////
! ////////  Read in control file information here ////////////
! ////////////////////////////////////////////////////////////

      call GETCL(ctl_file)


      INQUIRE (file=ctl_file,exist=exists)
             IF (.not.exists) then
                write (*,8004) ctl_file
                write (7,8004) ctl_file
 8004           format (1x,' File: ',a30,' not found',/,'  Program aborted')
                stop '  8'
             ENDIF

      open (unit=5,file=ctl_file,status='old',action='read',iostat=ierr)

      read(5,descr)
      rewind(5)
      read(5,files)
      rewind(5)
      read(5,params)
      rewind(5)

      open (unit=7,file=listing,status='unknown')
!//////////////////////////////////////////////////////////////
!  write out the date and time of program execution here ...    /
!  to screen and listing file                                                /
!//////////////////////////////////////////////////////////////

      call DATE_AND_TIME(TIME,DATE,ZONE,DT)

      write(*,8000)
      write(7,8000)
```

```
 8000 format(//,'  PROGRAM:  M6RATESM(v.10/01/05 - MWCOG/rjm) ')
      write(*,8001) dt(2),dt(3),dt(1),dt(5),dt(6),dt(7)
      write(7,8001) dt(2),dt(3),dt(1),dt(5),dt(6),dt(7)
 8001 format(/,'  EXECUTION DATE(MonDayYr): ',i2,'/',i2,'/',i4,4x,     &
             ' Time(HrMinSec): ',i2,':',i2,':',i2,//)

      write(7,899) utitle,uyear,ujur
 899 format(/,'-------------------------------------------------------------&
&-----------------------',                                                 &
/,' Description: ',a80,/,' Year:        ',a5,' Jurisdiction:  ',a30,   &
/,'-------------------------------------------------------------------&
&------------',/)

!
!  write out user-specified I/O filenames and 'delete' strings
!
      write(7,801) listing,mob6_fil,artrun,fwyrun,start,local,ramp,  &
      artrural
  801 format (/,'  User Specified Filenames:',//,          &
      '     Report listing:                    ',a60,/,  &
      ' (I) Mobile6 Raw Listing File:          ',a60,/,  &
      ' (O) Arterial Running Emission   Rates:    ',a60,/,  &
      ' (O) Freeway  Running Emission   Rates:    ',a60,/,  &
      ' (O) Start-up Emission Rates:           ',a60,/,  &
      ' (O) Local    Running Emission   Rates:    ',a60,/,  &
      ' (O) Fwy Ramp Running Emission   Rates:    ',a60,/,  &
      ' (O) Art.Running (w/RuralVMTMix) Rates:    ',a60)


!
!  write out user-specified I/O filenames and params
!

      write(7,111)                                          &
        hdgv_t,lddt_t,lddv_t,ldgt12_t,ldgt34_t,ldgv_t,mc_t, &
        hdgv_m,lddt_m,lddv_m,ldgt12_m,ldgt34_m,ldgv_m,mc_m, &
        hdgv_s,lddt_s,lddv_s,ldgt12_s,ldgt34_s,ldgv_s,mc_s

 111  format(//,'User Specified Daily Ends,VMT,Starts by Veh.Type:',//   &
      ,'Avg Trip-Ends/day by Vehicle Type',/,                           &
      '     hdgv     lddt     lddv   ldgt12   ldgt34     ldgv       mc', &
      /,7f9.4,//,                                                       &
      'Avg VMT/day       by Vehicle Type',/,                            &
      '     hdgv     lddt     lddv   ldgt12   ldgt34     ldgv       mc', &
      /,7f9.4,//,                                                       &
      'Avg Starts/day    by Vehicle Type',/,                            &
      '     hdgv     lddt     lddv   ldgt12   ldgt34     ldgv       mc', &
      /,7f9.4)


!---------------------------------------------------------------
      write(7,800) char(12)  !  page break character
  800 format (a1)            !
!---------------------------------------------------------------

      write(7,899) utitle,uyear,ujur

!   Check that the Mobile 6 text - Input file actually exists
      INQUIRE (FILE =mob6_fil, EXIST = exists)
      IF (.NOT. exists) then
        write(*,888)  mob6_fil
        write(7,888)  mob6_fil
 888    format(' File: ',a30,' Not Found ',/,'  Program aborted ')
        stop  '   8'
      ENDIF
!
      open (unit=9,file=mob6_fil,status='old')

      open (unit=15,file=artrun)
      open (unit=16,file=fwyrun)
      open (unit=17,file=start)
      open (unit=18,file=local)
      open (unit=19,file=ramp)
      open (unit=22,file=artrural)

      open (unit=20,file='temp.dat')
      open (unit=21,file='verify.dat')
      write(*,995)
  995 format(/,'  Reading Input Mobile6 Listing File  '/)

   55 read (9,200,end=990) line
  200 format(a132)
      scnflg  = line(66:74)
      scnind  = line(75:79)
      seaflg  = line(48:54)           !
      seaind  = line(56:61)           !
      spdflg  = line(34:39)
      spdind  = line(40:44)
      modflg  = line(22:28)
      modind  = line(29:35)
      facflg  = line(43:51)
      facind  = line(52:60)
      v1      = line(1:20)
      v2      = line(22:31)
      v3      = line(32:41)
      v4      = line(42:51)
      v5      = line(52:61)
      v6      = line(62:71)
      v7      = line(72:81)
      v8      = line(82:91)
      v9      = line(92:101)
      v10     = line(102:111)
      v11     = line(112:121)

      if (scnflg   .eq. 'SCENARIO:') then
          scn_    = scnind
      endif

      if  (spdflg   .eq. 'Speed:')  then
           spd_    = spdind
      endif

      if  (seaflg   .eq. 'Season:')  then
          if    (seaind .eq.     'Winter')  then
                 sea_    = '  1'
            elseif (seaind .eq. 'Spring')  then
                 sea_    = '  2'
            elseif (seaind .eq. 'Summer')  then
                 sea_    = '  3'
            elseif (seaind .eq. 'Fall  ')  then
                 sea_    = '  4'
          endif
      endif



      if  (modflg   .eq. 'OPMODE:')  then
           mod_    = modind
      endif

      if  (facflg   .eq. 'FACILITY:')  then
          fac_     = facind
      endif

      if ((v1 .eq. '   VMT Distribution:') .or.      &
          (v1 .eq. '        VOC   Start:') .or.      &
          (v1 .eq. '  VOC Total Exhaust:') .or.      &
          (v1 .eq. '           CO Start:') .or.      &
          (v1 .eq. '   CO Total Exhaust:') .or.      &
          (v1 .eq. '          NOx Start:') .or.      &
          (v1 .eq. '  NOx Total Exhaust:') .or.      &
          (v1 .eq. '      Hot Soak Loss:') .or.      &
          (v1 .eq. '       Diurnal Loss:') .or.      &
          (v1 .eq. '     Crankcase Loss:') .or.      &
```

```
         (v1 .eq. '       Resting Loss:') .or.      &
         (v1 .eq. '       Running Loss:'))     then


           write(20,880)                             &
          scn_ ,sea_,spd_,mod_,fac_,v1,v2,v3,v4,v5,v6,v7,v8,v9,v10,v11
  880     format(a5,a3,a5,a7,a9,a20,10a10)
     endif
     goto 55
 990  continue

!===================================================================
! Begin Arterial Emissions Work ...                                =
!===================================================================
      rewind(20)



 45   read(20,872,end=802)                              &
      scenario,sea_no, speed, mod_, fac_,(vmtdst(i),i=1,10),       &
          (hcstrt(i),i=1,10),                           &
          (hctotx(i),i=1,10),                           &
          (costrt(i),i=1,10),                           &
          (cototx(i),i=1,10),                           &
          (nxstrt(i),i=1,10),                           &
          (nxtotx(i),i=1,10),                           &
          (hotskl(i),i=1,10),                           &
          (diurnl(i),i=1,10),                           &
          (restgl(i),i=1,10),                           &
          (runngl(i),i=1,10),                           &
          (crankl(i),i=1,10)


 872  format(i5,i3,f5.1,a7,a9,20x,10f10.4,              &
     (11(/,49x,10f10.4)))


      write(21,870)
870   format('                                            ',/)
      write(21,872)                                      &
      scenario,sea_no, speed, mod_, fac_,(vmtdst(i),i=1,10),  &
          (hcstrt(i),i=1,10),                           &
          (hctotx(i),i=1,10),                           &
          (costrt(i),i=1,10),                           &
          (cototx(i),i=1,10),                           &
          (nxstrt(i),i=1,10),                           &
          (nxtotx(i),i=1,10),                           &
          (hotskl(i),i=1,10),                           &
          (diurnl(i),i=1,10),                           &
          (restgl(i),i=1,10),                           &
          (runngl(i),i=1,10),                           &
          (crankl(i),i=1,10)

!
!  Now go through emission computations
!

!  define emission rate dimensions
!  convert speed into integer

      ispeed = NINT(speed)     ! convert real speed to NEAREST integer value

!  create emission type (etype) variable
      if ((fac_ == ' Arterial' ) .AND. &
          (mod_  == ' Stable'  ) .AND. &
          (scenario  <  500    ))         etype = 1        !  Arterial/stabilized

      if  (fac_ == ' Non-Ramp' )          etype = 2        !  Freeway non-ramp/stabilized

      if  (fac_ == ' Fwy Ramp' )          etype = 3        !  Freeway Ramp/stabilized

      if ((fac_ == ' Local   ' ) .AND. &
          (mod_ == ' Stable'   ))         etype=  4        !  Local Road/stabilized

      if  (mod_ == ' Cold  '   )          etype = 5        !  Local / Cold

      if  (mod_ == ' Hot   '   )          etype = 6        !  Local / Hot

      if ((fac_ == ' Arterial' ) .AND. &
          (mod_  == ' Stable'  ) .AND. &
          (scenario  >   500   ))         etype = 7        !  Arterial/Stabilized/Local

!  Calculate VMT Distribution for Gas-related Vehicle Types:

      totalvmt = vmtdst(10)

      if (totalvmt .eq. 0) then
         pctlgv   = 0
         pctlgt12 = 0
         pctlgt34 = 0
         pcthdgv  = 0
         pctlddv  = 0
         pctlddt  = 0
         pctmc    = 0
       else
         pctlgv   = vmtdst(1) / totalvmt
         pctlgt12 = vmtdst(2) / totalvmt
         pctlgt34 = vmtdst(3) / totalvmt
         pcthdgv  = vmtdst(5) / totalvmt
         pctmc    = vmtdst(9) / totalvmt
         pctlddv  = vmtdst(6) / totalvmt
         pctlddt  = vmtdst(7) / totalvmt
         pctmc    = vmtdst(9) / totalvmt
      endif
!
!  Calculate Cold Start-up HC, CO, and NX emission rates (gm/mi)
!  and multiple by miles to get per trip rates
!

!   first check that for the zero divide for miles/starts (by vehicle)
!
      if (ldgv_s .eq. 0) then
          ldgvms   = 0
        else
          ldgvms   = ldgv_m   / ldgv_s
      endif
      if (ldgt12_s .eq. 0) then
          ldgt12ms = 0
        else
          ldgt12ms = ldgt12_m / ldgt12_s
      endif
      if (ldgt34_s .eq. 0) then
          ldgt34ms = 0
        else
          ldgt34ms = ldgt34_m / ldgt34_s
      endif
      if (lddv_s   .eq. 0) then
          lddvms   = 0
        else
          lddvms   = lddv_m   / lddv_s
      endif
      if (lddt_s   .eq. 0) then
          lddtms   = 0
        else
          lddtms   = lddt_m   / lddt_s
      endif
      if (mc_s     .eq. 0) then
          mcms     = 0
        else
          mcms     = mc_m     / mc_s
      endif

!
!  Calculate composite Hot Soak, Wt Diurnal, Crank Case, & Rest Loss
```

```
!  components here:
!
!   first check that for the zero divide for miles/trips (by vehicle)
!
      if (ldgv_t .eq. 0) then
          ldgvmt   = 0
        else
          ldgvmt   = ldgv_m   / ldgv_t
      endif
      if (ldgt12_t .eq. 0) then
          ldgt12mt = 0
        else
          ldgt12mt = ldgt12_m / ldgt12_t
      endif
      if (ldgt34_t .eq. 0) then
          ldgt34mt = 0
        else
          ldgt34mt = ldgt34_m / ldgt34_t
      endif
      if (hdgv_t   .eq. 0) then
          hdgvmt   = 0
        else
          hdgvmt   = hdgv_m   / hdgv_t
      endif
      if (mc_t     .eq. 0) then
          mcmt     = 0
        else
          mcmt     = mc_m     / mc_t
      endif




      comp_hs     = (hotskl(1)  * ldgvmt    * pctlgv  ) +    &
                    (hotskl(2)  * ldgt12mt  * pctlgt12) +    &
                    (hotskl(3)  * ldgt34mt  * pctlgt34) +    &
                    (hotskl(5)  * hdgvmt    * pcthdgv ) +    &
                    (hotskl(9)  * mcmt      * pctmc   )



      comp_wd     = (diurnl(1)  * ldgv_m     * pctlgv  ) +   &
                    (diurnl(2)  * ldgt12_m   * pctlgt12) +   &
                    (diurnl(3)  * ldgt34_m   * pctlgt34) +   &
                    (diurnl(5)  * hdgv_m     * pcthdgv ) +   &
                    (diurnl(9)  * mc_m       * pctmc   )


      comp_cc     = (crankl(1)  * pctlgv  ) +              &
                    (crankl(2)  * pctlgt12) +              &
                    (crankl(3)  * pctlgt34) +              &
                    (crankl(5)  * pcthdgv ) +              &
                    (crankl(9)  * pctmc   )


      comp_rn     = (runngl(1)  * pctlgv  ) +              &
                    (runngl(2)  * pctlgt12) +              &
                    (runngl(3)  * pctlgt34) +              &
                    (runngl(5)  * pcthdgv ) +              &
                    (runngl(9)  * pctmc   )


      comp_rg     = (restgl(1)  * ldgv_m   * pctlgv  ) +     &
                    (restgl(2)  * ldgt12_m * pctlgt12) +     &
                    (restgl(3)  * ldgt34_m * pctlgt34) +     &
                    (restgl(5)  * hdgv_m   * pcthdgv ) +     &
                    (restgl(9)  * mc_m     * pctmc   )


!
!  now define the final composite HC, CO, and NOx rates
!

      comp_hc(etype,ispeed,sea_no)     = hctotx(10) + comp_cc + comp_rn
      comp_co(etype,ispeed,sea_no)     = cototx(10)
      comp_nx(etype,ispeed,sea_no)     = nxtotx(10)



      comp_hcc(etype,ispeed,sea_no)   =((hcstrt(1)  * ldgvms   *  pctlgv  ) +   &
                                        (hcstrt(2)  * ldgt12ms *  pctlgt12) +   &
                                        (hcstrt(3)  * ldgt34ms *  pctlgt34) +   &
                                        (hcstrt(6)  * lddvms   *  pctlddv ) +   &
                                        (hcstrt(7)  * lddtms   *  pctlddt ) +   &
                                        (hcstrt(9)  * mcms     *  pctmc   ))

      comp_coc(etype,ispeed,sea_no)   =((costrt(1)  * ldgvms   * pctlgv  )  +   &
                                        (costrt(2)  * ldgt12ms * pctlgt12)  +   &
                                        (costrt(3)  * ldgt34ms * pctlgt34)  +   &
                                        (costrt(6)  * lddvms   * pctlddv )  +   &
                                        (costrt(7)  * lddtms   * pctlddt )  +   &
                                        (costrt(9)  * mcms     * pctmc   ))

      comp_nxc(etype,ispeed,sea_no)   =((nxstrt(1)  * ldgvms   * pctlgv  )  +   &
                                        (nxstrt(2)  * ldgt12ms * pctlgt12)  +   &
                                        (nxstrt(3)  * ldgt34ms * pctlgt34)  +   &
                                        (nxstrt(6)  * lddvms   * pctlddv )  +   &
                                        (nxstrt(7)  * lddtms   * pctlddt )  +   &
                                        (nxstrt(9)  * mcms     * pctmc   ))
!!

      comp_hch(etype,ispeed,sea_no)   =((hcstrt(1)  * ldgvms   *  pctlgv  ) +   &
                                        (hcstrt(2)  * ldgt12ms *  pctlgt12) +   &
                                        (hcstrt(3)  * ldgt34ms *  pctlgt34) +   &
                                        (hcstrt(6)  * lddvms   *  pctlddv ) +   &
                                        (hcstrt(7)  * lddtms   *  pctlddt ) +   &
                                        (hcstrt(9)  * mcms     *  pctmc   ))

      comp_coh(etype,ispeed,sea_no)   =((costrt(1)  * ldgvms   * pctlgv  )  +   &
                                        (costrt(2)  * ldgt12ms * pctlgt12)  +   &
                                        (costrt(3)  * ldgt34ms * pctlgt34)  +   &
                                        (costrt(6)  * lddvms   * pctlddv )  +   &
                                        (costrt(7)  * lddtms   * pctlddt )  +   &
                                        (costrt(9)  * mcms     * pctmc   ))

      comp_nxh(etype,ispeed,sea_no)   =((nxstrt(1)  * ldgvms   * pctlgv  )  +   &
                                        (nxstrt(2)  * ldgt12ms * pctlgt12)  +   &
                                        (nxstrt(3)  * ldgt34ms * pctlgt34)  +   &
                                        (nxstrt(6)  * lddvms   * pctlddv )  +   &
                                        (nxstrt(7)  * lddtms   * pctlddt )  +   &
                                        (nxstrt(9)  * mcms     * pctmc   ))
!!


      goto 45
 802  continue
   !@ open (unit=15,file=artrun)  1
   !@ open (unit=16,file=fwyrun)  2
   !@ open (unit=17,file=start)   5,6
   !@ open (unit=18,file=local)   4
   !@ open (unit=19,file=ramp)    3
   !@ open (unit=22,file=artrural)7
!-----------------------------------------------------------------------
      write(7,800) char(12)  !  page break character
      write(7,861)
 861  format (/,'M6 Composite Nx Arterial Stabilized Emission Rates by Season:',//,  &
      ' Spd        Season 1/Winter, 2/Spring, 3/Summer, 4/Fall  -->>  ',/,          &
      ' mph           ',                                &
      ' ---           ')

 ! Write out the Seasonal arterial Nx rates
 ! to the data(Unit 15) & report file
    do i=1,65
```

```
      if              (comp_nx(1,i,1) == 0)  cycle
      write(7,862)  i, (comp_nx(1,i,j),j=1,4)
      write(15,862) i, (comp_nx(1,i,j),j=1,4)
 862  format(1x,i3,6x,12(F7.3,2x))
    end do

      close(15)
!---------------------------------------------------------------------
      write(7,800) char(12)  !  page break character
      write(7,863)
 863  format (/,'M6 Composite Nx Freeway Stabilized Emission Rates by Season:',//,  &
      ' Spd        Season 1/Winter, 2/Spring, 3/Summer, 4/Fall  -->>  ',/,          &
      ' mph           ',                                &
      ' ---           ')

 ! Write out the Seasonal freeway  Nx rates
 ! to the data(Unit 16) & report file
    do i=1,65
      if              (comp_nx(2,i,1) == 0)  cycle
      write(7,862)  i, (comp_nx(2,i,j),j=1,4)
      write(16,862) i, (comp_nx(2,i,j),j=1,4)

    end do

      close(16)
!---------------------------------------------------------------------
!---------------------------------------------------------------------
      write(7,800) char(12)  !  page break character
      write(7,865)
 865  format (/,'M6 Composite Nx startup Emission Rates by Season:',//,  &
      ' Spd     24 rates printed:  Cold rate, Season 1/Winter, 2/Spring, 3/Summer, 4/Fall  /
Hot rate, Season 1/Winter, 2/Spring, 3/Summer, 4/Fall -->>  ',/,          &
      ' mph           ',                                &
      ' ---           ')

 ! Write out the Seasonal startup rates  Nx rates
 ! to the data(Unit 17) & report file
    do i=1,65
      if                                      (comp_nxc(5,i,1) == 0)  cycle
      write(7,866)  i,    (comp_nxh(6,i,j),j=1,4), (comp_nxc(5,i,j),j=1,4)
      write(17,866) i,    (comp_nxh(6,i,j),j=1,4), (comp_nxc(5,i,j),j=1,4)
 866  format(1x,i3,6x,12(F7.3,2x),12(F7.3,2x))
    end do

      close(17)
!---------------------------------------------------------------------
      write(7,800) char(12)  !  page break character
      write(7,867)
 867  format (/,'M6 Composite Nx Local Stabilized Emission Rates by Season:',//,  &
      ' Spd        Season 1/Winter, 2/Spring, 3/Summer, 4/Fall  -->>  ',/,          &
      ' mph           ',                                &
      ' ---           ')

 ! Write out the Seasonal freeway  Nx rates
 ! to the data(Unit 18) & report file
    do i=1,65
      if              (comp_nx(4,i,1) == 0)  cycle
      write(7,862)  i, (comp_nx(4,i,j),j=1,4)
      write(18,862) i, (comp_nx(4,i,j),j=1,4)

    end do

      close(18)
!---------------------------------------------------------------------
      write(7,800) char(12)  !  page break character
      write(7,868)
 868  format (/,'M6 Composite Nx Ramp  Stabilized Emission Rates by Season:',//,  &
      ' Spd        Season 1/Winter, 2/Spring, 3/Summer, 4/Fall  -->>  ',/,          &
      ' mph           ',                                &
      ' ---           ')

 ! Write out the Seasonal freeway  Nx rates
 ! to the data(Unit 19) & report file
    do i=1,65
      if              (comp_nx(3,i,1) == 0)  cycle
      write(7,862)  i, (comp_nx(3,i,j),j=1,4)
      write(19,862) i, (comp_nx(3,i,j),j=1,4)

    end do

      close(19)
!---------------------------------------------------------------------
!---------------------------------------------------------------------
      write(7,800) char(12)  !  page break character
      write(7,869)
 869  format (/,'M6 Composite Nx Art/Rural Stabilized Emission Rates by Season:',//,  &
      ' Spd        Season 1/Winter, 2/Spring, 3/Summer, 4/Fall  -->>  ',/,          &
      ' mph           ',                                &
      ' ---           ')

 ! Write out the Seasonal freeway  Nx rates
 ! to the data(Unit 22) & report file
    do i=1,65
      if              (comp_nx(7,i,1) == 0)  cycle
      write(7,862)  i, (comp_nx(7,i,j),j=1,4)
      write(22,862) i, (comp_nx(7,i,j),j=1,4)

    end do

      close(22)
!---------------------------------------------------------------------
!---------------------------------------------------------------------
      write(7,890)
 890  format(//, '-- Normal Completion -- ')
!---------------------------------------------------------------------
      stop 'Normal Completion'
      end
```

M6RateS.ctl

```
! CAL05.Ctl
! Control File for M6RATES Program
!
! The INPUT file is:
! unit  9:  Mobile 6 listing - in Mobile 5b format
!
!
! The 5 OUTPUT files are:
!
! unit 07:  listing   - (the program listing file)
! unit 15:  artrun   - Arterial     running emission rates by speed
! unit 16:  fwyrun   - Freeway      running emission rates by speed
! unit 17:  start    - Startup (Cold/Hot)   emission rates
! unit 18:  local    - Local        running emission rates
! unit 19:  ramp     - Freeway-Ramp running emission rates
!
! Params specify the Avg Trips (*_T), miles  (*_M)  and Starts (*.s)
!
&descr
   utitle    = 'xxxx'
   uyear     = 'xxxx'
   ujur      = 'x County'
   /
&files
   listing   = 'm6ratesS.rpt'
   mob6_fil  = 'M0511001.TXT'
   artrun    = 'm0511001.r_a'
   fwyrun    = 'm0511001.r_f'
   start     = 'm0511001.stt'
   local     = 'm0511001.lcl'
   ramp      = 'm0511001.ram'
   artrural  = 'm0511001.r_r'
   /

&params
   hdgv_t    = 4.9123
   lddt_t    = 5.7548
   lddv_t    = 5.1979
   ldgt12_t  = 5.7548
   ldgt34_t  = 5.7548
   ldgv_t    = 5.3799
   mc_t      = 0.9639

   hdgv_m    = 32.1339
   lddt_m    = 34.7558
   lddv_m    = 14.4768
   ldgt12_m  = 38.4124
   ldgt34_m  = 36.4774
   ldgv_m    = 28.7107
   mc_m      =  8.3415

   hdgv_s    =  6.88
   lddt_s    =  8.06
   lddv_s    =  7.28
   ldgt12_s  =  8.06
   ldgt34_s  =  8.06
   ldgv_s    =  7.28
   mc_s      =  1.35
   /
```

Attachment 2

M6RatesPM Program Files

M6RatesPM.f90

```
program M6RATESPM
! ------------------------------------------------------------------
!      compile command:            LF95    m6ratesPM.f95
!      program execution command:  m6rates <mobile text file>
! ------------------------------------------------------------------

! This program is used to read a Mobile6 listing and to compute/write
! out 'final' running and start-up emissions used in MWCOG's
! mobile emissions calculation process.
!
! The Mobile6 PM Listings file MUST be in Mobile5b Format
! The sequence of scenarios MUST be as follows:
!
!  SCENARIO: 1   PM/ Network Winter
!  SCENARIO: 2   PM/ Network Spring
!  SCENARIO: 3   PM/ Network Summer
!  SCENARIO: 4   PM/ Network Fall

!  SCENARIO: 5   PM/ Local   Winter
!  SCENARIO: 6   PM/ Local   Spring
!  SCENARIO: 7   PM/ Local   Summer
!  SCENARIO: 8   PM/ Local   Fall
!
! A one line file is written out containing 8 Rates:
!
!    Network-based                      Local-based
!    Winter Spring Summer Fall Rates and Winter Spring Summer Fall
!      (1)    (2)    (3)   (4)           (5)    (6)    (7)   (8)
! ------------------------------------------------------------------
! ------------------------------------------------------------------
!  variable declarations
! ------------------------------------------------------------------


      character(len=132):: line
      character(len=20) :: v1
      character(len=5):: spdind, sped_
      character(len=6):: spdflg, sea_, seaind
      character(len=7):: seaflg
      character(len=8):: scnind1, scnind2, scen_, scenflg1,scenflg2
      character(len=10) :: v11, seasonrate(8)


      logical  ::  exists

      character(len=120)::  inp_file

! ////////////////////////////////////////////////////////
! ////////  Read in control file information here ////////////
! ////////////////////////////////////////////////////////

      call GETCL(inp_file)

     INQUIRE (file=inp_file,exist=exists)
      IF (.not.exists) then
                write (*,8004) inp_file
 8004           format (1x,' File: ',a30,' not found',/,'  Program aborted')
                stop '  8'
      ENDIF

      open (unit=9,file=inp_file,status='old')
      open (unit=15,file='M6ratesPM.txt')

      write(*,995)
 995  format(/,'  Reading Input Mobile6 Listing File  '/)

 55   read (9,200,end=990) line
 200  format(a132)
      scenflg1= line(18:25) !
      scenflg2= line(19:26) !
      scnind1 = line(26:27) !
      scnind2 = line(27:28) !
      spdflg  = line(34:39) !
      spdind  = line(40:44) !
      seaflg  = line(48:54)
      seaind  = line(56:61)
      v1      = line(1:20)
      v11     = line(112:121)

      if (scenflg1 .eq. 'Scenario') then
          scen_    = scnind1
      endif
      if (scenflg2 .eq. 'Scenario') then
          scen_    = scnind2
      endif

      if  (spdflg   .eq. 'Speed:')  then
          sped_    = spdind
      endif

      if  (seaflg   .eq. 'Season:')  then
          sea_     = seaind
      endif

      if ((v1 .eq. '           Total PM:') .and. (sped_ .eq. ' 35.0') .and.   &
          (scen_ .eq. ' 1') .and. (sea_ .eq. 'Winter')) then

              seasonrate(1) = v11
      endif
      if ((v1 .eq. '           Total PM:') .and. (sped_ .eq. ' 35.0') .and.  &
          (scen_ .eq. ' 2') .and. (sea_ .eq. 'Spring')) then

              seasonrate(2) = v11
      endif
      if ((v1 .eq. '           Total PM:') .and. (sped_ .eq. ' 35.0') .and.  &
          (scen_ .eq. ' 3') .and. (sea_ .eq. 'Summer')) then

              seasonrate(3) = v11
      endif
      if ((v1 .eq. '           Total PM:') .and. (sped_ .eq. ' 35.0') .and.  &
          (scen_ .eq. ' 4') .and. (sea_ .eq. 'Fall  ')) then

              seasonrate(4) = v11
      endif
      if ((v1 .eq. '           Total PM:') .and. (sped_ .eq. ' 35.0') .and.  &
          (scen_ .eq. ' 5') .and. (sea_ .eq. 'Winter')) then

              seasonrate(5) = v11
      endif
      if ((v1 .eq. '           Total PM:') .and. (sped_ .eq. ' 35.0') .and.  &
          (scen_ .eq. ' 6') .and. (sea_ .eq. 'Spring')) then

              seasonrate(6) = v11
      endif
      if ((v1 .eq. '           Total PM:') .and. (sped_ .eq. ' 35.0') .and.  &
          (scen_ .eq. ' 7') .and. (sea_ .eq. 'Summer')) then

              seasonrate(7) = v11
      endif
      if ((v1 .eq. '           Total PM:') .and. (sped_ .eq. ' 35.0') .and.  &
          (scen_ .eq. ' 8') .and. (sea_ .eq. 'Fall  ')) then

              seasonrate(8) = v11
      endif

goto 55

990  continue
```

```
 45   write (15,872) sped_, seasonrate(1),            &
                            seasonrate(2),            &
                            seasonrate(3),            &
                            seasonrate(4),            &
                            seasonrate(5),            &
                            seasonrate(6),            &
                            seasonrate(7),            &
                            seasonrate(8)


 872  format(a5,8(a10))

!-----------------------------------------------------------------
      write(*,890)
 890  format(//, '-- Normal Completion -- ')
!-----------------------------------------------------------------
      stop 'Normal Completion'
      end
```

Run_M6RatesPM.bat

```
::  Run the M6RATESPM program in batch
::  Run 16 times for each juris;
::           after each run rename generic output file name to
::           juris. specific name


M6RATESPM M0511001.PM
rename    m6RatesPM.txt  m605pmDC.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmAL.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmAR.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmCA.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmCH.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmCL.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmFR.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmFX.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmLD.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmMC.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmPG.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPW.txt  m605pmCA.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmSM.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmSP.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmST.N_L

rem M6RATESPM XXXXXXXX.PM
rem rename    m6RatesPM.txt  m605pmWE.N_L

rem Finished
```

Attachment 3

Post Processor Batch File and TP+ Scripts

Seasonal_Emiss.bat

```
REM  ================================================================================
REM    Seasonal_Emiss.bat                                                            =
REM    Seasonal Nx & PM Mobile Emission Estimation                                   =
REM    Year:                                                                         =
REM    Description:  Travel Model:   V21D#50 Sept 2005                               =
REM                  Land Use:       Rnd 7.0                                        =
REM                  Emission Rates: Mobile 6.2 2010                                =
REM                  Networks:       TIP 2006-11                                    =
REM                                                                                 =
REM  ================================================================================

REM  ========          Input File Specification Section          =======================

REM 'Final' Loaded Network & AM, PM, Off-Peak Trip Tables & juris level local VMT file
REM  note that input file Base_Juris_VMT.txt is prepared, provided by user
REM  Futr_Juris_VMT.txt is generated by the Pre_Local Program

set _inpnet_=I:\CGV2_1D_50_Sept_05_Conformity2006\2002\i6hwy.net
set _inpamt_=I:\CGV2_1D_50_Sept_05_Conformity2006\2002\i6am.vtt
set _inppmt_=I:\CGV2_1D_50_Sept_05_Conformity2006\2002\i6pm.vtt
set _inpopt_=I:\CGV2_1D_50_Sept_05_Conformity2006\2002\i6op.vtt
set _inplocalB_=Base_Juris_VMT.txt
set _inplocalF_=Futr_Juris_VMT.txt


REM  MOBILE6 Emission File subdirectory (if needed) & Naming 'Prefix'
set _M6Sub_=I:\CGV2_1D_50_Sept_05_Conformity2006\EMISSIONS\M6Rates\2002_Season\
set _M6NxPre_=m602NX
set _M6PMPre_=m602PM

REM  ================================================================
REM  =====   End of Input File Specifications                 ========
REM  ================================================================

REM Global Parameters:
REM    _SeasonFtr_     AAWDT to Seasonal ADT ftr. (Win:0.9028/Spr:  .9570/Sum: 0.9984/Fall 0.9445/)
REM    _SeasonDays_    No. of Days in each Season (Win:    90/Spr:     92/Sum:     92/Fall:    91)
REM    _SeasonRateNo_  Index used in Rate lookups (Win:     1/Spr:      2/Sum:      3/Fall:     4)
REM    _Season_=       Season label in Reports  'Winter', 'Spring', 'Summer', or 'Fall'
REM    _Year_=         Year   label in Reports  '2010' for example


REM  ================================================================
REM  =====   Start TP+ program executions                 ========
REM  ================================================================

runtpp AQTRIP.S
runtpp ZONESPRD.S
runtpp pre_local.s

REM ###########################################################################################
REM ########################    Begin Winter   ################################################
REM ###########################################################################################

set _Year_=2002

set _SeasonFtr_=0.9028
set _SeasonDays_=90
set _SeasonRateNo_=1
set _Season_=Winter


runtpp Peak_Spread_Seasonal_Nx.S
runtpp RUNNING_Seasonal_Nx.S
runtpp STRT_SKR_Seasonal_Nx.S
runtpp local_Seasonal_Nx.s
```

```
copy Peak_Spread_Seasonal_Nx.rpt  %_Season_%_Peak_Spread.rpt
copy RUNNING_Seasonal_Nx.rpt      %_Season_%_RUNNING.rpt
copy STRT_SKR_Seasonal_Nx.rpt     %_Season_%_STRT_SKR.rpt
copy local_Seasonal_Nx.rpt        %_Season_%_local.rpt

del Peak_Spread_Seasonal_Nx.rpt
del RUNNING_Seasonal_Nx.rpt
del STRT_SKR_Seasonal_Nx.rpt
del local_Seasonal_Nx.rpt

copy strt_skr.txt                 %_Season_%_strt_skr.txt
copy running.txt                  %_Season_%_running.txt
copy local.txt                    %_Season_%_local.txt

REM ##############################################################################################
REM ########################    End   Winter   ###################################################
REM ##############################################################################################

REM ##############################################################################################
REM ########################    Begin Spring   ###################################################
REM ##############################################################################################

set _SeasonFtr_=0.9570
set _SeasonDays_=92
set _SeasonRateNo_=2
set _Season_=Spring

runtpp Peak_Spread_Seasonal_Nx.S
runtpp RUNNING_Seasonal_Nx.S
runtpp STRT_SKR_Seasonal_Nx.S
runtpp local_Seasonal_Nx.s

copy Peak_Spread_Seasonal_Nx.rpt  %_Season_%_Peak_Spread.rpt
copy RUNNING_Seasonal_Nx.rpt      %_Season_%_RUNNING.rpt
copy STRT_SKR_Seasonal_Nx.rpt     %_Season_%_STRT_SKR.rpt
copy local_Seasonal_Nx.rpt        %_Season_%_local.rpt

del Peak_Spread_Seasonal_Nx.rpt
del RUNNING_Seasonal_Nx.rpt
del STRT_SKR_Seasonal_Nx.rpt
del local_Seasonal_Nx.rpt

copy strt_skr.txt                 %_Season_%_strt_skr.txt
copy running.txt                  %_Season_%_running.txt
copy local.txt                    %_Season_%_local.txt

REM ##############################################################################################
REM ########################    End   Spring   ###################################################
REM ##############################################################################################

REM ##############################################################################################
REM ########################    Begin Summer   ###################################################
REM ##############################################################################################

set _SeasonFtr_=0.9984
set _SeasonDays_=92
set _SeasonRateNo_=3
set _Season_=Summer

runtpp Peak_Spread_Seasonal_Nx.S
runtpp RUNNING_Seasonal_Nx.S
runtpp STRT_SKR_Seasonal_Nx.S
runtpp local_Seasonal_Nx.s

copy Peak_Spread_Seasonal_Nx.rpt  %_Season_%_Peak_Spread.rpt
copy RUNNING_Seasonal_Nx.rpt      %_Season_%_RUNNING.rpt
copy STRT_SKR_Seasonal_Nx.rpt     %_Season_%_STRT_SKR.rpt
copy local_Seasonal_Nx.rpt        %_Season_%_local.rpt

del Peak_Spread_Seasonal_Nx.rpt
del RUNNING_Seasonal_Nx.rpt
```

```
del STRT_SKR_Seasonal_Nx.rpt
del local_Seasonal_Nx.rpt

copy strt_skr.txt                %_Season_%_strt_skr.txt
copy running.txt                 %_Season_%_running.txt
copy local.txt                   %_Season_%_local.txt

REM ###########################################################################################
REM ########################    End   Summer   ################################################
REM ###########################################################################################

REM ###########################################################################################
REM ########################    Begin Fall     ################################################
REM ###########################################################################################

set _SeasonFtr_=0.9445
set _SeasonDays_=91
set _SeasonRateNo_=4
set _Season_=Fall

runtpp Peak_Spread_Seasonal_Nx.S
runtpp RUNNING_Seasonal_Nx.S
runtpp STRT_SKR_Seasonal_Nx.S
runtpp local_Seasonal_Nx.s

copy Peak_Spread_Seasonal_Nx.rpt  %_Season_%_Peak_Spread.rpt
copy RUNNING_Seasonal_Nx.rpt      %_Season_%_RUNNING.rpt
copy STRT_SKR_Seasonal_Nx.rpt     %_Season_%_STRT_SKR.rpt
copy local_Seasonal_Nx.rpt        %_Season_%_local.rpt

del Peak_Spread_Seasonal_Nx.rpt
del RUNNING_Seasonal_Nx.rpt
del STRT_SKR_Seasonal_Nx.rpt
del local_Seasonal_Nx.rpt

copy strt_skr.txt                %_Season_%_strt_skr.txt
copy running.txt                 %_Season_%_running.txt
copy local.txt                   %_Season_%_local.txt

REM ###########################################################################################
REM ########################    End   Fall     ################################################
REM ###########################################################################################

REM = Copy 4 Seasonal Starting/Running/Local Summary Files to Single Starting/Running/Local Files =

copy  Winter_strt_skr.txt + Spring_strt_skr.txt + Summer_strt_skr.txt + Fall_strt_skr.txt  %_year_%_strt_skr.txt
copy  Winter_running.txt  + Spring_running.txt  + Summer_running.txt  + Fall_running.txt   %_year_%_running.txt
copy  Winter_local.txt    + Spring_local.txt    + Summer_local.txt    + Fall_local.txt     %_year_%_local.txt


REM  ===== and clear env. variables  ========

set _inpnet_=
set _inpamt_=
set _inppmt_=
set _inpopt_=
set _inplocalB_=
set _inplocalF_=
set _M6Sub_=
set _M6Pre_=
set _SeasonFtr_=
set _SeasonDays_=
set _SeasonRateNo_=
set _Season_=
set _Year_=

REM ========  END  =========
```

AQTRIP.S

```
*del tppl*.PRN
; ====================================================================
;  AQTRip.S
;
;  Prepare Vehicle trips tables for AQ emission estimation process
;
; ====================================================================
;-------------------------------------------------
; Define Inputs/ Outputs / Global Variable Names/Parameters     -
;-------------------------------------------------


;Input Files :
AMTRP      = '%_inpamt_%';  Iter 2 AM Vehicle Trips(spec'd in batch)
PMTRP      = '%_inppmt_%';  Iter 2 PM Vehicle Trips(spec'd in batch)
OPTRP      = '%_inpopt_%';  Iter 2 OP Vehicle Trips(spec'd in batch)

;Output Files :
daytrips   = 'i224hrve.tt'                  ; Balanced 24Hr Veh Trips
tripends   = 'trip.end'                     ; 24hr,am,pm,op Trip-Ends
tripdst    = 'trip.dst'                     ; 27x27 Trip distribution

;Number Of Air Quality Juris./Extl Station TAZ Groups
aqd = '27'

;-------------------------------------------------
;Define the 30 Air Quality Juris-Extl/TAZ Equiv -
;-------------------------------------------------

COPY FILE=AQD_TAZ.EQV
;               ; Jur    Jur Rate Set
;               ; ----   -------------
D  1 =    1- 319 ; DC         DC               1
D  2 =  320- 627 ; Mtg        Mtg              2
D  3 =  640-1020 ; PG         PG               3
D  4 = 1080-1099 ; How        PG               3
D  5 = 1110-1142 ; AA         PG               3
D  6 = 1060-1073 ; Car        PG               3
D  7 = 2172-2191 ; Balt Extls PG               3
D  8 = 1150-1163 ; Cal        Cal              4
D  9 = 1200-1223 ; Chs        Chs              5
D 10 = 1030-1053 ; Frd        Frd              6
D 11 = 2169-2171 ; Frd Extls  Frd              6
D 12 = 1230-1311 ; Arl        Arl              7
D 13 = 1400-1755 ; Ffx        Ffx              8
D 14 = 1780-1905 ; Ldn        Ldn              9
D 15 = 1920-2061 ; PW         PW              10
D 16 = 2080-2093 ; Sta        Sta             11
D 17 = 1330-1389 ; Alx        Alx             12
D 18 = 1170-1190 ; Stm        Stm             13
D 19 = 2164-2168 ; Wash Co Extls  Wash Co     14
D 20 = 2130-2132 ; Clk        Clk             15
D 21 = 2115-2125 ; Fau        Clk             15
D 22 = 2135-2141 ; Jef        Clk             15
D 23 = 2154-2163 ; Clk Extls  Clk             15
D 24 = 2105-2110 ; Spts       Spts            16
D 25 = 2070-2074 ; KG         Spts            16
D 26 = 2100-2101 ; Frdbg      Spts            16
D 27 = 2145-2153 ; Spts Extls Spts            16
;
ENDCOPY

;--------------------------------------------------------------------
; Program script follows:
;--------------------------------------------------------------------
; Step 1.
; First read in Final Iter 2. Time per.-specific trip tables
; (they are segmented by mode)
; consolidate into daily, AM, PM, and Off-Peak trip tables, write out
;--------------------------------------------------------------------
;
;
RUN PGM=MATRIX                                    ; - - - - - - - - - -
  MATI[1]  = @AMTRP@                              ;    AM Trip file
  MATI[2]  = @PMTRP@                              ;    PM Trip file
  MATI[3]  = @OPTRP@                              ;    OP Trip file
  MATO = totdayve.tem, MO=30,31,32,33             ;output trip file
;                                                  4 -tables
;                                                     1) daily(unbalanced)
;                                                     2) AM Total Trips
;                                                     3) PM Total Trips
;                                                     4) OP Total Trips
;     AM             PM            Off-Pk
;--------------  --------------  --------------
 MW[1] = MI.1.1  MW[11] = MI.2.1 MW[21] = MI.3.1  ; <- 1-Occ Vehs
 MW[2] = MI.1.2  MW[12] = MI.2.2 MW[22] = MI.3.2  ; <- 2-Occ Vehs
 MW[3] = MI.1.3  MW[13] = MI.2.3 MW[23] = MI.3.3  ; <- 3+Occ Vehs
 MW[4] = MI.1.4  MW[14] = MI.2.4 MW[24] = MI.3.4  ; <- Medium Heavy Trks
 MW[5] = MI.1.5  MW[15] = MI.2.5 MW[25] = MI.3.5  ; <- Airport Pax ADrs

 ;
 ; Consolidate daily, AM,PM,OPk trips here (in mtxs 30,31,32,33)
 ;
  MW[30] = MW[1] + MW[11] + MW[21] +               ; Total Veh Trips
           MW[2] + MW[12] + MW[22] +               ; in mw[30]
           MW[3] + MW[13] + MW[23] +               ;
           MW[4] + MW[14] + MW[24] +               ;
           MW[5] + MW[15] + MW[25]                 ;

  MW[31] = MW[01] + MW[02] + MW[03] + MW[04] + MW[05] ; Total AM  Trips
  MW[32] = MW[11] + MW[12] + MW[13] + MW[14] + MW[15] ; Total PM  Trips
  MW[33] = MW[21] + MW[22] + MW[23] + MW[24] + MW[25] ; Total OPk Trips

endrun
;============================================================

;--------------------------------------------------------------------
; Step 2.
; Read in Daily(unbalanced),AM,PM,OP veh. trip tab & get X-pose of each.
; write out ASCII zone file listing Daily(balanced), AM,PM,&OP Os/Ds.
; Write out daily balanced trip table
;--------------------------------------------------------------------

RUN PGM=MATRIX
  MATI[1]  = totdayve.tem       ; 24 Hr Veh Trips/ Unbalanced
  MATO     = @daytrips@, MO=10  ; 24 Hr Veh Trips/ Balanced
;
  MW[1] = MI.1.1    ; Total Daily Veh.Trips/Unbalanced
  MW[2] = MI.1.1.T  ; Total Daily Veh.Trips/Unbalanced - Transposed
;
;
  MW[11] = MI.1.2    ;       AM Veh.Trips/Unbalanced
  MW[12] = MI.1.2.T  ;       AM Veh.Trips/Unbalanced - Transposed
;
;
  MW[21] = MI.1.3    ;       PM Veh.Trips/Unbalanced
  MW[22] = MI.1.3.T  ;       PM Veh.Trips/Unbalanced - Transposed
;
;
  MW[31] = MI.1.4    ;       OP Veh.Trips/Unbalanced
```

```
  MW[32] = MI.1.4.T  ; Total OP Veh.Trips/Unbalanced - Transposed
;
;-------------------------------------------------------------------------
; Now, balance the total daily vehicle trip table here                  -
; and then get the row and col totals of the daily, AM, PM, and Off-    -
; peak trips                                                            -
;-------------------------------------------------------------------------
;
  MW[10]= (MW[1] + MW[2]) * 0.50

  RSUM10 = ROWSUM(10) ; Zonal Row Total of daily BALANCED Veh. trips
  RSUM11 = ROWSUM(11) ; Zonal Row Total of AM             Veh. trips
  RSUM12 = ROWSUM(12) ; Zonal Col Total of AM             Veh. trips
  RSUM21 = ROWSUM(21) ; Zonal Row Total of PM             Veh. trips
  RSUM22 = ROWSUM(22) ; Zonal Col Total of PM             Veh. trips
  RSUM31 = ROWSUM(31) ; Zonal Row Total of OffPk          Veh. trips
  RSUM32 = ROWSUM(32) ; Zonal Col Total of OffPk          Veh. trips

  List   = I(5),  rsum10(10.2), rsum10(10.2), ;  Daily Bal O/Ds
                  rsum11(10.2), rsum12(10.2), ;  AM Os/Ds
                  rsum21(10.2), rsum22(10.2), ;  PM Os/Ds
                  rsum31(10.2), rsum32(10.2), ;  OP Os/Ds
                  file=@tripends@

ENDRUN         ; all done
;
;-------------------------------------------------------------------------
; Step 3.
; Squeeze zonal daily balanced trip table to Air Quality Districts
;-------------------------------------------------------------------------

RUN PGM=MATRIX
  MATI[1]    = @daytrips@       ;   24 Hr Veh Trips/ Balanced
  MATO       = sqz.tem,MO=1     ;   24 Hr Veh Trips/ Balanced squeezed
  MW[1] = MI.1.1    ; Total Daily Veh.Trips/Balanced
  RENUMBER FILE=AQD_TAZ.EQV, MISSINGZI=M, MISSINGZO=W
ENDRUN

;
;-------------------------------------------------------------------------
; Step 4.
; Read squeezed district level daily balanced veh. trip table
;-------------------------------------------------------------------------

RUN PGM=MATRIX
ZONES=@AQD@
ARRAY ROWCHKI=@AQD@, ROWADJ=@AQD@, ROWCHKF=@AQD@
  MATI[1]    = sqz.tem          ;
  MATO       = sqzftrxp.tem,mo=3,dec=4
  MW[1] = MI.1.1         ; Total Daily Veh.Trips/Balanced/Squeezed
  ROWSM1     = ROWSUM(1) ; MATRIX ROW Total
JLOOP
  MW[2][J]   = Round(MW[1][J] / ROWSM1 * 1000.00)
ENDJLOOP

  ROWCHKI[i] = 0
  ROWADJ[I]  = 0
JLOOP
  ROWchkI[i] = rowchkI[i] + MW[2][J] ; Initial Check
ENDJLOOP

  ROWADJ[I]     = 1000.0 - ROWCHKI[i]

  ROWCHKF[i]    = 0
JLOOP
   IF (I=J)
      MW[2][J] = MW[2][J] + ROWADJ[I]
   ENDIF
ENDJLOOP

JLOOP
  ROWchkF[i]  = rowchkF[i] + MW[2][J] ; Final   Check

     MW[3][J] = MW[2][J] /1000.0
ENDJLOOP

JLOOP
   LIST =I(5),J(5),MW[1](10),MW[2](10),MW[3](10.4),
         rowchkI[i](6),ROWADJ[i](6),ROWCHKF[i](6),file=distchk.asc
ENDJLOOP


RUN PGM=MATRIX
  MATI  = sqzftrxp.tem
  MW[1] = mi.1.1.T
  PRINT FORM=6.3,
  LIST  =i(5),' ',
  mw[1][01],' ',mw[1][02],' ',mw[1][03],' ',mw[1][04],' ',
  mw[1][05],' ',mw[1][06],' ',mw[1][07],' ',mw[1][08],' ',
  mw[1][09],' ',mw[1][10],' ',mw[1][11],' ',mw[1][12],' ',
  mw[1][13],' ',mw[1][14],' ',mw[1][15],' ',mw[1][16],' ',
  mw[1][17],' ',mw[1][18],' ',mw[1][19],' ',mw[1][20],' ',
  mw[1][21],' ',mw[1][22],' ',mw[1][23],' ',mw[1][24],' ',
  mw[1][25],' ',mw[1][26],' ',mw[1][27],
  file=@tripdst@
ENDRUN

*copy tppl*.PRN aqtrip.rpt
```

ZONESPRD.S

```
*DEL TPPL*.PRN
;------------------------------------------------------------------------
;ZONESPRD.S - This program reads zonal modeled AM/PM/Off-Pk Prd trips
;             and allocates them to each hour.  Output is a zone file
;             of hourly origins and destinations.
;------------------------------------------------------------------------
;
; The input file is named: trip.end (from the aqtrip.s program)
; The output files are:    hrlyorig.asc (hourly trip origins file)
;                          hrlydest.asc (hourly trip destins.file)
;
;

run pgm=matrix
zones=2191
ZDATI[1] = trip.end,z=1-5,day_o=6-15,day_d=16-25,
                          am_o=26-35, am_d=36-45,
                          pm_o=46-55, pm_d=56-65,
                          op_o=66-75, op_d=76-85

; Set up arrays

ARRAY,
HORIG=24, ; hrly Origins
HDEST=24  ; hrly Destinations

;Establish  Hrly distributions for AM, PM and Off-Pk Period Trips
;Curves taken from 1994 HTS Auto Dr. Trips in motion distributions
;Note: Hours range from 1-24, instead of 0-23
; Pcts of last hour (24) may be adjusted slightly to force normalization

LOOKUP NAME=HR_DST,           ; <<-- HRLY Trip Distributions
       LOOKUP[1]=1, RESULT=2,  ; AM
       LOOKUP[2]=1, RESULT=3,  ; PM
       LOOKUP[3]=1, RESULT=4,  ; OP
       INTERPOLATE = N,LIST=T,

R= " 1, 0.000, 0.000, 0.003, ",
   " 2, 0.000, 0.000, 0.004, ",
   " 3, 0.000, 0.000, 0.003, ",
   " 4, 0.000, 0.000, 0.003, ",
   " 5, 0.000, 0.000, 0.005, ",
   " 6, 0.000, 0.000, 0.022, ",
   " 7, 0.201, 0.000, 0.000, ",
   " 8, 0.398, 0.000, 0.000, ",
   " 9, 0.401, 0.000, 0.000, ",
   "10, 0.000, 0.000, 0.097, ",
   "11, 0.000, 0.000, 0.082, ",
   "12, 0.000, 0.000, 0.092, ",
   "13, 0.000, 0.000, 0.101, ",
   "14, 0.000, 0.000, 0.089, ",
   "15, 0.000, 0.000, 0.090, ",
   "16, 0.000, 0.000, 0.116, ",
   "17, 0.000, 0.314, 0.000, ",
   "18, 0.000, 0.373, 0.000, ",
   "19, 0.000, 0.313, 0.000, ",
   "20, 0.000, 0.000, 0.108, ",
   "21, 0.000, 0.000, 0.077, ",
   "22, 0.000, 0.000, 0.058, ",
   "23, 0.000, 0.000, 0.034, ",
   "24, 0.000, 0.000, 0.016, "

;------------------------------------------------------------------------
; NOTE: The hourly arrays are indexed from 1 to 24, as follows:
; 1-  12mid - 12:59AM       13- 12noon - 12:59PM
; 2- 1:00AM -  1:59AM       14- 1:00PM -  1:59PM
; 3- 2:00AM -  2:59AM       15- 2:00PM -  2:59PM
; 4- 3:00AM -  3:59AM       16- 3:00PM -  3:59PM
; 5- 4:00AM -  4:59AM       17- 4:00PM -  4:59PM
; 6- 5:00AM -  5:59AM       18- 5:00PM -  5:59PM
; 7- 6:00AM -  6:59AM       19- 6:00PM -  6:59PM
; 8- 7:00AM -  1:59AM       20- 7:00PM -  7:59PM
; 9- 8:00AM -  2:59AM       21- 8:00PM -  8:59PM
;10- 9:00AM -  3:59AM       22- 9:00PM -  9:59PM
;11-10:00AM -  4:59AM       23-10:00PM - 10:59PM
;12-11:00AM - 11:59AM       24-11:00PM - 11:59PM
;------------------------------------------------------------------------
;
 SUM_IO = SUM_IO + am_o[i] + pm_o[i] + op_o[i] ; sum of input origins
 SUM_ID = SUM_ID + am_d[i] + pm_d[i] + op_d[i] ; sum of input destinations
;------------------------------------------------------------------------
; Hourly Origin Trip Allocation                                         -
;------------------------------------------------------------------------

LOOP IDX=1,24
 HORIG[IDX] = (am_o[i] * HR_DST(1,IDX)) +
              (pm_o[i] * HR_DST(2,IDX)) +
              (op_o[i] * HR_DST(3,IDX))

 HDEST[IDX] = (am_d[i] * HR_DST(1,IDX)) +
              (pm_d[i] * HR_DST(2,IDX)) +
              (op_d[i] * HR_DST(3,IDX))

;
; Let's accumulate hourly Origins/Destinations to make sure 'Outs=Ins'
;
 SUM_HO = SUM_HO + HORIG[IDX]  ; sum of hourly origins
 SUM_HD = SUM_HD + HDEST[IDX]  ; sum of hourly destinations

ENDLOOP
;
; List out Hourly hourly Origins/Destinations
;
LIST = I(5),
       HORIG[01](10.2),HORIG[02](10.2),HORIG[03](10.2),HORIG[04](10.2),
       HORIG[05](10.2),HORIG[06](10.2),HORIG[07](10.2),HORIG[08](10.2),
       HORIG[09](10.2),HORIG[10](10.2),HORIG[11](10.2),HORIG[12](10.2),
       HORIG[13](10.2),HORIG[14](10.2),HORIG[15](10.2),HORIG[16](10.2),
       HORIG[17](10.2),HORIG[18](10.2),HORIG[19](10.2),HORIG[20](10.2),
       HORIG[21](10.2),HORIG[22](10.2),HORIG[23](10.2),HORIG[24](10.2),
       file=HRLYORIG.ASC

LIST = I(5),
       HDEST[01](10.2),HDEST[02](10.2),HDEST[03](10.2),HDEST[04](10.2),
       HDEST[05](10.2),HDEST[06](10.2),HDEST[07](10.2),HDEST[08](10.2),
       HDEST[09](10.2),HDEST[10](10.2),HDEST[11](10.2),HDEST[12](10.2),
       HDEST[13](10.2),HDEST[14](10.2),HDEST[15](10.2),HDEST[16](10.2),
       HDEST[17](10.2),HDEST[18](10.2),HDEST[19](10.2),HDEST[20](10.2),
       HDEST[21](10.2),HDEST[22](10.2),HDEST[23](10.2),HDEST[24](10.2),
       file=HRLYDEST.ASC

endrun
; ---------------------------------------------------------------
*copy tppl*.prn zonesprd.rpt
```

Pre_Local.s

```
*del tppl*.prn
;-------------------------------------------------------------------------
;Pre_Local.s -  This script reads a forecast loaded links file and summarizies VMT
;              at the jurisdiction level, rounding figures to 000s.  This
information
;              will be read in by the LOCAL.S script to compute local emissions
run pgm=hwyload
  neti = %_inpnet_%

ARRAY J_VMT_Fut   = 27,  ; Juris. Future Yr Network VMT  Total
      J_VMT_FutRnd= 27   ; Juris. Future Yr Network VMT  Total / Rounded to nearest
1000

zones = 1

LOOKUP NAME=NetEms,       ;   Emission jurisdiction code related to network
jurisdiction code
  LOOKUP[1]=1, RESULT=2,  ;   Note:  external VMT is not distinguished from internal
VMT
  INTERPOLATE = N,LIST=T,FAIL=99,99,99,  ;
;lw.JUR  JCD
R=" 0,   1",   ; DC
  " 1,   2",   ; Mtg
  " 2,   3",   ; PG
  " 3,  12",   ; Arl
  " 4,  17",   ; Alx
  " 5,  13",   ; FFx
  " 6,  14",   ; Ldn
  " 7,  15",   ; PW
  " 9,  10",   ; Frd
  "10,   4",   ; How
  "11,   5",   ; Aar
  "12,   9",   ; Chs
  "14,   6",   ; Car
  "15,   8",   ; Cal
  "16,  18",   ; StM
  "17,  25",   ; KG
  "18,  26",   ; Fbg
  "19,  16",   ; Sta
  "20,  24",   ; Spts
  "21,  21",   ; Fau
  "22,  20",   ; Clk
  "23,  22"    ; Jef

; Set up arrays
phase = linkread

  t0          = li.amhtime
  lw.totvol   = li.i624vol
  lw.distance = li.distance
  lw.jur      = li.jur
  lw.Ftype    = li.ftype
  lw.totvmt   = lw.totvol*lw.distance

endphase

phase = iloop
;
      linkloop               ;            select -
        if (lw.ftype>0  )  ;  <<---      ALL HIGHWAY links
          idx =netEms(1,lw.jur)
          J_VMT_Fut[idx] =  J_VMT_Fut[idx] + lw.totvmt  ; Juris. Future Yr Network
VMT  Total
        endif
      endlinkloop

;      Round to 1000s at Juris level and get regional totals:
      loop k=1,27
        J_VMT_FutRnd[K] =   (Round(J_VMT_Fut[k]/1000.0)) * 1000.0  ; Juris. Future Yr
Network VMT  Total
        T_VMT_Fut       =    T_VMT_Fut   +  J_VMT_Fut[k]
      endloop


  loop k=1,27
     Print form=10.0 list =  k(5),'     ',J_VMT_Fut[k], J_VMT_FutRnd[k],
       ' ;; EmisJurCode/ VMT Unrounded /VMT Rounded to nrst 000 / reg VMT= ',
T_VMT_Fut,
                                                              File = Futr_Juris_VMT.txt
  endloop
endphase
endrun
```

Peak_Spread_Seasonal_Nx.s

```
*del tppl*.prn
;------------------------------------------------------------------------
;Peak_Spread_Seasonal_Nx.s - Post-traffic assignment process to develop hourly
;                speeds and volumes.  The hourly speeds will be used
;                to recompute AM, PM and Off-Peak Period Speeds which
;                will be recycled back to the trip distribution process
;
;                 The program was built of of PEAKTST4.S which was one
;                 of many V2.1C post-processor alternative tests explored by
;                 Milone&Kirby in the Fall of 2003 for the TRB Model Review
;                 committee.
;
;                This run includes special freeway volume overides based
;                on skycomp-based volume flow volumes for congested links
;
;  ----------
;       Changes per V2.1 D Draft 50 Model:
;         1.   Speed is NOT the minimum of pre-/post- spreaded hrly volumes, as
before.
;              Speed is based on the initial volume only.
;         2.   Frwy speed-flow curves now have w/ 16 mph floor for freeways (not 8mph
as before).
;         3.   Original 'initial' hrly distributions adjusted so that
;              peaking assumptions used in traffic assignment are maintained.
;         4.   The time period volumes from the traffic assignment are 'conserved'.
;              i.e., The initial hourly volumes are adjusted to match assignment
loads.
;         5.   Non-Freeway Speed flow curves updated.
;------------------------------------------------------------------------
;       August/Sept 2006 Changes
;       Environment Variable added : _SeasonFtr_
;       factor is applied to total volume to convert avg weekday volume to
;       appropriate seasonal volume

; Define Inputs/Outputs:


; Step 1. Accumulate regional AM&PM highway volume.
;         The AM/PM totals will be stored in temporary variables
;         _AMVOL and _PMVOL.

run pgm=hwynet
 neti     = %_inpnet_%
 neto     = dummy.net,include = a,b,i6amvol,i6pmvol

 if (a>2191 &&  b>2191)
 _AMVOL = _AMVOL + i6amvol
 _PMVOL = _PMVOL + i6pmvol
endif

 LOG PREFIX=HWYNET , VAR =_AMVOL, _PMVOL ; pass regional AM/PM volumes figures
endrun                                   ; out to TP MAIN as HWYNET._AMVOL &
HWYNET._PMVOL
*del dummy.net

;-----------------------------------------------------------------
; Step 2. (TP_MAIN)
;      -  Calculated ratio of regional PM volume to AM volume
;         in variable: ftram
;

amtot=hwynet._amvol
pmtot=hwynet._pmvol
ftram=pmtot/amtot


; Step 3 (TP+/hwynet)
;      -  Apply ratio (ftram) to AM volume to develop scaled AM Volume
;      -  Identify AM/PM HOV link using a 0/1 'flags'(AMHOVFLG/PMHOVFLG)
;         These links must be identified so that they will be allocated
;         to hourly periods using special hourly distributions.

run pgm=hwynet

 neti = %_inpnet_%
 neto = temp.net,include = a,b,distance,spdclass,capclass,ftype,amhtime,
        amlane,pmlane,oplane,i6amvol,i6pmvol,i6opvol,i624vol,jur,atype,
        i6amspd,i6pmspd,i6opspd,
        amhovflg,pmhovflg,ftramvol

        amhovflg = 0
        pmhovflg = 0
         if (i6amvol = i624vol) amhovflg = 1
         if (i6pmvol = i624vol) pmhovflg = 1

        ftramvol = i6amvol * @ftram@ ; ftramvol is the scaled am vol so that the
regional total
endrun                                   ; equals the pm total.  The scaled vol is
used to develop a balanced
                                         ; distribution of am,pm peaking class
codes for the system below.
                                         ; It is not used for any other purpose
;-----------------------------------------------------------------
; Step 4. (TP+/hwynet)
;         Now develop final hourly VMT and Speeds
;

run pgm=hwyload
  neti = temp.net


; Set up arrays

ARRAY,
CAPA=24,   ; hourly link capacities
IVOL=24,   ; initial hrly volumes based on table lookup distributions
IVCR=24,   ; Initial V/C ratio
IVMT=24,   ; Initial VMT
ISPD=24,   ; Initial Restrained Hrly Speed

XVOL=24,   ; excess hrly volume- portion of initial volume exceeding capacity
NVOL=24,   ; 'New'  hrly volume- initial volume+excess from adjacent hr(s)
FVOL=24,   ; Final  hrly volume- final hourly volume (after volume spreading)
NVCR=24,   ; New    V/C ratio
NSPD=24,   ; New    Restrained Hrly Speed

FSPD=24,   ; Final Restrained Hrly Speed
DSPD=24,   ; Difference between Initial and Final Speed
LANE=24,   ; lanes
FVMT=24    ; Final  VMT


;------------------------------------------------------------------------
; NOTE: The hourly arrays are indexed from 1 to 24, as follows:
; 1-  12mid - 12:59AM       13- 12noon - 12:59PM
; 2- 1:00AM -  1:59AM       14- 1:00PM -  1:59PM
; 3- 2:00AM -  2:59AM       15- 2:00PM -  2:59PM
; 4- 3:00AM -  3:59AM       16- 3:00PM -  3:59PM
; 5- 4:00AM -  4:59AM       17- 4:00PM -  4:59PM
; 6- 5:00AM -  5:59AM       18- 5:00PM -  5:59PM
; 7- 6:00AM -  6:59AM       19- 6:00PM -  6:59PM
; 8- 7:00AM -  7:59AM       20- 7:00PM -  7:59PM
; 9- 8:00AM -  8:59AM       21- 8:00PM -  8:59PM
;10- 9:00AM -  9:59AM       22- 9:00PM -  9:59PM
;11-10:00AM - 10:59AM       23-10:00PM - 10:59PM
;12-11:00AM - 11:59AM       24-11:00PM - 11:59PM
;------------------------------------------------------------------------
;
;------------------------------------------------------------------------
```

```
; Initial Hourly traffic distribution LOOKUP for NON-HOV Links        -
;-------------------------------------------------------------------------

;Establish 9 lookup Hrly distributions
;Curves taken from M.Freeman's 8/27/02 Memo to File (Figure 5)
;Note: Hours range from 1-24, instead of 0-23
;      Pcts of last hour (24) may be adjusted slightly to force normalization
; Updated 8/25 by milone, moran
; so that assignment&peak spreader use consistent peaking assumptions
LOOKUP NAME=HR_DIST,           ; <<-- HRLY distributions by peak type&Ft
       LOOKUP[1]=1, RESULT=2,  ; AM / Freeway
       LOOKUP[2]=1, RESULT=3,  ; AM / Arterial
       LOOKUP[3]=1, RESULT=4,  ; AM / Local/Collector

       LOOKUP[4]=1, RESULT=5,  ; PM / Freeway
       LOOKUP[5]=1, RESULT=6,  ; PM / Arterial
       LOOKUP[6]=1, RESULT=7,  ; PM / Local/Collector

       LOOKUP[7]=1, RESULT=8,  ; Even / Freeway
       LOOKUP[8]=1, RESULT=9,  ; Even / Arterial
       LOOKUP[9]=1, RESULT=10, ; Even / Local/Collector
       INTERPOLATE = N,LIST=T,
R= " 1  0.767  0.490  0.337  1.113  0.760  0.621  1.073  0.671  0.520",
   " 2  0.548  0.301  0.195  0.644  0.408  0.323  0.728  0.396  0.305",
   " 3  0.517  0.250  0.176  0.478  0.281  0.242  0.606  0.301  0.238",
   " 4  0.717  0.374  0.285  0.420  0.238  0.199  0.680  0.330  0.301",
   " 5  1.879  1.092  0.958  0.581  0.377  0.321  1.235  0.719  0.703",
   " 6  6.199  4.052  3.801  1.379  1.075  0.962  3.602  2.272  2.369",
   " 7  8.662  8.748  9.188  3.238  2.699  2.583  4.991  4.578  4.832",
   " 8 11.133 12.380 13.403  4.629  4.618  4.667  6.955  7.651  8.064",
   " 9  8.038  9.822 10.917  4.711  5.148  5.068  5.442  6.899  7.265",
   "10  6.937  6.386  6.095  3.836  4.376  4.096  5.927  6.112  5.800",
   "11  5.138  4.707  4.495  3.898  4.192  3.938  5.176  5.153  4.802",
   "12  4.679  4.531  4.509  4.208  4.674  4.543  5.148  5.404  5.141",
   "13  4.653  4.717  4.809  4.611  5.252  5.247  5.340  5.803  5.496",
   "14  4.584  4.639  4.635  4.832  5.210  5.007  5.450  5.678  5.336",
   "15  4.662  4.802  4.845  5.950  5.874  5.763  6.102  5.971  5.890",
   "16  4.703  5.092  5.167  7.319  7.139  7.034  6.801  6.619  6.679",
   "17  4.558  5.259  5.238  9.950  9.580 10.056  5.944  6.258  6.610",
   "18  4.763  5.545  5.584 10.866 10.929 11.574  6.631  7.153  7.661",
   "19  4.324  4.983  4.919  8.551  9.029  9.651  5.347  5.921  6.435",
   "20  3.655  3.903  3.716  5.613  6.012  6.167  4.994  5.294  5.452",
   "21  2.950  2.965  2.698  4.246  4.436  4.597  3.885  4.047  4.088",
   "22  2.644  2.403  2.010  3.682  3.579  3.518  3.441  3.269  3.061",
   "23  2.058  1.639  1.297  2.798  2.409  2.203  2.696  2.212  1.901",
   "24  1.232  0.920  0.723  2.447  1.705  1.620  1.806  1.289  1.052"

;;; Original / Fall 2003 Hourly Curves - Superseded -
;; " 1, 0.758, 0.490, 0.337, 1.169, 0.780, 0.645, 1.022, 0.642, 0.507",
;; " 2, 0.541, 0.301, 0.195, 0.677, 0.419, 0.336, 0.693, 0.379, 0.297",
;; " 3, 0.511, 0.250, 0.176, 0.502, 0.288, 0.251, 0.577, 0.288, 0.232",
;; " 4, 0.708, 0.374, 0.285, 0.441, 0.244, 0.207, 0.648, 0.316, 0.294",
;; " 5, 1.856, 1.091, 0.959, 0.610, 0.387, 0.334, 1.176, 0.688, 0.686",
;; " 6, 6.123, 4.048, 3.804, 1.449, 1.103, 1.000, 3.431, 2.175, 2.310",
;; " 7, 9.488, 9.020, 9.206, 3.011, 2.603, 2.452, 5.805, 5.069, 5.153",
;; " 8,10.022,11.834,13.334, 4.305, 4.454, 4.430, 6.769, 7.724, 7.985",
;; " 9, 8.804,10.128,10.938, 4.381, 4.965, 4.811, 6.330, 7.639, 7.748",
;; "10, 6.735, 6.373, 6.106, 4.030, 4.489, 4.257, 5.645, 5.852, 5.656",
;; "11, 5.075, 4.703, 4.499, 4.095, 4.300, 4.093, 4.930, 4.933, 4.683",
;; "12, 4.622, 4.527, 4.513, 4.421, 4.794, 4.721, 4.903, 5.174, 5.013",
;; "13, 4.596, 4.713, 4.813, 4.844, 5.387, 5.453, 5.086, 5.556, 5.359",
;; "14, 4.528, 4.635, 4.639, 5.076, 5.344, 5.204, 5.191, 5.436, 5.203",
;; "15, 4.605, 4.798, 4.849, 6.251, 6.025, 5.989, 5.812, 5.717, 5.743",
;; "16, 4.645, 5.087, 5.171, 8.268, 7.593, 7.701, 6.477, 6.337, 6.513",
;; "17, 4.637, 5.265, 5.233, 9.493, 9.303, 9.537, 6.702, 6.859, 7.033",
;; "18, 4.845, 5.551, 5.579, 9.659,10.417,11.003, 6.753, 7.301, 7.571",
;; "19, 4.399, 4.988, 4.915, 8.159, 8.768, 9.153, 6.029, 6.490, 6.847",
;; "20, 3.610, 3.899, 3.719, 5.897, 6.167, 6.409, 4.756, 5.068, 5.316",
;; "21, 2.914, 2.962, 2.700, 4.461, 4.550, 4.778, 3.700, 3.875, 3.986",
;; "22, 2.612, 2.401, 2.012, 3.868, 3.671, 3.656, 3.277, 3.130, 2.985",
;; "23, 2.033, 1.637, 1.298, 2.939, 2.471, 2.290, 2.568, 2.118, 1.854",
;; "24, 1.333, 0.925, 0.720, 1.994, 1.478, 1.290, 1.720, 1.234, 1.026"
;;;

;-------------------------------------------------------------------------
;  End of Hourly non-HOV traffic distribution LOOKUP                  -
;-------------------------------------------------------------------------
;-------------------------------------------------------------------------
; Initial Hourly traffic distribution LOOKUP for Special HOV Links    -
;-------------------------------------------------------------------------

;Establish 9 lookup Hrly distributions
;Curves taken from Fall 2002 HOV traffic counts provided by Pat Zilliacus
; provide in Mar 2003 (undocumented).
;
;

LOOKUP NAME=HR_HOVD,           ; <<-- HOV HRLY distributions by type
       LOOKUP[1]=1, RESULT=2,  ; AM prd HOV Operation on Freeways
       LOOKUP[2]=1, RESULT=3,  ; PM prd HOV Operation on Freeway
       LOOKUP[3]=1, RESULT=4,  ; unused / for future use
       LOOKUP[4]=1, RESULT=5,  ; unused / for future use
       LOOKUP[5]=1, RESULT=6,  ; unused / for future use
       LOOKUP[6]=1, RESULT=7,  ; unused / for future use
       LOOKUP[7]=1, RESULT=8,  ; unused / for future use
       LOOKUP[8]=1, RESULT=9,  ; unused / for future use
       LOOKUP[9]=1, RESULT=10, ; unused / for future use
       INTERPOLATE = N,LIST=T,

R= " 1, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   " 2, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   " 3, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   " 4, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   " 5, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   " 6, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   " 7,29.700, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   " 8,43.300, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   " 9,27.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "10, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "11, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "12, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "13, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "14, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "15, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "16, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "17, 0.000,37.300, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "18, 0.000,41.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "19, 0.000,21.700, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "20, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "21, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "22, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "23, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000",
   "24, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000, 0.000"
```

```
;--------------------------------------------------------------------
;  End of HOV Hourly traffic distribution LOOKUP                     -
;--------------------------------------------------------------------

;--------------------------------------------------------------------
; Speed Lookup tables - Speed is a function of V/C                  -

LOOKUP NAME = SPDA,
       LOOKUP[1] = 1,RESULT=2,   ; FWY/RMP AT=1-2
       LOOKUP[2] = 1,RESULT=3,   ; FWY/RMP AT=3-4
       LOOKUP[3] = 1,RESULT=4,   ; FWY/RMP AT=5-7
       LOOKUP[4] = 1,RESULT=5,   ; MAJ AT=1-2
       LOOKUP[5] = 1,RESULT=6,   ; MAJ AT=3-4
       LOOKUP[6] = 1,RESULT=7,   ; MAJ AT=5
       LOOKUP[7] = 1,RESULT=8,   ; MAJ AT=6-7
       LOOKUP[8] = 1,RESULT=9,   ; MIN AT=1-2
       LOOKUP[9] = 1,RESULT=10,  ; MIN AT=3-4
       LOOKUP[10]= 1,RESULT=11,  ; MIN AT=5
       LOOKUP[11]= 1,RESULT=12,  ; MIN AT=6-7
       LOOKUP[12]= 1,RESULT=13,  ; COL AT=1-2
       LOOKUP[13]= 1,RESULT=14,  ; COL AT=3-4
       LOOKUP[14]= 1,RESULT=15,  ; COL AT=5
       LOOKUP[15]= 1,RESULT=16,  ; COL AT=6-7
       LOOKUP[16]= 1,RESULT=17,  ; EXP AT=1-2
       LOOKUP[17]= 1,RESULT=18,  ; EXP AT=3-5
       LOOKUP[18]= 1,RESULT=19,  ; EXP AT=6-7
  INTERPOLATE = Y, LIST=T,
; UPDATED 9/23/04 Speed Flow Curves - sivasailam/milone
;
; V/C     |----   Freeway  ---||-----    Maj Art    ------||------   Minor Art  -----||------  Collector ---------||----    Expr  -----|
;   Atp->  1-2    3-4    5-7    1-2    3-4    5      6-7    1-2    3-4      5      6-7    1-2   3-4     5      6-7   1-2   3-5    6-7
;        -----  ------ ------ ------ ------ ------ ------ ------ ------ ------ ------ ------ ------ ------ ------  -----  ------ ------
R=" 0.00  55.000 60.000 67.000 25.000 35.000 40.000 45.000 20.000 30.000 35.000 40.000 15.000 20.000 25.000 30.000 45.000 50.000 55.000",
  " 0.10  54.945 59.945 66.940 24.300 33.600 38.600 43.600 19.400 28.900 33.800 39.200 14.500 19.300 24.300 28.800 44.945 49.939 54.933",
  " 0.20  54.890 59.890 66.880 23.600 32.200 37.200 42.200 18.800 27.800 32.600 38.400 14.000 18.600 23.600 27.600 44.890 49.878 54.866",
  " 0.30  54.810 59.800 66.790 22.900 30.800 35.800 40.800 18.200 26.700 31.400 37.600 13.500 17.900 22.900 26.400 44.820 49.800 54.780",
  " 0.40  54.710 59.690 66.670 22.200 29.400 34.400 39.400 17.600 25.600 30.200 36.800 13.000 17.200 22.200 25.200 44.730 49.700 54.670",
  " 0.50  54.570 59.540 66.490 21.500 28.000 33.000 38.000 17.000 24.500 29.000 36.000 12.500 16.500 21.500 24.000 44.620 49.578 54.536",
  " 0.60  54.370 59.300 66.180 20.800 27.000 31.600 36.400 16.400 23.400 27.800 35.000 12.000 16.000 20.800 23.000 44.470 49.411 54.352",
  " 0.70  54.060 58.910 65.600 20.100 26.000 30.200 34.800 15.800 22.300 26.600 34.100 11.500 15.500 20.100 22.000 44.260 49.178 54.096",
  " 0.80  53.540 58.170 64.260 19.400 25.000 28.800 33.200 15.200 21.200 25.400 31.400 11.000 15.000 19.400 21.000 43.970 48.856 53.741",
  " 0.90  52.560 56.560 60.840 18.700 24.000 27.400 31.600 14.600 20.100 24.200 28.700 10.500 14.500 18.700 20.000 43.530 48.367 53.203",
  " 1.00  50.580 53.220 55.280 18.000 23.000 26.000 30.000 14.000 19.000 23.000 26.000 10.000 14.000 18.000 19.000 42.820 47.578 52.336",
  " 1.10  46.860 48.550 49.875 16.600 20.800 23.400 27.200 12.800 17.600 21.000 23.600  9.200 12.800 16.600 17.600 41.250 45.833 50.417",
  " 1.17  44.256 45.281 46.092 15.620 19.260 21.580 25.240 11.960 16.620 19.600 21.920  8.640 11.960 15.620 16.620 40.151 44.612 49.073",
  " 1.20  43.140 43.880 44.470 15.200 18.600 20.800 24.400 11.600 16.200 19.000 21.200  8.400 11.600 15.200 16.200 39.680 44.089 48.498",
  " 1.30  39.335 39.870 40.315 13.800 16.400 18.200 21.600 10.400 14.800 17.000 18.800  7.600 10.400 13.800 14.800 36.925 41.028 45.131",
  " 1.40  35.530 35.860 36.160 12.400 14.200 15.600 18.800  9.200 13.400 15.000 16.400  6.800  9.200 12.400 13.400 34.170 37.967 41.763",
  " 1.50  32.470 32.740 32.990 11.000 12.000 13.000 16.000  8.000 12.000 13.000 14.000  6.000  8.000 11.000 12.000 31.420 34.911 38.402",
  " 1.60  29.410 29.620 29.820 11.000 12.000 13.000 16.000  8.000 12.000 13.000 14.000  6.000  8.000 11.000 12.000 28.670 31.856 35.041",
  " 1.80  24.550 24.700 24.850 11.000 12.000 13.000 16.000  8.000 12.000 13.000 14.000  6.000  8.000 11.000 12.000 24.050 26.722 29.394",
  " 2.00  20.610 20.730 20.860 11.000 12.000 13.000 16.000  8.000 12.000 13.000 14.000  6.000  8.000 11.000 12.000 20.230 22.478 24.726",
  " 2.25  16.650 16.750 16.850 11.000 12.000 13.000 16.000  8.000 12.000 13.000 14.000  6.000  8.000 11.000 12.000 16.350 18.167 19.983",
  "99.99  16.650 16.750 16.850 11.000 12.000 13.000 16.000  8.000 12.000 13.000 14.000  6.000  8.000 11.000 12.000 16.350 18.167 19.983"
;
;
;
;
;>>
;--------------------------------------------------------------------
; Added Lookup - Freeway Volume Flow (v/hr/ln) as a function of V/C  -
;       (D.Sivasailam 12/9/03).                                      -
;       Note: Volume flows on freeways for congested conditions      -
;        -  these values will be used to develop override hrly       -
;           freeway link volumes where V/C > 1.0                     -
;--------------------------------------------------------------------
LOOKUP NAME = CFWYFLWA,         ; congested freeway flow array
```

```
       LOOKUP[1]=1, RESULT=2,   ;         Area Type 1
       LOOKUP[2]=1, RESULT=3,   ;         Area Type 2
       LOOKUP[3]=1, RESULT=4,   ;         Area Type 3
       LOOKUP[4]=1, RESULT=5,   ;         Area Type 4
       LOOKUP[5]=1, RESULT=6,   ;         Area Type 5
       LOOKUP[6]=1, RESULT=7,   ;         Area Type 6
       LOOKUP[7]=1, RESULT=8,   ;         Area Type 7
       INTERPOLATE=Y, LIST=T,   ; Interpolate Between Points, List out
;
; LOOKUP VALUES FOLLOW - UNITS: Vehicles Per Hour Per Lane (VPHPL)
;
;          Fwy   Fwy   Fwy   Fwy   Fwy   FWY   FWY
;    V/C   AT1   AT2   AT3   AT4   AT5   AT6   AT7
;   ----- ----- ----- ----- ----- ----- ----- -----
R= " 1.00  1500  1600  1800  1800  2000  2000  2100 ",
   " 1.20  1433  1528  1719  1719  1911  1911  2006 ",
   " 1.40  1366  1457  1639  1639  1821  1821  1912 ",
   " 1.60  1299  1385  1559  1559  1732  1732  1818 ",
   " 1.80  1214  1295  1457  1457  1619  1619  1699 ",
   " 2.00  1128  1204  1355  1355  1505  1505  1580 ",
   " 2.25  1017  1085  1221  1221  1356  1356  1424 ",
   "99.99  1017  1085  1221  1221  1356  1356  1424 "
;>>
;-------------------------------------------------------------------------
; End of Speed Lookup tables                                             -
;-------------------------------------------------------------------------

zones = 1

phase = linkread
  t0          = li.amhtime

;
  lw.amcap    = capacityfor(li.amlane,li.capclass)
  lw.pmcap    = capacityfor(li.pmlane,li.capclass)
  lw.opcap    = capacityfor(li.oplane,li.capclass)

  lw.amlane   = li.amlane
  lw.pmlane   = li.pmlane
  lw.oplane   = li.oplane

  lw.ffspd    = speedfor(1,li.spdclass)
  lw.distance = li.distance

  lw.amspd    = li.i6amspd
  lw.pmspd    = li.i6pmspd
  lw.opspd    = li.i6opspd

  lw.amvol    = li.i6amvol * %_SeasonFtr_%
  lw.pmvol    = li.i6pmvol * %_SeasonFtr_%
  lw.opvol    = li.i6opvol * %_SeasonFtr_%
  lw.totvol   = li.i624vol * %_SeasonFtr_%

  lw.amvmt    = lw.amvol*lw.distance
  lw.pmvmt    = lw.pmvol*lw.distance
  lw.opvmt    = lw.opvol*lw.distance

  lw.ftramvol = li.ftramvol

  lw.ftype    = li.ftype
  lw.atype    = li.atype
  lw.jur      = li.jur
  lw.amhovflg = li.amhovflg
  lw.pmhovflg = li.pmhovflg


endphase

phase = iloop
;
      linkloop               ;            select -
  if (lw.ftype>0  )  ;  <<---      ALL HIGHWAY links

;-------------------------------------------------------------------------
;  Define peaking class 1, 2, or 3 (AM, PM, or Even)                     -
;  Note AM,PM tolerences originally set to +/-7.5% changed to +/- 10%    -
;-------------------------------------------------------------------------
;

if (lw.totvol = 0)
    pkdfpct  = 0
else
    pkdfpct  = ((lw.ftramvol - lw.pmvol) / lw.totvol) * 100.00
endif

if     (pkdfpct >   7.50)
       pkclass = 1 ; AM  type peaking
elseif (pkdfpct <  -7.50)
       pkclass = 2; PM   type peaking
else
       pkclass = 3; Even type peaking
endif


;
;-------------------------------------------------------------------------
;  Define Facility Class 1, 2, or 3 (freeway, arterial, collector/local) -
;-------------------------------------------------------------------------
;

if     (lw.ftype = 1 || lw.ftype = 5 || lw.ftype = 6)
       ftclass = 1                    ; Freeway/Expresway/Ramp
elseif (lw.ftype = 2 || lw.ftype = 3)
       ftclass = 2                    ; Arterial
else
       ftclass = 3                    ; local
endif


;
;-------------------------------------------------------------------------
;  Define Joint Peak / Facility (JPF) Class 1-9
;-------------------------------------------------------------------------
;

if (pkclass = 1 && ftclass = 1)  jpf = 1 ; AM/freeway
if (pkclass = 1 && ftclass = 2)  jpf = 2 ; AM/arterial
if (pkclass = 1 && ftclass = 3)  jpf = 3 ; AM/collector/local

if (pkclass = 2 && ftclass = 1)  jpf = 4 ; PM/freeway
if (pkclass = 2 && ftclass = 2)  jpf = 5 ; PM/arterial
if (pkclass = 2 && ftclass = 3)  jpf = 6 ; PM/collector/local

if (pkclass = 3 && ftclass = 1)  jpf = 7 ; Even/freeway
if (pkclass = 3 && ftclass = 2)  jpf = 8 ; Even/arterial
if (pkclass = 3 && ftclass = 3)  jpf = 9 ; Even/collector/local

;
;-------------------------------------------------------------------------
; Now apply the appropriate initial distributions to daily volume        -
; and compute initial capacities to develop IVOL & CAPA hourly arrays    -
; Note:  Hourly AM,PM,Off-Pk volumes may not sum to period volumes in     -
; the loaded links file. reconciliation will occur following the initial -
; allocation of hourly volumes  IVOL[1] ... IVOL[24]                     -
;-------------------------------------------------------------------------
;
;
LOOP IDX=1,24
 IF (lw.amhovflg = 0 && lw.pmhovflg =0 ) ; if link is operating all day...
   IVOL[idx] = (HR_DIST(jpf,idx) * lw.totvol)/100.0 ; initial hrly volume
 ENDIF

 IF (lw.amhovflg = 1 )              ; if link operates during AM hrs...
```

```
   IVOL[idx] = (HR_HOVD(1,idx) * lw.totvol)/100.0 ; initial hrly volume
 ENDIF

 IF (lw.pmhovflg = 1)               ; if link operates during PM hrs...
   IVOL[idx] = (HR_HOVD(2,idx) * lw.totvol)/100.0 ; initial hrly volume
 ENDIF
                                                  ;

 ; Define Hourly lanes and capacities
     if     (idx >   6 && idx < 10)               ; compute capacity
        capa[idx] = lw.amcap                      ; based on time slot
        lane[idx] = lw.amlane                     ;;> am lanes

      elseif (idx > 16 && idx < 20)
        capa[idx] = lw.pmcap
        lane[idx] = lw.pmlane                     ;;> pm lanes
      else
        capa[idx] = lw.opcap
        lane[idx] = lw.oplane                     ;;> op lanes
     endif
ENDLOOP


;-------------------------------------------------------------------------
; Next factor the link hourly volumes to ensure they are equal to the    -
; the period volumes of the input loaded links file.                     -
;                                                                        -
;-------------------------------------------------------------------------

 _iniamvol  = IVOL[7]   + IVOL[8]  + IVOL[9]

 _inipmvol  = IVOL[17]  + IVOL[18] + IVOL[19]

 _iniopvol  = lw.totvol - (_iniamvol + _inipmvol)


LOOP IDX=1,24
   IF      (IDX =  7, 8, 9 && _iniamvol > 0)
     IVOL[idx] = IVOL[idx] *  (lw.amvol/_iniamvol)

    ELSEIF (IDX = 17,18,19 && _inipmvol > 0)
     IVOL[idx] = IVOL[idx] *  (lw.pmvol/_inipmvol)

    ELSEIF (_iniopvol > 0)
     IVOL[idx] = IVOL[idx] * ( (lw.totvol-(lw.amvol+lw.pmvol)) / _iniopvol )
   ENDIF


   ; Compute the Initial VMT
   ;
     IVMT[IDX]  = IVOL[IDX]* lw.DISTANCE    ;Final VMT = Final/Spread Vol
                                            ;      * Distance



   ;
   ; Compute the Initial V/C
   ;
       IVCR[IDX] =(IVOL[IDX] / CAPA[IDX])
   ;
   ; Compute the INITIAL Speed based on INITIAL V/C
   ; Lookup Curves based on Facility type and Area Type
         IF       (lw.ftype = 1,6 && lw.atype = 1,2)
             ISPD[IDX] = SPDA(1,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 1,6 && lw.atype = 3,4)
             ISPD[IDX] = SPDA(2,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 1,6 && lw.atype = 5-7)
             ISPD[IDX] = SPDA(3,IVCR[IDX])
         ENDIF

         IF       (lw.ftype = 2 && lw.atype = 1-2)
             ISPD[IDX] = SPDA(4,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 2 && lw.atype = 3-4)
             ISPD[IDX] = SPDA(5,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 2 && lw.atype = 5)
             ISPD[IDX] = SPDA(6,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 2 && lw.atype = 6-7)
             ISPD[IDX] = SPDA(7,IVCR[IDX])
         ENDIF

         IF       (lw.ftype = 3 && lw.atype = 1-2)
             ISPD[IDX] = SPDA(8,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 3 && lw.atype = 3-4)
             ISPD[IDX] = SPDA(9,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 3 && lw.atype = 5)
             ISPD[IDX] = SPDA(10,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 3 && lw.atype = 6-7)
             ISPD[IDX] = SPDA(11,IVCR[IDX])
         ENDIF

         IF       (lw.ftype = 4 && lw.atype = 1-2)
             ISPD[IDX] = SPDA(12,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 4 && lw.atype = 3-4)
             ISPD[IDX] = SPDA(13,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 4 && lw.atype = 5)
             ISPD[IDX] = SPDA(14,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 4 && lw.atype = 6-7)
             ISPD[IDX] = SPDA(15,IVCR[IDX])
         ENDIF


         IF       (lw.ftype = 5 && lw.atype = 1-2)
             ISPD[IDX] = SPDA(16,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 5 && lw.atype = 3-5)
             ISPD[IDX] = SPDA(17,IVCR[IDX])
         ENDIF
         IF       (lw.ftype = 5 && lw.atype = 6-7)
             ISPD[IDX] = SPDA(18,IVCR[IDX])
         ENDIF

ENDLOOP

;-------------------------------------------------------------------
; Now, invoke peak spreading routine to develop 'final' volumes     -
;-------------------------------------------------------------------

NVOL[18]=IVOL[18] ; Hour 18 (PM Peak hour 5-6PM)
NVOL[17]=IVOL[17] ;
NVOL[19]=IVOL[19] ;
FVOL[18]=IVOL[18] ;               spread to
   IF (NVOL[18] > CAPA[18])     ; shoulder hrs (17/19)
      FVOL[18] = CAPA[18]
;;>                    --  freeway override --
       if (lw.ftype=1)
          FVOL[18] = CFWYFLWA(lw.atype,IVCR[18]) * lane[18]
       endif
;;>
       XVOL[18] = NVOL[18] - FVOL[18] ; -- a 50/50 split
       NVOL[17] = IVOL[17] + (XVOL[18]*0.50)
       NVOL[19] = IVOL[19] + (XVOL[18]*0.50) ;
   ENDIF


NVOL[8]=IVOL[8]                     ; Hour 8 (AM Peak hour 7-8AM)
```

```
NVOL[7]=IVOL[7]                                 ;
NVOL[9]=IVOL[9]                                 ;
FVOL[8]=IVOL[8]                                 ; spread to
    IF (NVOL[8] > CAPA[8])                      ; shoulder hrs (7/9)
        FVOL[8] = CAPA[8]
;;>                     --  freeway override --
        if (lw.ftype=1)
           FVOL[8] = CFWYFLWA(lw.atype,IVCR[8]) * lane[8]
        endif
;;>
        XVOL[8] = NVOL[8] - FVOL[8]             ; -- a 50/50 split
            NVOL[7] = IVOL[7] + (XVOL[8]*0.50)  ;
            NVOL[9] = IVOL[9] + (XVOL[8]*0.50)  ;
    ENDIF

LOOP IDX = 7,2,-1                               ; Pre- AM Peak
     FVOL[IDX] = NVOL[IDX]                      ; Spread (hrs 7-2)
         IF (NVOL[IDX] > CAPA[IDX])             ;
             FVOL[IDX] = CAPA[IDX]
;;>                     --  freeway override --
        if (lw.ftype=1)
           FVOL[IDX] = CFWYFLWA(lw.atype,IVCR[IDX]) * lane[idx]
        endif
;;>
             XVOL[IDX] = NVOL[IDX] - FVOL[IDX]      ;
         ENDIF
             TMP=(IDX-1)                        ;
             NVOL[TMP] = IVOL[TMP]+XVOL[IDX]    ;
ENDLOOP
     NVOL[1] = IVOL[1] + XVOL[2]                ; Hour 1 / No spread
     FVOL[1] = IVOL[1] + XVOL[2]                ; Hour 1 / No spread
                                                ; even if > capacity


LOOP IDX = 9,12                                 ; Post-AM Peak
     FVOL[IDX] = NVOL[IDX]                      ; Spread (hrs 9-12)
         IF (NVOL[IDX] > CAPA[IDX])             ;
             FVOL[IDX] = CAPA[IDX]
;;>                     --  freeway override --
        if (lw.ftype=1)
           FVOL[IDX] = CFWYFLWA(lw.atype,IVCR[IDX]) * lane[idx]
        endif
;;>
             XVOL[IDX] = NVOL[IDX] - FVOL[IDX]      ;
         ENDIF
             TMP=(IDX+1)                        ;
             NVOL[TMP] = IVOL[TMP]+XVOL[IDX]    ;
ENDLOOP



LOOP IDX = 17,14,-1                             ; Pre- PM Peak
     FVOL[IDX] = NVOL[IDX]                      ; Spread (hrs 17-14)
         IF (NVOL[IDX] > CAPA[IDX])             ;
             FVOL[IDX] = CAPA[IDX]
;;>                     --  freeway override --
        if (lw.ftype=1)
           FVOL[IDX] = CFWYFLWA(lw.atype,IVCR[IDX]) * lane[idx]
        endif
;;>
             XVOL[IDX] = NVOL[IDX] - FVOL[IDX]      ;
         ENDIF
             TMP=(IDX-1)                        ;
             NVOL[TMP] = IVOL[TMP]+XVOL[IDX]    ;
ENDLOOP
     NVOL[13] = IVOL[13] + XVOL[12] + XVOL[14]  ; Hour 13 (Noon Hr)
     FVOL[13] = IVOL[13] + XVOL[12] + XVOL[14]  ; Hour 13 (Noon Hr)
                                                ; No Spread


LOOP IDX = 19,23                                ; Post-PM Peak
     FVOL[IDX] = NVOL[IDX]                      ; Spread (hrs 19-23)
         IF (NVOL[IDX] > CAPA[IDX])             ;
             FVOL[IDX] = CAPA[IDX]
;;>                     --  freeway override --
        if (lw.ftype=1)
           FVOL[IDX] = CFWYFLWA(lw.atype,IVCR[IDX]) * lane[idx]
        endif
;;>
             XVOL[IDX] = NVOL[IDX] - FVOL[IDX]      ;
         ENDIF
             TMP=(IDX+1)                        ;
             NVOL[TMP] = IVOL[TMP]+XVOL[IDX]    ;
ENDLOOP
     NVOL[24] = IVOL[24] + XVOL[23]             ; Hour 24 (Last Hr)
     FVOL[24] = IVOL[24] + XVOL[23]             ; Hour 24 (Last Hr)
                                                ; no Spread

;
;-----------------------------------------------------------------
; Now we're finished with the 'final' hourly volume development.
; Next, compute hourly V/C ratio, volume delay function, and Speed
; using the 'final' hourly volume. also compute Final VMT
; Note that the VC is based on NVOL, or the NONSPREADED volume (IVOL+XVOL)
;
;
;-----------------------------------------------------------------
;

LOOP IDX=1,24
;;   NVCR[IDX] =(NVOL[IDX] / CAPA[IDX])
;;>
      NVCR[IDX] =(FVOL[IDX] / CAPA[IDX])
        if (lw.ftype = 1 && IVCR[IDX] > NVCR[IDX])
                    NVCR[IDX] = IVCR[IDX]
        endif
;;>
   ;
   ; Compute the NEW  Speed based on NEW V/C ratio
   ;
          IF       (lw.ftype = 1,6 && lw.atype = 1,2)
              NSPD[IDX] = SPDA(1,NVCR[IDX])
          ENDIF
          IF       (lw.ftype = 1,6 && lw.atype = 3,4)
              NSPD[IDX] = SPDA(2,NVCR[IDX])
          ENDIF
          IF       (lw.ftype = 1,6 && lw.atype = 5-7)
              NSPD[IDX] = SPDA(3,NVCR[IDX])
          ENDIF

          IF       (lw.ftype = 2 && lw.atype = 1-2)
              NSPD[IDX] = SPDA(4,NVCR[IDX])
          ENDIF
          IF       (lw.ftype = 2 && lw.atype = 3-4)
              NSPD[IDX] = SPDA(5,NVCR[IDX])
          ENDIF
          IF       (lw.ftype = 2 && lw.atype = 5)
              NSPD[IDX] = SPDA(6,NVCR[IDX])
          ENDIF
          IF       (lw.ftype = 2 && lw.atype = 6-7)
              NSPD[IDX] = SPDA(7,NVCR[IDX])
          ENDIF

          IF       (lw.ftype = 3 && lw.atype = 1-2)
              NSPD[IDX] = SPDA(8,NVCR[IDX])
          ENDIF
          IF       (lw.ftype = 3 && lw.atype = 3-4)
              NSPD[IDX] = SPDA(9,NVCR[IDX])
          ENDIF
          IF       (lw.ftype = 3 && lw.atype = 5)
              NSPD[IDX] = SPDA(10,NVCR[IDX])
          ENDIF
          IF       (lw.ftype = 3 && lw.atype = 6-7)
              NSPD[IDX] = SPDA(11,NVCR[IDX])
```

```
         ENDIF

         IF       (lw.ftype = 4 && lw.atype = 1-2)
             NSPD[IDX] = SPDA(12,NVCR[IDX])
         ENDIF
         IF       (lw.ftype = 4 && lw.atype = 3-4)
             NSPD[IDX] = SPDA(13,NVCR[IDX])
         ENDIF
         IF       (lw.ftype = 4 && lw.atype = 5)
             NSPD[IDX] = SPDA(14,NVCR[IDX])
         ENDIF
         IF       (lw.ftype = 4 && lw.atype = 6-7)
             NSPD[IDX] = SPDA(15,NVCR[IDX])
         ENDIF


         IF       (lw.ftype = 5 && lw.atype = 1-2)
             NSPD[IDX] = SPDA(16,NVCR[IDX])
         ENDIF
         IF       (lw.ftype = 5 && lw.atype = 3-5)
             NSPD[IDX] = SPDA(17,NVCR[IDX])
         ENDIF
         IF       (lw.ftype = 5 && lw.atype = 6-7)
             NSPD[IDX] = SPDA(18,NVCR[IDX])
         ENDIF


   ; Compute the Final VMT / Speed / and Speed Difference
   ;
     FVMT[IDX]  = FVOL[IDX]* lw.DISTANCE    ; Final VMT = Final/spread vol * distance


     FSPD[IDX]  =               NSPD[IDX]   ; Final Speed is based non-spreaded
volume


     DSPD[IDX]  =     ISPD[IDX]-NSPD[IDX]   ; ini spd - final (new) speed
ENDLOOP

;
;  Now smooth final speeds for the boundary hours 1,13,24
;

   FSPD[1]  =  FSPD[2]
   FSPD[24] =  FSPD[23]
   FSPD[13] = (FSPD[12] + FSPD[14]) / 2.0

;-------------------------------------------------------------------------------------
----------------------------


;  summarize initial / final(spread) hourly volumes

        IVOLTOT =  IVOLTOT  +
                   IVOL[1]  + IVOL[2]  + IVOL[3]  + IVOL[4]  + IVOL[5]  +  IVOL[6] +
                   IVOL[7]  + IVOL[8]  + IVOL[9]  + IVOL[10] + IVOL[11] + IVOL[12] +
                   IVOL[13] + IVOL[14] + IVOL[15] + IVOL[16] + IVOL[17] + IVOL[18] +
                   IVOL[19] + IVOL[20] + IVOL[21] + IVOL[22] + IVOL[23] + IVOL[24]

        FVOLTOT =  FVOLTOT  +
                   FVOL[1]  + FVOL[2]  + FVOL[3]  + FVOL[4]  + FVOL[5]  + FVOL[6]  +
                   FVOL[7]  + FVOL[8]  + FVOL[9]  + FVOL[10] + FVOL[11] + FVOL[12] +
                   FVOL[13] + FVOL[14] + FVOL[15] + FVOL[16] + FVOL[17] + FVOL[18] +
                   FVOL[19] + FVOL[20] + FVOL[21] + FVOL[22] + FVOL[23] + FVOL[24]

        FVMTTOT =  FVMTTOT  +
                   FVMT[1]  + FVMT[2]  + FVMT[3]  + FVMT[4]  + FVMT[5]  + FVMT[6]  +
                   FVMT[7]  + FVMT[8]  + FVMT[9]  + FVMT[10] + FVMT[11] + FVMT[12] +
                   FVMT[13] + FVMT[14] + FVMT[15] + FVMT[16] + FVMT[17] + FVMT[18] +
                   FVMT[19] + FVMT[20] + FVMT[21] + FVMT[22] + FVMT[23] + FVMT[24]
;
PRINT FORM=8.0,
     list= a(6),b(6),lw.ftype,lw.atype,
         lw.totvol,lw.amvol,lw.pmvol,pkdfpct,
          pkclass(3), ftclass(3), jpf(3),'   ',
         lw.amcap,lw.pmcap,lw.opcap,lw.jur, file=check.ini

    PRINT FORM=10.2,
     list= a(6),b(6),
      ivol[1], ivol[2], ivol[3], ivol[4], ivol[5], ivol[6], ivol[7], ivol[8],
      ivol[9],ivol[10],ivol[11],ivol[12],ivol[13],ivol[14],ivol[15],ivol[16],
     ivol[17],ivol[18],ivol[19],ivol[20],ivol[21],ivol[22],ivol[23],ivol[24],
     file=check.i_v

     list= a(6),b(6),
      capa[1], capa[2], capa[3], capa[4], capa[5], capa[6], capa[7], capa[8],
      capa[9],capa[10],capa[11],capa[12],capa[13],capa[14],capa[15],capa[16],
     capa[17],capa[18],capa[19],capa[20],capa[21],capa[22],capa[23],capa[24],
     file=check.cap

     list= a(6),b(6),
      fvol[1], fvol[2], fvol[3], fvol[4], fvol[5], fvol[6], fvol[7], fvol[8],
      fvol[9],fvol[10],fvol[11],fvol[12],fvol[13],fvol[14],fvol[15],fvol[16],
     fvol[17],fvol[18],fvol[19],fvol[20],fvol[21],fvol[22],fvol[23],fvol[24],
     file=check.f_v

     list= a(6),b(6),
      xvol[1], xvol[2], xvol[3], xvol[4], xvol[5], xvol[6], xvol[7], xvol[8],
      xvol[9],xvol[10],xvol[11],xvol[12],xvol[13],xvol[14],xvol[15],xvol[16],
     xvol[17],xvol[18],xvol[19],xvol[20],xvol[21],xvol[22],xvol[23],xvol[24],
     file=check.x_v

     list= a(6),b(6),
      nvcr[1], nvcr[2], nvcr[3], nvcr[4], nvcr[5], nvcr[6], nvcr[7], nvcr[8],
      nvcr[9],nvcr[10],nvcr[11],nvcr[12],nvcr[13],nvcr[14],nvcr[15],nvcr[16],
     nvcr[17],nvcr[18],nvcr[19],nvcr[20],nvcr[21],nvcr[22],nvcr[23],nvcr[24],
     file=check.fvc

     list= a(6),b(6),
      ivcr[1], ivcr[2], ivcr[3], ivcr[4], ivcr[5], ivcr[6], ivcr[7], ivcr[8],
      ivcr[9],ivcr[10],ivcr[11],ivcr[12],ivcr[13],ivcr[14],ivcr[15],ivcr[16],
     ivcr[17],ivcr[18],ivcr[19],ivcr[20],ivcr[21],ivcr[22],ivcr[23],ivcr[24],
     file=check.ivc


    PRINT FORM=3.0,
     list= a(6),b(6),
      fspd[1], fspd[2], fspd[3], fspd[4], fspd[5], fspd[6], fspd[7], fspd[8],
      fspd[9],fspd[10],fspd[11],fspd[12],fspd[13],fspd[14],fspd[15],fspd[16],
     fspd[17],fspd[18],fspd[19],fspd[20],fspd[21],fspd[22],fspd[23],fspd[24],
     file=HOURLYLK.SPD


    PRINT FORM=3.0,
     list= a(6),b(6),
      dspd[1], dspd[2], dspd[3], dspd[4], dspd[5], dspd[6], dspd[7], dspd[8],
      dspd[9],dspd[10],dspd[11],dspd[12],dspd[13],dspd[14],dspd[15],dspd[16],
     dspd[17],dspd[18],dspd[19],dspd[20],dspd[21],dspd[22],dspd[23],dspd[24],
     file=check.sdf


    PRINT FORM=10.2,
     list= a(6),b(6),
      fvmt[1], fvmt[2], fvmt[3], fvmt[4], fvmt[5], fvmt[6], fvmt[7], fvmt[8],
      fvmt[9],fvmt[10],fvmt[11],fvmt[12],fvmt[13],fvmt[14],fvmt[15],fvmt[16],
     fvmt[17],fvmt[18],fvmt[19],fvmt[20],fvmt[21],fvmt[22],fvmt[23],fvmt[24],
     file=HOURLYLK.VMT


     endif                        ;<<<<<<<<<-------- select links

    ; clear out all hourly arrays
    Loop idx=1,24
     CAPA[idx] = 0
```

```
 IVOL[idx] = 0
 IVCR[idx] = 0
 IVMT[idx] = 0
 ISPD[idx] = 0
 XVOL[idx] = 0
 NVOL[idx] = 0
 FVOL[idx] = 0
 NVCR[idx] = 0
 NSPD[idx] = 0
 FSPD[idx] = 0
 DSPD[idx] = 0
 LANE[idx] = 0
 FVMT[idx] = 0
endloop

endlinkloop



endphase
endrun




; -------------------------------------------------------------
*copy tppl*.prn peak_spread.rpt
```

Running_Seasonal_Nx.s

```
*del tppl*.prn
;-------------------------------------------------------------------------
; Program: RUNNING_Seasonal_Nx.S
;
; Calculate running Nx emissions by Season
;  using hourly volumes developed from
; the Peak_Spread.S program
; Updates
; 8/19/05 Added GMperTN Parameter
; 8/31/05 added 'txt' file creation for printing jurisdictional results
;         added _Year_, _Season_, _SeasonFtr_,_SeasonRateNo_ environmental variables
;-------------------------------------------------------------------------

 INNET   ='temp.net'       ; input basic network
 HRNETVMT='hourlylk.vmt'   ; input hourly vmt
 HRNETSPD='hourlylk.spd'   ; input hourly speed
 JRTRPDST='trip.dst'       ; veh trip juris level distr
 GMperTN = 907184.74       ; Grams oper Ton parameter
 SNo=%_SeasonRateNo_%      ; Season rate no. 1/Winter, 2/Spring, 3/Summer, 4/Fall
;-------------------------------------------------------------
; Emission -
;-------------------------------------------------------------
;  1) DC                      15) PW
;  2) Mtg                     16) Sta
;  3) PG                      17) Alx
;  4) How                     18) StM
;  5) Aar                     19) WashCoExtls   2164-2168
;  6) Car                     20) Clk
;  7) Balt Extls 2172-2191    21) Fau
;  8) Cal                     22) Jef
;  9) Chs                     23) VA W.Extls    2154-2163
; 10) Frd                     24) Spts
; 11) Frd. Extls  2169-2171   25) KG
; 12) Arl                     26) Fbg
; 13) FFx                     27) VA S.Extls    2145-2153
; 14) Ldn
;-------------------------------------------------------------
 j01A_RAT='%_m6Sub_%%_m6NxPre_%dc.r_a'; DC      Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j02A_RAT='%_m6Sub_%%_m6NxPre_%mc.r_a'; Mtg     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j03A_RAT='%_m6Sub_%%_m6NxPre_%pg.r_a'; PG      Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j04A_RAT='%_m6Sub_%%_m6NxPre_%pg.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j05A_RAT='%_m6Sub_%%_m6NxPre_%pg.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j06A_RAT='%_m6Sub_%%_m6NxPre_%pg.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j07A_RAT='%_m6Sub_%%_m6NxPre_%pg.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j08A_RAT='%_m6Sub_%%_m6NxPre_%ca.r_a'; Cal     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j09A_RAT='%_m6Sub_%%_m6NxPre_%ch.r_a'; Chs     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j10A_RAT='%_m6Sub_%%_m6NxPre_%fr.r_a'; Frd     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j11A_RAT='%_m6Sub_%%_m6NxPre_%fr.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j12A_RAT='%_m6Sub_%%_m6NxPre_%ar.r_a'; Arl     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j13A_RAT='%_m6Sub_%%_m6NxPre_%fx.r_a'; Ffx     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j14A_RAT='%_m6Sub_%%_m6NxPre_%ld.r_a'; Ldn     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j15A_RAT='%_m6Sub_%%_m6NxPre_%pw.r_a'; PW      Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j16A_RAT='%_m6Sub_%%_m6NxPre_%st.r_a'; Sta     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j17A_RAT='%_m6Sub_%%_m6NxPre_%al.r_a'; Alx     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j18A_RAT='%_m6Sub_%%_m6NxPre_%sm.r_a'; StM     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j19A_RAT='%_m6Sub_%%_m6NxPre_%we.r_a'; Wash    Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j20A_RAT='%_m6Sub_%%_m6NxPre_%cl.r_a'; Clk     Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j21A_RAT='%_m6Sub_%%_m6NxPre_%cl.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j22A_RAT='%_m6Sub_%%_m6NxPre_%cl.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j23A_RAT='%_m6Sub_%%_m6NxPre_%cl.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j24A_RAT='%_m6Sub_%%_m6NxPre_%sp.r_a'; Spts    Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j25A_RAT='%_m6Sub_%%_m6NxPre_%sp.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j26A_RAT='%_m6Sub_%%_m6NxPre_%sp.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j27A_RAT='%_m6Sub_%%_m6NxPre_%sp.r_a'; "       Art 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)

;-------------------------------------------------
 j01F_RAT='%_m6Sub_%%_m6NxPre_%dc.r_f'; DC      Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j02F_RAT='%_m6Sub_%%_m6NxPre_%mc.r_f'; Mtg     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j03F_RAT='%_m6Sub_%%_m6NxPre_%pg.r_f'; PG      Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j04F_RAT='%_m6Sub_%%_m6NxPre_%pg.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j05F_RAT='%_m6Sub_%%_m6NxPre_%pg.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j06F_RAT='%_m6Sub_%%_m6NxPre_%pg.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j07F_RAT='%_m6Sub_%%_m6NxPre_%pg.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j08F_RAT='%_m6Sub_%%_m6NxPre_%ca.r_f'; Cal     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j09F_RAT='%_m6Sub_%%_m6NxPre_%ch.r_f'; Chs     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j10F_RAT='%_m6Sub_%%_m6NxPre_%fr.r_f'; Frd     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j11F_RAT='%_m6Sub_%%_m6NxPre_%fr.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j12F_RAT='%_m6Sub_%%_m6NxPre_%ar.r_f'; Arl     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j13F_RAT='%_m6Sub_%%_m6NxPre_%fx.r_f'; Ffx     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j14F_RAT='%_m6Sub_%%_m6NxPre_%ld.r_f'; Ldn     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j15F_RAT='%_m6Sub_%%_m6NxPre_%pw.r_f'; PW      Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j16F_RAT='%_m6Sub_%%_m6NxPre_%st.r_f'; Sta     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j17F_RAT='%_m6Sub_%%_m6NxPre_%al.r_f'; Alx     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j18F_RAT='%_m6Sub_%%_m6NxPre_%sm.r_f'; StM     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j19F_RAT='%_m6Sub_%%_m6NxPre_%we.r_f'; Wash    Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j20F_RAT='%_m6Sub_%%_m6NxPre_%cl.r_f'; Clk     Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j21F_RAT='%_m6Sub_%%_m6NxPre_%cl.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j22F_RAT='%_m6Sub_%%_m6NxPre_%cl.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j23F_RAT='%_m6Sub_%%_m6NxPre_%cl.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
```

```
 j24F_RAT='%_m6Sub_%%_m6NxPre_%sp.r_f'; Spts    Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j25F_RAT='%_m6Sub_%%_m6NxPre_%sp.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j26F_RAT='%_m6Sub_%%_m6NxPre_%sp.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j27F_RAT='%_m6Sub_%%_m6NxPre_%sp.r_f'; "       Fwy 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)

;-------------------------------------------------
 j01R_RAT='%_m6Sub_%%_m6NxPre_%dc.ram'; DC      Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j02R_RAT='%_m6Sub_%%_m6NxPre_%mc.ram'; Mtg     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j03R_RAT='%_m6Sub_%%_m6NxPre_%pg.ram'; PG      Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j04R_RAT='%_m6Sub_%%_m6NxPre_%pg.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j05R_RAT='%_m6Sub_%%_m6NxPre_%pg.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j06R_RAT='%_m6Sub_%%_m6NxPre_%pg.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j07R_RAT='%_m6Sub_%%_m6NxPre_%pg.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j08R_RAT='%_m6Sub_%%_m6NxPre_%ca.ram'; Cal     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j09R_RAT='%_m6Sub_%%_m6NxPre_%ch.ram'; Chs     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j10R_RAT='%_m6Sub_%%_m6NxPre_%fr.ram'; Frd     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j11R_RAT='%_m6Sub_%%_m6NxPre_%fr.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j12R_RAT='%_m6Sub_%%_m6NxPre_%ar.ram'; Arl     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j13R_RAT='%_m6Sub_%%_m6NxPre_%fx.ram'; Ffx     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j14R_RAT='%_m6Sub_%%_m6NxPre_%ld.ram'; Ldn     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j15R_RAT='%_m6Sub_%%_m6NxPre_%pw.ram'; PW      Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j16R_RAT='%_m6Sub_%%_m6NxPre_%st.ram'; Sta     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j17R_RAT='%_m6Sub_%%_m6NxPre_%al.ram'; Alx     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j18R_RAT='%_m6Sub_%%_m6NxPre_%sm.ram'; StM     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j19R_RAT='%_m6Sub_%%_m6NxPre_%we.ram'; Wash    Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j20R_RAT='%_m6Sub_%%_m6NxPre_%cl.ram'; Clk     Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j21R_RAT='%_m6Sub_%%_m6NxPre_%cl.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j22R_RAT='%_m6Sub_%%_m6NxPre_%cl.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j23R_RAT='%_m6Sub_%%_m6NxPre_%cl.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j24R_RAT='%_m6Sub_%%_m6NxPre_%sp.ram'; Spts    Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j25R_RAT='%_m6Sub_%%_m6NxPre_%sp.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j26R_RAT='%_m6Sub_%%_m6NxPre_%sp.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)
 j27R_RAT='%_m6Sub_%%_m6NxPre_%sp.ram'; "       Rmp 4 Seasonal Nx Rates
(Wntr,Sprg,Summr,Fall)

;-------------------------------------------------
 j01PM_RAT='%_m6Sub_%%_m6PMPre_%dc.n_l'; DC     Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j02PM_RAT='%_m6Sub_%%_m6PMPre_%mc.n_l'; Mtg    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j03PM_RAT='%_m6Sub_%%_m6PMPre_%pg.n_l'; PG     Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j04PM_RAT='%_m6Sub_%%_m6PMPre_%pg.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j05PM_RAT='%_m6Sub_%%_m6PMPre_%pg.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j06PM_RAT='%_m6Sub_%%_m6PMPre_%pg.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j07PM_RAT='%_m6Sub_%%_m6PMPre_%pg.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j08PM_RAT='%_m6Sub_%%_m6PMPre_%ca.n_l'; Cal    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j09PM_RAT='%_m6Sub_%%_m6PMPre_%ch.n_l'; Chs    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j10PM_RAT='%_m6Sub_%%_m6PMPre_%fr.n_l'; Frd    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j11PM_RAT='%_m6Sub_%%_m6PMPre_%fr.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j12PM_RAT='%_m6Sub_%%_m6PMPre_%ar.n_l'; Arl    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j13PM_RAT='%_m6Sub_%%_m6PMPre_%fx.n_l'; Ffx    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j14PM_RAT='%_m6Sub_%%_m6PMPre_%ld.n_l'; Ldn    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j15PM_RAT='%_m6Sub_%%_m6PMPre_%pw.n_l'; PW     Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j16PM_RAT='%_m6Sub_%%_m6PMPre_%st.n_l'; Sta    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j17PM_RAT='%_m6Sub_%%_m6PMPre_%al.n_l'; Alx    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j18PM_RAT='%_m6Sub_%%_m6PMPre_%sm.n_l'; StM    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j19PM_RAT='%_m6Sub_%%_m6PMPre_%we.n_l'; Wash   Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j20PM_RAT='%_m6Sub_%%_m6PMPre_%cl.n_l'; Clk    Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j21PM_RAT='%_m6Sub_%%_m6PMPre_%cl.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j22PM_RAT='%_m6Sub_%%_m6PMPre_%cl.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j23PM_RAT='%_m6Sub_%%_m6PMPre_%cl.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j24PM_RAT='%_m6Sub_%%_m6PMPre_%sp.n_l'; Spts   Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j25PM_RAT='%_m6Sub_%%_m6PMPre_%sp.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j26PM_RAT='%_m6Sub_%%_m6PMPre_%sp.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)
 j27PM_RAT='%_m6Sub_%%_m6PMPre_%sp.n_l'; "      Seasonal PM Rates
(Wntr,Sprg,Summr,Fall)

run pgm=hwynet
    neti     = @innet@
    neto     = temp2.net

    linki[2] = @hrnetvmt@ var = a, b,
    vmt01 vmt02,vmt03,vmt04,vmt05,vmt06,vmt07,vmt08,vmt09,vmt10,
    vmt11 vmt12,vmt13,vmt14,vmt15,vmt16,vmt17,vmt18,vmt19,vmt20,
    vmt21 vmt22,vmt23,vmt24

    linki[3] = @hrnetspd@ var = a, b,
    spd01 spd02,spd03,spd04,spd05,spd06,spd07,spd08,spd09,spd10,
    spd11 spd12,spd13,spd14,spd15,spd16,spd17,spd18,spd19,spd20,
    spd21 spd22,spd23,spd24

;  CREATE SOME FREQUENCY-CROSSTABS FOR CHECKING
;  if (i624vol > 0 && FType >0)
;           _cnt=1
;else
;           _cnt =0
;endif
;CROSSTAB VAR=_CNT,ROW=FTYPE, RANGE=0-5-1,0-5
;CROSSTAB VAR=_CNT,ROW=FTYPE, RANGE=1-7-1, COL=OPLANE,    RANGE=1-7-1
```

```
  IF (A=3192-3200           )  ;**debug selection
    list = a(6), b(6), ftype(3)
  endif
endrun


run pgm=hwyload
    neti     = temp2.net
; Set up arrays
  array,        ;
    vmt   =24,  ; Hourly VMT
    spd   =24,  ; Hourly Speed
    CPR   =24,  ; Hourly composite PM Network Rate
    CNR   =24,  ; Hourly composite Nx Rate
    PEM   =24,  ; Hourly PM emissions
    NEM   =24   ; Hourly Nx emissions

; Set up Lookup tables
;---------------------------------------------------------------------
; Jurisdictional Trip Distribution Array                             -
;---------------------------------------------------------------------
  LOOKUP NAME=JDST,               ;
         LOOKUP[01]=1, RESULT=2,  ;
         LOOKUP[02]=1, RESULT=3,  ;
         LOOKUP[03]=1, RESULT=4,  ;
         LOOKUP[04]=1, RESULT=5,  ;
         LOOKUP[05]=1, RESULT=6,  ;
         LOOKUP[06]=1, RESULT=7,  ;
         LOOKUP[07]=1, RESULT=8,  ;
         LOOKUP[08]=1, RESULT=9,  ;
         LOOKUP[09]=1, RESULT=10, ;
         LOOKUP[10]=1, RESULT=11, ;
         LOOKUP[11]=1, RESULT=12, ;
         LOOKUP[12]=1, RESULT=13, ;
         LOOKUP[13]=1, RESULT=14, ;
         LOOKUP[14]=1, RESULT=15, ;
         LOOKUP[15]=1, RESULT=16, ;
         LOOKUP[16]=1, RESULT=17, ;
         LOOKUP[17]=1, RESULT=18, ;
         LOOKUP[18]=1, RESULT=19, ;
         LOOKUP[19]=1, RESULT=20, ;
         LOOKUP[20]=1, RESULT=21, ;
         LOOKUP[21]=1, RESULT=22, ;
         LOOKUP[22]=1, RESULT=23, ;
         LOOKUP[23]=1, RESULT=24, ;
         LOOKUP[24]=1, RESULT=25, ;
         LOOKUP[25]=1, RESULT=26, ;
         LOOKUP[26]=1, RESULT=27, ;
         LOOKUP[27]=1, RESULT=28, ;
         INTERPOLATE = N,LIST=T,File=@JRTRPDST@

;---------------------------------------------------------------------
; Emission Rate Speed Lookups by jurisdiction                        -
;---------------------------------------------------------------------------
; ARTERIAL Seasonal Nx Rates LOOK-Ups Here (1/Winter,2/Spring,3/Summer,4/Fall)
;---------------------------------------------------------------------------
  LOOKUP NAME=J01AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J01A_RAT@

  LOOKUP NAME=J02AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J02A_RAT@

  LOOKUP NAME=J03AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J03A_RAT@

  LOOKUP NAME=J04AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J04A_RAT@

  LOOKUP NAME=J05AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J05A_RAT@

  LOOKUP NAME=J06AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J06A_RAT@

  LOOKUP NAME=J07AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J07A_RAT@

  LOOKUP NAME=J08AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J08A_RAT@

  LOOKUP NAME=J09AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J09A_RAT@

  LOOKUP NAME=J10AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J10A_RAT@

  LOOKUP NAME=J11AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J11A_RAT@

  LOOKUP NAME=J12AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         INTERPOLATE = N,LIST=T,file=@J12A_RAT@

  LOOKUP NAME=J13AR,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
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        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J13A_RAT@

  LOOKUP NAME=J14AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J14A_RAT@

  LOOKUP NAME=J15AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J15A_RAT@

  LOOKUP NAME=J16AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J16A_RAT@

  LOOKUP NAME=J17AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J17A_RAT@

  LOOKUP NAME=J18AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J18A_RAT@

  LOOKUP NAME=J19AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J19A_RAT@

  LOOKUP NAME=J20AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J20A_RAT@

  LOOKUP NAME=J21AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J21A_RAT@

  LOOKUP NAME=J22AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J22A_RAT@

  LOOKUP NAME=J23AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J23A_RAT@

  LOOKUP NAME=J24AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J24A_RAT@

  LOOKUP NAME=J25AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J25A_RAT@

  LOOKUP NAME=J26AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J26A_RAT@

  LOOKUP NAME=J27AR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J27A_RAT@

;--------------------------------------------------------------------
; FREEWAY  Seasonal Nx Rates LOOK-Ups Here (1/Winter,2/Spring,3/Summer,4/Fall)
;--------------------------------------------------------------------
  LOOKUP NAME=J01FR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J01F_RAT@

  LOOKUP NAME=J02FR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J02F_RAT@

  LOOKUP NAME=J03FR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J03F_RAT@

  LOOKUP NAME=J04FR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J04F_RAT@

  LOOKUP NAME=J05FR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J05F_RAT@

  LOOKUP NAME=J06FR,             ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
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        INTERPOLATE = N,LIST=T,file=@J06F_RAT@

LOOKUP NAME=J07FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J07F_RAT@

LOOKUP NAME=J08FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J08F_RAT@

LOOKUP NAME=J09FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J09F_RAT@

LOOKUP NAME=J10FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J10F_RAT@

LOOKUP NAME=J11FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J11F_RAT@

LOOKUP NAME=J12FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J12F_RAT@

LOOKUP NAME=J13FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J13F_RAT@

LOOKUP NAME=J14FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J14F_RAT@

LOOKUP NAME=J15FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J15F_RAT@

LOOKUP NAME=J16FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J16F_RAT@

LOOKUP NAME=J17FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J17F_RAT@

LOOKUP NAME=J18FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J18F_RAT@

LOOKUP NAME=J19FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J19F_RAT@

LOOKUP NAME=J20FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J20F_RAT@

LOOKUP NAME=J21FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J21F_RAT@

LOOKUP NAME=J22FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J22F_RAT@

LOOKUP NAME=J23FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J23F_RAT@

LOOKUP NAME=J24FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J24F_RAT@

LOOKUP NAME=J25FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J25F_RAT@

LOOKUP NAME=J26FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        INTERPOLATE = N,LIST=T,file=@J26F_RAT@

LOOKUP NAME=J27FR,              ;
        LOOKUP[1]=1, RESULT=2,  ;
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         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J27F_RAT@

;--------------------------------------------------------------------
; RAMP   Seasonal Nx Rates LOOK-Ups Here (1/Winter,2/Spring,3/Summer,4/Fall)
;--------------------------------------------------------------------
  LOOKUP NAME=J01RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J01R_RAT@

  LOOKUP NAME=J02RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J02R_RAT@

  LOOKUP NAME=J03RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J03R_RAT@

  LOOKUP NAME=J04RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J04R_RAT@

  LOOKUP NAME=J05RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J05R_RAT@

  LOOKUP NAME=J06RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J06R_RAT@

  LOOKUP NAME=J07RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J07R_RAT@

  LOOKUP NAME=J08RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J08R_RAT@

  LOOKUP NAME=J09RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J09R_RAT@

  LOOKUP NAME=J10RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J10R_RAT@

  LOOKUP NAME=J11RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J11R_RAT@

  LOOKUP NAME=J12RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J12R_RAT@

  LOOKUP NAME=J13RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J13R_RAT@

  LOOKUP NAME=J14RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J14R_RAT@

  LOOKUP NAME=J15RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J15R_RAT@

  LOOKUP NAME=J16RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J16R_RAT@

  LOOKUP NAME=J17RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J17R_RAT@

  LOOKUP NAME=J18RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J18R_RAT@

  LOOKUP NAME=J19RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J19R_RAT@

  LOOKUP NAME=J20RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
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         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J20R_RAT@

  LOOKUP NAME=J21RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J21R_RAT@

  LOOKUP NAME=J22RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J22R_RAT@

  LOOKUP NAME=J23RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J23R_RAT@

  LOOKUP NAME=J24RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J24R_RAT@

  LOOKUP NAME=J25RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J25R_RAT@

  LOOKUP NAME=J26RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J26R_RAT@

  LOOKUP NAME=J27RR,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         INTERPOLATE = N,LIST=T,file=@J27R_RAT@

;---------------------------------------------------------------------
; PM     Seasonal PM Rate LOOK-Ups Here Network: 1/Winter,2/Spring,3/Summer,4/Fall)
;                                       Local:   5/Winter,6/Spring,7/Summer,8/Fall)
;---------------------------------------------------------------------
  LOOKUP NAME=J01PM,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         LOOKUP[5]=1, RESULT=6,  ;
         LOOKUP[6]=1, RESULT=7,  ;
         LOOKUP[7]=1, RESULT=8,  ;
         LOOKUP[8]=1, RESULT=9,  ;
         INTERPOLATE = N,LIST=T,file=@J01PM_RAT@

  LOOKUP NAME=J02PM,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         LOOKUP[5]=1, RESULT=6,  ;
         LOOKUP[6]=1, RESULT=7,  ;
         LOOKUP[7]=1, RESULT=8,  ;
         LOOKUP[8]=1, RESULT=9,  ;
         INTERPOLATE = N,LIST=T,file=@J02PM_RAT@

  LOOKUP NAME=J03PM,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         LOOKUP[5]=1, RESULT=6,  ;
         LOOKUP[6]=1, RESULT=7,  ;
         LOOKUP[7]=1, RESULT=8,  ;
         LOOKUP[8]=1, RESULT=9,  ;
         INTERPOLATE = N,LIST=T,file=@J03PM_RAT@

  LOOKUP NAME=J04PM,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         LOOKUP[5]=1, RESULT=6,  ;
         LOOKUP[6]=1, RESULT=7,  ;
         LOOKUP[7]=1, RESULT=8,  ;
         LOOKUP[8]=1, RESULT=9,  ;
         INTERPOLATE = N,LIST=T,file=@J04PM_RAT@

  LOOKUP NAME=J05PM,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         LOOKUP[5]=1, RESULT=6,  ;
         LOOKUP[6]=1, RESULT=7,  ;
         LOOKUP[7]=1, RESULT=8,  ;
         LOOKUP[8]=1, RESULT=9,  ;
         INTERPOLATE = N,LIST=T,file=@J05PM_RAT@

  LOOKUP NAME=J06PM,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         LOOKUP[5]=1, RESULT=6,  ;
         LOOKUP[6]=1, RESULT=7,  ;
         LOOKUP[7]=1, RESULT=8,  ;
         LOOKUP[8]=1, RESULT=9,  ;
         INTERPOLATE = N,LIST=T,file=@J06PM_RAT@

  LOOKUP NAME=J07PM,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         LOOKUP[5]=1, RESULT=6,  ;
         LOOKUP[6]=1, RESULT=7,  ;
         LOOKUP[7]=1, RESULT=8,  ;
         LOOKUP[8]=1, RESULT=9,  ;
         INTERPOLATE = N,LIST=T,file=@J07PM_RAT@

  LOOKUP NAME=J08PM,             ;
         LOOKUP[1]=1, RESULT=2,  ;
         LOOKUP[2]=1, RESULT=3,  ;
         LOOKUP[3]=1, RESULT=4,  ;
         LOOKUP[4]=1, RESULT=5,  ;
         LOOKUP[5]=1, RESULT=6,  ;
         LOOKUP[6]=1, RESULT=7,  ;
         LOOKUP[7]=1, RESULT=8,  ;
         LOOKUP[8]=1, RESULT=9,  ;
         INTERPOLATE = N,LIST=T,file=@J08PM_RAT@
```

```
LOOKUP NAME=J09PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J09PM_RAT@

LOOKUP NAME=J10PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J10PM_RAT@

LOOKUP NAME=J11PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J11PM_RAT@

LOOKUP NAME=J12PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J12PM_RAT@

LOOKUP NAME=J13PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J13PM_RAT@

LOOKUP NAME=J14PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J14PM_RAT@

LOOKUP NAME=J15PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J15PM_RAT@

LOOKUP NAME=J16PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J16PM_RAT@

LOOKUP NAME=J17PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J17PM_RAT@

LOOKUP NAME=J18PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J18PM_RAT@

LOOKUP NAME=J19PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J19PM_RAT@

LOOKUP NAME=J20PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J20PM_RAT@

LOOKUP NAME=J21PM,              ;
        LOOKUP[1]=1, RESULT=2,  ;
        LOOKUP[2]=1, RESULT=3,  ;
        LOOKUP[3]=1, RESULT=4,  ;
        LOOKUP[4]=1, RESULT=5,  ;
        LOOKUP[5]=1, RESULT=6,  ;
        LOOKUP[6]=1, RESULT=7,  ;
        LOOKUP[7]=1, RESULT=8,  ;
        LOOKUP[8]=1, RESULT=9,  ;
        INTERPOLATE = N,LIST=T,file=@J21PM_RAT@
```

```
  LOOKUP NAME=J22PM,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         LOOKUP[5]=1, RESULT=6,   ;
         LOOKUP[6]=1, RESULT=7,   ;
         LOOKUP[7]=1, RESULT=8,   ;
         LOOKUP[8]=1, RESULT=9,   ;
         INTERPOLATE = N,LIST=T,file=@J22PM_RAT@

  LOOKUP NAME=J23PM,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         LOOKUP[5]=1, RESULT=6,   ;
         LOOKUP[6]=1, RESULT=7,   ;
         LOOKUP[7]=1, RESULT=8,   ;
         LOOKUP[8]=1, RESULT=9,   ;
         INTERPOLATE = N,LIST=T,file=@J23PM_RAT@

  LOOKUP NAME=J24PM,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         LOOKUP[5]=1, RESULT=6,   ;
         LOOKUP[6]=1, RESULT=7,   ;
         LOOKUP[7]=1, RESULT=8,   ;
         LOOKUP[8]=1, RESULT=9,   ;
         INTERPOLATE = N,LIST=T,file=@J24PM_RAT@

  LOOKUP NAME=J25PM,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         LOOKUP[5]=1, RESULT=6,   ;
         LOOKUP[6]=1, RESULT=7,   ;
         LOOKUP[7]=1, RESULT=8,   ;
         LOOKUP[8]=1, RESULT=9,   ;
         INTERPOLATE = N,LIST=T,file=@J25PM_RAT@

  LOOKUP NAME=J26PM,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         LOOKUP[5]=1, RESULT=6,   ;
         LOOKUP[6]=1, RESULT=7,   ;
         LOOKUP[7]=1, RESULT=8,   ;
         LOOKUP[8]=1, RESULT=9,   ;
         INTERPOLATE = N,LIST=T,file=@J26PM_RAT@

  LOOKUP NAME=J27PM,              ;
         LOOKUP[1]=1, RESULT=2,   ;
         LOOKUP[2]=1, RESULT=3,   ;
         LOOKUP[3]=1, RESULT=4,   ;
         LOOKUP[4]=1, RESULT=5,   ;
         LOOKUP[5]=1, RESULT=6,   ;
         LOOKUP[6]=1, RESULT=7,   ;
         LOOKUP[7]=1, RESULT=8,   ;
         LOOKUP[8]=1, RESULT=9,   ;
         INTERPOLATE = N,LIST=T,file=@J27PM_RAT@
;-------------------------------------------------------------------------
; End of Emission Rate Lookups
;-------------------------------------------------------------------------
  zones=1

  phase=linkread
    t0=li.amhtime       ; dummy in a t0 -any link attribute will do
        lw.ftype  = li.ftype   ; facility type code
        lw.jur    = li.jur     ; jurisdiction code
        lw.totvol = li.i624vol ; total link volume

        lw.vmt01  = li.vmt01   ;
        lw.vmt02  = li.vmt02   ;
        lw.vmt03  = li.vmt03   ;
        lw.vmt04  = li.vmt04   ;
        lw.vmt05  = li.vmt05   ;
        lw.vmt06  = li.vmt06   ;
        lw.vmt07  = li.vmt07   ;
        lw.vmt08  = li.vmt08   ;
        lw.vmt09  = li.vmt09   ;
        lw.vmt10  = li.vmt10   ;
        lw.vmt11  = li.vmt11   ;
        lw.vmt12  = li.vmt12   ;
        lw.vmt13  = li.vmt13   ;
        lw.vmt14  = li.vmt14   ;
        lw.vmt15  = li.vmt15   ;
        lw.vmt16  = li.vmt16   ;
        lw.vmt17  = li.vmt17   ;
        lw.vmt18  = li.vmt18   ;
        lw.vmt19  = li.vmt19   ;
        lw.vmt20  = li.vmt20   ;
        lw.vmt21  = li.vmt21   ;
        lw.vmt22  = li.vmt22   ;
        lw.vmt23  = li.vmt23   ;
        lw.vmt24  = li.vmt24   ;


        lw.spd01  = li.spd01   ;
        lw.spd02  = li.spd02   ;
        lw.spd03  = li.spd03   ;
        lw.spd04  = li.spd04   ;
        lw.spd05  = li.spd05   ;
        lw.spd06  = li.spd06   ;
        lw.spd07  = li.spd07   ;
        lw.spd08  = li.spd08   ;
        lw.spd09  = li.spd09   ;
        lw.spd10  = li.spd10   ;
        lw.spd11  = li.spd11   ;
        lw.spd12  = li.spd12   ;
        lw.spd13  = li.spd13   ;
        lw.spd14  = li.spd14   ;
        lw.spd15  = li.spd15   ;
        lw.spd16  = li.spd16   ;
        lw.spd17  = li.spd17   ;
        lw.spd18  = li.spd18   ;
        lw.spd19  = li.spd19   ;
        lw.spd20  = li.spd20   ;
        lw.spd21  = li.spd21   ;
        lw.spd22  = li.spd22   ;
        lw.spd23  = li.spd23   ;
        lw.spd24  = li.spd24   ;
      endphase

      phase=iloop
           linkloop
;;           IF (A=3192-3200           )  ;**debug selection
           IF (lw.FTYPE > 0 && lw.TOTVOL > 0)  ; <<-----  Link Selection Criterea
      ;-------------------------------------------------------------------------
      ;Next  define air quality jurisdiction codes (jcd).                     -
      ;   These are different from the standard                               -
      ;   'jur' codes on network links, since they include                    -
      ;   include some external station ranges.                               -       -
      ;-------------------------------------------------------------------------
      ;


        IF (lw.Jur = 0) ; 1  DC
           JCD =    1
        ENDIF
```

```
IF (lw.Jur = 1) ; 2  Mtg
    JCD =    2
ENDIF
IF (lw.Jur = 2) ; 3  PG
    JCD =    3
ENDIF
IF (lw.Jur = 9) ;10  Frd
    JCD =   10
ENDIF
IF (lw.Jur = 14) ; 6  Car
    JCD =    6
ENDIF
IF (lw.Jur = 10) ; 4  How
    JCD =    4
ENDIF
IF (lw.Jur = 11) ; 5  Aar
    JCD =    5
ENDIF
IF (lw.Jur = 15) ; 8  Cal
    JCD =    8
ENDIF
IF (lw.Jur = 16) ;18  StM
    JCD =   18
ENDIF
IF (lw.Jur = 12) ; 9  Chs
    JCD =    9
ENDIF
IF (lw.Jur = 3) ;12  Arl
    JCD =   12
ENDIF
IF (lw.Jur = 4) ;17  Alx
    JCD =   17
ENDIF
IF (lw.Jur = 5) ;13  FFx
    JCD =   13
ENDIF
IF (lw.Jur = 6) ;14  Ldn
    JCD =   14
ENDIF
IF (lw.Jur = 7) ;15  PW
    JCD =   15
ENDIF
IF (lw.Jur = 17) ;25  KG
    JCD =   25
ENDIF
IF (lw.Jur = 19) ;16  Sta
    JCD =   16
ENDIF
IF (lw.Jur = 18) ;26  Fbg
    JCD =   26
ENDIF
IF (lw.Jur = 20) ;24  Spts
    JCD =   24
ENDIF
IF (lw.Jur = 21) ;21  Fau
    JCD =   21
ENDIF
IF (lw.Jur = 22) ;20  Clk
    JCD =   20
ENDIF
IF (lw.Jur = 23) ;22  Jef
    JCD =   22
ENDIF
IF ((A>2144 & A<2154) || (B>2144 & B<2154)) ;27  S.Extls    2145-2153
    JCD =   27
ENDIF
IF ((A>2153 & A<2164) || (B>2153 & B<2164)) ;23  W.Extls    2154-2163
    JCD =   23
ENDIF
IF ((A>2163 & A<2169) || (B>2163 & B<2169)) ;19  NW. Extl   2164-2168
    JCD =   19
ENDIF
   IF ((A>2168 & A<2172) || (B>2168 & B<2172)) ;11  Frd        2169-2171
       JCD =   11
   ENDIF
   IF ((A>2171 & A<2192) || (B>2171 & B<2192)) ; 7  Balt Extls 2172-2191
       JCD =    7
   ENDIF

;---------------------------------------------------------------------
; end of JCD definitions
;---------------------------------------------------------------------
;

;---------------------------------------------------------------------
; Put vmt and spd into hourly arrays
;---------------------------------------------------------------------
;
    vmt[01]=lw.vmt01 vmt[02]=lw.vmt02 vmt[03]=lw.vmt03 vmt[04]=lw.vmt04
    vmt[05]=lw.vmt05 vmt[06]=lw.vmt06 vmt[07]=lw.vmt07 vmt[08]=lw.vmt08
    vmt[09]=lw.vmt09 vmt[10]=lw.vmt10 vmt[11]=lw.vmt11 vmt[12]=lw.vmt12
    vmt[13]=lw.vmt13 vmt[14]=lw.vmt14 vmt[15]=lw.vmt15 vmt[16]=lw.vmt16
    vmt[17]=lw.vmt17 vmt[18]=lw.vmt18 vmt[19]=lw.vmt19 vmt[20]=lw.vmt20
    vmt[21]=lw.vmt21 vmt[22]=lw.vmt22 vmt[23]=lw.vmt23 vmt[24]=lw.vmt24


    spd[01]=lw.spd01 spd[02]=lw.spd02 spd[03]=lw.spd03 spd[04]=lw.spd04
    spd[05]=lw.spd05 spd[06]=lw.spd06 spd[07]=lw.spd07 spd[08]=lw.spd08
    spd[09]=lw.spd09 spd[10]=lw.spd10 spd[11]=lw.spd11 spd[12]=lw.spd12
    spd[13]=lw.spd13 spd[14]=lw.spd14 spd[15]=lw.spd15 spd[16]=lw.spd16
    spd[17]=lw.spd17 spd[18]=lw.spd18 spd[19]=lw.spd19 spd[20]=lw.spd20
    spd[21]=lw.spd21 spd[22]=lw.spd22 spd[23]=lw.spd23 spd[24]=lw.spd24


;---------------------------------------------------------------------
; Now compute hourly composite NOx, PM Emission rates (CNR,CPR)
;  and emissions (CEM,PEM)
; which, for running rates, are computed by facility type
; (freeways, arterials, and freeway ramps)
;---------------------------------------------------------------------
;
if (lw.ftype = 1 || lw.ftype = 5)
   LOOP IDX= 1,24
                          ;  -- for arterial, freeway, ramp, and network PM

        CNR[IDX] = (J01FR(@Sno@,Spd[idx]) * JDST(JCD,1))  +   ; COMPOSITE
                   (J02FR(@Sno@,Spd[idx]) * JDST(JCD,2))  +   ; Nx FREEWAY
                   (J03FR(@Sno@,Spd[idx]) * JDST(JCD,3))  +   ; RATE
                   (J04FR(@Sno@,Spd[idx]) * JDST(JCD,4))  +   ;
                   (J05FR(@Sno@,Spd[idx]) * JDST(JCD,5))  +   ;
                   (J06FR(@Sno@,Spd[idx]) * JDST(JCD,6))  +   ;
                   (J07FR(@Sno@,Spd[idx]) * JDST(JCD,7))  +   ;
                   (J08FR(@Sno@,Spd[idx]) * JDST(JCD,8))  +   ;
                   (J09FR(@Sno@,Spd[idx]) * JDST(JCD,9))  +   ;
                   (J10FR(@Sno@,Spd[idx]) * JDST(JCD,10)) +   ;
                   (J11FR(@Sno@,Spd[idx]) * JDST(JCD,11)) +   ;
                   (J12FR(@Sno@,Spd[idx]) * JDST(JCD,12)) +   ;
                   (J13FR(@Sno@,Spd[idx]) * JDST(JCD,13)) +   ;
                   (J14FR(@Sno@,Spd[idx]) * JDST(JCD,14)) +   ;
                   (J15FR(@Sno@,Spd[idx]) * JDST(JCD,15)) +   ;
                   (J16FR(@Sno@,Spd[idx]) * JDST(JCD,16)) +   ;
                   (J17FR(@Sno@,Spd[idx]) * JDST(JCD,17)) +   ;
                   (J18FR(@Sno@,Spd[idx]) * JDST(JCD,18)) +   ;
                   (J19FR(@Sno@,Spd[idx]) * JDST(JCD,19)) +   ;
                   (J20FR(@Sno@,Spd[idx]) * JDST(JCD,20)) +   ;
                   (J21FR(@Sno@,Spd[idx]) * JDST(JCD,21)) +   ;
                   (J22FR(@Sno@,Spd[idx]) * JDST(JCD,22)) +   ;
                   (J23FR(@Sno@,Spd[idx]) * JDST(JCD,23)) +   ;
                   (J24FR(@Sno@,Spd[idx]) * JDST(JCD,24)) +   ;
                   (J25FR(@Sno@,Spd[idx]) * JDST(JCD,25)) +   ;
                   (J26FR(@Sno@,Spd[idx]) * JDST(JCD,26)) +   ;
                   (J27FR(@Sno@,Spd[idx]) * JDST(JCD,27))     ;
```

```
        NEM[IDX] =  CNR[idx]  * VMT[idx]          ; Nx Emissions (gm)


    ENDLOOP
 ENDIF

; ---------------------------------------------------------------------

if (lw.ftype > 1 && lw.ftype < 5)
   LOOP IDX= 1,24


        CNR[IDX] = (J01AR(@Sno@,Spd[idx]) * JDST(JCD,1))  +   ; COMPOSITE
                   (J02AR(@Sno@,Spd[idx]) * JDST(JCD,2))  +   ; Nx ARTERIAL
                   (J03AR(@Sno@,Spd[idx]) * JDST(JCD,3))  +   ; RATE
                   (J04AR(@Sno@,Spd[idx]) * JDST(JCD,4))  +   ;
                   (J05AR(@Sno@,Spd[idx]) * JDST(JCD,5))  +   ;
                   (J06AR(@Sno@,Spd[idx]) * JDST(JCD,6))  +   ;
                   (J07AR(@Sno@,Spd[idx]) * JDST(JCD,7))  +   ;
                   (J08AR(@Sno@,Spd[idx]) * JDST(JCD,8))  +   ;
                   (J09AR(@Sno@,Spd[idx]) * JDST(JCD,9))  +   ;
                   (J10AR(@Sno@,Spd[idx]) * JDST(JCD,10)) +   ;
                   (J11AR(@Sno@,Spd[idx]) * JDST(JCD,11)) +   ;
                   (J12AR(@Sno@,Spd[idx]) * JDST(JCD,12)) +   ;
                   (J13AR(@Sno@,Spd[idx]) * JDST(JCD,13)) +   ;
                   (J14AR(@Sno@,Spd[idx]) * JDST(JCD,14)) +   ;
                   (J15AR(@Sno@,Spd[idx]) * JDST(JCD,15)) +   ;
                   (J16AR(@Sno@,Spd[idx]) * JDST(JCD,16)) +   ;
                   (J17AR(@Sno@,Spd[idx]) * JDST(JCD,17)) +   ;
                   (J18AR(@Sno@,Spd[idx]) * JDST(JCD,18)) +   ;
                   (J19AR(@Sno@,Spd[idx]) * JDST(JCD,19)) +   ;
                   (J20AR(@Sno@,Spd[idx]) * JDST(JCD,20)) +   ;
                   (J21AR(@Sno@,Spd[idx]) * JDST(JCD,21)) +   ;
                   (J22AR(@Sno@,Spd[idx]) * JDST(JCD,22)) +   ;
                   (J23AR(@Sno@,Spd[idx]) * JDST(JCD,23)) +   ;
                   (J24AR(@Sno@,Spd[idx]) * JDST(JCD,24)) +   ;
                   (J25AR(@Sno@,Spd[idx]) * JDST(JCD,25)) +   ;
                   (J26AR(@Sno@,Spd[idx]) * JDST(JCD,26)) +   ;
                   (J27AR(@Sno@,Spd[idx]) * JDST(JCD,27))     ;


        NEM[IDX] =  CNR[idx]  * VMT[idx]          ; Nx Emissions (gm)


    ENDLOOP
 ENDIF


; ---------------------------------------------------------------------

if (lw.ftype = 6 )
   LOOP IDX= 1,24
        SPD[IDX] = 35         ; Make RAMP SPEEDS EQUAL to 35 MPH
                              ; Per the lookup table


        CNR[IDX] = (J01RR(@Sno@,Spd[idx]) * JDST(JCD,1))  +   ; COMPOSITE
                   (J02RR(@Sno@,Spd[idx]) * JDST(JCD,2))  +   ; Nx ARTERIAL
                   (J03RR(@Sno@,Spd[idx]) * JDST(JCD,3))  +   ; RATE
                   (J04RR(@Sno@,Spd[idx]) * JDST(JCD,4))  +   ;
                   (J05RR(@Sno@,Spd[idx]) * JDST(JCD,5))  +   ;
                   (J06RR(@Sno@,Spd[idx]) * JDST(JCD,6))  +   ;
                   (J07RR(@Sno@,Spd[idx]) * JDST(JCD,7))  +   ;
                   (J08RR(@Sno@,Spd[idx]) * JDST(JCD,8))  +   ;
                   (J09RR(@Sno@,Spd[idx]) * JDST(JCD,9))  +   ;
                   (J10RR(@Sno@,Spd[idx]) * JDST(JCD,10)) +   ;
                   (J11RR(@Sno@,Spd[idx]) * JDST(JCD,11)) +   ;
                   (J12RR(@Sno@,Spd[idx]) * JDST(JCD,12)) +   ;
                   (J13RR(@Sno@,Spd[idx]) * JDST(JCD,13)) +   ;
                   (J14RR(@Sno@,Spd[idx]) * JDST(JCD,14)) +   ;
                   (J15RR(@Sno@,Spd[idx]) * JDST(JCD,15)) +   ;
                   (J16RR(@Sno@,Spd[idx]) * JDST(JCD,16)) +   ;
                   (J17RR(@Sno@,Spd[idx]) * JDST(JCD,17)) +   ;
                   (J18RR(@Sno@,Spd[idx]) * JDST(JCD,18)) +   ;
                   (J19RR(@Sno@,Spd[idx]) * JDST(JCD,19)) +   ;
                   (J20RR(@Sno@,Spd[idx]) * JDST(JCD,20)) +   ;
                   (J21RR(@Sno@,Spd[idx]) * JDST(JCD,21)) +   ;
                   (J22RR(@Sno@,Spd[idx]) * JDST(JCD,22)) +   ;
                   (J23RR(@Sno@,Spd[idx]) * JDST(JCD,23)) +   ;
                   (J24RR(@Sno@,Spd[idx]) * JDST(JCD,24)) +   ;
                   (J25RR(@Sno@,Spd[idx]) * JDST(JCD,25)) +   ;
                   (J26RR(@Sno@,Spd[idx]) * JDST(JCD,26)) +   ;
                   (J27RR(@Sno@,Spd[idx]) * JDST(JCD,27))     ;


        NEM[IDX] =  CNR[idx]  * VMT[idx]          ; Nx Emissions (gm)

   ENDLOOP
ENDIF

;PM emissions :
  LOOP IDX= 1,24
        SPD[IDX] = 35         ; Make      SPEEDS EQUAL to 35 MPH
                              ; Per the lookup table


      CPR[IDX] =  (J01PM(@Sno@,Spd[idx]) * JDST(JCD,1))  +   ; COMPOSITE
                  (J02PM(@Sno@,Spd[idx]) * JDST(JCD,2))  +   ; PM Network
                  (J03PM(@Sno@,Spd[idx]) * JDST(JCD,3))  +   ; RATE
                  (J04PM(@Sno@,Spd[idx]) * JDST(JCD,4))  +   ;
                  (J05PM(@Sno@,Spd[idx]) * JDST(JCD,5))  +   ;
                  (J06PM(@Sno@,Spd[idx]) * JDST(JCD,6))  +   ;
                  (J07PM(@Sno@,Spd[idx]) * JDST(JCD,7))  +   ;
                  (J08PM(@Sno@,Spd[idx]) * JDST(JCD,8))  +   ;
                  (J09PM(@Sno@,Spd[idx]) * JDST(JCD,9))  +   ;
                  (J10PM(@Sno@,Spd[idx]) * JDST(JCD,10)) +   ;
                  (J11PM(@Sno@,Spd[idx]) * JDST(JCD,11)) +   ;
                  (J12PM(@Sno@,Spd[idx]) * JDST(JCD,12)) +   ;
                  (J13PM(@Sno@,Spd[idx]) * JDST(JCD,13)) +   ;
                  (J14PM(@Sno@,Spd[idx]) * JDST(JCD,14)) +   ;
                  (J15PM(@Sno@,Spd[idx]) * JDST(JCD,15)) +   ;
                  (J16PM(@Sno@,Spd[idx]) * JDST(JCD,16)) +   ;
                  (J17PM(@Sno@,Spd[idx]) * JDST(JCD,17)) +   ;
                  (J18PM(@Sno@,Spd[idx]) * JDST(JCD,18)) +   ;
                  (J19PM(@Sno@,Spd[idx]) * JDST(JCD,19)) +   ;
                  (J20PM(@Sno@,Spd[idx]) * JDST(JCD,20)) +   ;
                  (J21PM(@Sno@,Spd[idx]) * JDST(JCD,21)) +   ;
                  (J22PM(@Sno@,Spd[idx]) * JDST(JCD,22)) +   ;
                  (J23PM(@Sno@,Spd[idx]) * JDST(JCD,23)) +   ;
                  (J24PM(@Sno@,Spd[idx]) * JDST(JCD,24)) +   ;
                  (J25PM(@Sno@,Spd[idx]) * JDST(JCD,25)) +   ;
                  (J26PM(@Sno@,Spd[idx]) * JDST(JCD,26)) +   ;
                  (J27PM(@Sno@,Spd[idx]) * JDST(JCD,27))     ;


       PEM[IDX] =  CPR[idx]  * VMT[idx]          ; PM Network  Emissions (gm)


   ENDLOOP

;****** debug section - dumping link-level outputs for selected links
 if (a=3200-3300)
     list = '     A     B  hr spd jcd  ft     vmt  nx_r  pm_r  N_E    PM_E   ',
            file=running.dbg
     list = '------ ----- --- --- --- --- ------- ----- ----- -----  ------- ',
            file=running.dbg
  LOOP IDX= 1,24
     list = a(6), b(6), idx(4), spd[idx](4),jcd(4),lw.ftype(4),
     VMT[idx](8.2), cnr[idx](6.3),' ',cpr[idx](6.3),' ',
            NEM[idx](10.2),PEM[idx](10.2),
            file=running.dbg
  ENDLOOP
 endif
```

```
;******  end of debug section


;-------------------------------------------------------------------
; Accumulate total,hourly Nx,PM emissions and VMT          -          -
; Reset All Hourly Arrays before going to the next link          -
;-------------------------------------------------------------------
;

        PEM_01   =  PEM_01  + PEM[01]   ; Accumulated PM Emiss. Hour 01
        NEM_01   =  NEM_01  + NEM[01]   ; Accumulated Nx Emiss. Hour 01
        VMT_01   =  VMT_01  + vmt[01]   ; Accumulated VMT       Hour 01

        PEM_02   =  PEM_02  + PEM[02]   ; Accumulated PM Emiss. Hour 02
        NEM_02   =  NEM_02  + NEM[02]   ; Accumulated Nx Emiss. Hour 02
        VMT_02   =  VMT_02  + vmt[02]   ; Accumulated VMT       Hour 02

        PEM_03   =  PEM_03  + PEM[03]   ; Accumulated PM Emiss. Hour 03
        NEM_03   =  NEM_03  + NEM[03]   ; Accumulated Nx Emiss. Hour 03
        VMT_03   =  VMT_03  + vmt[03]   ; Accumulated VMT       Hour 03

        PEM_04   =  PEM_04  + PEM[04]   ; Accumulated PM Emiss. Hour 04
        NEM_04   =  NEM_04  + NEM[04]   ; Accumulated Nx Emiss. Hour 04
        VMT_04   =  VMT_04  + vmt[04]   ; Accumulated VMT       Hour 04

        PEM_05   =  PEM_05  + PEM[05]   ; Accumulated PM Emiss. Hour 05
        NEM_05   =  NEM_05  + NEM[05]   ; Accumulated Nx Emiss. Hour 05
        VMT_05   =  VMT_05  + vmt[05]   ; Accumulated VMT       Hour 05

        PEM_06   =  PEM_06  + PEM[06]   ; Accumulated PM Emiss. Hour 06
        NEM_06   =  NEM_06  + NEM[06]   ; Accumulated Nx Emiss. Hour 06
        VMT_06   =  VMT_06  + vmt[06]   ; Accumulated VMT       Hour 06

        PEM_07   =  PEM_07  + PEM[07]   ; Accumulated PM Emiss. Hour 07
        NEM_07   =  NEM_07  + NEM[07]   ; Accumulated Nx Emiss. Hour 07
        VMT_07   =  VMT_07  + vmt[07]   ; Accumulated VMT       Hour 07

        PEM_08   =  PEM_08  + PEM[08]   ; Accumulated PM Emiss. Hour 08
        NEM_08   =  NEM_08  + NEM[08]   ; Accumulated Nx Emiss. Hour 08
        VMT_08   =  VMT_08  + vmt[08]   ; Accumulated VMT       Hour 08

        PEM_09   =  PEM_09  + PEM[09]   ; Accumulated PM Emiss. Hour 09
        NEM_09   =  NEM_09  + NEM[09]   ; Accumulated Nx Emiss. Hour 09
        VMT_09   =  VMT_09  + vmt[09]   ; Accumulated VMT       Hour 09

        PEM_10   =  PEM_10  + PEM[10]   ; Accumulated PM Emiss. Hour 10
        NEM_10   =  NEM_10  + NEM[10]   ; Accumulated Nx Emiss. Hour 10
        VMT_10   =  VMT_10  + vmt[10]   ; Accumulated VMT       Hour 10

        PEM_11   =  PEM_11  + PEM[11]   ; Accumulated PM Emiss. Hour 11
        NEM_11   =  NEM_11  + NEM[11]   ; Accumulated Nx Emiss. Hour 11
        VMT_11   =  VMT_11  + vmt[11]   ; Accumulated VMT       Hour 11

        PEM_12   =  PEM_12  + PEM[12]   ; Accumulated PM Emiss. Hour 12
        NEM_12   =  NEM_12  + NEM[12]   ; Accumulated Nx Emiss. Hour 12
        VMT_12   =  VMT_12  + vmt[12]   ; Accumulated VMT       Hour 12

        PEM_13   =  PEM_13  + PEM[13]   ; Accumulated PM Emiss. Hour 13
        NEM_13   =  NEM_13  + NEM[13]   ; Accumulated Nx Emiss. Hour 13
        VMT_13   =  VMT_13  + vmt[13]   ; Accumulated VMT       Hour 13

        PEM_14   =  PEM_14  + PEM[14]   ; Accumulated PM Emiss. Hour 14
        NEM_14   =  NEM_14  + NEM[14]   ; Accumulated Nx Emiss. Hour 14
        VMT_14   =  VMT_14  + vmt[14]   ; Accumulated VMT       Hour 14

        PEM_15   =  PEM_15  + PEM[15]   ; Accumulated PM Emiss. Hour 15
        NEM_15   =  NEM_15  + NEM[15]   ; Accumulated Nx Emiss. Hour 15
        VMT_15   =  VMT_15  + vmt[15]   ; Accumulated VMT       Hour 15

        PEM_16   =  PEM_16  + PEM[16]   ; Accumulated PM Emiss. Hour 16
        NEM_16   =  NEM_16  + NEM[16]   ; Accumulated Nx Emiss. Hour 16
        VMT_16   =  VMT_16  + vmt[16]   ; Accumulated VMT       Hour 16
        PEM_17   =  PEM_17  + PEM[17]   ; Accumulated PM Emiss. Hour 17
        NEM_17   =  NEM_17  + NEM[17]   ; Accumulated Nx Emiss. Hour 17
        VMT_17   =  VMT_17  + vmt[17]   ; Accumulated VMT       Hour 17

        PEM_18   =  PEM_18  + PEM[18]   ; Accumulated PM Emiss. Hour 18
        NEM_18   =  NEM_18  + NEM[18]   ; Accumulated Nx Emiss. Hour 18
        VMT_18   =  VMT_18  + vmt[18]   ; Accumulated VMT       Hour 18

        PEM_19   =  PEM_19  + PEM[19]   ; Accumulated PM Emiss. Hour 19
        NEM_19   =  NEM_19  + NEM[19]   ; Accumulated Nx Emiss. Hour 19
        VMT_19   =  VMT_19  + vmt[19]   ; Accumulated VMT       Hour 19

        PEM_20   =  PEM_20  + PEM[20]   ; Accumulated PM Emiss. Hour 20
        NEM_20   =  NEM_20  + NEM[20]   ; Accumulated Nx Emiss. Hour 20
        VMT_20   =  VMT_20  + vmt[20]   ; Accumulated VMT       Hour 20

        PEM_21   =  PEM_21  + PEM[21]   ; Accumulated PM Emiss. Hour 21
        NEM_21   =  NEM_21  + NEM[21]   ; Accumulated Nx Emiss. Hour 21
        VMT_21   =  VMT_21  + vmt[21]   ; Accumulated VMT       Hour 21

        PEM_22   =  PEM_22  + PEM[22]   ; Accumulated PM Emiss. Hour 22
        NEM_22   =  NEM_22  + NEM[22]   ; Accumulated Nx Emiss. Hour 22
        VMT_22   =  VMT_22  + vmt[22]   ; Accumulated VMT       Hour 22

        PEM_23   =  PEM_23  + PEM[23]   ; Accumulated PM Emiss. Hour 23
        NEM_23   =  NEM_23  + NEM[23]   ; Accumulated Nx Emiss. Hour 23
        VMT_23   =  VMT_23  + vmt[23]   ; Accumulated VMT       Hour 23

        PEM_24   =  PEM_24  + PEM[24]   ; Accumulated PM Emiss. Hour 24
        NEM_24   =  NEM_24  + NEM[24]   ; Accumulated Nx Emiss. Hour 24
        VMT_24   =  VMT_24  + vmt[24]   ; Accumulated VMT       Hour 24


    LOOP IDX= 1,24
        PEMTOT   = PEMTOT  + PEM[IDX]   ; Accumulated PM Emiss. Total
        NEMTOT   = NEMTOT  + NEM[IDX]   ; Accumulated Nx Emiss. Total
        VMTTOT   = VMTTOT  + vmt[IDX]   ; Accumulated VMT       Total
    ENDLOOP


  ;-------------------------------------------------------------------
  ; Finally, write out all the link information
  ;
  ;-------------------------------------------------------------------


  ;
  PRINT FORM=8.0,
   list= a(6),b(6),
       lw.ftype, lw.jur, jcd,
       file=linkout.INI

  PRINT FORM=3.0,
   list= a(6),b(6),
    spd[1], spd[2], spd[3], spd[4], spd[5], spd[6], spd[7], spd[8],
    spd[9],spd[10],spd[11],spd[12],spd[13],spd[14],spd[15],spd[16],
   spd[17],spd[18],spd[19],spd[20],spd[21],spd[22],spd[23],spd[24],
   file=linkout.SPD

  PRINT FORM=10.2,
   list= a(6),b(6),
    vmt[1], vmt[2], vmt[3], vmt[4], vmt[5], vmt[6], vmt[7], vmt[8],
    vmt[9],vmt[10],vmt[11],vmt[12],vmt[13],vmt[14],vmt[15],vmt[16],
   vmt[17],vmt[18],vmt[19],vmt[20],vmt[21],vmt[22],vmt[23],vmt[24],
   file=linkout.VMT

  PRINT FORM=10.2,
   list= a(6),b(6),
   pem[1], pem[2], pem[3], pem[4], pem[5], pem[6], pem[7], pem[8],
   pem[9], pem[10],pem[11],pem[12],pem[13],pem[14],pem[15],pem[16],
```

```
 pem[17],pem[18],pem[19],pem[20],pem[21],pem[22],pem[23],pem[24],
 file=linkout.pem

PRINT FORM=10.2,
 list= a(6),b(6),
  nem[1], nem[2], nem[3], nem[4], nem[5], nem[6], nem[7], nem[8],
  nem[9],nem[10],nem[11],nem[12],nem[13],nem[14],nem[15],nem[16],
 nem[17],nem[18],nem[19],nem[20],nem[21],nem[22],nem[23],nem[24],
 file=linkout.nem
;---------------------------------------------------------------------
; End of link write section
;
;---------------------------------------------------------------------



ENDIF ;  <<-----  END OF Link Selection Criterea loop
ENDLINKLOOP  ;  End of linkloop

;
; Now, List out the total emissions by Hour
;
 LIST = 'Summary of Nx, PM     Emissions(gms), by Hour '
 List ='  '
 print form= 15.2cs  LIST = 'Hour 01: ',PEM_01, NEM_01,VMT_01
 print form= 15.2cs  LIST = 'Hour 02: ',PEM_02, NEM_02,VMT_02
 print form= 15.2cs  LIST = 'Hour 03: ',PEM_03, NEM_03,VMT_03
 print form= 15.2cs  LIST = 'Hour 04: ',PEM_04, NEM_04,VMT_04
 print form= 15.2cs  LIST = 'Hour 05: ',PEM_05, NEM_05,VMT_05
 print form= 15.2cs  LIST = 'Hour 06: ',PEM_06, NEM_06,VMT_06
 print form= 15.2cs  LIST = 'Hour 07: ',PEM_07, NEM_07,VMT_07
 print form= 15.2cs  LIST = 'Hour 08: ',PEM_08, NEM_08,VMT_08
 print form= 15.2cs  LIST = 'Hour 09: ',PEM_09, NEM_09,VMT_09
 print form= 15.2cs  LIST = 'Hour 10: ',PEM_10, NEM_10,VMT_10
 print form= 15.2cs  LIST = 'Hour 11: ',PEM_11, NEM_11,VMT_11
 print form= 15.2cs  LIST = 'Hour 12: ',PEM_12, NEM_12,VMT_12
 print form= 15.2cs  LIST = 'Hour 13: ',PEM_13, NEM_13,VMT_13
 print form= 15.2cs  LIST = 'Hour 14: ',PEM_14, NEM_14,VMT_14
 print form= 15.2cs  LIST = 'Hour 15: ',PEM_15, NEM_15,VMT_15
 print form= 15.2cs  LIST = 'Hour 16: ',PEM_16, NEM_16,VMT_16
 print form= 15.2cs  LIST = 'Hour 17: ',PEM_17, NEM_17,VMT_17
 print form= 15.2cs  LIST = 'Hour 18: ',PEM_18, NEM_18,VMT_18
 print form= 15.2cs  LIST = 'Hour 19: ',PEM_19, NEM_19,VMT_19
 print form= 15.2cs  LIST = 'Hour 20: ',PEM_20, NEM_20,VMT_20
 print form= 15.2cs  LIST = 'Hour 21: ',PEM_21, NEM_21,VMT_21
 print form= 15.2cs  LIST = 'Hour 22: ',PEM_22, NEM_22,VMT_22
 print form= 15.2cs  LIST = 'Hour 23: ',PEM_23, NEM_23,VMT_23
 print form= 15.2cs  LIST = 'Hour 24: ',PEM_24, NEM_24,VMT_24
 List ='  '
 print form= 15.2cs,
 LIST=                      'SUM ',PEMTOT(20.2),'          ',NEMTOT(20.2)
 print form= 15.2cs,
 LIST =   '                   '      ,  '        ', VMTTOT(20.2)

endphase

endrun

;-------------------------
run pgm=hwynet
    neti     = @innet@
    neto     = dummy.net

    linki[2] = linkout.vmt  var = a, b,
    vmt01 vmt02,vmt03,vmt04,vmt05,vmt06,vmt07,vmt08,vmt09,vmt10,
    vmt11 vmt12,vmt13,vmt14,vmt15,vmt16,vmt17,vmt18,vmt19,vmt20,
    vmt21 vmt22,vmt23,vmt24

    linki[3] = linkout.spd var = a, b,
    spd01 spd02,spd03,spd04,spd05,spd06,spd07,spd08,spd09,spd10,
    spd11 spd12,spd13,spd14,spd15,spd16,spd17,spd18,spd19,spd20,
    spd21 spd22,spd23,spd24

    linki[4] = linkout.pem var = a, b,
    PEM01 PEM02,PEM03,PEM04,PEM05,PEM06,PEM07,PEM08,PEM09,PEM10,
    PEM11 PEM12,PEM13,PEM14,PEM15,PEM16,PEM17,PEM18,PEM19,PEM20,
    PEM21 PEM22,PEM23,PEM24


    linki[6] = linkout.nem var = a, b,
    nem01 nem02,nem03,nem04,nem05,nem06,nem07,nem08,nem09,nem10,
    nem11 nem12,nem13,nem14,nem15,nem16,nem17,nem18,nem19,nem20,
    nem21 nem22,nem23,nem24

; ------------------------------------------------------------
 if (i624vol > 0 && FType >0)
           _cnt=1
 else
           _cnt =0
 endif
; define MSA/NonMSA      NOTE: This is MSA Definition is 10 not 12 jurs.(no
stafford/Calvert)
; MSA= dc,mtg,pg,arl,alx,ffx,ldn,pw,frd,chs,cal,stf
 if (JUR=0-7 || jur = 9 || jur=12)
           msa= 1
 else
           msa= 0
 endif

  VMT =
    vmt01+vmt02+vmt03+vmt04+vmt05+vmt06+vmt07+vmt08+vmt09+vmt10+
    vmt11+vmt12+vmt13+vmt14+vmt15+vmt16+vmt17+vmt18+vmt19+vmt20+
    vmt21+vmt22+vmt23+vmt24

 PEM =
    PEM01+PEM02+PEM03+PEM04+PEM05+PEM06+PEM07+PEM08+PEM09+PEM10+
    PEM11+PEM12+PEM13+PEM14+PEM15+PEM16+PEM17+PEM18+PEM19+PEM20+
    PEM21+PEM22+PEM23+PEM24

 NEM =
    nem01+nem02+nem03+nem04+nem05+nem06+nem07+nem08+nem09+nem10+
    nem11+nem12+nem13+nem14+nem15+nem16+nem17+nem18+nem19+nem20+
    nem21+nem22+nem23+nem24


  wSPD=
      vmt01*spd01 + vmt02*spd02 + vmt03*spd03 + vmt04*spd04 +
      vmt05*spd05 + vmt06*spd06 + vmt07*spd07 + vmt08*spd08 +
      vmt09*spd09 + vmt10*spd10 + vmt11*spd11 + vmt12*spd12 +
      vmt13*spd13 + vmt14*spd14 + vmt15*spd15 + vmt16*spd16 +
      vmt17*spd17 + vmt18*spd18 + vmt19*spd19 + vmt20*spd20 +
      vmt21*spd21 + vmt22*spd22 + vmt23*spd23 + vmt24*spd24

IF (VMT = 0)
    SPD = 0
ELSE
    SPD = Wspd / vmt ;  daily weighted link speed
ENDIF

IF     (SPD <  2.5)
    spdgroup=    0
ELSEIF (SPD <  7.5)
    spdgroup=    5
ELSEIF (SPD < 12.5)
    spdgroup=   10
ELSEIF (SPD < 17.5)
    spdgroup=   15
ELSEIF (SPD < 22.5)
    spdgroup=   20
ELSEIF (SPD < 27.5)
    spdgroup=   25
ELSEIF (SPD < 32.5)
    spdgroup=   30
ELSEIF (SPD < 37.5)
```

```
    spdgroup=   35
ELSEIF (SPD < 42.5)
    spdgroup=   40
ELSEIF (SPD < 47.5)
    spdgroup=   45
ELSEIF (SPD < 52.5)
    spdgroup=   50
ELSEIF (SPD < 57.5)
    spdgroup=   55
ELSEIF (SPD < 62.5)
    spdgroup=   60
ELSE
    spdgroup=   65
ENDIF



 WSPD01=vmt01*spd01  WSPD09=vmt09*spd09  WSPD17=vmt17*spd17
 WSPD02=vmt02*spd02  WSPD10=vmt10*spd10  WSPD18=vmt18*spd18
 WSPD03=vmt03*spd03  WSPD11=vmt11*spd11  WSPD19=vmt19*spd19
 WSPD04=vmt04*spd04  WSPD12=vmt12*spd12  WSPD20=vmt20*spd20
 WSPD05=vmt05*spd05  WSPD13=vmt13*spd13  WSPD21=vmt21*spd21
 WSPD06=vmt06*spd06  WSPD14=vmt14*spd14  WSPD22=vmt22*spd22
 WSPD07=vmt07*spd07  WSPD15=vmt15*spd15  WSPD23=vmt23*spd23
 WSPD08=vmt08*spd08  WSPD16=vmt16*spd16  WSPD24=vmt24*spd24



;---------------------------------------------------------------------
; Hourly Crosstab summaries start here.                              -
; Each Hourly Crosstab is a summary of:                              -
; VMT, Spd*VMT, PM(gms), Nx(gms), Wgtd Speed(mph),         -
; PM(tns), Nx(tns)                                         -
;---------------------------------------------------------------------
;
 CROSSTAB VAR=vmt01,wspd01,PEM01,NEM01,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD01/vmt01, form=9.3cs,
          COMP=PEM01/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM01/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)

 CROSSTAB VAR=vmt02,wspd02,PEM02,NEM02,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD02/vmt02, form=9.3cs,
          COMP=PEM02/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM02/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt03,wspd03,PEM03,NEM03,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD03/vmt03, form=9.3cs,
          COMP=PEM03/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM03/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt04,wspd04,PEM04,NEM04,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD04/vmt04, form=9.3cs,
          COMP=PEM04/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM04/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt05,wspd05,PEM05,NEM05,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD05/vmt05, form=9.3cs,
          COMP=PEM05/ @GMperTN@ ,form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM05/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt06,wspd06,PEM06,NEM06,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD06/vmt06, form=9.3cs,
          COMP=PEM06/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM06/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt07,wspd07,PEM07,NEM07,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD07/vmt07, form=9.3cs,
          COMP=PEM07/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM07/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt08,wspd08,PEM08,NEM08,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD08/vmt08, form=9.3cs,
          COMP=PEM08/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM08/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt09,wspd09,PEM09,NEM09,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD09/vmt09, form=9.3cs,
          COMP=PEM09/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM09/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt10,wspd10,PEM10,NEM10,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD10/vmt10, form=9.3cs,
          COMP=PEM10/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM10/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt11,wspd11,PEM11,NEM11,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD11/vmt11, form=9.3cs,
          COMP=PEM11/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM11/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt12,wspd12,PEM12,NEM12,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD12/vmt12, form=9.3cs,
          COMP=PEM12/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM12/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt13,wspd13,PEM13,NEM13,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD13/vmt13, form=9.3cs,
          COMP=PEM13/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM13/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt14,wspd14,PEM14,NEM14,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD14/vmt14, form=9.3cs,
```

```
         COMP=PEM14/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
         COMP=NEM14/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt15,wspd15,PEM15,NEM15,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD15/vmt15, form=9.3cs,
          COMP=PEM15/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM15/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt16,wspd16,PEM16,NEM16,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD16/vmt16, form=9.3cs,
          COMP=PEM16/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM16/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt17,wspd17,PEM17,NEM17,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD17/vmt17, form=9.3cs,
          COMP=PEM17/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM17/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt18,wspd18,PEM18,NEM18,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD18/vmt18, form=9.3cs,
          COMP=PEM18/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM18/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt19,wspd19,PEM19,NEM19,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD19/vmt19, form=9.3cs,
          COMP=PEM19/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM19/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt20,wspd20,PEM20,NEM20,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD20/vmt20, form=9.3cs,
          COMP=PEM20/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM20/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt21,wspd21,PEM21,NEM21,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD21/vmt21, form=9.3cs,
          COMP=PEM21/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM21/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt22,wspd22,PEM22,NEM22,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD22/vmt22, form=9.3cs,
          COMP=PEM22/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM22/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt23,wspd23,PEM23,NEM23,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD23/vmt23, form=9.3cs,
          COMP=PEM23/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM23/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


 CROSSTAB VAR=vmt24,wspd24,PEM24,NEM24,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wSPD24/vmt24, form=9.3cs,
          COMP=PEM24/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM24/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)


;---------------------------------------------------------------------
; Total Regional Crosstab summary is below:  Juris x FTpe           -
; Reflects all 24 hours.                                            -
; VMT, Spd*VMT, PM(gms), Nx(gms), Wgtd Speed(mph),         -
; PM(tns), Nx(tns)                                                  -
;---------------------------------------------------------------------
; TOTAL VMT, Nx, PM Emissions
 CROSSTAB VAR=_cnt, vmt, PEM, nem,wspd,form=12cs,
          ROW=jur,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wspd/vmt, form=12.1cs,  ;WGTD SPEED
          COMP=PEM / @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM / @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)
;---------------------------------------------------------------------
; Total Regional Crosstab summary is below:    MSA x Ftype          -
; Reflects all 24 hours.                                            -
; VMT, Spd*VMT, PM(gms), Nx(gms), Wgtd Speed(mph),         -
; PM(tns),  Nx(tns)                                          -
;---------------------------------------------------------------------
; TOTAL VMT, Nx, PM Emissions
 CROSSTAB VAR=_cnt, vmt, PEM, nem,wspd,form=12cs,
          ROW=msa,RANGE=0-30-1,,0-30,
          COL=FTYPE, RANGE=0-6-1,0-6,
          COMP=wspd/vmt, form=12.1cs,  ;WGTD SPEED
          COMP=PEM/ @GMperTN@ , form=9.3cs,;PM Emissions (in TONs)
          COMP=NEM/ @GMperTN@ , form=9.3cs ;Nx Emissions (in TONs)

 CROSSTAB VAR=_cnt,vmt,PEM,nem,form=12cs,
          ROW=spdgroup,RANGE=0-65-1,,0-65,
          COL=msa, RANGE=0-1-1,0-1,
          COMP=PEM/ @GMperTN@ , form=9.3cs, ;PM Emissions in tons
          COMP=NEM/ @GMperTN@ , form=9.3cs, ;Nx Emissions in tons
          COMP=PEM/vmt, form=9.3cs,    ;PM Emissions composite rate
          COMP=NEM/vmt, form=9.3cs     ;Nx Emissions composite rate
endrun


;-------------------------------------------------------------------------------------
-
;Now lets wite out a neat jurisdiction level summary file
;-------------------------------------------------------------------------------------
-
;              will be read in by the LOCAL.S script to compute local emissions

Out_TXT ='RUNNING.TXT'   ; Output text file containing results
vmtftr  =%_SeasonFtr_%     ; Monthly or Season Factor applied to VMT
SDays   =%_SeasonDays_%   ; No. of Days in the season

GMperTN = 907184.74      ; Grams per Ton parameter
run pgm=hwyload
  neti = dummy.net

ARRAY J_VMT   = 27,                                ; Juris. Network VMT  Total
      J_PM    = 27, J_PMR   = 27, J_PMT   = 27,    ; Juris. PM gms, rates gm/mi,
tons per day
      J_NX    = 27, J_NXR   = 27, J_NXT   = 27,    ; Juris. NX gms, rates gm/mi,
tons per day
                                  J_PMT_S = 27,    ; Juris. PM tons per Season
                                  J_NXT_S = 27     ; Juris. NX tons per Season
zones = 1
```

```
LOOKUP NAME=NetEms,       ;   Emission jurisdiction code related to network
jurisdiction code
  LOOKUP[1]=1, RESULT=2,  ;   Note:  external VMT is not distinguished from internal
VMT
  INTERPOLATE = N,LIST=T,FAIL=99,99,99,  ;
;lw.JUR  JCD
R=" 0,   1",   ; DC
  " 1,   2",   ; Mtg
  " 2,   3",   ; PG
  " 3,  12",   ; Arl
  " 4,  17",   ; Alx
  " 5,  13",   ; FFx
  " 6,  14",   ; Ldn
  " 7,  15",   ; PW
  " 9,  10",   ; Frd
  "10,   4",   ; How
  "11,   5",   ; Aar
  "12,   9",   ; Chs
  "14,   6",   ; Car
  "15,   8",   ; Cal
  "16,  18",   ; StM
  "17,  25",   ; KG
  "18,  26",   ; Fbg
  "19,  16",   ; Sta
  "20,  24",   ; Spts
  "21,  21",   ; Fau
  "22,  20",   ; Clk
  "23,  22"    ; Jef

; Set up arrays
phase = linkread

  t0          = li.amhtime
  lw.ftype    = li.ftype
  lw.vmt      = li.vmt
  lw.PEM     = li.PEM
  lw.nem      = li.nem
  lw.jur      = li.jur

endphase

;
phase = iloop
 linkloop                ;              select -
       if (lw.ftype>0  )  ;  <<---      ALL HIGHWAY links
         idx =netEms(1,lw.jur)
         J_VMT[idx] =  J_VMT[idx] + lw.vmt     ; Juris. Network VMT  Total
         J_PM[idx]  =  J_PM[idx]  + lw.PEM    ; Juris. Network VMT  Total
         J_NX[idx]  =  J_NX[idx]  + lw.nem     ; Juris. Network VMT  Total

         T_VMT = T_VMT +  lw.vmt
         T_PM = T_PM   +  lw.PEM
         T_NX = T_NX   +  lw.nem
;
       endif


;     regional totals:



endlinkloop

;TOTAL RATES:
  IF (T_VMT  = 0)
      T_PMR  = 0
      T_NXR  = 0
  ELSE
      T_PMR = T_PM / T_VMT
      T_NXR = T_NX / T_VMT
  ENDIF

; compute UNFACTORED Regional VMT for reporting purposes (rounded to nearest
thousand)

  _UnftrVMT = Round((T_VMT / %_SeasonFTR_%) / 1000.0)  * 1000.0

   Print form=10.0 list = 'Running Emission Results                        ',
file=@out_TXT@
   Print form=10.0 list = 'Year: ', '%_Year_%', '      Season/Month: ','%_Season_%',
 file=@out_TXT@
   Print form=10.0 list = 'Season/Month Factor Applied to Modeled AAWDT VMT:
','%_SeasonFtr_%', file=@out_TXT@
   Print form=10.0 list = 'No. of Days in the Season:
','%_SeasonDays_%', file=@out_TXT@
   Print form=10.0 list = '  ',file=@out_TXT@

      Print list='             Daily         Daily        Daily     Daily     Daily
  Daily     Daily     Seasonal  Seasonal ',file=@Out_TXT@
      Print list=' Juris        VMT          PM(gms)      NX(gms)   PM g/mi   Nx g/mi
  PM Tons   Nx Tons   Nx Tons   PM Tons  ',file=@Out_TXT@
      Print list='----------|------------|------------|------------|---------|--------
-|---------|---------|---------|---------|',file=@Out_TXT@

LOOP k=1,27
; CALCULATE Seasonal EMISSIONS IN TONS HERE
;
;         CALCULATE DAILY Emissions IN TONS HERE (round to three decimal places)
;
          J_PMT[k] = (Round(J_PM[k]/ @GMperTN@ * 1000.0)) / 1000.0
          J_NXT[k] = (Round(J_NX[k]/ @GMperTN@ * 1000.0)) / 1000.0


;
;
;         Accumulate Regional EMISSIONS IN Gms/Tons HERE
;

          T_PMT= T_PMT  +  J_PMT[k]
          T_NXT= T_NXT  +  J_NXT[k]

          J_PMT_S[k] = J_PMT[k] * @SDays@
          J_NXT_S[k] = J_NXT[k] * @SDays@

          T_PMT_S= T_PMT_S  +  J_PMT_S[k]
          T_NXT_S= T_NXT_S  +  J_NXT_S[k]

print form= 10.3 list = ' jno/nx tons per day/days in season/ nox tons /year:
',k,j_nxt[k],@sdays@, J_NXT_S[k],
                                                                              file =
jur.chk
ENDLOOP
;
LOOP k=1,27
; GET AVG rateS BY JURIS.& REGIONAL
;
;JURIS RATES (Gm/MI):
  IF (J_VMT[k] =  0)
     J_PMR[k]  =  0
     J_NXR[k]  =  0
  ELSE
     J_PMR[k]  = J_PM[k] / J_VMT[k]
     J_NXR[k]  = J_NX[k] / J_VMT[k]
  ENDIF


    IF (k= 1) _jur = str(k,3,0) +' *DC   '
    IF (k= 2) _jur = str(k,3,0) +' *Mtg  '
    IF (k= 3) _jur = str(k,3,0) +' *PG   '
    IF (k= 4) _jur = str(k,3,0) +'  How  '
    IF (k= 5) _jur = str(k,3,0) +'  AAr  '
    IF (k= 6) _jur = str(k,3,0) +'  Car  '
    IF (k= 7) _jur = str(k,3,0) +'  BaltX'
    IF (k= 8) _jur = str(k,3,0) +'  Cal  '
    IF (k= 9) _jur = str(k,3,0) +' *Chs  '
```

```
    IF (k=10) _jur = str(k,3,0) +' *Frd  '
    IF (k=11) _jur = str(k,3,0) +'  FrdX '
    IF (k=12) _jur = str(k,3,0) +' *Arl  '
    IF (k=13) _jur = str(k,3,0) +' *Ffx  '
    IF (k=14) _jur = str(k,3,0) +' *Ldn  '
    IF (k=15) _jur = str(k,3,0) +' *PW   '
    IF (k=16) _jur = str(k,3,0) +'  Sta  '
    IF (k=17) _jur = str(k,3,0) +' *Alx  '
    IF (k=18) _jur = str(k,3,0) +'  StM  '
    IF (k=19) _jur = str(k,3,0) +'  WaCoX'
    IF (k=20) _jur = str(k,3,0) +'  Clk  '
    IF (k=21) _jur = str(k,3,0) +'  Fau  '
    IF (k=22) _jur = str(k,3,0) +'  Jeff '
    IF (k=23) _jur = str(k,3,0) +'  WestX'
    IF (k=24) _jur = str(k,3,0) +'  Spots'
    IF (k=25) _jur = str(k,3,0) +'  KGeo '
    IF (k=26) _jur = str(k,3,0) +'  Fbrg '
    IF (k=27) _jur = str(k,3,0) +'  SouX '

     Print form=13.0csv list = _jur,J_VMT[k],J_PM[k],J_NX[k],
                                                 J_PMR[k](10.3),J_NXR[k](10.3),

J_PMT[k](10.3),J_NXT[k](10.3),J_NXT_S[k](10.2),J_PMT_S[k](10.2),
                                                 File=@out_TXT@
endloop

     Print list=' '          ,file=@Out_TXT@
     Print form=13.0csv list =  'Total     ',T_VMT,   T_PM,  T_NX,
                                                 T_PMR(10.3),T_NXR(10.3),
                                                 T_PMT(10.3),T_NXT(10.3),
T_NXT_S(10.2), T_PMT_S(10.2),
                                                 File=@out_TXT@
     Print list=' Note: * indicates MSA '
,file=@Out_TXT@

; Finally compute, print MSA pollutant, trip totals
; MSA defined as  dc,mtg,pg,arl,alx,ffx,ldn,pw,frd,chs (Not incl Calvert & Stafford)
;
MSA_VMT= J_VMT[01] + J_VMT[02] + J_VMT[03] +
         J_VMT[09] + J_VMT[10] + J_VMT[12] + J_VMT[13] +
         J_VMT[14] + J_VMT[15] + J_VMT[17]

MSA_PMT= J_PMT[01] + J_PMT[02] + J_PMT[03] +
         J_PMT[09] + J_PMT[10] + J_PMT[12] + J_PMT[13] +
         J_PMT[14] + J_PMT[15] + J_PMT[17]

MSA_NXT= J_NXT[01] + J_NXT[02] + J_NXT[03] +
         J_NXT[09] + J_NXT[10] + J_NXT[12] + J_NXT[13] +
         J_NXT[14] + J_NXT[15] + J_NXT[17]

MSA_NXT_S= J_NXT_S[01] + J_NXT_S[02] + J_NXT_S[03] +
           J_NXT_S[09] + J_NXT_S[10] + J_NXT_S[12] + J_NXT_S[13] +
           J_NXT_S[14] + J_NXT_S[15] + J_NXT_S[17]

MSA_PMT_S= J_PMT_S[01] + J_PMT_S[02] + J_PMT_S[03] +
           J_PMT_S[09] + J_PMT_S[10] + J_PMT_S[12] + J_PMT_S[13] +
           J_PMT_S[14] + J_PMT_S[15] + J_PMT_S[17]

Print list=' '
,file=@Out_TXT@
Print list=' MSA RUNNING EMISSION TOTALS
,file=@Out_TXT@
Print list=' MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS ',file=@Out_TXT@

print, form=13.0csv,list ='  MSA Seasonal Daily VMT          ',MSA_VMT
,file=@Out_TXT@
print, form=13.3csv,list ='  MSA Seasonal Daily PM Running Emissions(Tons): ',MSA_PMT
           ,file=@Out_TXT@
print, form=13.3csv,list ='  MSA Seasonal Daily NX Running Emissions(Tons): ',MSA_NXT
           ,file=@Out_TXT@
print, form=13.2csv,list ='  MSA Seasonal ','%_SeasonDays_%','-Day NX Running
Emissions(Tons): ',MSA_NXT_S            ,file=@Out_TXT@
print, form=13.2csv,list ='  MSA Seasonal ','%_SeasonDays_%','-Day PM Running
Emissions(Tons): ',MSA_PMT_S            ,file=@Out_TXT@

Print form=13.0csv list =  'Note: Approximate Unadjusted VMT for the modeled Region
is: ',_UnftrVMT,   file=@Out_TXT@

endphase
endrun

*copy tppl*.prn running_Seasonal_Nx.rpt

*del tppl*.prn
```

Strt_Skr_Seasonal_Nx.s

```
*del tppl*.PRN
;-------------------------------------------------------------------------
;STRT_SKR_Seasonal_Nx.S - Calculation of Zonal Startup / SOAK emissions
;Note 4/15/03 update -"smoothed" hot/cold start distribution at hour 4
;     4/29/03 corrected starting emission equation error
;     8/19/04 created output text file (STRT_SKR.TXT) that results are sent to
;
;-------------------------------------------------------------------------
; INPUT Files:
 JRTRPDST='trip.dst'       ; veh trip juris level distr
 HRLY_Os ='HRLYORIG.ASC'   ; Hourly Zonal trip origins
 HRLY_Ds ='HRLYDEST.ASC'   ; Hourly Zonal trip destinations
; Output File/Parameters
 Out_TXT ='STRT_SKR.TXT'   ; Output text file containing results
 GMperTN = 907184.74       ; Grams per Ton parameter
 HNo=%_SeasonRateNo_%      ; Seasonal Hot  Start rate no. 1/Winter, 2/Spring,
3/Summer, 4/Fall
 CNo=%_SeasonRateNo_% + 4  ; Seasonal Cold Start rate no. 1/Winter, 2/Spring,
3/Summer, 4/Fall
 SDays=%_SeasonDays_%      ; No. of Days in the saeson
;-------------------------------------------------------------
; Emission juris codes
;-------------------------------------------------------------
;  1) DC                      15) PW
;  2) Mtg                     16) Sta
;  3) PG                      17) Alx
;  4) How                     18) StM
;  5) Aar                     19) WashCoExtls   2164-2168
;  6) Car                     20) Clk
;  7) Balt Extls 2172-2191    21) Fau
;  8) Cal                     22) Jef
;  9) Chs                     23) VA W.Extls    2154-2163
; 10) Frd                     24) Spts
; 11) Frd. Extls  2169-2171   25) KG
; 12) Arl                     26) Fbg
; 13) FFx                     27) VA S.Extls    2145-2153
; 14) Ldn
;-------------------------------------------------------------
 j01S_RAT='%_m6Sub_%%_m6NxPre_%dc.stt'; DC      Strt Nx Rates
 j02S_RAT='%_m6Sub_%%_m6NxPre_%mc.stt'; Mtg     Strt Nx Rates
 j03S_RAT='%_m6Sub_%%_m6NxPre_%pg.stt'; PG      Strt Nx Rates
 j04S_RAT='%_m6Sub_%%_m6NxPre_%pg.stt'; "       Strt Nx Rates
 j05S_RAT='%_m6Sub_%%_m6NxPre_%pg.stt'; "       Strt Nx Rates
 j06S_RAT='%_m6Sub_%%_m6NxPre_%pg.stt'; "       Strt Nx Rates
 j07S_RAT='%_m6Sub_%%_m6NxPre_%pg.stt'; "       Strt Nx Rates
 j08S_RAT='%_m6Sub_%%_m6NxPre_%ca.stt'; Cal     Strt Nx Rates
 j09S_RAT='%_m6Sub_%%_m6NxPre_%ch.stt'; Chs     Strt Nx Rates
 j10S_RAT='%_m6Sub_%%_m6NxPre_%fr.stt'; Frd     Strt Nx Rates
 j11S_RAT='%_m6Sub_%%_m6NxPre_%fr.stt'; "       Strt Nx Rates
 j12S_RAT='%_m6Sub_%%_m6NxPre_%ar.stt'; Arl     Strt Nx Rates
 j13S_RAT='%_m6Sub_%%_m6NxPre_%fx.stt'; Ffx     Strt Nx Rates
 j14S_RAT='%_m6Sub_%%_m6NxPre_%ld.stt'; Ldn     Strt Nx Rates
 j15S_RAT='%_m6Sub_%%_m6NxPre_%pw.stt'; PW      Strt Nx Rates
 j16S_RAT='%_m6Sub_%%_m6NxPre_%st.stt'; Sta     Strt Nx Rates
 j17S_RAT='%_m6Sub_%%_m6NxPre_%al.stt'; Alx     Strt Nx Rates
 j18S_RAT='%_m6Sub_%%_m6NxPre_%sm.stt'; StM     Strt Nx Rates
 j19S_RAT='%_m6Sub_%%_m6NxPre_%we.stt'; Wash    Strt Nx Rates
 j20S_RAT='%_m6Sub_%%_m6NxPre_%cl.stt'; Clk     Strt Nx Rates
 j21S_RAT='%_m6Sub_%%_m6NxPre_%cl.stt'; "       Strt Nx Rates
 j22S_RAT='%_m6Sub_%%_m6NxPre_%cl.stt'; "       Strt Nx Rates
 j23S_RAT='%_m6Sub_%%_m6NxPre_%cl.stt'; "       Strt Nx Rates
 j24S_RAT='%_m6Sub_%%_m6NxPre_%sp.stt'; Spts    Strt Nx Rates
 j25S_RAT='%_m6Sub_%%_m6NxPre_%sp.stt'; "       Strt Nx Rates
 j26S_RAT='%_m6Sub_%%_m6NxPre_%sp.stt'; "       Strt Nx Rates
 j27S_RAT='%_m6Sub_%%_m6NxPre_%sp.stt'; "       Strt Nx Rates
;-----------------------------------------------------
;-----------------------------------------------------

 J01SKRAT='%_m6Sub_%%_m6NxPre_%dc.ram'; DC      Strt Nx Rates
 j02SKRAT='%_m6Sub_%%_m6NxPre_%mc.ram'; Mtg     Strt Nx Rates
 j03SKRAT='%_m6Sub_%%_m6NxPre_%pg.ram'; PG      Strt Nx Rates
 j04SKRAT='%_m6Sub_%%_m6NxPre_%pg.ram'; "       Strt Nx Rates
 j05SKRAT='%_m6Sub_%%_m6NxPre_%pg.ram'; "       Strt Nx Rates
 j06SKRAT='%_m6Sub_%%_m6NxPre_%pg.ram'; "       Strt Nx Rates
 j07SKRAT='%_m6Sub_%%_m6NxPre_%pg.ram'; "       Strt Nx Rates
 j08SKRAT='%_m6Sub_%%_m6NxPre_%ca.ram'; Cal     Strt Nx Rates
 j09SKRAT='%_m6Sub_%%_m6NxPre_%ch.ram'; Chs     Strt Nx Rates
 j10SKRAT='%_m6Sub_%%_m6NxPre_%fr.ram'; Frd     Strt Nx Rates
 j11SKRAT='%_m6Sub_%%_m6NxPre_%fr.ram'; "       Strt Nx Rates
 j12SKRAT='%_m6Sub_%%_m6NxPre_%ar.ram'; Arl     Strt Nx Rates
 j13SKRAT='%_m6Sub_%%_m6NxPre_%fx.ram'; Ffx     Strt Nx Rates
 j14SKRAT='%_m6Sub_%%_m6NxPre_%ld.ram'; Ldn     Strt Nx Rates
 j15SKRAT='%_m6Sub_%%_m6NxPre_%pw.ram'; PW      Strt Nx Rates
 j16SKRAT='%_m6Sub_%%_m6NxPre_%st.ram'; Sta     Strt Nx Rates
 j17SKRAT='%_m6Sub_%%_m6NxPre_%al.ram'; Alx     Strt Nx Rates
 j18SKRAT='%_m6Sub_%%_m6NxPre_%sm.ram'; StM     Strt Nx Rates
 j19SKRAT='%_m6Sub_%%_m6NxPre_%we.ram'; Wash    Strt Nx Rates
 j20SKRAT='%_m6Sub_%%_m6NxPre_%cl.ram'; Clk     Strt Nx Rates
 j21SKRAT='%_m6Sub_%%_m6NxPre_%cl.ram'; "       Strt Nx Rates
 j22SKRAT='%_m6Sub_%%_m6NxPre_%cl.ram'; "       Strt Nx Rates
 j23SKRAT='%_m6Sub_%%_m6NxPre_%cl.ram'; "       Strt Nx Rates
 j24SKRAT='%_m6Sub_%%_m6NxPre_%sp.ram'; Spts    Strt Nx Rates
 j25SKRAT='%_m6Sub_%%_m6NxPre_%sp.ram'; "       Strt Nx Rates
 j26SKRAT='%_m6Sub_%%_m6NxPre_%sp.ram'; "       Strt Nx Rates
 j27SKRAT='%_m6Sub_%%_m6NxPre_%sp.ram'; "       Strt Nx Rates
;-------------------------------------------------
run pgm=matrix
; ---------------------------------------------------------------
zones=2191

ZDATI[1]=@HRLY_Os@,Z=1-5,
  HORIG01=  6- 15, HORIG02= 16-  25, HORIG03= 26- 35, HORIG04= 36- 45,
  HORIG05= 46- 55, HORIG06= 56-  65, HORIG07= 66- 75, HORIG08= 76- 85,
  HORIG09= 86- 95, HORIG10= 96- 105, HORIG11=106-115, HORIG12=116-125,
  HORIG13=126-135, HORIG14=136- 145, HORIG15=146-155, HORIG16=156-165,
  HORIG17=166-175, HORIG18=176- 185, HORIG19=186-195, HORIG20=196-205,
  HORIG21=206-215, HORIG22=216- 225, HORIG23=226-235, HORIG24=236-245

ZDATI[2]=@HRLY_Ds@,Z=1-5,
  HDEST01=  6- 15, HDEST02= 16-  25, HDEST03= 26- 35, HDEST04= 36- 45,
  HDEST05= 46- 55, HDEST06= 56-  65, HDEST07= 66- 75, HDEST08= 76- 85,
  HDEST09= 86- 95, HDEST10= 96- 105, HDEST11=106-115, HDEST12=116-125,
  HDEST13=126-135, HDEST14=136- 145, HDEST15=146-155, HDEST16=156-165,
  HDEST17=166-175, HDEST18=176- 185, HDEST19=186-195, HDEST20=196-205,
  HDEST21=206-215, HDEST22=216- 225, HDEST23=226-235, HDEST24=236-245

; Set up arrays

ARRAY,
STRT    =24, ; hrly Origins
STOP    =24, ; hrly Destinations

CNCR    =24, ; Cold Start Composite Nx Rate
HNCR    =24, ; Hot  Start Composite Nx Rate
STNE    =24, ; Start Composite Nx EMISS
J_NX    =27, ; Daily Juris. NX Total EMISSIONS  GMS
J_NXR   =27, ; Daily Juris. NX Total RATE Gm/Tr
J_NXT   =27, ; Daily Juris. NX Total EMISSIONS  TONS
J_NXT_S =27, ; Seasonal Juris. NX Total EMISSIONS  TONS
J_ST    =27, ; Daily Juris. Trip Starts
J_SP    =27  ; Daily Juris. Trip Stops

;Establish hourly cold and hot start pcts
;- The proportion of Cold, Hot Vehicle starts for each hour (1-24)
;  Distributions taken from 1994 HTS - Hamid Humeida

;---------------------------------------------------------------------
; NOTE: The hourly arrays are indexed from 1 to 24, as follows:
; 1-  12mid - 12:59AM       13- 12noon - 12:59PM
; 2- 1:00AM -  1:59AM       14- 1:00PM -  1:59PM
```

```
; 3- 2:00AM -  2:59AM       15- 2:00PM -  2:59PM
; 4- 3:00AM -  3:59AM       16- 3:00PM -  3:59PM
; 5- 4:00AM -  4:59AM       17- 4:00PM -  4:59PM
; 6- 5:00AM -  5:59AM       18- 5:00PM -  5:59PM
; 7- 6:00AM -  6:59AM       19- 6:00PM -  6:59PM
; 8- 7:00AM -  1:59AM       20- 7:00PM -  7:59PM
; 9- 8:00AM -  2:59AM       21- 8:00PM -  8:59PM
;10- 9:00AM -  3:59AM       22- 9:00PM -  9:59PM
;11-10:00AM -  4:59AM       23-10:00PM - 10:59PM
;12-11:00AM - 11:59AM       24-11:00PM - 11:59PM
;---------------------------------------------------------------------
;
;

LOOKUP NAME=CHDST,             ;Cold / Hot Distribution for each hour
       LOOKUP[1]=1, RESULT=2,  ; Pct. Cold Starts
       LOOKUP[2]=1, RESULT=3,  ; Pct. Hot  Starts
       INTERPOLATE = N,LIST=T,

R= " 1,0.847,0.153 ",
   " 2,0.838,0.162 ",
   " 3,0.929,0.071 ",
   " 4,0.912,0.088 ",
   " 5,0.894,0.106 ",
   " 6,0.930,0.070 ",
   " 7,0.884,0.116 ",
   " 8,0.829,0.171 ",
   " 9,0.730,0.270 ",
   "10,0.615,0.385 ",
   "11,0.554,0.446 ",
   "12,0.551,0.449 ",
   "13,0.505,0.495 ",
   "14,0.512,0.488 ",
   "15,0.562,0.438 ",
   "16,0.583,0.417 ",
   "17,0.605,0.395 ",
   "18,0.599,0.401 ",
   "19,0.552,0.448 ",
   "20,0.570,0.430 ",
   "21,0.616,0.384 ",
   "22,0.664,0.336 ",
   "23,0.711,0.289 ",
   "24,0.730,0.270 "

;---------------------------------------------------------------------
LOOKUP NAME=JCDTAZRG,          ; JCD AQ Juris code/taz range equiv
       LOOKUP[1]=1, RESULT=2,  ; Low  TAZ Range
       LOOKUP[2]=1, RESULT=3,  ; High TAZ Range
       LOOKUP[3]=1, RESULT=4,  ; JCD Code (1-27)
       INTERPOLATE = N,LIST=T,FAIL=0,0,0,
 R=    "  1,    1,  319,  1 ", ; DC
       "  2,  320,  627,  2 ", ; Mtg
       "  3,  640, 1020,  3 ", ; PG
       "  4, 1080, 1099,  4 ", ; How
       "  5, 1110, 1142,  5 ", ; Aar
       "  6, 1060, 1073,  6 ", ; Car
       "  7, 2172, 2191,  7 ", ; Balt Extls 2172-2191
       "  8, 1150, 1163,  8 ", ; Cal
       "  9, 1200, 1223,  9 ", ; Chs
       " 10, 1030, 1053, 10 ", ; Frd
       " 11, 2169, 2171, 11 ", ; Frd Extls 2169-2171
       " 12, 1230, 1311, 12 ", ; Arl
       " 13, 1400, 1755, 13 ", ; FFx
       " 14, 1780, 1905, 14 ", ; Ldn
       " 15, 1920, 2061, 15 ", ; PW
       " 16, 2080, 2093, 16 ", ; Sta
       " 17, 1330, 1389, 17 ", ; Alx
       " 18, 1170, 1190, 18 ", ; StM
       " 19, 2164, 2168, 19 ", ; NW. Extls  2164-2168
       " 20, 2130, 2132, 20 ", ; Clk
       " 21, 2115, 2125, 21 ", ; Fau
       " 22, 2135, 2141, 22 ", ; Jef
       " 23, 2154, 2163, 23 ", ; W.Extls    2154-2163
       " 24, 2105, 2110, 24 ", ; Spts
       " 25, 2070, 2074, 25 ", ; KG
       " 26, 2100, 2101, 26 ", ; Fbg
       " 27, 2145, 2153, 27 "  ; S.Extls    2145-2153
;
;---------------------------------------------------------------------
; Jurisdictional Trip Distribution Array                             -
;---------------------------------------------------------------------
  LOOKUP NAME=JDST,                ;
         LOOKUP[01]=1, RESULT=2,   ;
         LOOKUP[02]=1, RESULT=3,   ;
         LOOKUP[03]=1, RESULT=4,   ;
         LOOKUP[04]=1, RESULT=5,   ;
         LOOKUP[05]=1, RESULT=6,   ;
         LOOKUP[06]=1, RESULT=7,   ;
         LOOKUP[07]=1, RESULT=8,   ;
         LOOKUP[08]=1, RESULT=9,   ;
         LOOKUP[09]=1, RESULT=10,  ;
         LOOKUP[10]=1, RESULT=11,  ;
         LOOKUP[11]=1, RESULT=12,  ;
         LOOKUP[12]=1, RESULT=13,  ;
         LOOKUP[13]=1, RESULT=14,  ;
         LOOKUP[14]=1, RESULT=15,  ;
         LOOKUP[15]=1, RESULT=16,  ;
         LOOKUP[16]=1, RESULT=17,  ;
         LOOKUP[17]=1, RESULT=18,  ;
         LOOKUP[18]=1, RESULT=19,  ;
         LOOKUP[19]=1, RESULT=20,  ;
         LOOKUP[20]=1, RESULT=21,  ;
         LOOKUP[21]=1, RESULT=22,  ;
         LOOKUP[22]=1, RESULT=23,  ;
         LOOKUP[23]=1, RESULT=24,  ;
         LOOKUP[24]=1, RESULT=25,  ;
         LOOKUP[25]=1, RESULT=26,  ;
         LOOKUP[26]=1, RESULT=27,  ;
         LOOKUP[27]=1, RESULT=28,  ;
         INTERPOLATE = N,LIST=T,FAIL=0,0,0,File=@jrtrpdst@

;---------------------------------------------------------------------
; Hot & Cold start emission rate lookups by jurisdiction             -
;---------------------------------------------------------------------
;
;---------------------------------------------------------------------
  LOOKUP NAME=J01SR,               ;
         LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
         LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
         LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
         LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
         LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
         LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
         LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
         LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
         INTERPOLATE = N,LIST=T,file=@J01S_RAT@

  LOOKUP NAME=J02SR,               ;
         LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
         LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
         LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
         LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
         LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
         LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
         LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
         LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
         INTERPOLATE = N,LIST=T,file=@J02S_RAT@

  LOOKUP NAME=J03SR,               ;
         LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
         LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
         LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
         LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
         LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
```

```
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J03S_RAT@

LOOKUP NAME=J04SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J04S_RAT@

LOOKUP NAME=J05SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J05S_RAT@

LOOKUP NAME=J06SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J06S_RAT@

LOOKUP NAME=J07SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J07S_RAT@

LOOKUP NAME=J08SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J08S_RAT@

LOOKUP NAME=J09SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J09S_RAT@

LOOKUP NAME=J10SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J10S_RAT@

LOOKUP NAME=J11SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J11S_RAT@

LOOKUP NAME=J12SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J12S_RAT@

LOOKUP NAME=J13SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J13S_RAT@

LOOKUP NAME=J14SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J14S_RAT@

LOOKUP NAME=J15SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J15S_RAT@

LOOKUP NAME=J16SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
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        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J16S_RAT@

LOOKUP NAME=J17SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J17S_RAT@

LOOKUP NAME=J18SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J18S_RAT@

LOOKUP NAME=J19SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J19S_RAT@

LOOKUP NAME=J20SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J20S_RAT@

LOOKUP NAME=J21SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J21S_RAT@

LOOKUP NAME=J22SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J22S_RAT@

LOOKUP NAME=J23SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J23S_RAT@

LOOKUP NAME=J24SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J24S_RAT@

LOOKUP NAME=J25SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J25S_RAT@

LOOKUP NAME=J26SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J26S_RAT@

LOOKUP NAME=J27SR,              ;
        LOOKUP[1]=1, RESULT=2,  ; Hot  Nx Winter Start Rate (gm/trip)
        LOOKUP[2]=1, RESULT=3,  ; Hot  Nx Spring Start Rate (gm/trip)
        LOOKUP[3]=1, RESULT=4,  ; Hot  Nx Summer Start Rate (gm/trip)
        LOOKUP[4]=1, RESULT=5,  ; Hot  Nx Fall   Start Rate (gm/trip)
        LOOKUP[5]=1, RESULT=6,  ; Cold Nx Winter Start Rate (gm/trip)
        LOOKUP[6]=1, RESULT=7,  ; Cold Nx Spring Start Rate (gm/trip)
        LOOKUP[7]=1, RESULT=8,  ; Cold Nx Summer Start Rate (gm/trip)
        LOOKUP[8]=1, RESULT=9,  ; Cold Nx Fall   Start Rate (gm/trip)
        INTERPOLATE = N,LIST=T,file=@J27S_RAT@

;---------------------------------------------------------------------
; End of Hot Cold Emission Rate Lookups
;---------------------------------------------------------------------
;---------------------------------------------------------------------
; Now put hourly zonal trip starts, STOPS into HOURLY arrayS
-
;---------------------------------------------------------------------

 STRT[01]=HORIG01 STRT[07]=HORIG07 STRT[13]=HORIG13 STRT[19]=HORIG19
 STRT[02]=HORIG02 STRT[08]=HORIG08 STRT[14]=HORIG14 STRT[20]=HORIG20
 STRT[03]=HORIG03 STRT[09]=HORIG09 STRT[15]=HORIG15 STRT[21]=HORIG21
 STRT[04]=HORIG04 STRT[10]=HORIG10 STRT[16]=HORIG16 STRT[22]=HORIG22
 STRT[05]=HORIG05 STRT[11]=HORIG11 STRT[17]=HORIG17 STRT[23]=HORIG23
 STRT[06]=HORIG06 STRT[12]=HORIG12 STRT[18]=HORIG18 STRT[24]=HORIG24

 STOP[01]=HDEST01 STOP[07]=HDEST07 STOP[13]=HDEST13 STOP[19]=HDEST19
 STOP[02]=HDEST02 STOP[08]=HDEST08 STOP[14]=HDEST14 STOP[20]=HDEST20
 STOP[03]=HDEST03 STOP[09]=HDEST09 STOP[15]=HDEST15 STOP[21]=HDEST21
 STOP[04]=HDEST04 STOP[10]=HDEST10 STOP[16]=HDEST16 STOP[22]=HDEST22
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 STOP[05]=HDEST05 STOP[11]=HDEST11 STOP[17]=HDEST17 STOP[23]=HDEST23
 STOP[06]=HDEST06 STOP[12]=HDEST12 STOP[18]=HDEST18 STOP[24]=HDEST24

;-------------------------------------------------------------------------
;Next, define air quality jurisdiction codes (jcd).                      -
; associated with each origin TAZ.                                       -
; These include some external station ranges as well as jurisdictions  -       -
;-------------------------------------------------------------------------
     JCD = 0  ; initialize JCD Code
LOOP IDX = 1,27
     IF ( (I >= JCDTAZRG(1,IDX)) && (I <= JCDTAZRG(2,IDX)) )
         JCD = JCDTAZRG(3,IDX)
     ENDIF
ENDLOOP
;-------------------------------------------------------------------------
; end of JCD definitions
;-------------------------------------------------------------------------
;-------------------------------------------------------------------------
; Now compute hourly
; Composite Hot  NOx emission rate (HNCR)
; Composite Cold NOx emission rate (CNCR)
;-------------------------------------------------------------------------
;

   LOOP IDX= 1,24
             ; 35 is dummy lookup value to read 1-line lookup tabs

; ---- Begin Hot Start composite Nx Rate computations ----------


       HNCR[IDX] = (J01SR(@Hno@,13) * JDST(JCD,1))  +   ; Hot Start
                   (J02SR(@Hno@,13) * JDST(JCD,2))  +   ; Nx Composite
                   (J03SR(@Hno@,13) * JDST(JCD,3))  +   ; RATE
                   (J04SR(@Hno@,13) * JDST(JCD,4))  +   ;
                   (J05SR(@Hno@,13) * JDST(JCD,5))  +   ;
                   (J06SR(@Hno@,13) * JDST(JCD,6))  +   ;
                   (J07SR(@Hno@,13) * JDST(JCD,7))  +   ;
                   (J08SR(@Hno@,13) * JDST(JCD,8))  +   ;
                   (J09SR(@Hno@,13) * JDST(JCD,9))  +   ;
                   (J10SR(@Hno@,13) * JDST(JCD,10)) +   ;
                   (J11SR(@Hno@,13) * JDST(JCD,11)) +   ;
                   (J12SR(@Hno@,13) * JDST(JCD,12)) +   ;
                   (J13SR(@Hno@,13) * JDST(JCD,13)) +   ;
                   (J14SR(@Hno@,13) * JDST(JCD,14)) +   ;
                   (J15SR(@Hno@,13) * JDST(JCD,15)) +   ;
                   (J16SR(@Hno@,13) * JDST(JCD,16)) +   ;
                   (J17SR(@Hno@,13) * JDST(JCD,17)) +   ;
                   (J18SR(@Hno@,13) * JDST(JCD,18)) +   ;
                   (J19SR(@Hno@,13) * JDST(JCD,19)) +   ;
                   (J20SR(@Hno@,13) * JDST(JCD,20)) +   ;
                   (J21SR(@Hno@,13) * JDST(JCD,21)) +   ;
                   (J22SR(@Hno@,13) * JDST(JCD,22)) +   ;
                   (J23SR(@Hno@,13) * JDST(JCD,23)) +   ;
                   (J24SR(@Hno@,13) * JDST(JCD,24)) +   ;
                   (J25SR(@Hno@,13) * JDST(JCD,25)) +   ;
                   (J26SR(@Hno@,13) * JDST(JCD,26)) +   ;
                   (J27SR(@Hno@,13) * JDST(JCD,27))     ;

; -------- End Hot Start Rate Computations ---------------------------
; ---Begin Cold Start Composite Nx Rate computations ----------


       CNCR[IDX] = (J01SR(@Cno@,13) * JDST(JCD,1))  +   ; Cold Start
                   (J02SR(@Cno@,13) * JDST(JCD,2))  +   ; Nx Composite
                   (J03SR(@Cno@,13) * JDST(JCD,3))  +   ; RATE
                   (J04SR(@Cno@,13) * JDST(JCD,4))  +   ;
                   (J05SR(@Cno@,13) * JDST(JCD,5))  +   ;
                   (J06SR(@Cno@,13) * JDST(JCD,6))  +   ;
                   (J07SR(@Cno@,13) * JDST(JCD,7))  +   ;
                   (J08SR(@Cno@,13) * JDST(JCD,8))  +   ;
                   (J09SR(@Cno@,13) * JDST(JCD,9))  +   ;
                   (J10SR(@Cno@,13) * JDST(JCD,10)) +   ;
                   (J11SR(@Cno@,13) * JDST(JCD,11)) +   ;
                   (J12SR(@Cno@,13) * JDST(JCD,12)) +   ;
                   (J13SR(@Cno@,13) * JDST(JCD,13)) +   ;
                   (J14SR(@Cno@,13) * JDST(JCD,14)) +   ;
                   (J15SR(@Cno@,13) * JDST(JCD,15)) +   ;
                   (J16SR(@Cno@,13) * JDST(JCD,16)) +   ;
                   (J17SR(@Cno@,13) * JDST(JCD,17)) +   ;
                   (J18SR(@Cno@,13) * JDST(JCD,18)) +   ;
                   (J19SR(@Cno@,13) * JDST(JCD,19)) +   ;
                   (J20SR(@Cno@,13) * JDST(JCD,20)) +   ;
                   (J21SR(@Cno@,13) * JDST(JCD,21)) +   ;
                   (J22SR(@Cno@,13) * JDST(JCD,22)) +   ;
                   (J23SR(@Cno@,13) * JDST(JCD,23)) +   ;
                   (J24SR(@Cno@,13) * JDST(JCD,24)) +   ;
                   (J25SR(@Cno@,13) * JDST(JCD,25)) +   ;
                   (J26SR(@Cno@,13) * JDST(JCD,26)) +   ;
                   (J27SR(@Cno@,13) * JDST(JCD,27))     ;
; -------- End Cold Start Rate Computations ---------------------------
```

```
; -------- Now apply Composite Cold/Hot Rates to trip origins---------
; -- TO COMPUTE HOURLY  Nx EMISSIONS ----------------------
;  w/ 4/29/03 correction

   STNE[idx] =  strt[idx] *
             ((CNCR[idx] * CHDST(1,idx)) + (HNCR[idx] * CHDST(2,idx)))

;---------------------------------------------------------------------
;------- accumulate JUrisdictional Nx emissions, starts------
;---------------------------------------------------------------------
LOOP JDX=1,27
IF (JCD=JDX) ;
    J_NX[jdx]   = J_NX[jdx] + STNE[idx]   ; NX (gms) per day
    J_ST[jdx]   = J_ST[jdx] + STRT[idx]   ; Starts per Day
    J_SP[jdx]   = J_SP[jdx] + STOP[idx]   ; Stops per Day

ENDIF
ENDLOOP
;---------------------------------------------------------------------
;---END of Jurisdictional  Nx emissions, starts -------------
;---------------------------------------------------------------------

;---------------------------------------
;TOTAL Regional Nx, Trip Origins -
;---------------------------------------
;
   TOTNX_ST   = TOTNX_ST + STNE[idx]
   TOTstart   = TOTstart + strt[idx]
   TOTstOP    = TOTstOP  + stOP[idx]
ENDLOOP

;<<<<<<--------------
if (i=627,628)
 t1=jdst(jcd,1),
 t2=jdst(jcd,2)   t3=jdst(jcd,3)  t4=jdst(jcd,4)   t5=jdst(jcd,5),
 t6=jdst(jcd,6)   t7=jdst(jcd,7)  t8=jdst(jcd,8)   t9=jdst(jcd,9),
t10=jdst(jcd,10) t11=jdst(jcd,11) t12=jdst(jcd,12) t13=jdst(jcd,13),
t14=jdst(jcd,14) t15=jdst(jcd,15) t16=jdst(jcd,16) t17=jdst(jcd,17),
t18=jdst(jcd,18) t19=jdst(jcd,19) t20=jdst(jcd,20) t21=jdst(jcd,21),
t22=jdst(jcd,22) t23=jdst(jcd,23) t24=jdst(jcd,24) t25=jdst(jcd,25),
t26=jdst(jcd,26) t27=jdst(jcd,27)

list=i(5), t1(5.3),  t2(5.3),  t3(5.3),  t4(5.3),
           t5(5.3),  t6(5.3),  t7(5.3),  t8(5.3),
           t9(5.3), t10(5.3), t11(5.3), t12(5.3),
          t13(5.3), t14(5.3), t15(5.3), t16(5.3),
          t17(5.3), t18(5.3), t19(5.3), t20(5.3),
          t21(5.3), t22(5.3), t23(5.3), t24(5.3),
          t25(5.3), t26(5.3), t27(5.3),
                    file=dud.dat  ;
endif
;<<<<<<--------------


IF (I=ZONES)       ;  ALL DONE WITH ZONE LOOP
;
; GET AVG rateS BY JURIS.& REGIONAL
; get total seasonal Nox emissions

;
;JURIS rATES:
LOOP TDX=1,27
  IF (J_ST[TDX] = 0)
    J_NXR[TDX] =  0
  ELSE
    J_NXR[TDX] = J_NX[TDX] / J_ST[TDX]
  ENDIF

;
; CALCULATE daily nox  Emissions in tons HERE
;
```

```
    J_NXT[TDX] = (Round( J_NX[TDX]/ @GMperTN@ *1000.0)) / 1000.0

;  CALCULATE seasonal nox emissions IN TONS HERE
;
    J_NXT_S[TDX] = J_NXT[TDX]* @SDays@

;  CALCULATE TOTAL TONS per Day
    T_NXT = T_NXT + J_NXT[TDX]
;
    T_NXT_S = T_NXT_S + J_NXT_S[TDX]

;
;
ENDLOOP

;TOTAL RATES:
  IF (TOTSTART  = 0)
    T_NXR = 0
  ELSE
    T_NXR = TOTNX_ST / TOTSTART
  ENDIF


; Now List Out The Results

;
Print LIST=' '                                                                                                  ,file=@Out_TXT@
Print LIST=' Total Starting Nox Emissions (gms) By Jurisdiction        '                              ,file=@Out_TXT@
Print form=10.0 list = 'Year: ','%_Year_%','       Season/Month: ', '%_Season_%', file=@Out_TXT@
Print LIST='         Daily       Daily         Nx Rate        Daily       ','@SDays@','-Day   '  ,file=@Out_TXT@
Print LIST='Juris     Nx(gms)     Trip Starts  (gm/trip)       Nx(tns)     Nx(tns)    '  ,file=@Out_TXT@
Print LIST='------  ------------ ------------ ------------  ------------ ------------',file=@Out_TXT@
print, form=13.0csv,list =' 1  DC ', J_NX[01] J_ST[01]  J_NXR[01](13.3) J_NXT[01](13.3) J_NXT_S[01](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list =' 2  MTG', J_NX[02] J_ST[02]  J_NXR[02](13.3) J_NXT[02](13.3) J_NXT_S[02](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list =' 3  PG ', J_NX[03] J_ST[03]  J_NXR[03](13.3) J_NXT[03](13.3) J_NXT_S[03](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list =' 4  HOW', J_NX[04] J_ST[04]  J_NXR[04](13.3) J_NXT[04](13.3) J_NXT_S[04](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list =' 5  AAR', J_NX[05] J_ST[05]  J_NXR[05](13.3) J_NXT[05](13.3) J_NXT_S[05](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list =' 6  CAR', J_NX[06] J_ST[06]  J_NXR[06](13.3) J_NXT[06](13.3) J_NXT_S[06](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list =' 7 BalX', J_NX[07] J_ST[07]  J_NXR[07](13.3) J_NXT[07](13.3) J_NXT_S[07](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list =' 8  CAL', J_NX[08] J_ST[08]  J_NXR[08](13.3) J_NXT[08](13.3) J_NXT_S[08](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list =' 9  CHS', J_NX[09] J_ST[09]  J_NXR[09](13.3) J_NXT[09](13.3) J_NXT_S[09](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='10  FRD', J_NX[10] J_ST[10]  J_NXR[10](13.3) J_NXT[10](13.3) J_NXT_S[10](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='11 FrdX', J_NX[11] J_ST[11]  J_NXR[11](13.3) J_NXT[11](13.3) J_NXT_S[11](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='12  ARL', J_NX[12] J_ST[12]  J_NXR[12](13.3) J_NXT[12](13.3) J_NXT_S[12](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='13  FFX', J_NX[13] J_ST[13]  J_NXR[13](13.3) J_NXT[13](13.3) J_NXT_S[13](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='14  LDN', J_NX[14] J_ST[14]  J_NXR[14](13.3) J_NXT[14](13.3) J_NXT_S[14](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='15  PW ', J_NX[15] J_ST[15]  J_NXR[15](13.3) J_NXT[15](13.3) J_NXT_S[15](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='16  STA', J_NX[16] J_ST[16]  J_NXR[16](13.3) J_NXT[16](13.3) J_NXT_S[16](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='17  ALX', J_NX[17] J_ST[17]  J_NXR[17](13.3) J_NXT[17](13.3) J_NXT_S[17](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='18  STM', J_NX[18] J_ST[18]  J_NXR[18](13.3) J_NXT[18](13.3) J_NXT_S[18](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='19 WasX', J_NX[19] J_ST[19]  J_NXR[19](13.3) J_NXT[19](13.3) J_NXT_S[19](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='20  CLK', J_NX[20] J_ST[20]  J_NXR[20](13.3) J_NXT[20](13.3) J_NXT_S[20](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='21  FAU', J_NX[21] J_ST[21]  J_NXR[21](13.3) J_NXT[21](13.3) J_NXT_S[21](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='22  JEF', J_NX[22] J_ST[22]  J_NXR[22](13.3) J_NXT[22](13.3) J_NXT_S[22](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='23 VaWX', J_NX[23] J_ST[23]  J_NXR[23](13.3) J_NXT[23](13.3) J_NXT_S[23](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='24  SPT', J_NX[24] J_ST[24]  J_NXR[24](13.3) J_NXT[24](13.3) J_NXT_S[24](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='25   KG', J_NX[25] J_ST[25]  J_NXR[25](13.3) J_NXT[25](13.3) J_NXT_S[25](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='26  FBG', J_NX[26] J_ST[26]  J_NXR[26](13.3) J_NXT[26](13.3) J_NXT_S[26](13.2)  ,file=@Out_TXT@
print, form=13.0csv,list ='27 VaSX', J_NX[27] J_ST[27]  J_NXR[27](13.3) J_NXT[27](13.3) J_NXT_S[27](13.2)  ,file=@Out_TXT@
Print list=' '                                                                 ,file=@Out_TXT@
print, form=13.0csv ,list =' TOTAL ',TOTNX_ST,TOTSTART  T_NXR(13.3) T_NXT(13.3) ,T_NXT_S(13.2),  file=@Out_TXT@


Print LIST=' '                                                                    ,file=@Out_TXT@
Print LIST=' '                                                                    ,file=@Out_TXT@
;
; Finally compute, print MSA pollutant, trip totals
; MSA defined as  dc,mtg,pg,arl,alx,ffx,ldn,pw,frd,& chs (Not Calvert & Stafford)

MSA_ST = J_ST[01] + J_ST[02] + J_ST[03] +
         J_ST[09] + J_ST[10] + J_ST[12] + J_ST[13] +
```

```
         J_ST[14] + J_ST[15] + J_ST[17]

MSA_SP = J_SP[01] + J_SP[02] + J_SP[03] +
         J_SP[09] + J_SP[10] + J_SP[12] + J_SP[13] +
         J_SP[14] + J_SP[15] + J_SP[17]

MSA_NXT= J_NXT[01] + J_NXT[02] + J_NXT[03] +
         J_NXT[09] + J_NXT[10] + J_NXT[12] + J_NXT[13] +
         J_NXT[14] + J_NXT[15] + J_NXT[17]


MSA_NXT_S= J_NXT_S[01] + J_NXT_S[02] + J_NXT_S[03] +
           J_NXT_S[09] + J_NXT_S[10] + J_NXT_S[12] + J_NXT_S[13] +
           J_NXT_S[14] + J_NXT_S[15] + J_NXT_S[17]

Print list=' '                                                          ,file=@Out_TXT@
Print list=' MSA TOTALS:  '                                             ,file=@Out_TXT@
Print list=' MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS     ',file=@Out_TXT@
Print list=' '                                                          ,file=@Out_TXT@

print, form=13.0csv,list ='MSA Seasonal Daily TRIP STARTS:                          ',MSA_ST, file=@Out_TXT@
print, form=13.0csv,list ='MSA Seasonal Daily TRIP STOPS :                          ',MSA_SP,file=@Out_TXT@
Print list=' '                                                          ,file=@Out_TXT@
print, form=13.3csv,list ='MSA Seasonal Daily NX Start Emissions(Tons):             ',MSA_NXT,file=@Out_TXT@
print, form=13.3csv,list ='MSA Seasonal ','%_SeasonDays_%','-Day NX Start Emissions(Tons):                 ',MSA_NXT_S ,file=@Out_TXT@

ENDIF
ENDRUN
*copy tppl*.PRN stRT_SKR_Seasonal_Nx.rpt
```

Local_Seasonal_Nx.s

```
*del tppl*.PRN
;-------------------------------------------------------------------
;LOCAL.S  - Calculation of Local nx,PM emissions at Juris Level
;  Emissions calculated differently for Urban and Rural VMT.
;  Urban emiss's based on single Mobile 6 Local VMT mix
;                     rate at 12.5 mph
;  Arterial emiss's based on Mobile 6 Local VMT mix rate
;           from speeds of 1 to 45 mph; the distribution of
;           Local VMT for each speed is based on a regional
;           distribution
;-------------------------------------------------------------------
;INPUT Files:

  JurBVMTFile='%_inplocalB_%'  ;  Jurisdictional Base VMT file- contains Base VMT growth/Rural&Urban Pcts
  JurFVMTFile='%_inplocalF_%'  ;  Jurisdictional Future VMT file- contains Future VMT
  GMperTN = 907184.74       ;  Grams per Ton parameter
  RNo  =%_SeasonRateNo_%     ;  Seasonal Local Nx rate no. 1/Winter, 2/Spring, 3/Summer, 4/Fall
  SDays=%_SeasonDays_%      ;  Seasonal Local Nx rate no. 1/Winter, 2/Spring, 3/Summer, 4/Fall
;-------------------------------------------------------------------
; Emission juris codes - These are the 'ZONES' that are processed
;-------------------------------------------------------------------
;  1) DC                      15) PW
;  2) Mtg                     16) Sta
;  3) PG                      17) Alx
;  4) How                     18) StM
;  5) Aar                     19) WashCoExtls   2164-2168
;  6) Car                     20) Clk
;  7) Balt Extls 2172-2191    21) Fau
;  8) Cal                     22) Jef
;  9) Chs                     23) VA W.Extls    2154-2163
; 10) Frd                     24) Spts
; 11) Frd. Extls  2169-2171   25) KG
; 12) Arl                     26) Fbg
; 13) FFx                     27) VA S.Extls    2145-2153
; 14) Ldn
;-----------------------------------------------------------
 j01L_RAT='%_m6Sub_%%_m6NxPre_%dc.lcl'; DC      Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j02L_RAT='%_m6Sub_%%_m6NxPre_%mc.lcl'; Mtg     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j03L_RAT='%_m6Sub_%%_m6NxPre_%pg.lcl'; PG      Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j04L_RAT='%_m6Sub_%%_m6NxPre_%pg.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j05L_RAT='%_m6Sub_%%_m6NxPre_%pg.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j06L_RAT='%_m6Sub_%%_m6NxPre_%pg.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j07L_RAT='%_m6Sub_%%_m6NxPre_%pg.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j08L_RAT='%_m6Sub_%%_m6NxPre_%ca.lcl'; Cal     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j09L_RAT='%_m6Sub_%%_m6NxPre_%ch.lcl'; Chs     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j10L_RAT='%_m6Sub_%%_m6NxPre_%fr.lcl'; Frd     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j11L_RAT='%_m6Sub_%%_m6NxPre_%fr.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j12L_RAT='%_m6Sub_%%_m6NxPre_%ar.lcl'; Arl     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j13L_RAT='%_m6Sub_%%_m6NxPre_%fx.lcl'; Ffx     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j14L_RAT='%_m6Sub_%%_m6NxPre_%ld.lcl'; Ldn     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j15L_RAT='%_m6Sub_%%_m6NxPre_%pw.lcl'; PW      Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j16L_RAT='%_m6Sub_%%_m6NxPre_%st.lcl'; Sta     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j17L_RAT='%_m6Sub_%%_m6NxPre_%al.lcl'; Alx     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j18L_RAT='%_m6Sub_%%_m6NxPre_%sm.lcl'; StM     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j19L_RAT='%_m6Sub_%%_m6NxPre_%we.lcl'; Wash    Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j20L_RAT='%_m6Sub_%%_m6NxPre_%cl.lcl'; Clk     Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j21L_RAT='%_m6Sub_%%_m6NxPre_%cl.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j22L_RAT='%_m6Sub_%%_m6NxPre_%cl.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j23L_RAT='%_m6Sub_%%_m6NxPre_%cl.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j24L_RAT='%_m6Sub_%%_m6NxPre_%sp.lcl'; Spts    Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j25L_RAT='%_m6Sub_%%_m6NxPre_%sp.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j26L_RAT='%_m6Sub_%%_m6NxPre_%sp.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
 j27L_RAT='%_m6Sub_%%_m6NxPre_%sp.lcl'; "       Local ,Nx Rates (Winter,Spring,Summer,Fall)
;-----------------------------------------------------
;-----------------------------------------------------------
 J01RARAT='%_m6Sub_%%_m6NxPre_%dc.r_r'; DC      Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j02RARAT='%_m6Sub_%%_m6NxPre_%mc.r_r'; Mtg     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
```

```
 j03RARAT='%_m6Sub_%%_m6NxPre_%pg.r_r'; PG      Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j04RARAT='%_m6Sub_%%_m6NxPre_%pg.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j05RARAT='%_m6Sub_%%_m6NxPre_%pg.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j06RARAT='%_m6Sub_%%_m6NxPre_%pg.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j07RARAT='%_m6Sub_%%_m6NxPre_%pg.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j08RARAT='%_m6Sub_%%_m6NxPre_%ca.r_r'; Cal     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j09RARAT='%_m6Sub_%%_m6NxPre_%ch.r_r'; Chs     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j10RARAT='%_m6Sub_%%_m6NxPre_%fr.r_r'; Frd     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j11RARAT='%_m6Sub_%%_m6NxPre_%fr.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j12RARAT='%_m6Sub_%%_m6NxPre_%ar.r_r'; Arl     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j13RARAT='%_m6Sub_%%_m6NxPre_%fx.r_r'; Ffx     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j14RARAT='%_m6Sub_%%_m6NxPre_%ld.r_r'; Ldn     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j15RARAT='%_m6Sub_%%_m6NxPre_%pw.r_r'; PW      Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j16RARAT='%_m6Sub_%%_m6NxPre_%st.r_r'; Sta     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j17RARAT='%_m6Sub_%%_m6NxPre_%al.r_r'; Alx     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j18RARAT='%_m6Sub_%%_m6NxPre_%sm.r_r'; StM     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j19RARAT='%_m6Sub_%%_m6NxPre_%we.r_r'; Wash    Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j20RARAT='%_m6Sub_%%_m6NxPre_%cl.r_r'; Clk     Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j21RARAT='%_m6Sub_%%_m6NxPre_%cl.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j22RARAT='%_m6Sub_%%_m6NxPre_%cl.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j23RARAT='%_m6Sub_%%_m6NxPre_%cl.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j24RARAT='%_m6Sub_%%_m6NxPre_%sp.r_r'; Spts    Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j25RARAT='%_m6Sub_%%_m6NxPre_%sp.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j26RARAT='%_m6Sub_%%_m6NxPre_%sp.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
 j27RARAT='%_m6Sub_%%_m6NxPre_%sp.r_r'; "       Rural-Arterial Running Nx Rates (Winter,Spring,Summer,Fall)
;-----------------------------------------------------
;-----------------------------------------------------------
 J01PMRAT='%_m6Sub_%%_m6PMPre_%dc.N_L'; DC      PM Local Rates (Winter,Spring,Summer,Fall)
 j02PMRAT='%_m6Sub_%%_m6PMPre_%mc.N_L'; Mtg     PM Local Rates (Winter,Spring,Summer,Fall)
 j03PMRAT='%_m6Sub_%%_m6PMPre_%pg.N_L'; PG      PM Local Rates (Winter,Spring,Summer,Fall)
 j04PMRAT='%_m6Sub_%%_m6PMPre_%pg.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j05PMRAT='%_m6Sub_%%_m6PMPre_%pg.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j06PMRAT='%_m6Sub_%%_m6PMPre_%pg.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j07PMRAT='%_m6Sub_%%_m6PMPre_%pg.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j08PMRAT='%_m6Sub_%%_m6PMPre_%ca.N_L'; Cal     PM Local Rates (Winter,Spring,Summer,Fall)
 j09PMRAT='%_m6Sub_%%_m6PMPre_%ch.N_L'; Chs     PM Local Rates (Winter,Spring,Summer,Fall)
 j10PMRAT='%_m6Sub_%%_m6PMPre_%fr.N_L'; Frd     PM Local Rates (Winter,Spring,Summer,Fall)
 j11PMRAT='%_m6Sub_%%_m6PMPre_%fr.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j12PMRAT='%_m6Sub_%%_m6PMPre_%ar.N_L'; Arl     PM Local Rates (Winter,Spring,Summer,Fall)
 j13PMRAT='%_m6Sub_%%_m6PMPre_%fx.N_L'; Ffx     PM Local Rates (Winter,Spring,Summer,Fall)
 j14PMRAT='%_m6Sub_%%_m6PMPre_%ld.N_L'; Ldn     PM Local Rates (Winter,Spring,Summer,Fall)
 j15PMRAT='%_m6Sub_%%_m6PMPre_%pw.N_L'; PW      PM Local Rates (Winter,Spring,Summer,Fall)
 j16PMRAT='%_m6Sub_%%_m6PMPre_%st.N_L'; Sta     PM Local Rates (Winter,Spring,Summer,Fall)
 j17PMRAT='%_m6Sub_%%_m6PMPre_%al.N_L'; Alx     PM Local Rates (Winter,Spring,Summer,Fall)
 j18PMRAT='%_m6Sub_%%_m6PMPre_%sm.N_L'; StM     PM Local Rates (Winter,Spring,Summer,Fall)
 j19PMRAT='%_m6Sub_%%_m6PMPre_%we.N_L'; Wash    PM Local Rates (Winter,Spring,Summer,Fall)
 j20PMRAT='%_m6Sub_%%_m6PMPre_%cl.N_L'; Clk     PM Local Rates (Winter,Spring,Summer,Fall)
 j21PMRAT='%_m6Sub_%%_m6PMPre_%cl.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j22PMRAT='%_m6Sub_%%_m6PMPre_%cl.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j23PMRAT='%_m6Sub_%%_m6PMPre_%cl.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j24PMRAT='%_m6Sub_%%_m6PMPre_%sp.N_L'; Spts    PM Local Rates (Winter,Spring,Summer,Fall)
 j25PMRAT='%_m6Sub_%%_m6PMPre_%sp.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j26PMRAT='%_m6Sub_%%_m6PMPre_%sp.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
 j27PMRAT='%_m6Sub_%%_m6PMPre_%sp.N_L'; "       PM Local Rates (Winter,Spring,Summer,Fall)
;-----------------------------------------------------
run pgm=matrix
; ---------------------------------------------------------------
zones=27

;
; Read in the Juris. level input file
```

```
ZDATI[1]=@JurBVMTFile@,
                Z=1-5,                  ; Juris. Index 1-27
                BaseNetVMT =  6- 15,  ; Base   Year Network-based VMT
                BaseLclVMT = 26- 35,  ; Base   Year Local VMT
                UrbVMTPct  = 36- 45,  ; Urbanized Area Pct ('23.211' means 23.211%)
                RurVMTPct  = 46- 55   ; Rural     Area Pct

ZDATI[2]=@JurFVMTFile@,
                Z=1-5,                  ; Juris. Index 1-27
                FutrNetVMT = 21- 30   ; Future Year Network-based VMT
; Set up arrays

ARRAY,

J_VMT_Bas   = 27,   ; Juris. Base   Yr Network VMT  Total
J_VMT_Fut   = 27,   ; Juris. Future Yr Network VMT  Total

J_VMTL_Bs   = 27,   ; Juris. Base   Yr Local   VMT  Total

J_VMTL_Fu   = 27,       ; Juris. Future Yr Local   VMT  Total
J_VMTL_FuSeason = 27,   ; Juris. Future Yr Local VMT  Adjusted to Season/Month


J_Urbpct    = 27,   ; Daily    Juris. Base   Yr Local   VMT  Total
J_Rurpct    = 27,   ; Daily    Juris. Future Yr Local   VMT  Total

J_VMTL_BsU  = 27,   ; Daily    Juris. Base   Yr Local   VMT in Urbanized Area
J_VMTL_FuU  = 27,   ; Daily    Juris. Future Yr Local   VMT in Urbanized Area

J_VMTL_BsR  = 27,   ; Daily    Juris. Base   Yr Local   VMT in Rural     Area
J_VMTL_FuR  = 27,   ; Daily    Juris. Future Yr Local   VMT in Rural     Area

J_PMg       = 27,   ; Daily    Juris. PM Total EMISSIONS  GMS

J_NXg_Urb   = 27,   ; Daily    Juris. NX Total EMISSIONS  GMS
J_NXg_Rural = 27,   ; Daily    Juris. NX Total EMISSIONS  GMS

J_NXt_Urb   = 27,   ; Daily    Juris. NX Urban EMISSIONS in TONS
J_NXt_Rural = 27,   ; Daily    Juris. NX Rural EMISSIONS in TONS

J_PMt       = 27,   ; Daily    Juris. PM TOTAL EMISSIONS in TONS
J_PMt_S     = 27,   ; Seasonal Juris. PM TOTAL EMISSIONS in TONS
J_PMt_Total = 27,   ; Daily    Juris. PM TOTAL EMISSIONS in TONS
J_NXt_Total = 27,   ; Daily    Juris. NX TOTAL EMISSIONS in TONS
J_NXt_TotalS= 27    ; Seasonal Juris. NX TOTAL EMISSIONS in TONS

; End of Array declaration

; Establish the rural  Arterial  Nx emissions rates, by speeds
; Source: E Lucas (June 2005)
;
LOOKUP NAME=RASpdDst,          ; Generalized VMT Distribution of Rural Arterial
Traffic by Speed
       LOOKUP[1]=1, RESULT=2,  ; VMT Pct of Total Jurisdictional VMT
       INTERPOLATE = N,LIST=T,FAIL=0,0,0,
;; Speed    VMT% (e.g '1.123' means 1.123 %)
R= "    5   0.000  ",
   "    6   0.000  ",
   "    7   0.000  ",
   "    8   0.000  ",
   "    9   0.000  ",
   "   10   0.425  ",
   "   11   0.717  ",
   "   12   1.013  ",
   "   13   0.604  ",
   "   14   2.911  ",
   "   15   6.228  ",
   "   16   8.626  ",
   "   17   6.614  ",
   "   18   3.586  ",
   "   19   2.718  ",
   "   20   3.768  ",
   "   21   6.460  ",
   "   22   8.409  ",
   "   23  11.493  ",
   "   24   7.206  ",
   "   25   7.229  ",
   "   26   5.543  ",
   "   27   5.465  ",
   "   28   5.674  ",
   "   29   4.710  ",
   "   30   0.600  ",
   "   31   0.000  ",
   "   32   0.000  ",
   "   33   0.000  ",
   "   34   0.000  ",
   "   35   0.000  ",
   "   36   0.000  ",
   "   37   0.000  ",
   "   38   0.000  ",
   "   39   0.000  ",
   "   40   0.000  ",
   "   41   0.000  ",
   "   42   0.000  ",
   "   43   0.000  ",
   "   44   0.000  ",
   "   45   0.000  "

;;  Sum  100.000%

;---------------------------------------------------------------------
;---------------------------------------------------------------------
; Now read Mobile6 based Local/Urbanized & Arterial/Rural Emissions rates:
;---------------------------------------------------------------------
; Local Running Rates:
;---------------------------------------------------------------------
  LOOKUP NAME=J01L,                 ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J01L_RAT@

  LOOKUP NAME=J02L,                 ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J02L_RAT@

  LOOKUP NAME=J03L,                 ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J03L_RAT@

  LOOKUP NAME=J04L,                 ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J04L_RAT@

  LOOKUP NAME=J05L,                 ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J05L_RAT@

  LOOKUP NAME=J06L,                 ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
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        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J06L_RAT@

LOOKUP NAME=J07L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J07L_RAT@

LOOKUP NAME=J08L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J08L_RAT@

LOOKUP NAME=J09L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J09L_RAT@

LOOKUP NAME=J10L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J10L_RAT@

LOOKUP NAME=J11L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J11L_RAT@

LOOKUP NAME=J12L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J12L_RAT@

LOOKUP NAME=J13L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J13L_RAT@

LOOKUP NAME=J14L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J14L_RAT@

LOOKUP NAME=J15L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J15L_RAT@

LOOKUP NAME=J16L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J16L_RAT@

LOOKUP NAME=J17L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J17L_RAT@

LOOKUP NAME=J18L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J18L_RAT@

LOOKUP NAME=J19L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J19L_RAT@

LOOKUP NAME=J20L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J20L_RAT@

LOOKUP NAME=J21L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J21L_RAT@

LOOKUP NAME=J22L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J22L_RAT@

LOOKUP NAME=J23L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J23L_RAT@

LOOKUP NAME=J24L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J24L_RAT@

LOOKUP NAME=J25L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J25L_RAT@

LOOKUP NAME=J26L,               ;
        LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J26L_RAT@
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```
  LOOKUP NAME=J27L,              ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J27L_RAT@

;-------------------------------------------------------------------------
; End of Local Emission Rate Lookups
;-------------------------------------------------------------------------
;-------------------------------------------------------------------------
; Rural Arterial Running  emission rate lookups by jurisdiction         -
;-------------------------------------------------------------------------
;
;-------------------------------------------------------------------------
  LOOKUP NAME=J01RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J01RARAT@

  LOOKUP NAME=J02RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J02RARAT@

  LOOKUP NAME=J03RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J03RARAT@

  LOOKUP NAME=J04RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J04RARAT@

  LOOKUP NAME=J05RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J05RARAT@

  LOOKUP NAME=J06RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J06RARAT@

  LOOKUP NAME=J07RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J07RARAT@

  LOOKUP NAME=J08RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J08RARAT@

  LOOKUP NAME=J09RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J09RARAT@

  LOOKUP NAME=J10RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J10RARAT@

  LOOKUP NAME=J11RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J11RARAT@

  LOOKUP NAME=J12RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J12RARAT@

  LOOKUP NAME=J13RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J13RARAT@

  LOOKUP NAME=J14RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J14RARAT@

  LOOKUP NAME=J15RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J15RARAT@

  LOOKUP NAME=J16RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J16RARAT@

  LOOKUP NAME=J17RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J17RARAT@

  LOOKUP NAME=J18RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J18RARAT@

  LOOKUP NAME=J19RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
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         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J19RARAT@

  LOOKUP NAME=J20RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J20RARAT@

  LOOKUP NAME=J21RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J21RARAT@

  LOOKUP NAME=J22RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J22RARAT@

  LOOKUP NAME=J23RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J23RARAT@

  LOOKUP NAME=J24RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J24RARAT@

  LOOKUP NAME=J25RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J25RARAT@

  LOOKUP NAME=J26RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J26RARAT@

  LOOKUP NAME=J27RA,             ;
         LOOKUP[1]=1, RESULT=2,  ; Local Urbanized  NX Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=3,  ; Local Urbanized  NX Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=4,  ; Local Urbanized  Nx Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=5,  ; Local Urbanized  Nx Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J27RARAT@

;-------------------------------------------------------------------------
; End of Rural Arterial Running Emission Rate Lookups
;-------------------------------------------------------------------------
;-------------------------------------------------------------------------
; PM Local Running  emission rate lookups by jurisdiction         -
;-------------------------------------------------------------------
;
;-------------------------------------------------------------------
  LOOKUP NAME=J01PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J01PMRAT@

  LOOKUP NAME=J02PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J02PMRAT@

  LOOKUP NAME=J03PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J03PMRAT@

  LOOKUP NAME=J04PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J04PMRAT@

  LOOKUP NAME=J05PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J05PMRAT@

  LOOKUP NAME=J06PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J06PMRAT@

  LOOKUP NAME=J07PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J07PMRAT@

  LOOKUP NAME=J08PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J08PMRAT@

  LOOKUP NAME=J09PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J09PMRAT@

  LOOKUP NAME=J10PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
         INTERPOLATE = N,LIST=T,file=@J10PMRAT@

  LOOKUP NAME=J11PM,             ;
         LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
         LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
         LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
         LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
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        INTERPOLATE = N,LIST=T,file=@J11PMRAT@

LOOKUP NAME=J12PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J12PMRAT@

LOOKUP NAME=J13PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J13PMRAT@

LOOKUP NAME=J14PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J14PMRAT@

LOOKUP NAME=J15PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J15PMRAT@

LOOKUP NAME=J16PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J16PMRAT@

LOOKUP NAME=J17PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J17PMRAT@

LOOKUP NAME=J18PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J18PMRAT@

LOOKUP NAME=J19PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J19PMRAT@

LOOKUP NAME=J20PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J20PMRAT@

LOOKUP NAME=J21PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J21PMRAT@

LOOKUP NAME=J22PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J22PMRAT@

LOOKUP NAME=J23PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J23PMRAT@

LOOKUP NAME=J24PM,              ;
        LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
        LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
        LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
        LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
        INTERPOLATE = N,LIST=T,file=@J24PMRAT@

LOOKUP NAME=J25PM,              ;
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          LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
          LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
          LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
          LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
          INTERPOLATE = N,LIST=T,file=@J25PMRAT@

  LOOKUP NAME=J26PM,              ;
          LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
          LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
          LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
          LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
          INTERPOLATE = N,LIST=T,file=@J26PMRAT@

  LOOKUP NAME=J27PM,              ;
          LOOKUP[1]=1, RESULT=6,  ; Local PM Rate (gm/trip) Winter
          LOOKUP[2]=1, RESULT=7,  ; Local PM Rate (gm/trip) Spring
          LOOKUP[3]=1, RESULT=8,  ; Local PM Rate (gm/trip) Summer
          LOOKUP[4]=1, RESULT=9,  ; Local PM Rate (gm/trip) Fall
          INTERPOLATE = N,LIST=T,file=@J27PMRAT@

;-------------------------------------------------------------------------
; End of Rural Arterial Running Emission Rate Lookups
;-------------------------------------------------------------------------

;= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
;= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
;  Now make all jurisdiction level; computations
;= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =
;= = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = = =


J_VMT_Bas[i]    =  BaseNetVMT[i]   ; Juris. Base   Yr Network VMT  Total
J_VMT_Fut[i]    =  FutrNetVMT[i]   ; Juris. Future Yr Network VMT  Total
;
; Note the future VMT file has data for all jurisdictions, but the
; Base VMT file contains data for juris dictions in the MSA - for now
; we will let base VMT control the computation - emissions will be computed only where
; base VMT exists ...
;
  IF (J_VMT_BAS[i] = 0 )
      J_VMT_Fut[i] =  0
  ENDIF


J_VMTL_Bs[i]    =  BaseLclVMT[i]   ; Juris. Base   Yr Local   VMT  Total
J_Urbpct[i]     =  UrbVMTpct[i]    ; urban percent of local vmt
J_Rurpct[i]     =  RurVMTpct[i]    ; rural percent of local vmt

;
; Calculate Network VMT growth rate
;  and apply same to the Base year local VMT to get Future year local VMT
;
   IF (J_VMT_Bas[i]  = 0)
       _VMTGrowth    = 0
    ELSE
       _VMTGrowth    = J_VMT_Fut[i] / J_VMT_Bas[i]
   ENDIF

  J_VMTL_Fu[i]       =  J_VMTL_Bs[i]  * _VMTGrowth   ; Juris. Future Yr Local   VMT  Total (AAWDT)

  J_VMTL_FuSeason[i] =   J_VMTL_Fu[i] * %_SeasonFtr_%  ; Juris. Future Yr Local VMT  Adjusted to Season

  J_VMTL_FuU[i]   =  J_VMTL_FuSeason[i] * UrbVMTPct[i]/100.0   ; Juris. Future Yr Local   VMT in Urbanized Area
  J_VMTL_FuR[i]   =  J_VMTL_FuSeason[i] * RurVMTPct[i]/100.0   ; Juris. Future Yr Local   VMT in Rural     Area

;
;
;  Now compute juris.level  Nx, PM EMISSIONS  Rates (gm/mi)
;  Jurisdictional rates are in various files so rates will be applied in a series of conditional loops.
;  Urban PM,Nx emission rates are based on single juris. factor
;  Rural Nx Rates based on jurisdictional speed curves; VMT apportioned among various speeds based on global speed profile
;
```

```
IF       (i =  1)
     J_PMg[i]      =   J01PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J01L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J01RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

 ELSEIF  (i = 2)
     J_PMg[i]      =   J02PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J02L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J02RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

 ELSEIF  (i = 3)
     J_PMg[i]      =   J03PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J03L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J03RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

 ELSEIF  (i = 4)
     J_PMg[i]      =   J04PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J04L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J04RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

 ELSEIF  (i = 5)
     J_PMg[i]      =   J05PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J05L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J05RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

 ELSEIF  (i = 6)
     J_PMg[i]      =   J06PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J06L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J06RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

 ELSEIF  (i = 7)
     J_PMg[i]      =   J07PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J07L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J07RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

 ELSEIF  (i = 8)
     J_PMg[i]      =   J08PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J08L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J08RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP
```

```
ELSEIF  (i = 9)
    J_PMg[i]      =   J09PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J09L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J09RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =10)
    J_PMg[i]      =   J10PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J10L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J10RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =11)
    J_PMg[i]      =   J11PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J11L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J11RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =12)
    J_PMg[i]      =   J12PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J12L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J12RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =13)
    J_PMg[i]      =   J13PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J13L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J13RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =14)
    J_PMg[i]      =   J14PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J14L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J14RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =15)
    J_PMg[i]      =   J15PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J15L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J15RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =16)
    J_PMg[i]      =   J16PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J16L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J16RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP
```

```
ELSEIF  (i =17)
    J_PMg[i]      =   J17PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J17L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J17RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =18)
    J_PMg[i]      =   J18PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J18L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J18RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =19)
    J_PMg[i]      =   J19PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J19L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J19RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =20)
    J_PMg[i]      =   J20PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J20L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J20RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =21)
    J_PMg[i]      =   J21PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J21L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J21RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =22)
    J_PMg[i]      =   J22PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J22L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J22RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =23)
    J_PMg[i]      =   J23PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J23L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J23RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP

ELSEIF  (i =24)
    J_PMg[i]      =   J24PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
    J_NXg_Urb[i]  =   J24L(@Rno@,13) * J_VMTL_FuU[i]                       ; Juris. NX Local Urban EMISSIONS  (gm/mi)

  LOOP k=1,45
    _c            =   J24RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
    J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                               ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
  ENDLOOP
```

```
 ELSEIF  (i =25)
     J_PMg[i]      =   J25PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J25L(@Rno@,13) * J_VMTL_FuU[i]                      ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J25RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                              ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

 ELSEIF  (i =26)
     J_PMg[i]      =   J26PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J26L(@Rno@,13) * J_VMTL_FuU[i]                      ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J26RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                              ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

 ELSEIF  (i =27)
     J_PMg[i]      =   J27PM(@Rno@,35) * J_VMTL_FuU[i]                      ; Juris. PM Local Urban EMISSIONS  (gm/mi)
     J_NXg_Urb[i]  =   J27L(@Rno@,13) * J_VMTL_FuU[i]                      ; Juris. NX Local Urban EMISSIONS  (gm/mi)

   LOOP k=1,45
     _c            =   J27RA(@Rno@,k) * J_VMTL_FuR[i] * (RASpdDst(1,k) / 100.0) ; Rural emiss calculation at jur, speed level (temp)
     J_NXg_Rural[i]=   J_NXg_Rural[i]  +   _c                              ;  Juris. Nx Local Rural EMISSIONS  (gm/mi)
   ENDLOOP

ENDIF
;;;

J_PMt[i]           =  (ROUND(J_PMg[i] /@GMperTN@ *1000.0))/1000.0 ; Daily    Juris. PM Local Urban EMISSIONS in TONS
J_PMt_S[i]         =  J_PMt[i] *@Sdays@            ; Seasonal Juris PM Local Urban EMISSIONS in TONS

J_NXt_Urb[i]       =  (ROUND(J_Nxg_Urb[i]/@GMperTN@*1000.0))/1000.0    ; Daily    Juris Nx Local Urban EMISSIONS in TONS
J_NXt_Rural[i]     =  (ROUND(J_Nxg_Rural[i]/@GMperTN@*1000.0))/1000.0  ; Daily    Juris Nx Local Urban EMISSIONS in TONS

J_NXt_Total[i]     =  J_Nxt_Urb[i]  +  J_Nxt_Rural[i] ; Daily    Juris Nx Local       Emissions in Tons
J_NXt_TotalS[i]    =  J_Nxt_Total[i]  *  @Sdays@      ; Seasonal Juris Nx Local       Emissions in Tons

;
;=============================================================================================================================
;  Now lets summarize and list out when all done                                                                          =
;                                                                                                                            =
;=============================================================================================================================
;
IF (I=ZONES)       ;  ALL DONE WITH ZONE LOOP

;  Get Regional Totals:

  loop k=1,27
     T_VMT_Bas     =   T_VMT_Bas   +  J_VMT_Bas[k]
     T_VMT_Fut     =   T_VMT_Fut   +  J_VMT_Fut[k]
     T_VMTL_Bs     =   T_VMTL_Bs   +  J_VMTL_Bs[k]

     T_VMTL_Fu     =   T_VMTL_Fu   +  J_VMTL_Fu[k]
   T_VMTL_FuSeason =   T_VMTL_FuSeason   +  J_VMTL_FuSeason[k]
     T_VMTL_FuU    =   T_VMTL_FuU  +  J_VMTL_FuU[k]
     T_VMTL_FuR    =   T_VMTL_FuR  +  J_VMTL_FuR[k]

     T_PMg         =   T_PMg       +  J_PMg[k]
     T_NXg_Urb     =   T_NXg_Urb   +  J_NXg_Urb[k]

     T_NXg_Rural   =   T_NXg_Rural +  J_NXg_Rural[k]

     IF (T_VMTL_FuU = 0 )
       T_NX_UrbRATE =   0
       T_PM_RATE    =   0
      ELSE
       T_PM_RATE    =   T_PMg/  (T_VMTL_FuU  +  T_VMTL_FuR)
       T_NX_UrbRATE =   T_NXg_Urb  /  T_VMTL_FuU
    ENDIF
```

```
    IF (T_VMTL_FuR = 0 )
      T_NX_RurRATE =   0
     ELSE
      T_NX_RurRATE =   T_NXg_Rural/ T_VMTL_FuR
   ENDIF


    T_NXt_Urb     =   T_NXt_Urb   +  J_NXt_Urb[k]
    T_NXt_Rural   =   T_NXt_Rural +  J_NXt_Rural[k]

    T_PMt_Total   =   T_PMt_Total +  J_PMt[k]
    T_NXt_Total   =   T_NXt_Total +  J_NXt_Total[k]

  endloop
    T_PMt_TotalS  =   T_PMt_Total * @Sdays@
    T_NXt_TotalS  =   T_NXt_Total * @Sdays@


  Print          list = ' ---  Local Emissions Summary ---  ',File = Local.txt
  Print form=10.0 list = 'Year: ','%_Year_%','/ Season: ','%_Season_%','/ Seasonal VMT Factor: ','%_SeasonFtr_%','/ No. of Days: ', '%_SeasonDays_%'  file=Local.TXT
;;
;;=============================================================================================
;;=============================================================================================
    Print           list = '                              ',File = Local.txt
    Print           list = '      VMT  Summary:           ',File = Local.txt
    Print           list = '                              ',File = Local.txt
    Print           list = '             Base          Future                          Seasonal Adj                                                    ',File = Local.txt
    Print           list = ' Jur         AAWDT         AAWDT       Base       Est. Future  Est. Future    Urb    Rur      Urban          Rural    ',File = Local.txt
    Print           list = ' No.       Network VMT Network VMT   Local VMT    Local VMT    Local VMT     Pct    Pct     Local VMT    Local VMT   ',File = Local.txt
    Print           list = '----------|-----------||-----------||-----------||-----------||-----------||------||------||-----------||-----------|',File = Local.txt
  loop k=1,27
    IF (k= 1) _jur = str(k,3,0) +' *DC   '
    IF (k= 2) _jur = str(k,3,0) +' *Mtg  '
    IF (k= 3) _jur = str(k,3,0) +' *PG   '
    IF (k= 4) _jur = str(k,3,0) +'  How  '
    IF (k= 5) _jur = str(k,3,0) +'  AAr  '
    IF (k= 6) _jur = str(k,3,0) +'  Car  '
    IF (k= 7) _jur = str(k,3,0) +'  BaltX'
    IF (k= 8) _jur = str(k,3,0) +'  Cal  '
    IF (k= 9) _jur = str(k,3,0) +' *Chs  '
    IF (k=10) _jur = str(k,3,0) +' *Frd  '
    IF (k=11) _jur = str(k,3,0) +'  FrdX '
    IF (k=12) _jur = str(k,3,0) +' *Arl  '
    IF (k=13) _jur = str(k,3,0) +' *Ffx  '
    IF (k=14) _jur = str(k,3,0) +' *Ldn  '
    IF (k=15) _jur = str(k,3,0) +' *PW   '
    IF (k=16) _jur = str(k,3,0) +'  Sta  '
    IF (k=17) _jur = str(k,3,0) +' *Alx  '
    IF (k=18) _jur = str(k,3,0) +'  StM  '
    IF (k=19) _jur = str(k,3,0) +'  WaCoX'
    IF (k=20) _jur = str(k,3,0) +'  Clk  '
    IF (k=21) _jur = str(k,3,0) +'  Fau  '
    IF (k=22) _jur = str(k,3,0) +'  Jeff '
    IF (k=23) _jur = str(k,3,0) +'  WestX'
    IF (k=24) _jur = str(k,3,0) +'  Spots'
    IF (k=25) _jur = str(k,3,0) +'  KGeo '
    IF (k=26) _jur = str(k,3,0) +'  Fbrg '
    IF (k=27) _jur = str(k,3,0) +'  SouX '


    Print form=13.0csv list =  _jur,
                          J_VMT_Bas[k],   J_VMT_Fut[k],      J_VMTL_Bs[k],
                          J_VMTL_Fu[k],J_VMTL_FuSeason[k], J_UrbPct[k](8.2), J_RurPct[k](8.2),  J_VMTL_FuU[k],     J_VMTL_FuR[k],File = Local.txt
  endloop

    Print form=10.0 list = '----------|-----------||-----------||-----------||-----------||-----------||------||------||-----------||-----------|',File = Local.txt
    Print list ='       ' , file= local.txt
    Print form= 13.0csv list = 'Total     ',
                          T_VMT_Bas,       T_VMT_Fut,         T_VMTL_Bs,
                          T_VMTL_Fu,T_VMTL_FuSeason, '                ',     T_VMTL_FuU,        T_VMTL_FuR, ,File = Local.txt
    Print list ='    ', file=Local.txt
```

```
     Print list =          '
     Print form=13.3 list = '     '    , file=Local.txt
;;==============================================================================================
;;==============================================================================================
     Print           list = '                              ',File = Local.txt
     Print           list = '        PM Summary:           ',File = Local.txt
     Print           list = '                              ',File = Local.txt
     Print           list = '                                                                    ',File = Local.txt
     Print           list = '              Daily        Daily        Seasonal   ',File = Local.txt
     Print           list = ' Jur          Local        Local        Local      ',File = Local.txt
     Print           list = ' No.          PM(gm)       PM(Tn)       PM(Tn)     ',File = Local.txt
     Print           list = '----------||-----------||-----------||-----------| ',File = Local.txt
  loop k=1,27
    IF (k= 1) _jur = str(k,3,0) +' *DC   '
    IF (k= 2) _jur = str(k,3,0) +' *Mtg  '
    IF (k= 3) _jur = str(k,3,0) +' *PG   '
    IF (k= 4) _jur = str(k,3,0) +'  How  '
    IF (k= 5) _jur = str(k,3,0) +'  AAr  '
    IF (k= 6) _jur = str(k,3,0) +'  Car  '
    IF (k= 7) _jur = str(k,3,0) +'  BaltX'
    IF (k= 8) _jur = str(k,3,0) +'  Cal  '
    IF (k= 9) _jur = str(k,3,0) +' *Chs  '
    IF (k=10) _jur = str(k,3,0) +' *Frd  '
    IF (k=11) _jur = str(k,3,0) +'  FrdX '
    IF (k=12) _jur = str(k,3,0) +' *Arl  '
    IF (k=13) _jur = str(k,3,0) +' *Ffx  '
    IF (k=14) _jur = str(k,3,0) +' *Ldn  '
    IF (k=15) _jur = str(k,3,0) +' *PW   '
    IF (k=16) _jur = str(k,3,0) +'  Sta  '
    IF (k=17) _jur = str(k,3,0) +' *Alx  '
    IF (k=18) _jur = str(k,3,0) +'  StM  '
    IF (k=19) _jur = str(k,3,0) +'  WaCoX'
    IF (k=20) _jur = str(k,3,0) +'  Clk  '
    IF (k=21) _jur = str(k,3,0) +'  Fau  '
    IF (k=22) _jur = str(k,3,0) +'  Jeff '
    IF (k=23) _jur = str(k,3,0) +'  WestX'
    IF (k=24) _jur = str(k,3,0) +'  Spots'
    IF (k=25) _jur = str(k,3,0) +'  KGeo '
    IF (k=26) _jur = str(k,3,0) +'  Fbrg '
    IF (k=27) _jur = str(k,3,0) +'  SouX '


     Print form=13.0csv list =  _jur,
                                J_PMg[k],
                                J_PMt[k](13.3), J_PMt_S[k](13.3),File = Local.txt
  endloop

     Print form=10.0 list = '----------||-----------||-----------||-----------|',File = Local.txt
     Print list ='       ' , file= local.txt
     Print form= 13.0csv list = 'Total     ',
                               T_PMg,
                               T_PMt_Total(13.3),T_PMt_TotalS(13.3),File = Local.txt
     Print list ='    ', file=Local.txt
     Print list =          '
     Print form=13.3 list = 'Avg Rate: ',T_PM_RATE       , file=Local.txt
;;==============================================================================================
;;==============================================================================================
     Print form=10.0 list = '                              ',File = Local.txt
     Print form=10.0 list = '        Nx Summary:           ',File = Local.txt
     Print form=10.0 list = '                                  ',File = Local.txt
     Print           list = '                                                                  ',File = Local.txt
     Print form=10.0 list = '             Daily        Daily        Daily        Daily     Daily        Seasonal    ',File = Local.txt
     Print form=10.0 list = ' Jur         Local        Local        Local        Local     Total Local  Total Local ',File = Local.txt
     Print form=10.0 list = ' No.      Urban Nx(gm) Rural Nx(gm) Urban Nx(Tn) Rural Nx(Tn)   Nx(Tn)       Nx(Tn)     ',File = Local.txt
     Print form=10.0 list = '----------|-----------||-----------||-----------||-----------||-----------||-----------|',File = Local.txt
  loop k=1,27
    IF (k= 1) _jur = str(k,3,0) +' *DC   '
    IF (k= 2) _jur = str(k,3,0) +' *Mtg  '
    IF (k= 3) _jur = str(k,3,0) +' *PG   '
    IF (k= 4) _jur = str(k,3,0) +'  How  '
    IF (k= 5) _jur = str(k,3,0) +'  AAr  '
    IF (k= 6) _jur = str(k,3,0) +'  Car  '
```

```
    IF (k= 7) _jur = str(k,3,0) +'  BaltX'
    IF (k= 8) _jur = str(k,3,0) +'  Cal  '
    IF (k= 9) _jur = str(k,3,0) +' *Chs  '
    IF (k=10) _jur = str(k,3,0) +' *Frd  '
    IF (k=11) _jur = str(k,3,0) +'  FrdX '
    IF (k=12) _jur = str(k,3,0) +' *Arl  '
    IF (k=13) _jur = str(k,3,0) +' *Ffx  '
    IF (k=14) _jur = str(k,3,0) +' *Ldn  '
    IF (k=15) _jur = str(k,3,0) +' *PW   '
    IF (k=16) _jur = str(k,3,0) +'  Sta  '
    IF (k=17) _jur = str(k,3,0) +' *Alx  '
    IF (k=18) _jur = str(k,3,0) +'  StM  '
    IF (k=19) _jur = str(k,3,0) +'  WaCoX'
    IF (k=20) _jur = str(k,3,0) +'  Clk  '
    IF (k=21) _jur = str(k,3,0) +'  Fau  '
    IF (k=22) _jur = str(k,3,0) +'  Jeff '
    IF (k=23) _jur = str(k,3,0) +'  WestX'
    IF (k=24) _jur = str(k,3,0) +'  Spots'
    IF (k=25) _jur = str(k,3,0) +'  KGeo '
    IF (k=26) _jur = str(k,3,0) +'  Fbrg '
    IF (k=27) _jur = str(k,3,0) +'  SouX '


     Print form=13.0csv list =  _jur,
                            J_NXg_Urb[k],
                            J_NXg_Rural[k],
                            J_NXt_Urb[k](13.3),
                            J_NXt_Rural[k](13.3),
                            J_NXt_Total[k](13.3), J_NXt_TotalS[k](13.3),File = Local.txt
  endloop

     Print form=10.0 list = '----------|-----------||-----------||-----------||-----------||-----------||-----------|',File = Local.txt
     Print list ='       ' , file= local.txt
     Print form= 13.0csv list = 'Total     ',
                            T_NXg_Urb,
                            T_NXg_Rural,
                            T_NXt_Urb(13.3),
                            T_NXt_Rural(13.3),
                            T_NXt_Total(13.3),T_NXt_TotalS(13.3),File = Local.txt
     Print list ='    ', file=Local.txt
     Print list =        '
     Print form=13.3 list = 'Avg Rate: ',T_NX_UrbRATE, T_NX_RurRATE       , file=Local.txt

ENDIF
ENDRUN
*copy tppl*.PRN LOCAL_Seasonal_Nx.RPT
```

Attachment 4

Example Post Processor Output Listings

2002_strt_skr.txt

Total Starting Nox Emissions (gms) By Jurisdiction
Year: 2002 Season/Month: Winter

Juris	Daily Nx(gms)	Daily Trip Starts	Nx Rate (gm/trip)	Daily Nx(tns)	90-Day Nx(tns)
1 DC	1,835,004	1,579,036	1.162	2.023	182.07
2 MTG	3,357,551	3,041,982	1.104	3.701	333.09
3 PG	2,898,105	2,431,074	1.192	3.195	287.55
4 HOW	912,622	765,029	1.193	1.006	90.54
5 AAR	1,922,501	1,606,350	1.197	2.119	190.71
6 CAR	534,394	443,488	1.205	0.589	53.01
7 BalX	531,839	442,371	1.202	0.586	52.74
8 CAL	292,644	222,802	1.313	0.323	29.07
9 CHS	481,639	383,131	1.257	0.531	47.79
10 FRD	884,603	692,135	1.278	0.975	87.75
11 FrdX	18,927	15,333	1.234	0.021	1.89
12 ARL	849,999	757,715	1.122	0.937	84.33
13 FFX	3,831,802	3,500,817	1.095	4.224	380.16
14 LDN	717,141	665,124	1.078	0.791	71.19
15 PW	1,038,519	902,700	1.150	1.145	103.05
16 STA	305,107	252,272	1.209	0.336	30.24
17 ALX	512,390	469,312	1.092	0.565	50.85
18 STM	365,230	276,851	1.319	0.403	36.27
19 WasX	54,817	44,822	1.223	0.060	5.40
20 CLK	50,393	46,937	1.074	0.056	5.04
21 FAU	164,039	149,715	1.096	0.181	16.29
22 JEF	164,480	150,875	1.090	0.181	16.29
23 VaWX	87,786	76,664	1.145	0.097	8.73
24 SPT	300,212	246,131	1.220	0.331	29.79
25 KG	65,994	53,889	1.225	0.073	6.57
26 FBG	139,138	115,755	1.202	0.153	13.77
27 VaSX	90,522	75,410	1.200	0.100	9.00
TOTAL	22,407,397	19,407,721	1.155	24.702	2223.18

MSA TOTALS:
MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS

MSA Seasonal Daily TRIP STARTS: 14,423,027
MSA Seasonal Daily TRIP STOPS : 14,422,302

MSA Seasonal Daily NX Start Emissions(Tons): 18.087
MSA Seasonal 90-Day NX Start Emissions(Tons): 1,627.830

Total Starting Nox Emissions (gms) By Jurisdiction
Year: 2002 Season/Month: Spring

Juris	Daily Nx(gms)	Daily Trip Starts	Nx Rate (gm/trip)	Daily Nx(tns)	92-Day Nx(tns)
1 DC	1,565,898	1,579,036	0.992	1.726	158.79
2 MTG	2,835,004	3,041,982	0.932	3.125	287.50
3 PG	2,484,283	2,431,074	1.022	2.738	251.90
4 HOW	782,811	765,029	1.023	0.863	79.40
5 AAR	1,650,498	1,606,350	1.027	1.819	167.35
6 CAR	458,563	443,488	1.034	0.505	46.46
7 BalX	455,313	442,371	1.029	0.502	46.18
8 CAL	249,471	222,802	1.120	0.275	25.30
9 CHS	410,644	383,131	1.072	0.453	41.68
10 FRD	752,173	692,135	1.087	0.829	76.27
11 FrdX	16,114	15,333	1.051	0.018	1.66
12 ARL	717,032	757,715	0.946	0.790	72.68
13 FFX	3,237,759	3,500,817	0.925	3.569	328.35
14 LDN	605,304	665,124	0.910	0.667	61.36
15 PW	884,021	902,700	0.979	0.974	89.61
16 STA	260,830	252,272	1.034	0.288	26.50

17 ALX	427,662	469,312	0.911	0.471	43.33
18 STM	311,181	276,851	1.124	0.343	31.56
19 WasX	46,637	44,822	1.041	0.051	4.69
20 CLK	42,503	46,937	0.906	0.047	4.32
21 FAU	138,701	149,715	0.926	0.153	14.08
22 JEF	138,826	150,875	0.920	0.153	14.08
23 VaWX	74,423	76,664	0.971	0.082	7.54
24 SPT	256,859	246,131	1.044	0.283	26.04
25 KG	56,451	53,889	1.048	0.062	5.70
26 FBG	118,984	115,755	1.028	0.131	12.05
27 VaSX	77,337	75,410	1.026	0.085	7.82
TOTAL	19,055,285	19,407,721	0.982	21.002	1932.18

MSA TOTALS:
MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS

MSA Seasonal Daily TRIP STARTS: 14,423,027
MSA Seasonal Daily TRIP STOPS : 14,422,302

MSA Seasonal Daily NX Start Emissions(Tons): 15.342
MSA Seasonal 92-Day NX Start Emissions(Tons): 1,411.464

Total Starting Nox Emissions (gms) By Jurisdiction
Year: 2002 Season/Month: Summer

Juris	Daily Nx(gms)	Daily Trip Starts	Nx Rate (gm/trip)	Daily Nx(tns)	92-Day Nx(tns)
1 DC	1,416,016	1,579,036	0.897	1.561	143.61
2 MTG	2,560,203	3,041,982	0.842	2.822	259.62
3 PG	2,241,662	2,431,074	0.922	2.471	227.33
4 HOW	706,214	765,029	0.923	0.778	71.58
5 AAR	1,488,971	1,606,350	0.927	1.641	150.97
6 CAR	413,376	443,488	0.932	0.456	41.95
7 BalX	410,635	442,371	0.928	0.453	41.68
8 CAL	222,151	222,802	0.997	0.245	22.54
9 CHS	367,763	383,131	0.960	0.405	37.26
10 FRD	669,874	692,135	0.968	0.738	67.90
11 FrdX	14,444	15,333	0.942	0.016	1.47
12 ARL	648,941	757,715	0.856	0.715	65.78
13 FFX	2,929,193	3,500,817	0.837	3.229	297.07
14 LDN	546,616	665,124	0.822	0.603	55.48
15 PW	798,169	902,700	0.884	0.880	80.96
16 STA	234,765	252,272	0.931	0.259	23.83
17 ALX	387,287	469,312	0.825	0.427	39.28
18 STM	276,816	276,851	1.000	0.305	28.06
19 WasX	41,877	44,822	0.934	0.046	4.23
20 CLK	38,363	46,937	0.817	0.042	3.86
21 FAU	125,202	149,715	0.836	0.138	12.70
22 JEF	125,153	150,875	0.830	0.138	12.70
23 VaWX	67,163	76,664	0.876	0.074	6.81
24 SPT	231,092	246,131	0.939	0.255	23.46
25 KG	50,758	53,889	0.942	0.056	5.15
26 FBG	107,055	115,755	0.925	0.118	10.86
27 VaSX	69,679	75,410	0.924	0.077	7.08
TOTAL	17,189,440	19,407,721	0.886	18.948	1743.22

MSA TOTALS:
MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS

MSA Seasonal Daily TRIP STARTS: 14,423,027
MSA Seasonal Daily TRIP STOPS : 14,422,302

MSA Seasonal Daily NX Start Emissions(Tons): 13.851
MSA Seasonal 92-Day NX Start Emissions(Tons): 1,274.292

Total Starting Nox Emissions (gms) By Jurisdiction
Year: 2002 Season/Month: Fall

	Daily	Daily	Nx Rate	Daily	91-Day

Juris	Nx(gms)	Trip Starts	(gm/trip)	Nx(tns)	Nx(tns)
1 DC	1,615,878	1,579,036	1.023	1.781	162.07
2 MTG	2,939,743	3,041,982	0.966	3.241	294.93
3 PG	2,545,914	2,431,074	1.047	2.806	255.35
4 HOW	801,364	765,029	1.047	0.883	80.35
5 AAR	1,688,306	1,606,350	1.051	1.861	169.35
6 CAR	469,093	443,488	1.058	0.517	47.05
7 BalX	467,581	442,371	1.057	0.515	46.86
8 CAL	255,115	222,802	1.145	0.281	25.57
9 CHS	420,864	383,131	1.098	0.464	42.22
10 FRD	769,667	692,135	1.112	0.848	77.17
11 FrdX	16,569	15,333	1.081	0.018	1.64
12 ARL	753,304	757,715	0.994	0.830	75.53
13 FFX	3,389,215	3,500,817	0.968	3.736	339.98
14 LDN	635,675	665,124	0.956	0.701	63.79
15 PW	923,773	902,700	1.023	1.018	92.64
16 STA	271,966	252,272	1.078	0.300	27.30
17 ALX	454,357	469,312	0.968	0.501	45.59
18 STM	318,190	276,851	1.149	0.351	31.94
19 WasX	48,069	44,822	1.072	0.053	4.82
20 CLK	44,719	46,937	0.953	0.049	4.46
21 FAU	145,749	149,715	0.974	0.161	14.65
22 JEF	145,697	150,875	0.966	0.161	14.65
23 VaWX	77,740	76,664	1.014	0.086	7.83
24 SPT	267,735	246,131	1.088	0.295	26.84
25 KG	58,745	53,889	1.090	0.065	5.92
26 FBG	123,950	115,755	1.071	0.137	12.47
27 VaSX	80,254	75,410	1.064	0.088	8.01
TOTAL	19,729,231	19,407,721	1.017	21.747	1978.98

MSA TOTALS:
MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS

MSA Seasonal Daily TRIP STARTS: 14,423,027
MSA Seasonal Daily TRIP STOPS : 14,422,302

MSA Seasonal Daily NX Start Emissions(Tons): 15.926
MSA Seasonal 91-Day NX Start Emissions(Tons): 1,449.266

2002_running.txt

Running Emission Results
Year: 2002 Season/Month: Winter
Season/Month Factor Applied to Modeled AAWDT VMT: 0.9028
No. of Days in the Season: 90

Juris	Daily VMT	Daily PM(gms)	Daily NX(gms)	Daily PM g/mi	Daily Nx g/mi	Daily PM Tons	Daily Nx Tons	Seasonal Nx Tons	Seasonal PM Tons
1 *DC	8,032,977	292,664	16,323,185	0.036	2.032	0.323	17.993	1619.37	29.07
2 *Mtg	18,236,812	672,123	36,903,007	0.037	2.024	0.741	40.679	3661.11	66.69
3 *PG	19,659,563	753,709	42,385,087	0.038	2.156	0.831	46.722	4204.98	74.79
4 How	9,164,158	353,285	21,537,857	0.039	2.350	0.389	23.741	2136.69	35.01
5 AAr	12,748,781	492,918	29,330,882	0.039	2.301	0.543	32.332	2909.88	48.87
6 Car	2,633,063	101,818	4,901,239	0.039	1.861	0.112	5.403	486.27	10.08
7 BaltX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
8 Cal	1,158,043	47,992	2,176,304	0.041	1.879	0.053	2.399	215.91	4.77
9 *Chs	2,138,937	87,863	3,987,435	0.041	1.864	0.097	4.395	395.55	8.73
10 *Frd	7,394,844	285,946	17,444,207	0.039	2.359	0.315	19.229	1730.61	28.35
11 FrdX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
12 *Arl	4,052,479	144,478	8,412,505	0.036	2.076	0.159	9.273	834.57	14.31
13 *Ffx	24,004,670	838,957	49,473,559	0.035	2.061	0.925	54.535	4908.15	83.25
14 *Ldn	4,538,548	161,617	9,311,219	0.036	2.052	0.178	10.264	923.76	16.02
15 *PW	7,000,249	253,034	14,728,692	0.036	2.104	0.279	16.236	1461.24	25.11
16 Sta	3,552,882	133,538	8,842,909	0.038	2.489	0.147	9.748	877.32	13.23
17 *Alx	2,000,175	70,490	3,988,889	0.035	1.994	0.078	4.397	395.73	7.02
18 StM	1,482,076	61,832	2,951,716	0.042	1.992	0.068	3.254	292.86	6.12

19	WaCoX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
20	Clk	714,291	27,320	1,315,547	0.038	1.842	0.030	1.450	130.50	2.70
21	Fau	2,338,942	89,126	4,984,183	0.038	2.131	0.098	5.494	494.46	8.82
22	Jeff	1,118,717	43,164	2,160,726	0.039	1.931	0.048	2.382	214.38	4.32
23	WestX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
24	Spots	1,659,568	62,625	3,982,767	0.038	2.400	0.069	4.390	395.10	6.21
25	KGeo	605,337	23,033	1,161,776	0.038	1.919	0.025	1.281	115.29	2.25
26	Fbrg	341,292	12,865	744,404	0.038	2.181	0.014	0.821	73.89	1.26
27	SouX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
Total		134,576,402	5,010,397	287,048,094	0.037	2.133	5.522	316.418	28477.62	496.98

Note: * indicates MSA

MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS
MSA Seasonal Daily VMT 97,059,254
MSA Seasonal Daily PM Running Emissions(Tons): 3.926
MSA Seasonal Daily NX Running Emissions(Tons): 223.723
MSA Seasonal 90-Day NX Running Emissions(Tons): 20,135.07
MSA Seasonal 90-Day PM Running Emissions(Tons): 353.34
Note: Approximate Unadjusted VMT for the modeled Region is: 149,066,000Running Emission Results
Year: 2002 Season/Month: Spring
Season/Month Factor Applied to Modeled AAWDT VMT: 0.9570
No. of Days in the Season: 92

Juris	Daily VMT	Daily PM(gms)	Daily NX(gms)	Daily PM g/mi	Daily Nx g/mi	Daily PM Tons	Daily Nx Tons	Seasonal Nx Tons	Seasonal PM Tons
1 *DC	8,515,241	284,822	15,230,819	0.033	1.789	0.314	16.789	1544.59	28.89
2 *Mtg	19,331,669	654,700	34,336,548	0.034	1.776	0.722	37.850	3482.20	66.42
3 *PG	20,839,836	738,159	39,835,458	0.035	1.912	0.814	43.911	4039.81	74.89
4 How	9,714,333	346,238	20,356,362	0.036	2.095	0.382	22.439	2064.39	35.14
5 AAr	13,514,160	483,273	27,697,868	0.036	2.050	0.533	30.532	2808.94	49.04
6 Car	2,791,141	99,788	4,596,741	0.036	1.647	0.110	5.067	466.16	10.12
7 BaltX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
8 Cal	1,227,566	47,096	2,035,144	0.038	1.658	0.052	2.243	206.36	4.78
9 *Chs	2,267,349	86,188	3,728,527	0.038	1.644	0.095	4.110	378.12	8.74
10 *Frd	7,838,797	278,300	16,366,674	0.036	2.088	0.307	18.041	1659.77	28.24
11 FrdX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
12 *Arl	4,295,771	141,397	7,845,717	0.033	1.826	0.156	8.648	795.62	14.35
13 *Ffx	25,445,799	824,021	46,319,565	0.032	1.820	0.908	51.059	4697.43	83.54
14 *Ldn	4,811,021	158,706	8,679,992	0.033	1.804	0.175	9.568	880.26	16.10
15 *PW	7,420,511	248,738	13,803,793	0.034	1.860	0.274	15.216	1399.87	25.21
16 Sta	3,766,180	131,055	8,319,673	0.035	2.209	0.144	9.171	843.73	13.25
17 *Alx	2,120,256	68,927	3,698,949	0.033	1.745	0.076	4.077	375.08	6.99
18 StM	1,571,053	60,690	2,754,099	0.039	1.753	0.067	3.036	279.31	6.16
19 WaCoX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
20 Clk	757,174	26,616	1,216,483	0.035	1.607	0.029	1.341	123.37	2.67
21 Fau	2,479,362	86,924	4,661,591	0.035	1.880	0.096	5.139	472.79	8.83
22 Jeff	1,185,880	42,009	2,005,524	0.035	1.691	0.046	2.211	203.41	4.23
23 WestX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
24 Spots	1,759,201	61,464	3,751,848	0.035	2.133	0.068	4.136	380.51	6.26
25 KGeo	641,679	22,604	1,081,875	0.035	1.686	0.025	1.193	109.76	2.30
26 Fbrg	361,781	12,626	696,731	0.035	1.926	0.014	0.768	70.66	1.29
27 SouX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
Total	142,655,760	4,904,341	269,019,982	0.034	1.886	5.407	296.545	27282.14	497.44

Note: * indicates MSA

MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS
MSA Seasonal Daily VMT 102,886,250
MSA Seasonal Daily PM Running Emissions(Tons): 3.841
MSA Seasonal Daily NX Running Emissions(Tons): 209.269
MSA Seasonal 92-Day NX Running Emissions(Tons): 19,252.75
MSA Seasonal 92-Day PM Running Emissions(Tons): 353.37
Note: Approximate Unadjusted VMT for the modeled Region is: 149,066,000Running Emission Results
Year: 2002 Season/Month: Summer
Season/Month Factor Applied to Modeled AAWDT VMT: 0.9984
No. of Days in the Season: 92

Juris	Daily VMT	Daily PM(gms)	Daily NX(gms)	Daily PM g/mi	Daily Nx g/mi	Daily PM Tons	Daily Nx Tons	Seasonal Nx Tons	Seasonal PM Tons

1	*DC	8,883,613	297,494	15,756,637	0.033	1.774	0.328	17.369	1597.95	30.18
2	*Mtg	20,167,960	684,897	35,299,244	0.034	1.750	0.755	38.911	3579.81	69.46
3	*PG	21,741,370	772,021	40,748,323	0.036	1.874	0.851	44.917	4132.36	78.29
4	How	10,134,576	362,206	20,734,393	0.036	2.046	0.399	22.856	2102.75	36.71
5	AAr	14,098,785	505,563	28,232,871	0.036	2.003	0.557	31.121	2863.13	51.24
6	Car	2,911,886	104,379	4,714,549	0.036	1.619	0.115	5.197	478.12	10.58
7	BaltX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
8	Cal	1,280,671	49,147	2,082,978	0.038	1.626	0.054	2.296	211.23	4.97
9	*Chs	2,365,435	89,950	3,823,699	0.038	1.616	0.099	4.215	387.78	9.11
10	*Frd	8,177,904	290,429	16,684,019	0.036	2.040	0.320	18.391	1691.97	29.44
11	FrdX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
12	*Arl	4,481,607	147,866	8,058,482	0.033	1.798	0.163	8.883	817.24	15.00
13	*Ffx	26,546,591	862,123	47,562,728	0.032	1.792	0.950	52.429	4823.47	87.40
14	*Ldn	5,019,148	166,043	8,912,691	0.033	1.776	0.183	9.825	903.90	16.84
15	*PW	7,741,525	260,234	14,127,736	0.034	1.825	0.287	15.573	1432.72	26.40
16	Sta	3,929,106	137,102	8,449,311	0.035	2.150	0.151	9.314	856.89	13.89
17	*Alx	2,211,979	72,013	3,818,532	0.033	1.726	0.079	4.209	387.23	7.27
18	StM	1,639,017	63,322	2,815,241	0.039	1.718	0.070	3.103	285.48	6.44
19	WaCoX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
20	Clk	789,929	27,781	1,245,686	0.035	1.577	0.031	1.373	126.32	2.85
21	Fau	2,586,619	90,756	4,769,331	0.035	1.844	0.100	5.257	483.64	9.20
22	Jeff	1,237,181	43,837	2,053,226	0.035	1.660	0.048	2.263	208.20	4.42
23	WestX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
24	Spots	1,835,305	64,304	3,826,728	0.035	2.085	0.071	4.218	388.06	6.53
25	KGeo	669,438	23,643	1,106,212	0.035	1.652	0.026	1.219	112.15	2.39
26	Fbrg	377,432	13,209	712,372	0.035	1.887	0.015	0.785	72.22	1.38
27	SouX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
Total		148,827,075	5,128,317	275,534,990	0.034	1.851	5.652	303.724	27942.61	519.98

Note: * indicates MSA

MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS
MSA Seasonal Daily VMT 107,337,131
MSA Seasonal Daily PM Running Emissions(Tons): 4.015
MSA Seasonal Daily NX Running Emissions(Tons): 214.722
MSA Seasonal 92-Day NX Running Emissions(Tons): 19,754.42
MSA Seasonal 92-Day PM Running Emissions(Tons): 369.38

Note: Approximate Unadjusted VMT for the modeled Region is: 149,066,000Running Emission Results
Year: 2002 Season/Month: Fall
Season/Month Factor Applied to Modeled AAWDT VMT: 0.9445
No. of Days in the Season: 91

	Juris	Daily VMT	Daily PM(gms)	Daily NX(gms)	Daily PM g/mi	Daily Nx g/mi	Daily PM Tons	Daily Nx Tons	Seasonal Nx Tons	Seasonal PM Tons
1	*DC	8,404,016	283,765	15,165,107	0.034	1.805	0.313	16.717	1521.25	28.48
2	*Mtg	19,079,165	657,990	34,375,055	0.034	1.802	0.725	37.892	3448.17	65.97
3	*PG	20,567,631	728,460	39,464,682	0.035	1.919	0.803	43.502	3958.68	73.07
4	How	9,587,447	341,340	20,081,627	0.036	2.095	0.376	22.136	2014.38	34.22
5	AAr	13,337,643	475,836	27,347,326	0.036	2.050	0.525	30.145	2743.20	47.78
6	Car	2,754,683	98,379	4,571,159	0.036	1.659	0.108	5.039	458.55	9.83
7	BaltX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
8	Cal	1,211,532	46,693	2,024,722	0.039	1.671	0.051	2.232	203.11	4.64
9	*Chs	2,237,733	85,102	3,705,778	0.038	1.656	0.094	4.085	371.74	8.55
10	*Frd	7,736,409	280,375	16,344,767	0.036	2.113	0.309	18.017	1639.55	28.12
11	FrdX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
12	*Arl	4,239,663	141,566	7,810,100	0.033	1.842	0.156	8.609	783.42	14.20
13	*Ffx	25,113,436	825,742	46,098,433	0.033	1.836	0.910	50.815	4624.16	82.81
14	*Ldn	4,748,182	159,358	8,674,179	0.034	1.827	0.176	9.562	870.14	16.02
15	*PW	7,323,588	248,050	13,739,628	0.034	1.876	0.273	15.145	1378.20	24.84
16	Sta	3,716,988	130,535	8,241,147	0.035	2.217	0.144	9.084	826.64	13.10
17	*Alx	2,092,563	69,268	3,706,790	0.033	1.771	0.076	4.086	371.83	6.92
18	StM	1,550,532	60,194	2,737,287	0.039	1.765	0.066	3.017	274.55	6.01
19	WaCoX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
20	Clk	747,284	26,830	1,220,248	0.036	1.633	0.030	1.345	122.40	2.73
21	Fau	2,446,977	87,447	4,645,922	0.036	1.899	0.096	5.121	466.01	8.74
22	Jeff	1,170,390	42,364	2,007,579	0.036	1.715	0.047	2.213	201.38	4.28
23	WestX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00
24	Spots	1,736,224	61,191	3,714,795	0.035	2.140	0.067	4.095	372.64	6.10
25	KGeo	633,298	22,488	1,077,512	0.036	1.701	0.025	1.188	108.11	2.28
26	Fbrg	357,056	12,572	691,900	0.035	1.938	0.014	0.763	69.43	1.27
27	SouX	0	0	0	0.000	0.000	0.000	0.000	0.00	0.00

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Total       140,792,441    4,885,545  267,445,743     0.035     1.900     5.384   294.808  26827.53    489.94
 Note: * indicates MSA

 MSA definition: DC,MTG,PG,ARL,ALX,FFX,LDN,PW,FRD,& CHS
  MSA Seasonal Daily VMT            101,542,386
  MSA Seasonal Daily PM Running Emissions(Tons):         3.835
  MSA Seasonal Daily NX Running Emissions(Tons):       208.430
  MSA Seasonal 91-Day NX Running Emissions(Tons):     18,967.13
  MSA Seasonal 91-Day PM Running Emissions(Tons):        348.99
Note: Approximate Unadjusted VMT for the modeled Region is:   149,066,000
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2002_local.txt

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 ---  Local Emissions Summary ---
Year: 2002/ Season: Winter/ Seasonal VMT Factor: 0.9028/ No. of Days: 90

      VMT  Summary:
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Jur No.	Base AAWDT Network VMT	Future AAWDT Network VMT	Base Local VMT	Est. Future Local VMT	Seasonal Adj Est. Future Local VMT	Urb Pct	Rur Pct	Urban Local VMT	Rural Local VMT
1 *DC	8,883,000	8,898,000	1,510,000	1,512,550	1,365,530	100.00	0.00	1,365,530	0
2 *Mtg	19,636,000	20,200,000	1,404,000	1,444,327	1,303,938	91.00	9.00	1,186,584	117,354
3 *PG	21,321,000	21,776,000	1,299,000	1,326,721	1,197,764	93.00	7.00	1,113,920	83,843
4 How	0	0	0	0	0	0.00	0.00	0	0
5 AAr	0	0	0	0	0	0.00	0.00	0	0
6 Car	0	0	0	0	0	0.00	0.00	0	0
7 BaltX	0	0	0	0	0	0.00	0.00	0	0
8 Cal	0	0	0	0	0	0.00	0.00	0	0
9 *Chs	2,308,000	2,369,000	259,000	265,845	240,005	35.00	65.00	84,002	156,003
10 *Frd	7,893,000	8,191,000	609,000	631,993	570,563	38.00	62.00	216,814	353,749
11 FrdX	0	0	0	0	0	0.00	0.00	0	0
12 *Arl	4,312,000	4,489,000	243,000	252,975	228,386	100.00	0.00	228,386	0
13 *Ffx	25,747,000	26,589,000	2,127,000	2,196,559	1,983,053	100.00	0.00	1,983,053	0
14 *Ldn	4,438,000	5,027,000	674,000	763,452	689,244	55.00	45.00	379,084	310,160
15 *PW	7,109,000	7,754,000	877,000	956,570	863,592	66.00	34.00	569,970	293,621
16 Sta	0	0	0	0	0	0.00	0.00	0	0
17 *Alx	2,170,000	2,216,000	453,000	462,603	417,638	100.00	0.00	417,638	0
18 StM	0	0	0	0	0	0.00	0.00	0	0
19 WaCoX	0	0	0	0	0	0.00	0.00	0	0
20 Clk	0	0	0	0	0	0.00	0.00	0	0
21 Fau	0	0	0	0	0	0.00	0.00	0	0
22 Jeff	0	0	0	0	0	0.00	0.00	0	0
23 WestX	0	0	0	0	0	0.00	0.00	0	0
24 Spots	0	0	0	0	0	0.00	0.00	0	0
25 KGeo	0	0	0	0	0	0.00	0.00	0	0
26 Fbrg	0	0	0	0	0	0.00	0.00	0	0
27 SouX	0	0	0	0	0	0.00	0.00	0	0
Total	103,817,000	107,509,000	9,455,000	9,813,594	8,859,713			7,544,981	1,314,731

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       PM Summary:
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Jur No.	Daily Local PM(gm)	Daily Local PM(Tn)	Seasonal Local PM(Tn)
1 *DC	28,130	0.031	2.790
2 *Mtg	24,562	0.027	2.430
3 *PG	23,949	0.026	2.340
4 How	0	0.000	0.000
5 AAr	0	0.000	0.000
6 Car	0	0.000	0.000
7 BaltX	0	0.000	0.000
8 Cal	0	0.000	0.000
9 *Chs	1,856	0.002	0.180
10 *Frd	4,662	0.005	0.450
11 FrdX	0	0.000	0.000
12 *Arl	4,842	0.005	0.450
13 *Ffx	41,248	0.045	4.050
14 *Ldn	8,150	0.009	0.810
15 *PW	12,368	0.014	1.260
16 Sta	0	0.000	0.000
17 *Alx	8,645	0.010	0.900
18 StM	0	0.000	0.000

19	WaCoX	0	0.000	0.000
20	Clk	0	0.000	0.000
21	Fau	0	0.000	0.000
22	Jeff	0	0.000	0.000
23	WestX	0	0.000	0.000
24	Spots	0	0.000	0.000
25	KGeo	0	0.000	0.000
26	Fbrg	0	0.000	0.000
27	SouX	0	0.000	0.000
Total		158,412	0.174	15.660

Avg Rate: 0.018

Nx Summary:

Jur No.		Daily Local Urban Nx(gm)	Daily Local Rural Nx(gm)	Daily Local Urban Nx(Tn)	Daily Local Rural Nx(Tn)	Daily Total Local Nx(Tn)	Seasonal Total Local Nx(Tn)
1	*DC	1,502,083	0	1.656	0.000	1.656	149.040
2	*Mtg	1,273,204	149,967	1.403	0.165	1.568	141.120
3	*PG	1,272,097	113,428	1.402	0.125	1.527	137.430
4	How	0	0	0.000	0.000	0.000	0.000
5	AAr	0	0	0.000	0.000	0.000	0.000
6	Car	0	0	0.000	0.000	0.000	0.000
7	BaltX	0	0	0.000	0.000	0.000	0.000
8	Cal	0	0	0.000	0.000	0.000	0.000
9	*Chs	96,518	211,823	0.106	0.233	0.339	30.510
10	*Frd	246,517	475,648	0.272	0.524	0.796	71.640
11	FrdX	0	0	0.000	0.000	0.000	0.000
12	*Arl	248,712	0	0.274	0.000	0.274	24.660
13	*Ffx	2,121,867	0	2.339	0.000	2.339	210.510
14	*Ldn	443,149	428,470	0.488	0.472	0.960	86.400
15	*PW	630,387	385,449	0.695	0.425	1.120	100.800
16	Sta	0	0	0.000	0.000	0.000	0.000
17	*Alx	433,090	0	0.477	0.000	0.477	42.930
18	StM	0	0	0.000	0.000	0.000	0.000
19	WaCoX	0	0	0.000	0.000	0.000	0.000
20	Clk	0	0	0.000	0.000	0.000	0.000
21	Fau	0	0	0.000	0.000	0.000	0.000
22	Jeff	0	0	0.000	0.000	0.000	0.000
23	WestX	0	0	0.000	0.000	0.000	0.000
24	Spots	0	0	0.000	0.000	0.000	0.000
25	KGeo	0	0	0.000	0.000	0.000	0.000
26	Fbrg	0	0	0.000	0.000	0.000	0.000
27	SouX	0	0	0.000	0.000	0.000	0.000
Total		8,267,626	1,764,784	9.112	1.944	11.056	995.040

Avg Rate: 1.096 1.342 --- Local Emissions Summary ---
Year: 2002/ Season: Spring/ Seasonal VMT Factor: 0.9570/ No. of Days: 92

VMT Summary:

Jur No.		Base AAWDT Network VMT	Future AAWDT Network VMT	Base Local VMT	Est. Future Local VMT	Seasonal Adj Est. Future Local VMT	Urb Pct	Rur Pct	Urban Local VMT	Rural Local VMT
1	*DC	8,883,000	8,898,000	1,510,000	1,512,550	1,447,510	100.00	0.00	1,447,510	0
2	*Mtg	19,636,000	20,200,000	1,404,000	1,444,327	1,382,221	91.00	9.00	1,257,821	124,400
3	*PG	21,321,000	21,776,000	1,299,000	1,326,721	1,269,672	93.00	7.00	1,180,795	88,877
4	How	0	0	0	0	0	0.00	0.00	0	0
5	AAr	0	0	0	0	0	0.00	0.00	0	0
6	Car	0	0	0	0	0	0.00	0.00	0	0
7	BaltX	0	0	0	0	0	0.00	0.00	0	0
8	Cal	0	0	0	0	0	0.00	0.00	0	0
9	*Chs	2,308,000	2,369,000	259,000	265,845	254,414	35.00	65.00	89,045	165,369
10	*Frd	7,893,000	8,191,000	609,000	631,993	604,817	38.00	62.00	229,830	374,987

Jur No.										
11	FrdX	0	0	0	0	0	0.00	0.00	0	0
12	*Arl	4,312,000	4,489,000	243,000	252,975	242,097	100.00	0.00	242,097	0
13	*Ffx	25,747,000	26,589,000	2,127,000	2,196,559	2,102,107	100.00	0.00	2,102,107	0
14	*Ldn	4,438,000	5,027,000	674,000	763,452	730,623	55.00	45.00	401,843	328,780
15	*PW	7,109,000	7,754,000	877,000	956,570	915,438	66.00	34.00	604,189	311,249
16	Sta	0	0	0	0	0	0.00	0.00	0	0
17	*Alx	2,170,000	2,216,000	453,000	462,603	442,711	100.00	0.00	442,711	0
18	StM	0	0	0	0	0	0.00	0.00	0	0
19	WaCoX	0	0	0	0	0	0.00	0.00	0	0
20	Clk	0	0	0	0	0	0.00	0.00	0	0
21	Fau	0	0	0	0	0	0.00	0.00	0	0
22	Jeff	0	0	0	0	0	0.00	0.00	0	0
23	WestX	0	0	0	0	0	0.00	0.00	0	0
24	Spots	0	0	0	0	0	0.00	0.00	0	0
25	KGeo	0	0	0	0	0	0.00	0.00	0	0
26	Fbrg	0	0	0	0	0	0.00	0.00	0	0
27	SouX	0	0	0	0	0	0.00	0.00	0	0
Total		103,817,000	107,509,000	9,455,000	9,813,594	9,391,610			7,997,948	1,393,662

PM Summary:

Jur No.		Daily Local PM(gm)	Daily Local PM(Tn)	Seasonal Local PM(Tn)
1	*DC	26,345	0.029	2.668
2	*Mtg	23,144	0.026	2.392
3	*PG	22,553	0.025	2.300
4	How	0	0.000	0.000
5	AAr	0	0.000	0.000
6	Car	0	0.000	0.000
7	BaltX	0	0.000	0.000
8	Cal	0	0.000	0.000
9	*Chs	1,754	0.002	0.184
10	*Frd	4,413	0.005	0.460
11	FrdX	0	0.000	0.000
12	*Arl	4,600	0.005	0.460
13	*Ffx	39,099	0.043	3.956
14	*Ldn	7,756	0.009	0.828
15	*PW	11,782	0.013	1.196
16	Sta	0	0.000	0.000
17	*Alx	8,146	0.009	0.828
18	StM	0	0.000	0.000
19	WaCoX	0	0.000	0.000
20	Clk	0	0.000	0.000
21	Fau	0	0.000	0.000
22	Jeff	0	0.000	0.000
23	WestX	0	0.000	0.000
24	Spots	0	0.000	0.000
25	KGeo	0	0.000	0.000
26	Fbrg	0	0.000	0.000
27	SouX	0	0.000	0.000
Total		149,591	0.166	15.272

Avg Rate: 0.016

Nx Summary:

Jur No.		Daily Local Urban Nx(gm)	Daily Local Rural Nx(gm)	Daily Local Urban Nx(Tn)	Daily Local Rural Nx(Tn)	Daily Total Local Nx(Tn)	Seasonal Total Local Nx(Tn)
1	*DC	1,341,842	0	1.479	0.000	1.479	136.068
2	*Mtg	1,125,750	130,759	1.241	0.144	1.385	127.420

3 *PG	1,140,648	100,546	1.257	0.111	1.368	125.856
4 How	0	0	0.000	0.000	0.000	0.000
5 AAr	0	0	0.000	0.000	0.000	0.000
6 Car	0	0	0.000	0.000	0.000	0.000
7 BaltX	0	0	0.000	0.000	0.000	0.000
8 Cal	0	0	0.000	0.000	0.000	0.000
9 *Chs	86,106	186,872	0.095	0.206	0.301	27.692
10 *Frd	219,948	419,286	0.242	0.462	0.704	64.768
11 FrdX	0	0	0.000	0.000	0.000	0.000
12 *Arl	220,792	0	0.243	0.000	0.243	22.356
13 *Ffx	1,885,590	0	2.079	0.000	2.079	191.268
14 *Ldn	392,199	374,270	0.432	0.413	0.845	77.740
15 *PW	563,104	339,898	0.621	0.375	0.996	91.632
16 Sta	0	0	0.000	0.000	0.000	0.000
17 *Alx	377,190	0	0.416	0.000	0.416	38.272
18 StM	0	0	0.000	0.000	0.000	0.000
19 WaCoX	0	0	0.000	0.000	0.000	0.000
20 Clk	0	0	0.000	0.000	0.000	0.000
21 Fau	0	0	0.000	0.000	0.000	0.000
22 Jeff	0	0	0.000	0.000	0.000	0.000
23 WestX	0	0	0.000	0.000	0.000	0.000
24 Spots	0	0	0.000	0.000	0.000	0.000
25 KGeo	0	0	0.000	0.000	0.000	0.000
26 Fbrg	0	0	0.000	0.000	0.000	0.000
27 SouX	0	0	0.000	0.000	0.000	0.000
Total	7,353,168	1,551,630	8.105	1.711	9.816	903.072
Avg Rate:	0.919	1.113				

--- Local Emissions Summary ---
Year: 2002/ Season: Summer/ Seasonal VMT Factor: 0.9984/ No. of Days: 92

VMT Summary:

Jur No.	Base AAWDT Network VMT	Future AAWDT Network VMT	Base Local VMT	Est. Future Local VMT	Seasonal Adj Est. Future Local VMT	Urb Pct	Rur Pct	Urban Local VMT	Rural Local VMT
1 *DC	8,883,000	8,898,000	1,510,000	1,512,550	1,510,130	100.00	0.00	1,510,130	0
2 *Mtg	19,636,000	20,200,000	1,404,000	1,444,327	1,442,016	91.00	9.00	1,312,234	129,781
3 *PG	21,321,000	21,776,000	1,299,000	1,326,721	1,324,599	93.00	7.00	1,231,877	92,722
4 How	0	0	0	0	0	0.00	0.00	0	0
5 AAr	0	0	0	0	0	0.00	0.00	0	0
6 Car	0	0	0	0	0	0.00	0.00	0	0
7 BaltX	0	0	0	0	0	0.00	0.00	0	0
8 Cal	0	0	0	0	0	0.00	0.00	0	0
9 *Chs	2,308,000	2,369,000	259,000	265,845	265,420	35.00	65.00	92,897	172,523
10 *Frd	7,893,000	8,191,000	609,000	631,993	630,982	38.00	62.00	239,773	391,209
11 FrdX	0	0	0	0	0	0.00	0.00	0	0
12 *Arl	4,312,000	4,489,000	243,000	252,975	252,570	100.00	0.00	252,570	0
13 *Ffx	25,747,000	26,589,000	2,127,000	2,196,559	2,193,044	100.00	0.00	2,193,044	0
14 *Ldn	4,438,000	5,027,000	674,000	763,452	762,230	55.00	45.00	419,227	343,004
15 *PW	7,109,000	7,754,000	877,000	956,570	955,040	66.00	34.00	630,326	324,714
16 Sta	0	0	0	0	0	0.00	0.00	0	0
17 *Alx	2,170,000	2,216,000	453,000	462,603	461,863	100.00	0.00	461,863	0
18 StM	0	0	0	0	0	0.00	0.00	0	0
19 WaCoX	0	0	0	0	0	0.00	0.00	0	0
20 Clk	0	0	0	0	0	0.00	0.00	0	0
21 Fau	0	0	0	0	0	0.00	0.00	0	0
22 Jeff	0	0	0	0	0	0.00	0.00	0	0
23 WestX	0	0	0	0	0	0.00	0.00	0	0
24 Spots	0	0	0	0	0	0.00	0.00	0	0
25 KGeo	0	0	0	0	0	0.00	0.00	0	0
26 Fbrg	0	0	0	0	0	0.00	0.00	0	0
27 SouX	0	0	0	0	0	0.00	0.00	0	0
Total	103,817,000	107,509,000	9,455,000	9,813,594	9,797,892			8,343,940	1,453,952

PM Summary:

Jur No.	Daily Local PM(gm)	Daily Local PM(Tn)	Seasonal Local PM(Tn)
1 *DC	27,484	0.030	2.760
2 *Mtg	24,145	0.027	2.484
3 *PG	23,529	0.026	2.392
4 How	0	0.000	0.000
5 AAr	0	0.000	0.000
6 Car	0	0.000	0.000
7 BaltX	0	0.000	0.000
8 Cal	0	0.000	0.000
9 *Chs	1,830	0.002	0.184
10 *Frd	4,604	0.005	0.460
11 FrdX	0	0.000	0.000
12 *Arl	4,799	0.005	0.460
13 *Ffx	40,791	0.045	4.140
14 *Ldn	8,133	0.009	0.828
15 *PW	12,354	0.014	1.288
16 Sta	0	0.000	0.000
17 *Alx	8,498	0.009	0.828
18 StM	0	0.000	0.000
19 WaCoX	0	0.000	0.000
20 Clk	0	0.000	0.000
21 Fau	0	0.000	0.000
22 Jeff	0	0.000	0.000
23 WestX	0	0.000	0.000
24 Spots	0	0.000	0.000
25 KGeo	0	0.000	0.000
26 Fbrg	0	0.000	0.000
27 SouX	0	0.000	0.000
Total	156,167	0.172	15.824

Avg Rate: 0.016

Nx Summary:

Jur No.	Daily Local Urban Nx(gm)	Daily Local Rural Nx(gm)	Daily Local Urban Nx(Tn)	Daily Local Rural Nx(Tn)	Daily Total Local Nx(Tn)	Seasonal Total Local Nx(Tn)
1 *DC	1,425,562	0	1.571	0.000	1.571	144.532
2 *Mtg	1,196,758	136,236	1.319	0.150	1.469	135.148
3 *PG	1,208,471	104,394	1.332	0.115	1.447	133.124
4 How	0	0	0.000	0.000	0.000	0.000
5 AAr	0	0	0.000	0.000	0.000	0.000
6 Car	0	0	0.000	0.000	0.000	0.000
7 BaltX	0	0	0.000	0.000	0.000	0.000
8 Cal	0	0	0.000	0.000	0.000	0.000
9 *Chs	91,132	193,824	0.100	0.214	0.314	28.888
10 *Frd	232,820	434,761	0.257	0.479	0.736	67.712
11 FrdX	0	0	0.000	0.000	0.000	0.000
12 *Arl	234,385	0	0.258	0.000	0.258	23.736
13 *Ffx	2,006,636	0	2.212	0.000	2.212	203.504
14 *Ldn	415,453	388,718	0.458	0.428	0.886	81.512
15 *PW	597,549	353,633	0.659	0.390	1.049	96.508
16 Sta	0	0	0.000	0.000	0.000	0.000
17 *Alx	401,359	0	0.442	0.000	0.442	40.664
18 StM	0	0	0.000	0.000	0.000	0.000
19 WaCoX	0	0	0.000	0.000	0.000	0.000
20 Clk	0	0	0.000	0.000	0.000	0.000
21 Fau	0	0	0.000	0.000	0.000	0.000
22 Jeff	0	0	0.000	0.000	0.000	0.000
23 WestX	0	0	0.000	0.000	0.000	0.000
24 Spots	0	0	0.000	0.000	0.000	0.000
25 KGeo	0	0	0.000	0.000	0.000	0.000
26 Fbrg	0	0	0.000	0.000	0.000	0.000

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 27  SouX             0            0        0.000        0.000        0.000        0.000
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Total         7,810,125    1,611,566        8.608        1.776       10.384      955.328

Avg Rate:         0.936        1.108 ---  Local Emissions Summary ---
Year: 2002/ Season: Fall/ Seasonal VMT Factor: 0.9445/ No. of Days: 91

      VMT  Summary:

            Base          Future                          Seasonal Adj
 Jur        AAWDT         AAWDT       Base       Est. Future  Est. Future    Urb    Rur      Urban          Rural
 No.       Network VMT Network VMT   Local VMT    Local VMT    Local VMT     Pct    Pct     Local VMT    Local VMT
----------|-----------||-----------||-----------||-----------||-----------||------||------||-----------||-----------|
  1 *DC       8,883,000    8,898,000    1,510,000    1,512,550    1,428,603  100.00    0.00    1,428,603            0
  2 *Mtg     19,636,000   20,200,000    1,404,000    1,444,327    1,364,167   91.00    9.00    1,241,392      122,775
  3 *PG      21,321,000   21,776,000    1,299,000    1,326,721    1,253,088   93.00    7.00    1,165,372       87,716
  4  How              0            0            0            0            0    0.00    0.00            0            0
  5  AAr              0            0            0            0            0    0.00    0.00            0            0
  6  Car              0            0            0            0            0    0.00    0.00            0            0
  7  BaltX            0            0            0            0            0    0.00    0.00            0            0
  8  Cal              0            0            0            0            0    0.00    0.00            0            0
  9 *Chs      2,308,000    2,369,000      259,000      265,845      251,091   35.00   65.00       87,882      163,209
 10 *Frd      7,893,000    8,191,000      609,000      631,993      596,917   38.00   62.00      226,829      370,089
 11  FrdX             0            0            0            0            0    0.00    0.00            0            0
 12 *Arl      4,312,000    4,489,000      243,000      252,975      238,935  100.00    0.00      238,935            0
 13 *Ffx     25,747,000   26,589,000    2,127,000    2,196,559    2,074,650  100.00    0.00    2,074,650            0
 14 *Ldn      4,438,000    5,027,000      674,000      763,452      721,080   55.00   45.00      396,594      324,486
 15 *PW       7,109,000    7,754,000      877,000      956,570      903,481   66.00   34.00      596,297      307,183
 16  Sta              0            0            0            0            0    0.00    0.00            0            0
 17 *Alx      2,170,000    2,216,000      453,000      462,603      436,928  100.00    0.00      436,928            0
 18  StM              0            0            0            0            0    0.00    0.00            0            0
 19  WaCoX            0            0            0            0            0    0.00    0.00            0            0
 20  Clk              0            0            0            0            0    0.00    0.00            0            0
 21  Fau              0            0            0            0            0    0.00    0.00            0            0
 22  Jeff             0            0            0            0            0    0.00    0.00            0            0
 23  WestX            0            0            0            0            0    0.00    0.00            0            0
 24  Spots            0            0            0            0            0    0.00    0.00            0            0
 25  KGeo             0            0            0            0            0    0.00    0.00            0            0
 26  Fbrg             0            0            0            0            0    0.00    0.00            0            0
 27  SouX             0            0            0            0            0    0.00    0.00            0            0
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Total       103,817,000  107,509,000    9,455,000    9,813,594    9,268,940                    7,893,481    1,375,458


       PM Summary:

            Daily        Daily        Seasonal
 Jur        Local        Local        Local
 No.        PM(gm)       PM(Tn)       PM(Tn)
----------||-----------||-----------||-----------|
  1 *DC         27,715        0.031        2.821
  2 *Mtg        24,455        0.027        2.457
  3 *PG         23,541        0.026        2.366
  4  How             0        0.000        0.000
  5  AAr             0        0.000        0.000
  6  Car             0        0.000        0.000
  7  BaltX           0        0.000        0.000
  8  Cal             0        0.000        0.000
  9 *Chs          1,846        0.002        0.182
 10 *Frd          4,650        0.005        0.455
 11  FrdX            0        0.000        0.000
 12 *Arl          4,803        0.005        0.455
 13 *Ffx         41,078        0.045        4.095
 14 *Ldn          8,091        0.009        0.819
 15 *PW          12,164        0.013        1.183
 16  Sta             0        0.000        0.000
 17 *Alx          8,607        0.009        0.819
 18  StM             0        0.000        0.000
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19	WaCoX	0	0.000	0.000
20	Clk	0	0.000	0.000
21	Fau	0	0.000	0.000
22	Jeff	0	0.000	0.000
23	WestX	0	0.000	0.000
24	Spots	0	0.000	0.000
25	KGeo	0	0.000	0.000
26	Fbrg	0	0.000	0.000
27	SouX	0	0.000	0.000
Total		156,949	0.172	15.652

Avg Rate: 0.017

Nx Summary:

Jur No.		Daily Local Urban Nx(gm)	Daily Local Rural Nx(gm)	Daily Local Urban Nx(Tn)	Daily Local Rural Nx(Tn)	Daily Total Local Nx(Tn)	Seasonal Total Local Nx(Tn)
1	*DC	1,395,745	0	1.539	0.000	1.539	140.049
2	*Mtg	1,186,770	138,220	1.308	0.152	1.460	132.860
3	*PG	1,179,357	104,413	1.300	0.115	1.415	128.765
4	How	0	0	0.000	0.000	0.000	0.000
5	AAr	0	0	0.000	0.000	0.000	0.000
6	Car	0	0	0.000	0.000	0.000	0.000
7	BaltX	0	0	0.000	0.000	0.000	0.000
8	Cal	0	0	0.000	0.000	0.000	0.000
9	*Chs	89,552	194,767	0.099	0.215	0.314	28.574
10	*Frd	229,777	439,369	0.253	0.484	0.737	67.067
11	FrdX	0	0	0.000	0.000	0.000	0.000
12	*Arl	231,767	0	0.255	0.000	0.255	23.205
13	*Ffx	1,985,440	0	2.189	0.000	2.189	199.199
14	*Ldn	408,492	390,790	0.450	0.431	0.881	80.171
15	*PW	585,564	354,373	0.645	0.391	1.036	94.276
16	Sta	0	0	0.000	0.000	0.000	0.000
17	*Alx	404,596	0	0.446	0.000	0.446	40.586
18	StM	0	0	0.000	0.000	0.000	0.000
19	WaCoX	0	0	0.000	0.000	0.000	0.000
20	Clk	0	0	0.000	0.000	0.000	0.000
21	Fau	0	0	0.000	0.000	0.000	0.000
22	Jeff	0	0	0.000	0.000	0.000	0.000
23	WestX	0	0	0.000	0.000	0.000	0.000
24	Spots	0	0	0.000	0.000	0.000	0.000
25	KGeo	0	0	0.000	0.000	0.000	0.000
26	Fbrg	0	0	0.000	0.000	0.000	0.000
27	SouX	0	0	0.000	0.000	0.000	0.000
Total		7,697,059	1,621,933	8.484	1.788	10.272	934.752

Avg Rate: 0.975 1.179

ATTACHMENT D

D1. Transit Bus
D2. School Bus

MEMORANDUM

November 15, 2005

To: Air Quality Conformity File

From: Daivamani Sivasailam

Subject: Transit Bus Emissions for PM 2.5 Conformity Assessment of the 2005 CLRP and FY 2006 – FY 2011 TIP

This memo discusses the development of direct fine particles (PM 2.5), and NOx precursors emissions estimates for transit buses for the conformity analysis years.

Approach

This effort pivots from previously collected transit data (survey and emissions estimation are described in the 8-hour Ozone and Winter CO conformity assessment report), where the data were analyzed on a daily basis, annual statistics were also available from that effort and were applied in the PM 2.5 assessment.

The annual VMT from the survey was divided by the number of service days for each provider to calculate a daily VMT for the 2002 base year. Using the appropriate emissions factor, based on the average operating speed for each provider and the season, staff calculated the daily direct PM 2.5 and NOx precursor emissions for transit buses for each season. From the daily estimates, seasonal total, based on the number of days per season and the annual total emissions were estimated. The following table shows year 2002 estimation of transit bus emissions. Similar methods were used to estimate emissions for 2010, 2020 and 2030 analysis years.

2002 TRANSIT BUS CHARACTERISTICS / EMISSIONS (PM 2.5 - FALL)

Jurisdiction	Operator	2002 Weekday VMT	2002 Annual VMT	2002 Daily VMT	Remove Stafford/ Calvert	Average Speed	PM 2.5			NOx		
							factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
District of Columbia	Metrobus	50,552	18,451,480	50,552	50,552	*10*	0.8176	41331	0.0456	24.0030	1213400	1.3375
District of Columbia	MTA Commuter buses	2,510	916,150	2,510	2,510	*45*	0.8176	2052	0.0023	17.5280	43995	0.0485
District of Columbia	Peter Pan / Trailways	200	50,000	137	137	*55*	0.8176	112	0.0001	22.0800	3025	0.0033
District of Columbia	Carolina Trailways	20	5,000	14	14	*55*	0.8176	11	0.0000	22.0800	302	0.0003
District of Columbia	Capitol Trailways	100	25,000	68	68	*55*	0.8176	56	0.0001	22.0800	1512	0.0017
District of Columbia	Martz / Grey Line sightseeing	500	125,000	342	342	55	0.8176	280	0.0003	22.0800	7562	0.0083
District of Columbia	New World Tours	100	25,000	83	83	*20*	0.8176	68	0.0001	18.3610	1530	0.0017
District of Columbia	Georgetown U. shuttle	100	25,000	83	83	15	0.8176	68	0.0001	20.6230	1719	0.0019
District of Columbia	American U. shuttle	83	30,000	100	100	20	0.8176	82	0.0001	18.3610	1836	0.0020
District of Columbia	George Washington U shuttle	100	25,000	83	83	*15*	0.8176	68	0.0001	20.6230	1719	0.0019
District of Columbia	EPA Shuttle	200	50,000	200	200	*15*	0.8176	164	0.0002	20.6230	4125	0.0045
District of Columbia	USDOT Shuttle	200	50,000	200	200	*15*	0.8176	164	0.0002	20.6230	4125	0.0045
District of Columbia	Gallaudet Shuttle	100	25,000	83	83	*15*	0.8176	68	0.0001	20.6230	1719	0.0019
District of Columbia	Metro Access - paratransit	5,000	1,250,000	3,425	3,425	15	0.8176	2800	0.0031	20.6230	70627	0.0779
Maryland	Corridor Transit (CTC)	1,265	459,130	1,837	1,837	18	0.8176	1502	0.0017	19.1150	35105	0.0387
Maryland	Peter Pan / Trailways	1,800	450,000	1,233	1,233	*55*	0.8176	1008	0.0011	22.0800	27222	0.0300
Maryland	Carolina Trailways	225	56,250	154	154	*55*	0.8176	126	0.0001	22.0800	3403	0.0038
Maryland	Capitol Trailways	400	100,000	274	274	*55*	0.8176	224	0.0002	22.0800	6049	0.0067
Maryland	Martz / Grey Line sightseeing	2,250	562,500	1,541	1,541	55	0.8176	1260	0.0014	22.0800	34027	0.0375
Maryland	New World Tours	100	25,000	68	68	*20*	0.8176	56	0.0001	18.3610	1258	0.0014
Montgomery	Metrobus	17,262	6,300,630	17,262	17,262	*15*	0.8176	14113	0.0156	20.6230	355994	0.3924
Montgomery	MTA Commuter buses	2,180	795,700	3,183	3,183	*45*	0.8176	2602	0.0029	17.5280	55788	0.0615
Montgomery	Mont. Co. Ride-On	35,616	13,000,000	35,616	35,616	15	0.8176	29120	0.0321	20.6230	734518	0.8097
Prince George's	Metrobus	24,660	9,000,900	24,660	24,660	*15*	0.8176	20162	0.0222	20.6230	508563	0.5606
Prince George's	MTA Commuter buses	6,840	2,496,600	9,986	9,986	*45*	0.8176	8165	0.0090	17.5280	175042	0.1930
Prince George's	PG Co. The Bus	9,723	2,460,000	6,740	6,740	15	0.8176	5510	0.0061	20.6230	138993	0.1532
Prince George's	ShuttleUM (U. of MD)	1,864	652,482	2,175	2,175	11	0.8176	1778	0.0020	23.0810	50200	0.0553
Prince George's	P.G. Co. paratransit	3,000	750,000	2,055	2,055	*15*	0.8176	1680	0.0019	20.6230	42376	0.0467
Frederick	MTA Commuter buses	370	135,050	540	540	*45*	0.8176	442	0.0005	17.5280	9469	0.0104
Frederick	Fredrick Co. TransiT	3,082	847,666	2,322	2,322	12	0.8176	1899	0.0021	22.3130	51819	0.0571
Charles	MTA Commuter buses	2,290	572,500	2,290	2,290	*45*	0.8176	1872	0.0021	17.5280	40139	0.0442
Virginia	Metrobus	30,825	11,251,125	30,825	30,825	*15*	0.8176	25203	0.0278	20.6230	635704	0.7007
Virginia	Lee Coaches	70	17,500	70	49	*45*	0.8176	40	0.0000	17.5280	859	0.0009
Virginia	Brooks Transit	750	187,500	750	750	*45*	0.8176	613	0.0007	17.5280	13146	0.0145

2002 TRANSIT BUS CHARACTERISTICS / EMISSIONS (PM 2.5 - FALL)

Jurisdiction	Operator	2002 Weekday VMT	2002 Annual VMT	2002 Daily VMT	Remove Stafford/ Calvert	Average Speed	PM 2.5			NOx		
							factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
Virginia	Quicks Commuter Service	1,320	330,000	1,320	924	*45*	0.8176	755	0.0008	17.5280	16196	0.0179
Virginia	National Coach Works	1,650	412,500	1,650	1,155	*45*	0.8176	944	0.0010	17.5280	20245	0.0223
Virginia	Greyhound / Trailways (VA)	5,000	1,250,000	3,425	2,397	*55*	0.8176	1960	0.0022	22.0800	52932	0.0583
Virginia	Carolina Trailways	225	56,250	154	108	*55*	0.8176	88	0.0001	22.0800	2382	0.0026
Virginia	Martz / Grey Line sightseeing	2,250	562,500	1,541	1,079	55	0.8176	882	0.0010	22.0800	23819	0.0263
Virginia	New World Tours	185	67,525	185	130	*20*	0.8176	106	0.0001	18.3610	2378	0.0026
Alexandria	Alexandria DASH	3,454	1,215,746	3,331	3,331	13	0.8176	2723	0.0030	21.6630	72155	0.0795
Alexandria	Old Town "trolley" buses	300	75,000	205	205	*20*	0.8176	168	0.0002	18.3610	3773	0.0042
Alexandria	Alexandria DOT-paratransit	924	231,033	633	633	*15*	0.8176	518	0.0006	20.6230	13054	0.0144
Arlington	Arlington Co. ART	794	289,800	794	794	16	0.8176	649	0.0007	20.0580	15926	0.0176
Arlington	Crystal City Express	96	24,000	80	80	*15*	0.8176	65	0.0001	20.6230	1650	0.0018
Arlington	Skyline Crystal Express	144	36,000	120	120	*15*	0.8176	98	0.0001	20.6230	2475	0.0027
Arlington	Arlington STAR-paratransit	3,245	811,271	2,223	2,223	*15*	0.8176	1817	0.0020	20.6230	45838	0.0505
Fairfax	Fairfax Connector	18,036	6,348,531	17,393	17,393	*15*	0.8176	14221	0.0157	20.6230	358701	0.3954
Fairfax	Washington Flyer Coach Service	1,370	500,000	1,370	1,370	65	0.8176	1120	0.0012	32.0620	43921	0.0484
Fairfax	Fairfax Co. Fastran- paratransit	11,427	2,845,372	7,796	7,796	15	0.8176	6374	0.0070	20.6230	160767	0.1772
Fairfax	City of Fairfax CUE	1,483	522,000	1,430	1,430	15	0.8176	1169	0.0013	20.6230	29494	0.0325
Fairfax	City of Ffx, City Wheels-paratransit.	100	25,000	68	68	*15*	0.8176	56	0.0001	20.6230	1413	0.0016
Fairfax	City of Falls Ch. Fare Wheels-paratransit	100	25,000	68	68	*15*	0.8176	56	0.0001	20.6230	1413	0.0016
Prince William	PRTC Omnilink	4,038	1,009,500	4,038	4,038	*15*	0.8176	3301	0.0036	20.6230	83276	0.0918
Prince William	PRTC OmniRide	5,700	1,425,000	5,700	5,700	27	0.8176	4660	0.0051	16.6090	94671	0.1044
Loudoun	Loudoun Transportation Assc.	4,532	1,132,884	4,532	4,532	15	0.8176	3705	0.0041	20.6230	93454	0.1030
Loudoun	Loudoun Commuter Service	1,866	671,600	2,686	2,686	*25*	0.8176	2196	0.0024	16.9400	45508	0.0502
Loudoun	Loudoun Transit (LCTA)-paratransit	100	25,000	68	68	*15*	0.8176	56	0.0001	20.6230	1413	0.0016
TOTAL		272,676	91,064,675	262,274	259,771			212389	0.2341		5463717	6.0227

Notes:

1) Used WMATA percent VMT by jurisdiction from FY03-08 AQC, Appendix I (page I-3)
2) Assumed average freeway speed of 55 mph where higher than 55 speed limit is available, and 45 mph where speed limit is 55

November 15, 2005

Memorandum

To: Air Quality Conformity Files

From: Daivamani Sivasailam
Principal Transportation Engineer

Subject: PM 2.5 Emissions Inventory of School Buses

This memorandum outlines the procedure that staff followed to develop the fine particulate matter (PM 2.5) emissions inventory from the school bus fleet in the region as part of the conformity analysis of the 2005 Constrained Long Range Plan (CLRP) and FY 2006- FY 2011 Transportation Improvement Program (TIP).

In calendar 2001, staff compiled annual vehicle miles of travel (VMT) from the school systems in the region; this annual VMT was used to develop the 2002 base year emissions inventory. As the first step, the daily VMT by school system was estimated by dividing the annual VMT by number of days the different school systems operate, which varies from 190 days to 220 days. The average operating speed of the buses was also obtained from the 2001 survey; and speeds vary from a low of 14 mph to a high of 30 mph. Using the emissions rates for the appropriate speed and season, and the daily VMT, staff estimated direct PM 2.5 and NOx precursor emissions for each of the school systems. Using the daily emissions and the number of days the school buses operate each season, the emissions for the four seasons were estimated. As a final step the annual emissions for direct PM 2.5 and NOx precursors, were estimated by adding up the emissions for the four seasons.

Similarly, emissions inventories for 2010, 2020, and 2030 were estimated assuming a 0.5% growth rate per year applied to the VMT reported in the base year. The following two pages show the tables depicting the daily and seasonal emissions inventories for 2002 base year.

FY2006-2011 TIP / 2005 CLRP AIR QUALITY CONFORMITY ANALYSIS

2002 SCHOOL BUS CHARACTERISTICS / EMISSIONS (PM 2.5)

				WINTER						SPRING					
				PM 2.5			NOx			PM 2.5			NOx		
Jurisdiction	2002 Weekday VMT	2002 Annual VMT	Average Speed	factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
District of Columbia	12,696	2,800,000	14	0.6640	8430	0.0093	13.9310	176868	0.1950	0.6389	8111	0.0089	13.7990	175192	0.1931
Montgomery	100,000	19,000,000	30	0.6640	66400	0.0732	10.9410	1094100	1.2060	0.6389	63890	0.0704	10.8150	1081500	1.1921
Prince George's	129,967	21,000,000	30	0.6640	86298	0.0951	10.9410	1421969	1.5675	0.6389	83036	0.0915	10.8150	1405593	1.5494
Frederick	33,684	6,400,000	30	0.6640	22366	0.0247	10.9410	368539	0.4062	0.6389	21521	0.0237	10.8150	364295	0.4016
Charles	20,801	3,950,000	30	0.6640	13812	0.0152	10.9410	227584	0.2509	0.6389	13290	0.0146	10.8150	224963	0.2480
Alexandria	2,028	446,264	25	0.6640	1347	0.0015	11.3790	23077	0.0254	0.6389	1296	0.0014	11.2530	22821	0.0252
Arlington	2,600	571,986	25	0.6640	1726	0.0019	11.3790	29585	0.0326	0.6389	1661	0.0018	11.2530	29258	0.0323
Fairfax	96,524	18,200,000	30	0.6640	64092	0.0706	10.9410	1056069	1.1641	0.6389	61669	0.0680	10.8150	1043907	1.1507
Prince William	36,114	6,900,000	30	0.6640	23980	0.0264	10.9410	395123	0.4355	0.6389	23073	0.0254	10.8150	390573	0.4305
Loudoun	28,347	6,100,000	30	0.6640	18822	0.0207	10.9410	310145	0.3419	0.6389	18111	0.0200	10.8150	306573	0.3379
TOTAL	462,761	85,368,250			307273	0.3387		5103059	5.6252		295658	0.3259		5044674	5.5608

FY2006-2011 TIP / 2005 CLRP AIR QUALITY CONFORMITY ANALYSIS

2002 SCHOOL BUS CHARACTERISTICS / EMISSIONS (PM 2.5)

				SUMMER						FALL					
				PM 2.5			NOx			PM 2.5			NOx		
Jurisdiction	2002 Weekday VMT	2002 Annual VMT	Average Speed	factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)	factors (g/mile)	emissions (grams)	emissions (tons)
District of Columbia	12,696	2,800,000	14	0.6397	8122	0.0090	13.7970	175167	0.1931	0.5581	7086	0.0078	13.6730	173592	0.1914
Montgomery	100,000	19,000,000	30	0.6397	63970	0.0705	10.8130	1081300	1.1919	0.5581	55810	0.0615	10.6610	1066100	1.1752
Prince George's	129,967	21,000,000	30	0.6397	83140	0.0916	10.8130	1405333	1.5491	0.5581	72535	0.0800	10.6610	1385578	1.5273
Frederick	33,684	6,400,000	30	0.6397	21548	0.0238	10.8130	364227	0.4015	0.5581	18799	0.0207	10.6610	359107	0.3958
Charles	20,801	3,950,000	30	0.6397	13306	0.0147	10.8130	224921	0.2479	0.5581	11609	0.0128	10.6610	221759	0.2444
Alexandria	2,028	446,264	25	0.6397	1297	0.0014	11.2510	22817	0.0252	0.5581	1132	0.0012	11.1060	22523	0.0248
Arlington	2,600	571,986	25	0.6397	1663	0.0018	11.2510	29253	0.0322	0.5581	1451	0.0016	11.1060	28876	0.0318
Fairfax	96,524	18,200,000	30	0.6397	61746	0.0681	10.8130	1043714	1.1505	0.5581	53870	0.0594	10.6610	1029042	1.1343
Prince William	36,114	6,900,000	30	0.6397	23102	0.0255	10.8130	390501	0.4305	0.5581	20155	0.0222	10.6610	385011	0.4244
Loudoun	28,347	6,100,000	30	0.6397	18134	0.0200	10.8130	306516	0.3379	0.5581	15820	0.0174	10.6610	302207	0.3331
TOTAL	462,761	85,368,250			296028	0.3263		5043749	5.5598		258267	0.2847		4973797	5.4827

Jurisdiction	Winter		Spring		Summer		Fall		Annual	
	PM	NOx	PM	NOx	PM	NOx	PM	NOx	PM	NOx
District of Columbia	0.539	11.308	0.519	11.201	0.358	7.724	0.453	11.098	1.869	41.331
Montgomery	4.245	69.950	4.085	69.145	2.821	47.677	3.568	68.160	14.719	254.932
Prince George's	5.517	90.912	5.309	89.865	3.666	61.965	4.637	88.586	19.129	331.328
Frederick	1.430	23.562	1.376	23.291	0.950	16.060	1.202	22.959	4.958	85.872
Charles	0.883	14.550	0.850	14.383	0.587	9.917	0.742	14.178	3.062	53.028
Alexandria	0.086	1.475	0.083	1.459	0.057	1.006	0.072	1.440	0.298	5.380
Arlington	0.110	1.892	0.106	1.871	0.073	1.290	0.093	1.846	0.383	6.898
Fairfax	4.098	67.519	3.943	66.741	2.723	46.020	3.444	65.791	14.207	246.071
Prince William	1.533	25.262	1.475	24.971	1.019	17.218	1.289	24.615	5.316	92.066
Loudoun	1.203	19.829	1.158	19.600	0.800	13.515	1.011	19.321	4.172	72.266
Total	19.645	326.259	18.903	322.526	13.053	222.391	16.512	317.995	**68.113**	**1189.172**

Assumptions

Number of days = 214
3 seasons with 58 days and Summer with 40 days

Winter	58
Spring	58
Summer	40
Fall	58

ATTACHMENT E

Memorandum

To: Air Quality Files

From: Eulalie G. Lucas
Transportation Engineer

Date: 11/16/2005

Re: Auto Access to Transit Emissions Calculations: PM2.5 and NOx Precursor

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Introduction:

The Environmental Protection Agency (EPA) in 2004 designated the District of Columbia, four counties in Maryland and five in northern Virginia as the Washington Metropolitan non-attainment area due to violation of health standards for fine particles PM2.5. Non-attainment areas were given one year from April 2005 to demonstrate conformity or face a lapse. In response to this federal requirement COG/TPB staff calculated PM2.5 direct and NOx precursor emission estimates associated with travel from the region's 2005 Constrained Long Range Plan (CLRP) and the FY2006-2011 Transportation Improvement Plan (TIP). Procedures used for these calculations required changes to the approach used in ozone season emission estimates since these emissions are reported on an annual not daily basis. The following paragraphs describe these procedures and updates and serve as documentation for PM2.5 and NOx emissions associated with travel to transit and park and ride lots in the PM2.5 non-attainment area.

Vehicle Mix and travel data:

VMT Mix percent associated with auto access to transit includes only passenger cars and light duty trucks, (not heavy duty trucks as with network VMT mix percents), used by commuters to access transit and park and ride lots. Because travel estimates to transit and 'park and ride' lots reflect commuting traffic only, the conversion from daily to annual reporting included only five days per week unlike network travel where staff assumed seven days.

Methodology:

The procedure used in the calculation of emissions associated with auto access to transit is an off-line process like transit and school bus emissions calculations. The approach is very simple: it involves the application of an emissions rate to each of the various components of travel, i.e., start up, running (35 mph for arterials and 45 mph for freeways) and hot soak. For trips originating outside the MSA, only those miles within the MSA are used in the calculation. Forecasting for 'out years' is based on growth trends for total internal modeled transit trips applied to the MWCOG/DTP 2002 Park and Ride Utilization inventory data.

Separate emissions rates are applied by components of a trip cycle, i.e., a start up rate for trip origins, a running rate for the running component, and a hot soak rate for trip destinations. These three rates represent an average of the ten composite rates for jurisdictions in the non-attainment area and for all light duty vehicle types (HDD fractions were zeroed out of the VMT Mix). This

adjustment was made based on the assumption that heavy duty vehicles such as tractor trailers are not used by commuters for trips to and from transit locations or to park and ride lots.

Updates:

The travel demand data used for the PM2.5 analysis are consistent with the 2005 CLRP ozone season analysis: travel demand model runs used Version 2.1D #50; the land activity forecasts are from Co-operative Forecasts Round 7; and the Mobile emissions were generated from Mobile model version 6.2. The seasonal adjustments in the table below were applied (see Mike Clifford and Daivamani Sivasailmani's memo dated May 5th, 2005) to convert AAWDT travel demand to AWDT for each season of the year; travel days and emissions were then developed for each season according to the number of commuting days in each season of the year. The table below lists these percents; also included is a map of the non-attainment area.

Results for 2002 for the winter season are shown in Exhibits 1 and 2; the other analysis years 2002, 2020 and 2030 are available in the full technical report.

Season	**Adjustment Factor** **AAWDT to AWDT season**	**Number of Commuting Days** **Per Season**
Winter	.97	65
Spring	1.02	66
Summer	1.05	66
Fall	1.00	65

Washington DC-Maryland-Virginia
PM 2.5 Nonattainment Area

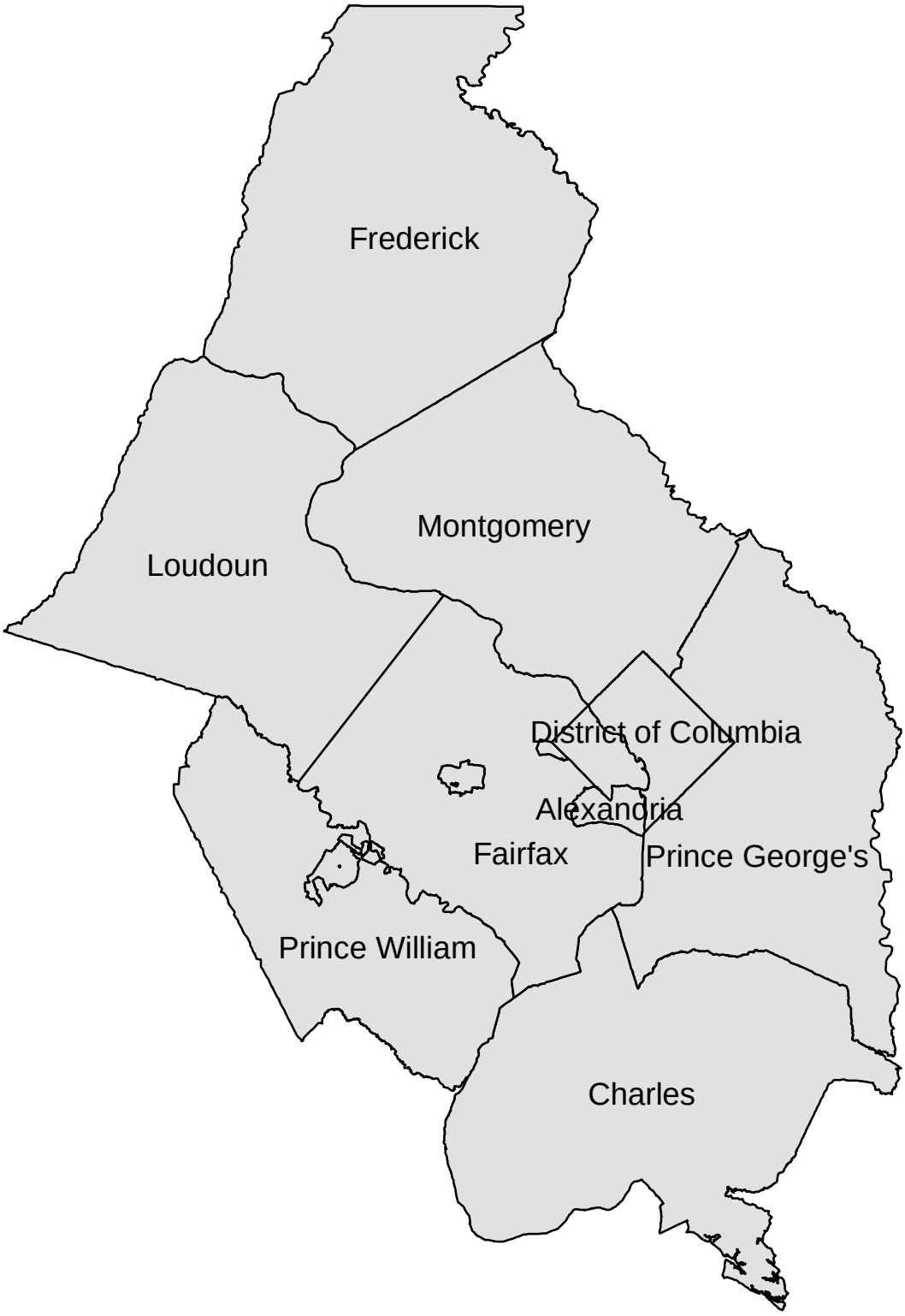

Exhibit 1
Winter
2002 NOx Precursor
AUTO ACCESS TO TRANSIT
FY2006-2011 TIP AND 2005 CLRP AIR QUALITY CONFORMITY

													E M I S S I O N S				
LOCATION		2002			AVERAGE TRIP LENGTH	2002 VMT	ARTERIAL %	FREEWAY %	ARTERIAL VMT	Adj.Art VMT	FREEWAY VMT	Adj.Fwy VMT	COLD START	RUNNING			TOTAL
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total										Arterial	Freeway	Total Running Emission (tones/day)	(tons/day)
													Rate (gm/mile)	Rate (gm/mile)	Rate (gm/mile)		
										Wk Days =	65		1.7666	1.0072	1.0635		
COMMUTER RAIL LOTS										Seasonal adj =	0.97						
BRUNSWICK 25%	25	305	102	**407**	7.5	3,053	57	43	1,740	1,688	1,313	1,273	0.0014	0.0037	0.0030	0.0067	0.0081
PT OF ROCKS 25%	25	204	68	**272**	7.5	2,040	57	43	1,163	1,128	877	851	0.0009	0.0025	0.0020	0.0045	0.0054
DICKERSON	0	15	0	**15**	7.5	113	57	43	64	62	48	47	0.0001	0.0001	0.0001	0.0002	0.0003
BARNESVILLE	0	46	0	**46**	7.5	345	57	43	197	191	148	144	0.0002	0.0004	0.0003	0.0008	0.0009
GERMANTOWN	0	386	0	**386**	7.5	2,895	57	43	1,650	1,601	1,245	1,208	0.0015	0.0036	0.0028	0.0064	0.0079
MET GROVE	0	352	0	**352**	7.5	2,640	57	43	1,505	1,460	1,135	1,101	0.0014	0.0032	0.0026	0.0058	0.0072
WAS GROVE	0	15	0	**15**	7.5	113	57	43	64	62	48	47	0.0001	0.0001	0.0001	0.0002	0.0003
GARRETT PARK	0	22	0	**22**	7.5	165	57	43	94	91	71	69	0.0001	0.0002	0.0002	0.0004	0.0004
BOWIE 50%	50	188	188	**375**	7.5	2,813	57	43	1,603	1,555	1,209	1,173	0.0011	0.0035	0.0028	0.0062	0.0073
SEABROOK 15%	15	224	40	**264**	7.5	1,980	57	43	1,129	1,095	851	826	0.0010	0.0024	0.0019	0.0044	0.0053
KENSINGTON	0	45	0	**45**	7.5	338	57	43	192	187	145	141	0.0002	0.0004	0.0003	0.0007	0.0009
LAUREL 30%	30	209	90	**299**	7.5	2,243	57	43	1,278	1,240	964	935	0.0010	0.0028	0.0022	0.0049	0.0059
GAITHESBURG	0	280	0	**280**	7.5	2,100	57	43	1,197	1,161	903	876	0.0011	0.0026	0.0021	0.0046	0.0057
BERWYN HEIGHTS	0	30	0	**30**	4.5	135	57	43	77	75	58	56	0.0001	0.0002	0.0001	0.0003	0.0004
RIVERDALE	0	65	0	**65**	4.5	293	57	43	167	162	126	122	0.0003	0.0004	0.0003	0.0006	0.0009
METRO RAIL LOTS																	
ADDISON ROAD	40	791	527	**1318**	7.5	9,885	57	43	5,634	5,465	4,251	4,123	0.0041	0.0121	0.0097	0.0218	0.0259
ARCHIVES	0	12	0	12	4.5	54	57	43	31	30	23	23	0.0000	0.0001	0.0001	0.0001	0.0002
ARLING	0	10	0	10	4.5	45	57	43	26	25	19	19	0.0000	0.0001	0.0000	0.0001	0.0001
BALLSTON	0	1175	0	1175	4.5	5,288	57	43	3,014	2,923	2,274	2,205	0.0046	0.0065	0.0052	0.0117	0.0162
BENN.RD	0	520	0	520	4.5	2,340	57	43	1,334	1,294	1,006	976	0.0020	0.0029	0.0023	0.0052	0.0072
BETH	0	395	0	395	4.5	1,778	57	43	1,013	983	764	741	0.0015	0.0022	0.0017	0.0039	0.0055
BRADD RD	0	10	0	**10**	4.5	45	57	43	26	25	19	19	0.0000	0.0001	0.0000	0.0001	0.0001
BROOKLAND	0	27	0	**27**	4.5	122	57	43	69	67	52	51	0.0001	0.0001	0.0001	0.0003	0.0004
CHEVERLY	0	557	0	**557**	4.5	2,507	57	43	1,429	1,386	1,078	1,045	0.0022	0.0031	0.0025	0.0055	0.0077
CLARENDON	0	554	0	554	4.5	2,493	57	43	1,421	1,378	1,072	1,040	0.0022	0.0031	0.0024	0.0055	0.0077
CLEVELAND PK	0	366	0	366	4.5	1,647	57	43	939	911	708	687	0.0014	0.0020	0.0016	0.0036	0.0051
COURT HOUSE	0	256	0	256	4.5	1,152	57	43	657	637	495	480	0.0010	0.0014	0.0011	0.0025	0.0035
CRYSTAL CITY	0	347	0	347	4.5	1,562	57	43	890	863	671	651	0.0014	0.0019	0.0015	0.0034	0.0048
DEANWOOD	0	194	0	**194**	4.5	873	57	43	498	483	375	364	0.0008	0.0011	0.0009	0.0019	0.0027
DUN LORING 10	10	1220	136	**1355**	4.5	6,098	57	43	3,476	3,371	2,622	2,543	0.0050	0.0075	0.0060	0.0134	0.0185
DUPONT CIRCLE	0	165	0	165	4.5	743	57	43	423	411	319	310	0.0006	0.0009	0.0007	0.0016	0.0023
EASTERN MKT	0	178	0	178	4.5	801	57	43	457	443	344	334	0.0007	0.0010	0.0008	0.0018	0.0025
EAST FALLS CH	0	442	0	**442**	4.5	1,989	57	43	1,134	1,100	855	830	0.0017	0.0024	0.0019	0.0044	0.0061
EIS	0	352	0	352	4.5	1,584	57	43	903	876	681	661	0.0014	0.0019	0.0015	0.0035	0.0049
FARRAGUT NORTH	0	102	0	102	4.5	459	57	43	262	254	197	191	0.0004	0.0006	0.0004	0.0010	0.0014
FARRAGUT WEST	0	221	0	221	4.5	995	57	43	567	550	428	415	0.0009	0.0012	0.0010	0.0022	0.0031
FEDERAL CENTER	0	75	0	75	4.5	338	57	43	192	187	145	141	0.0003	0.0004	0.0003	0.0007	0.0010
FEDERAL TRI	0	54	0	54	4.5	243	57	43	139	134	104	101	0.0002	0.0003	0.0002	0.0005	0.0007
FOGGY	0	102	0	102	4.5	459	57	43	262	254	197	191	0.0004	0.0006	0.0004	0.0010	0.0014
FORT TROTTEN	0	445	0	**445**	4.5	2,003	57	43	1,141	1,107	861	835	0.0017	0.0025	0.0020	0.0044	0.0061
FRH.HEIGHTS	0	679	0	679	4.5	3,056	57	43	1,742	1,689	1,314	1,274	0.0026	0.0038	0.0030	0.0067	0.0094
GALLERY PLACE	0	124	0	124	4.5	558	57	43	318	309	240	233	0.0005	0.0007	0.0005	0.0012	0.0017
GROSVENOR	0	716	0	**716**	4.5	3,222	57	43	1,837	1,781	1,385	1,344	0.0028	0.0040	0.0032	0.0071	0.0099

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HUNT NORTH 40	40	1873	1249	**3122**	7.5	23,415	57	43	13,347	12,946	10,068	9,766	0.0097	0.0287	0.0229	0.0516	0.0614
JUD SQUARE	0	110	0	110	4.5	495	57	43	282	274	213	206	0.0004	0.0006	0.0005	0.0011	0.0015
KING ST	0	30	0	**30**	4.5	135	57	43	77	75	58	56	0.0001	0.0002	0.0001	0.0003	0.0004
						0											
						0											
LANDOVER 25%	25	1410	470	**1880**	7.5	14,100	57	43	8,037	7,796	6,063	5,881	0.0064	0.0173	0.0138	0.0311	0.0375
L'ENFANT PLAZA	0	296	0	296	4.5	1,332	57	43	759	736	573	556	0.0012	0.0016	0.0013	0.0029	0.0041
MCPHERSON SQ	0	52	0	52	4.5	234	57	43	133	129	101	98	0.0002	0.0003	0.0002	0.0005	0.0007
MEDICAL CENTER	0	14	0	**14**	4.5	63	57	43	36	35	27	26	0.0001	0.0001	0.0001	0.0001	0.0002
METRO CENTER	0	177	0	177	4.5	797	57	43	454	440	342	332	0.0007	0.0010	0.0008	0.0018	0.0024
MINNES	0	353	0	**353**	4.5	1,589	57	43	905	878	683	663	0.0014	0.0020	0.0016	0.0035	0.0049
NAT AIR	0	87	0	87	4.5	392	57	43	223	216	168	163	0.0003	0.0005	0.0004	0.0009	0.0012
NEW CARROL 50	50	1049	1049	**2097**	7.5	15,728	57	43	8,965	8,696	6,763	6,560	0.0061	0.0193	0.0154	0.0347	0.0408
PRNTAGON	0	561	0	561	4.5	2,525	57	43	1,439	1,396	1,086	1,053	0.0022	0.0031	0.0025	0.0056	0.0078
PENTAGON CITY	0	381	0	381	4.5	1,715	57	43	977	948	737	715	0.0015	0.0021	0.0017	0.0038	0.0053
POTOMAC AVE	0	533	0	533	4.5	2,399	57	43	1,367	1,326	1,031	1,000	0.0021	0.0029	0.0023	0.0053	0.0074
ROCKVILLE	0	667	0	**667**	4.5	3,002	57	43	1,711	1,660	1,291	1,252	0.0026	0.0037	0.0029	0.0066	0.0092
ROSSLYN	0	356	0	356	4.5	1,602	57	43	913	886	689	668	0.0014	0.0020	0.0016	0.0035	0.0049
SHADY GROVE 10	10	3903	434	**4337**	7.5	32,528	57	43	18,541	17,984	13,987	13,567	0.0160	0.0399	0.0318	0.0717	0.0878
SILVER SPRING	0	44	0	**44**	4.5	198	57	43	113	109	85	83	0.0002	0.0002	0.0002	0.0004	0.0006
SMITH MALL	0	120	0	120	4.5	540	57	43	308	299	232	225	0.0005	0.0007	0.0005	0.0012	0.0017
STADIUM ARM	0	976	0	976	4.5	4,392	57	43	2,503	2,428	1,889	1,832	0.0038	0.0054	0.0043	0.0097	0.0135
TAKOMA PK	0	146	0	**146**	4.5	657	57	43	374	363	283	274	0.0006	0.0008	0.0006	0.0014	0.0020
TENLEYTON	0	17	0	**17**	4.5	77	57	43	44	42	33	32	0.0001	0.0001	0.0001	0.0002	0.0002
TWINBROOK	0	1136	0	**1136**	4.5	5,112	57	43	2,914	2,826	2,198	2,132	0.0044	0.0063	0.0050	0.0113	0.0157
UNION STAT	0	378	0	378	4.5	1,701	57	43	970	940	731	709	0.0015	0.0021	0.0017	0.0038	0.0052
VAN NESS	0	343	0	343	4.5	1,544	57	43	880	853	664	644	0.0013	0.0019	0.0015	0.0034	0.0047
VIENNA 25%	25	2798	933	**3731**	7.5	27,983	57	43	15,950	15,472	12,032	11,672	0.0127	0.0344	0.0274	0.0617	0.0744
VA SQUARE	0	642	0	642	4.5	2,889	57	43	1,647	1,597	1,242	1,205	0.0025	0.0035	0.0028	0.0064	0.0089
WEST FALLS CHUR	0	2183	0	**2183**	4.5	9,824	57	43	5,599	5,431	4,224	4,097	0.0085	0.0121	0.0096	0.0217	0.0302
WHITE FLINT	0	1633	0	1633	4.5	7,349	57	43	4,189	4,063	3,160	3,065	0.0064	0.0090	0.0072	0.0162	0.0226
WOODLEY	0	68	0	68	4.5	306	57	43	174	169	132	128	0.0003	0.0004	0.0003	0.0007	0.0009
RHODE ISLAND 30%	30	266	114	**380**	7.5	2,850	57	43	1,625	1,576	1,226	1,189	0.0013	0.0035	0.0028	0.0063	0.0075
BUS & CAR POOL LOTS																	
CARTER BARRON	0	798	0	798	4.5	3,591	57	43	2,047	1,985	1,544	1,498	0.0031	0.0044	0.0035	0.0079	0.0110
PG PLAZA	0	47	0	47	4.5	212	57	43	121	117	91	88	0.0002	0.0003	0.0002	0.0005	0.0006
PENN MAR SHOPP.	0	100	0	**100**	4.5	450	57	43	257	249	194	188	0.0004	0.0006	0.0004	0.0010	0.0014
CAP PLAZA	0	100	0	**100**	4.5	450	57	43	257	249	194	188	0.0004	0.0006	0.0004	0.0010	0.0014
EASTOVER	0	100	0	**100**	4.5	450	57	43	257	249	194	188	0.0004	0.0006	0.0004	0.0010	0.0014
FOUR MILE RUN	0	28	0	**28**	4.5	126	57	43	72	70	54	53	0.0001	0.0002	0.0001	0.0003	0.0004
SPRINGFIELD MALL	0	580	0	**580**	4.5	2,610	57	43	1,488	1,443	1,122	1,089	0.0023	0.0032	0.0026	0.0058	0.0080
SPRINGFIELD METH	0	48	0	**48**	4.5	216	57	43	123	119	93	90	0.0002	0.0003	0.0002	0.0005	0.0007
FRED ARMORY	0	33	0	**33**	7.5	248	57	43	141	137	106	103	0.0001	0.0003	0.0002	0.0005	0.0007
MYERSVILLE	0	65	0	**65**	7.5	488	57	43	278	270	210	203	0.0003	0.0006	0.0005	0.0011	0.0013
ROSEMONT	0	45	0	**45**	7.5	338	57	43	192	187	145	141	0.0002	0.0004	0.0003	0.0007	0.0009
URBANA	0	193	0	**193**	7.5	1,448	57	43	825	800	622	604	0.0008	0.0018	0.0014	0.0032	0.0039
JEFFERSON	0	40	0	**40**	7.5	300	57	43	171	166	129	125	0.0002	0.0004	0.0003	0.0007	0.0008
NORBECK RD	0	248	0	**248**	7.5	1,860	57	43	1,060	1,028	800	776	0.0010	0.0023	0.0018	0.0041	0.0051

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MONTROSE RD	0	650	0	**650**	7.5	4,875	57	43	2,779	2,695	2,096	2,033	0.0025	0.0060	0.0048	0.0108	0.0133
BRIGG CHENNY 5	50	215	215	**430**	7.5	3,225	57	43	1,838	1,783	1,387	1,345	0.0013	0.0040	0.0032	0.0071	0.0084
COMUS ROAD	0	30	0	**30**	7.5	225	57	43	128	124	97	94	0.0001	0.0003	0.0002	0.0005	0.0006
LAKEFOREST MALL	0	300	0	**300**	7.5	2,250	57	43	1,283	1,244	968	938	0.0012	0.0028	0.0022	0.0050	0.0061
BURTONSVILLE	0	500	0	**500**	7.5	3,750	57	43	2,138	2,073	1,613	1,564	0.0019	0.0046	0.0037	0.0083	0.0102
FORCEY MEM.	0	200	0	**200**	7.5	1,500	57	43	855	829	645	626	0.0008	0.0018	0.0015	0.0033	0.0041
TECH ROAD	0	155	0	**155**	7.5	1,163	57	43	663	643	500	485	0.0006	0.0014	0.0011	0.0026	0.0032
BELTWAY	0	265	0	**265**	7.5	1,988	57	43	1,133	1,099	855	829	0.0010	0.0024	0.0019	0.0044	0.0054
LAUREL VAN DUSE	0	62	0	**62**	7.5	465	57	43	265	257	200	194	0.0002	0.0006	0.0005	0.0010	0.0013
ACCOKEEK	0	450	0	**450**	7.5	3,375	57	43	1,924	1,866	1,451	1,408	0.0018	0.0041	0.0033	0.0074	0.0092
ABC DRIVE IN	0	100	0	**100**	7.5	750	57	43	428	415	323	313	0.0004	0.0009	0.0007	0.0017	0.0020
BOWIE 20%	20	526	131	**657**	7.5	4,928	57	43	2,809	2,724	2,119	2,055	0.0023	0.0060	0.0048	0.0109	0.0132
CLINTON 50%	50	212	212	**424**	7.5	3,180	57	43	1,813	1,758	1,367	1,326	0.0012	0.0039	0.0031	0.0070	0.0083
OXON HILL 20%	20	519	130	**649**	7.5	4,868	57	43	2,774	2,691	2,093	2,030	0.0023	0.0060	0.0048	0.0107	0.0130
EQUESTRIAN CENT	50	150	150	**300**	7.5	2,250	57	43	1,283	1,244	968	938	0.0009	0.0028	0.0022	0.0050	0.0058
BOWIE MARKET PL	0	50	0	**50**	7.5	375	57	43	214	207	161	156	0.0002	0.0005	0.0004	0.0008	0.0010
FT.WASHINGTON	0	412	0	**412**	7.5	3,090	57	43	1,761	1,708	1,329	1,289	0.0016	0.0038	0.0030	0.0068	0.0084
MONTPELIER REC	0	70	0	**70**	7.5	525	57	43	299	290	226	219	0.0003	0.0006	0.0005	0.0012	0.0014
RESTON	0	1547	0	**1547**	7.5	11,603	57	43	6,613	6,415	4,989	4,839	0.0060	0.0142	0.0113	0.0256	0.0316
GREENBRIAR	0	55	0	**55**	7.5	413	57	43	235	228	177	172	0.0002	0.0005	0.0004	0.0009	0.0011
FAIR OAKS	0	150	0	**150**	7.5	1,125	57	43	641	622	484	469	0.0006	0.0014	0.0011	0.0025	0.0031
ROLLING VALLEY	0	628	0	**628**	7.5	4,710	57	43	2,685	2,604	2,025	1,965	0.0024	0.0058	0.0046	0.0104	0.0128
SPRINGFIELD PLAZ	0	230	0	**230**	7.5	1,725	57	43	983	954	742	719	0.0009	0.0021	0.0017	0.0038	0.0047
FAIRLANES BOWL	0	35	0	**35**	7.5	263	57	43	150	145	113	109	0.0001	0.0003	0.0003	0.0006	0.0007
NOTTOWAY PARK	0	14	0	**14**	7.5	105	57	43	60	58	45	44	0.0001	0.0001	0.0001	0.0002	0.0003
HORNER RD	0	2397	0	**2397**	7.5	17,978	57	43	10,247	9,940	7,730	7,498	0.0093	0.0221	0.0176	0.0397	0.0490
LAKE RIDGE	0	555	0	**555**	7.5	4,163	57	43	2,373	2,301	1,790	1,736	0.0022	0.0051	0.0041	0.0092	0.0113
MINNIEVILLE RD 4	40	336	224	560	7.5	4,200	57	43	2,394	2,322	1,806	1,752	0.0017	0.0052	0.0041	0.0093	0.0110
GORDON BLVD	0	156	0	156	7.5	1,170	57	43	667	647	503	488	0.0006	0.0014	0.0011	0.0026	0.0032
HILLENDALE	0	248	0	**248**	7.5	1,860	57	43	1,060	1,028	800	776	0.0010	0.0023	0.0018	0.0041	0.0051
POTOMAC MILLS	0	946	0	**946**	7.5	7,095	57	43	4,044	3,923	3,051	2,959	0.0037	0.0087	0.0069	0.0156	0.0193
List of new lots to be added in Conformity Document lis																	
PARK-AND-RIDE LOTS - MARYLAND																	
PARK-AND-RIDE LOTS - MARYLAND																	
CHARLES COUNTY																	
301 Park & Ride	25	287	96	383	7.5	2,873	57	43	1,637	1,588	1,235	1,198	0.0013	0.0035	0.0028	0.0063	0.0076
Charles County Gove	25	26	9	35	7.5	263	57	43	150	145	113	109	0.0001	0.0003	0.0003	0.0006	0.0007
Food Lion Shopping	25	38	13	50	7.5	375	57	43	214	207	161	156	0.0002	0.0005	0.0004	0.0008	0.0010
La Plata Armory	25	15	5	20	7.5	150	57	43	86	83	65	63	0.0001	0.0002	0.0001	0.0003	0.0004
Laurel Springs Regio	25	38	13	50	7.5	375	57	43	214	207	161	156	0.0002	0.0005	0.0004	0.0008	0.0010
Life Wesleyan Churcl	25	38	13	50	7.5	375	57	43	214	207	161	156	0.0002	0.0005	0.0004	0.0008	0.0010
Mattawoman-Beantov	25	435	145	580	7.5	4,350	57	43	2,480	2,405	1,871	1,814	0.0020	0.0053	0.0043	0.0096	0.0116
Smallwood Village	25	75	25	100	7.5	750	57	43	428	415	323	313	0.0003	0.0009	0.0007	0.0017	0.0020
St. Charles Towne	25	263	88	350	7.5	2,625	57	43	1,496	1,451	1,129	1,095	0.0012	0.0032	0.0026	0.0058	0.0070
PARK-AND-RIDE LOTS - MARYLAND																	
FREDERICK COUNTY																	
Frederick (north)	25	123	41	164	7.5	1,230	57	43	701	680	529	513	0.0006	0.0015	0.0012	0.0027	0.0033
Frederick (south)	25	173	58	230	7.5	1,725	57	43	983	954	742	719	0.0008	0.0021	0.0017	0.0038	0.0046
Monacacy Marcst	25	600	200	800	7.5	6,000	57	43	3,420	3,317	2,580	2,503	0.0027	0.0074	0.0059	0.0132	0.0160

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PARK-AND-RIDE LOTS - MARYLAND																	
MONTGOMERY COUNTY																	
Colesville	0	190	0	190	7.5	1,425	57	43	812	788	613	594	0.0007	0.0017	0.0014	0.0031	0.0039
Damascus	50	0	0		7.5	0	57	43	0	0	0	0	0.0000	0.0000	0.0000	0.0000	0.0000
Gaithersburg	50	259	259	517	7.5	3,878	57	43	2,210	2,144	1,667	1,617	0.0015	0.0048	0.0038	0.0086	0.0101
Gaithersburg	50	175	175	350	7.5	2,625	57	43	1,496	1,451	1,129	1,095	0.0010	0.0032	0.0026	0.0058	0.0068
Germantown Town	50	0	0		7.5	0	57	43	0	0	0	0	0.0000	0.0000	0.0000	0.0000	0.0000
Greencastle	50	75	75	150	7.5	1,125	57	43	641	622	484	469	0.0004	0.0014	0.0011	0.0025	0.0029
Milestone Shopping	50	88	88	175	7.5	1,313	57	43	748	726	564	547	0.0005	0.0016	0.0013	0.0029	0.0034
PARK-AND-RIDE LOTS - MAYLAND																	
PRINCE GEORGE'S COUNTY																	
Hampton Mall	0	100	0	100	4.5	450	57	43	257	249	194	188	0.0004	0.0006	0.0004	0.0010	0.0014
Laurel (south)	25	513	171	684	7.5	5,130	57	43	2,924	2,836	2,206	2,140	0.0023	0.0063	0.0050	0.0113	0.0136
PARK-AND-RIDE LOTS - VIRGINIA						0				0		0	0.0000	0.0000	0.0000		
ARLINGTON COUNTY						0				0		0	0.0000	0.0000	0.0000		
Ballston Public Parkir	25	375	125	500	7.5	3,750	57	43	2,138	2,073	1,613	1,564	0.0017	0.0046	0.0037	0.0083	0.0100
Washington-Lee	50	178	178	356	7.5	2,670	57	43	1,522	1,476	1,148	1,114	0.0010	0.0033	0.0026	0.0059	0.0069
PARK-AND-RIDE LOTS - VIRGINIA						0				0							
FAIRFAX COUNTY						0				0							
American Legion	50	50	50	100	7.5	750	57	43	428	415	323	313	0.0003	0.0009	0.0007	0.0017	0.0019
Canterbury Woods Pl	50	17	17	34	7.5	255	57	43	145	141	110	106	0.0001	0.0003	0.0002	0.0006	0.0007
Centreville	50	185	185	370	7.5	2,775	57	43	1,582	1,534	1,193	1,157	0.0011	0.0034	0.0027	0.0061	0.0072
Centreville United Me	50	74	74	147	7.5	1,103	57	43	628	610	474	460	0.0004	0.0014	0.0011	0.0024	0.0029
Fairfax County Gover	50	85	85	170	7.5	1,275	57	43	727	705	548	532	0.0005	0.0016	0.0012	0.0028	0.0033
Greenbriar Park	50	28	28	55	7.5	413	57	43	235	228	177	172	0.0002	0.0005	0.0004	0.0009	0.0011
Herndon-Monroe	50	873	873	1,745	7.5	13,088	57	43	7,460	7,236	5,628	5,459	0.0051	0.0161	0.0128	0.0289	0.0340
Michael's	50	100	100	200	7.5	1,500	57	43	855	829	645	626	0.0006	0.0018	0.0015	0.0033	0.0039
Parkwood Baptist	50	9	9	18	7.5	135	57	43	77	75	58	56	0.0001	0.0002	0.0001	0.0003	0.0004
South Run District Pk	50	170	170	340	7.5	2,550	57	43	1,454	1,410	1,097	1,064	0.0010	0.0031	0.0025	0.0056	0.0066
St Paul Chung Catho	50	50	50	100	7.5	750	57	43	428	415	323	313	0.0003	0.0009	0.0007	0.0017	0.0019
Stringfellow Rd	50	181	181	361	7.5	2,708	57	43	1,543	1,497	1,164	1,129	0.0011	0.0033	0.0026	0.0060	0.0070
Sully Station	50	70	70	140	7.5	1,050	57	43	599	581	452	438	0.0004	0.0013	0.0010	0.0023	0.0027
Sydenstricker Rd	50	84	84	167	7.5	1,253	57	43	714	693	539	522	0.0005	0.0015	0.0012	0.0028	0.0033
Wakefield Chapel Pk	50	25	25	50	7.5	375	57	43	214	207	161	156	0.0001	0.0005	0.0004	0.0008	0.0010
PARK-AND-RIDE LOTS - VIRGINIA																	
LOUDOUN COUNTY																	
Ashburn Farm	50	10	10	20	7.5	150	57	43	86	83	65	63	0.0001	0.0002	0.0001	0.0003	0.0004
Ashburn Village	50	20	20	40	7.5	300	57	43	171	166	129	125	0.0001	0.0004	0.0003	0.0007	0.0008
Cascades	50	28	28	55	7.5	413	57	43	235	228	177	172	0.0002	0.0005	0.0004	0.0009	0.0011
Dulles North Transit	50	375	375	750	7.5	5,625	57	43	3,206	3,110	2,419	2,346	0.0022	0.0069	0.0055	0.0124	0.0146
Hamilton	50	25	25	50	7.5	375	57	43	214	207	161	156	0.0001	0.0005	0.0004	0.0008	0.0010
Innovation Avenue	50	38	38	75	7.5	563	57	43	321	311	242	235	0.0002	0.0007	0.0006	0.0012	0.0015
Leesburg	50	25	25	50	7.5	375	57	43	214	207	161	156	0.0001	0.0005	0.0004	0.0008	0.0010
Leesburg Kohls	50	600	600	1200	7.5	9,000	57	43	5,130	4,976	3,870	3,754	0.0035	0.0110	0.0088	0.0199	0.0234
Purcellville	50	18	18	35	7.5	263	57	43	150	145	113	109	0.0001	0.0003	0.0003	0.0006	0.0007
Sterling Park SC	50	23	23	45	7.5	338	57	43	192	187	145	141	0.0001	0.0004	0.0003	0.0007	0.0009
Sterling Shaw Rd	50	24	24	48	7.5	360	57	43	205	199	155	150	0.0001	0.0004	0.0004	0.0008	0.0009

Exhibit 1
Winter
2002 NOx Precursor
AUTO ACCESS TO TRANSIT
FY2006-2011 TIP AND 2005 CLRP AIR QUALITY CONFORMITY

PARK-AND-RIDE LOTS - VIRGINIA																	
PRINCE WILLIAM COUNTY																	
Brittany	50	48	48	95	7.5	713	57	43	406	394	306	297	0.0003	0.0009	0.0007	0.0016	0.0018
Dale City	50	294	294	587	7.5	4,403	57	43	2,509	2,434	1,893	1,836	0.0017	0.0054	0.0043	0.0097	0.0114
Harbor Drive	50	100	100	200	7.5	1,500	57	43	855	829	645	626	0.0006	0.0018	0.0015	0.0033	0.0039
Lindendale	50	108	108	216	7.5	1,620	57	43	923	896	697	676	0.0006	0.0020	0.0016	0.0036	0.0042
Montclair	50	25	25	50	7.5	375	57	43	214	207	161	156	0.0001	0.0005	0.0004	0.0008	0.0010
PRTC Transit Center	50	93	93	185	7.5	1,388	57	43	791	767	597	579	0.0005	0.0017	0.0014	0.0031	0.0036
Tackett's Mill	50	85	85	169	7.5	1,268	57	43	722	701	545	529	0.0005	0.0016	0.0012	0.0028	0.0033
Triangle	50	15	15	29	7.5	218	57	43	124	120	94	91	0.0001	0.0003	0.0002	0.0005	0.0006
I-95 / Rt 123	50	282	282	563	7.5	4,223	57	43	2,407	2,335	1,816	1,761	0.0016	0.0052	0.0041	0.0093	0.0110
US 1 / VA 234	50	137	137	274	7.5	2,055	57	43	1,171	1,136	884	857	0.0008	0.0025	0.0020	0.0045	0.0053
MARC TRAIN COMMUTER LOTS						0				0		0	0.0000	0.0000	0.0000		
College Park	25	431	144	574	7.5	4,305	57	43	2,454	2,380	1,851	1,796	0.0020	0.0053	0.0042	0.0095	0.0115
Frederick	0	0	0	0	7.5	0	57	43	0	0	0	0	0.0000	0.0000	0.0000	0.0000	0.0000
Greenbelt	60	1346	2018	3364	7.5	25,230	57	43	14,381	13,950	10,849	10,523	0.0092	0.0310	0.0247	0.0556	0.0648
Harpers Ferry		98	0	98	7.5	735	57	43	419	406	316	307	0.0004	0.0009	0.0007	0.0016	0.0020
Muirkirk	60	260	390	650	7.5	4,875	57	43	2,779	2,695	2,096	2,033	0.0018	0.0060	0.0048	0.0108	0.0125
Seabrook	0	264	0	264	4.5	1,188	57	43	677	657	511	496	0.0010	0.0015	0.0012	0.0026	0.0036
Silver Spring	0	0	0	0	4.5	0	57	43	0	0	0	0	0.0000	0.0000	0.0000	0.0000	0.0000
Union Station	0	781	0	781	7.5	5,858	57	43	3,339	3,239	2,519	2,443	0.0030	0.0072	0.0057	0.0129	0.0160
VIRGINIA RAILWAY EXPRESS COMMUTER LOTS																	
Backlick Road	50	110	110	220	7.5	1,650	57	43	941	912	710	688	0.0006	0.0020	0.0016	0.0036	0.0043
Broad Run	50	198	198	396	7.5	2,970	57	43	1,693	1,642	1,277	1,239	0.0012	0.0036	0.0029	0.0066	0.0077
Brooke	50	150	150	300	7.5	2,250	57	43	1,283	1,244	968	938	0.0009	0.0028	0.0022	0.0050	0.0058
Burke Center	50	275	275	550	7.5	4,125	57	43	2,351	2,281	1,774	1,721	0.0016	0.0051	0.0040	0.0091	0.0107
Franconia/Springfield	50	1900	1900	3800	7.5	28,500	57	43	16,245	15,758	12,255	11,887	0.0111	0.0350	0.0279	0.0629	0.0740
Leeland Road	50	326	326	652	7.5	4,890	57	43	2,787	2,704	2,103	2,040	0.0019	0.0060	0.0048	0.0108	0.0127
Lorton	50	100	100	200	7.5	1,500	57	43	855	829	645	626	0.0006	0.0018	0.0015	0.0033	0.0039
Manassas	50	187	187	374	7.5	2,805	57	43	1,599	1,551	1,206	1,170	0.0011	0.0034	0.0027	0.0062	0.0073
Manassas Park	50	150	150	300	7.5	2,250	57	43	1,283	1,244	968	938	0.0009	0.0028	0.0022	0.0050	0.0058
Quantico	50	109	109	217	7.5	1,628	57	43	928	900	700	679	0.0006	0.0020	0.0016	0.0036	0.0042
Rippon	50	150	150	300	7.5	2,250	57	43	1,283	1,244	968	938	0.0009	0.0028	0.0022	0.0050	0.0058
Rolling Road	50	185	185	370	7.5	2,775	57	43	1,582	1,534	1,193	1,157	0.0011	0.0034	0.0027	0.0061	0.0072
Woodbridge	50	294	294	588	7.5	4,410	57	43	2,514	2,438	1,896	1,839	0.0017	0.0054	0.0043	0.0097	0.0114
METRORAIL PARKING LOTS																	
Anacostia	25	861	287	1148	7.5	8,610	57	43	4,908	4,760	3,702	3,591	0.0039	0.0106	0.0084	0.0190	0.0229
Branch Avenue	50	1611	1611	3222	7.5	24,165	57	43	13,774	13,361	10,391	10,079	0.0094	0.0297	0.0236	0.0533	0.0627
Capitol Heights	50	194	194	387	7.5	2,903	57	43	1,654	1,605	1,248	1,211	0.0011	0.0036	0.0028	0.0064	0.0075
College Park	25	465	155	620	7.5	4,650	57	43	2,651	2,571	2,000	1,940	0.0021	0.0057	0.0045	0.0103	0.0124
Congress Heights	0	66	0	66	4.5	297	57	43	169	164	128	124	0.0003	0.0004	0.0003	0.0007	0.0009
Deanwood	0	194	0	194	7.5	1,455	57	43	829	804	626	607	0.0008	0.0018	0.0014	0.0032	0.0040
East Falls Church	50	221	221	442	7.5	3,315	57	43	1,890	1,833	1,425	1,383	0.0013	0.0041	0.0032	0.0073	0.0086
Forest Glen	50	329	329	658	7.5	4,935	57	43	2,813	2,729	2,122	2,058	0.0019	0.0061	0.0048	0.0109	0.0128
Franconia - Springfiel	50	1987	1987	3973	4.5	17,879	57	43	10,191	9,885	7,688	7,457	0.0116	0.0219	0.0175	0.0394	0.0510
Glenmont	50	925	925	1850	4.5	8,325	57	43	4,745	4,603	3,580	3,472	0.0054	0.0102	0.0081	0.0184	0.0238
Greenbelt	50	1783	1783	3565	7.5	26,738	57	43	15,240	14,783	11,497	11,152	0.0104	0.0328	0.0261	0.0590	0.0694
Naylor Road	50	216	216	431	7.5	3,233	57	43	1,843	1,787	1,390	1,348	0.0013	0.0040	0.0032	0.0071	0.0084
Prince George's Plaz	25	927	309	1236	7.5	9,270	57	43	5,284	5,125	3,986	3,867	0.0042	0.0114	0.0091	0.0204	0.0247
Southern Avenue	50	1090	1090	2180	4.5	9,810	57	43	5,592	5,424	4,218	4,092	0.0064	0.0120	0.0096	0.0216	0.0280
Suitland	50	1033	1033	2065	4.5	9,293	57	43	5,297	5,138	3,996	3,876	0.0060	0.0114	0.0091	0.0205	0.0265
Van Dorn Street	50	204	204	407	4.5	1,832	57	43	1,044	1,013	788	764	0.0012	0.0022	0.0018	0.0040	0.0052
West Hyattsville	25	453	151	604	7.5	4,530	57	43	2,582	2,505	1,948	1,889	0.0021	0.0056	0.0044	0.0100	0.0120
Wheaton	25	759	253	1012	7.5	7,590	57	43	4,326	4,197	3,264	3,166	0.0034	0.0093	0.0074	0.0167	0.0202
				108,749		715,007							0.3651	0.8778	0.6992	1.5771	1.9421

Seasonal Total (tons/season) = 126.24

Bold figures: New numbers taken from P & R directory
Figures in bracket: Carry forward figures from conformity doc.

Exhibit 2
WINTER
2002 PM AIR QUALITY EMISSIONS INVENTORY
AUTO ACCESS TO TRANSIT
FY2006-2011 TIP AND 2005 CLRP AIR QUALITY CONFORMITY

LOCATION		2002			AVERAGE TRIP LENGTH	2002 VMT	ADJ WINTER	RUNNING	TOTAL
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total			VMT	Rate (gm/mile)	(tons/day)
						Wk Days =	65	0.0169	
COMMUTER RAIL LOTS						Seasonal adj =	0.97		
BRUNSWICK 25%	25	305	102	**407**	7.5	3,053	2,961	50	0.0001
PT OF ROCKS 25%	25	204	68	**272**	7.5	2,040	1,979	33	0.0000
DICKERSON	0	15	0	**15**	7.5	113	109	2	0.0000
BARNESVILLE	0	46	0	**46**	7.5	345	335	6	0.0000
GERMANTOWN	0	386	0	**386**	7.5	2,895	2,808	47	0.0001
MET GROVE	0	352	0	**352**	7.5	2,640	2,561	43	0.0000
WAS GROVE	0	15	0	**15**	7.5	113	109	2	0.0000
GARRETT PARK	0	22	0	**22**	7.5	165	160	3	0.0000
BOWIE 50%	50	188	188	**375**	7.5	2,813	2,728	46	0.0001
SEABROOK 15%	15	224	40	**264**	7.5	1,980	1,921	32	0.0000
KENSINGTON	0	45	0	**45**	7.5	338	327	6	0.0000
LAUREL 30%	30	209	90	**299**	7.5	2,243	2,175	37	0.0000
GAITHESBURG	0	280	0	**280**	7.5	2,100	2,037	34	0.0000
BERWYN HEIGHTS	0	30	0	**30**	4.5	135	131	2	0.0000
RIVERDALE	0	65	0	**65**	4.5	293	284	5	0.0000
METRO RAIL LOTS									
ADDISON ROAD 40%	40	791	527	**1318**	7.5	9,885	9,588	162	0.0002
ARCHIVES	0	12	0	12	4.5	54	52	1	0.0000
ARLING	0	10	0	10	4.5	45	44	1	0.0000
BALLSTON	0	1175	0	1175	4.5	5,288	5,129	87	0.0001
BENN.RD	0	520	0	520	4.5	2,340	2,270	38	0.0000
BETH	0	395	0	395	4.5	1,778	1,724	29	0.0000
BRADD RD	0	10	0	**10**	4.5	45	44	1	0.0000
BROOKLAND	0	27	0	**27**	4.5	122	118	2	0.0000
CHEVERLY	0	557	0	**557**	4.5	2,507	2,431	41	0.0000
CLARENDON	0	554	0	554	4.5	2,493	2,418	41	0.0000
CLEVELAND PK	0	366	0	366	4.5	1,647	1,598	27	0.0000
COURT HOUSE	0	256	0	256	4.5	1,152	1,117	19	0.0000
CRYSTAL CITY	0	347	0	347	4.5	1,562	1,515	26	0.0000
DEANWOOD	0	194	0	**194**	4.5	873	847	14	0.0000
DUN LORING 10%	10	1220	136	**1355**	4.5	6,098	5,915	100	0.0001
DUPONT CIRCLE	0	165	0	165	4.5	743	720	12	0.0000
EASTERN MKT	0	178	0	178	4.5	801	777	13	0.0000
EAST FALLS CH	0	442	0	**442**	4.5	1,989	1,929	33	0.0000
EIS	0	352	0	352	4.5	1,584	1,536	26	0.0000
FARRAGUT NORTH	0	102	0	102	4.5	459	445	8	0.0000
FARRAGUT WEST	0	221	0	221	4.5	995	965	16	0.0000
FEDERAL CENTER	0	75	0	75	4.5	338	327	6	0.0000
FEDERAL TRI	0	54	0	54	4.5	243	236	4	0.0000
FOGGY	0	102	0	102	4.5	459	445	8	0.0000
FORT TROTTEN	0	445	0	**445**	4.5	2,003	1,942	33	0.0000
FRH.HEIGHTS	0	679	0	679	4.5	3,056	2,964	50	0.0001
GALLERY PLACE	0	124	0	124	4.5	558	541	9	0.0000
GROSVENOR	0	716	0	**716**	4.5	3,222	3,125	53	0.0001
HUNT NORTH 40%	40	1873	1249	**3122**	7.5	23,415	22,713	384	0.0004
JUD SQUARE	0	110	0	110	4.5	495	480	8	0.0000
KING ST	0	30	0	**30**	4.5	135	131	2	0.0000
LANDOVER 25%	25	1410	470	**1880**	7.5	14,100	13,677	231	0.0003
L'ENFANT PLAZA	0	296	0	296	4.5	1,332	1,292	22	0.0000
MCPHERSON SQ	0	52	0	52	4.5	234	227	4	0.0000
MEDICAL CENTER	0	14	0	**14**	4.5	63	61	1	0.0000
METRO CENTER	0	177	0	177	4.5	797	773	13	0.0000
MINNES	0	353	0	**353**	4.5	1,589	1,541	26	0.0000
NAT AIR	0	87	0	87	4.5	392	380	6	0.0000
NEW CARROL 50%	50	1049	1049	**2097**	7.5	15,728	15,256	258	0.0003
PRNTAGON	0	561	0	561	4.5	2,525	2,449	41	0.0000

Exhibit 2
WINTER
2002 PM AIR QUALITY EMISSIONS INVENTORY
AUTO ACCESS TO TRANSIT
FY2006-2011 TIP AND 2005 CLRP AIR QUALITY CONFORMITY

LOCATION	2002				AVERAGE TRIP LENGTH	2002 VMT	ADJ WINTER VMT	RUNNING Rate (gm/mile)	TOTAL (tons/day)
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total					
						Wk Days =	65	0.0169	
COMMUTER RAIL LOTS						Seasonal adj =	0.97		
PENTAGON CITY	0	381	0	381	4.5	1,715	1,663	28	0.0000
POTOMAC AVE	0	533	0	533	4.5	2,399	2,327	39	0.0000
ROCKVILLE	0	667	0	**667**	4.5	3,002	2,911	49	0.0001
ROSSLYN	0	356	0	356	4.5	1,602	1,554	26	0.0000
SHADY GROVE 10%	10	3903	434	**4337**	7.5	32,528	31,552	533	0.0006
SILVER SPRING	0	44	0	**44**	4.5	198	192	3	0.0000
SMITH MALL	0	120	0	120	4.5	540	524	9	0.0000
STADIUM ARM	0	976	0	976	4.5	4,392	4,260	72	0.0001
TAKOMA PK	0	146	0	**146**	4.5	657	637	11	0.0000
TENLEYTON	0	17	0	**17**	4.5	77	74	1	0.0000
TWINBROOK	0	1136	0	**1136**	4.5	5,112	4,959	84	0.0001
UNION STAT	0	378	0	378	4.5	1,701	1,650	28	0.0000
VAN NESS	0	343	0	343	4.5	1,544	1,497	25	0.0000
VIENNA 25%	25	2798	933	**3731**	7.5	27,983	27,143	459	0.0005
VA SQUARE	0	642	0	642	4.5	2,889	2,802	47	0.0001
WEST FALLS CHURCH	0	2183	0	**2183**	4.5	9,824	9,529	161	0.0002
WHITE FLINT	0	1633	0	1633	4.5	7,349	7,128	120	0.0001
WOODLEY	0	68	0	68	4.5	306	297	5	0.0000
RHODE ISLAND 30%	30	266	114	**380**	7.5	2,850	2,765	47	0.0001
BUS & CAR POOL LOTS									
CARTER BARRON	0	798	0	798	4.5	3,591	3,483	59	0.0001
PG PLAZA	0	47	0	47	4.5	212	205	3	0.0000
PENN MAR SHOPP.	0	100	0	**100**	4.5	450	437	7	0.0000
CAP PLAZA	0	100	0	**100**	4.5	450	437	7	0.0000
EASTOVER	0	100	0	**100**	4.5	450	437	7	0.0000
FOUR MILE RUN	0	28	0	**28**	4.5	126	122	2	0.0000
SPRINGFIELD MALL	0	580	0	**580**	4.5	2,610	2,532	43	0.0000
SPRINGFIELD METH CH	0	48	0	**48**	4.5	216	210	4	0.0000
FRED ARMORY	0	33	0	**33**	7.5	248	240	4	0.0000
MYERSVILLE	0	65	0	**65**	7.5	488	473	8	0.0000
ROSEMONT	0	45	0	**45**	7.5	338	327	6	0.0000
URBANA	0	193	0	**193**	7.5	1,448	1,404	24	0.0000
JEFFERSON	0	40	0	**40**	7.5	300	291	5	0.0000
NORBECK RD	0	248	0	**248**	7.5	1,860	1,804	30	0.0000
MONTROSE RD	0	650	0	**650**	7.5	4,875	4,729	80	0.0001
BRIGG CHENNY 50%	50	215	215	**430**	7.5	3,225	3,128	53	0.0001
COMUS ROAD	0	30	0	**30**	7.5	225	218	4	0.0000
LAKEFOREST MALL	0	300	0	**300**	7.5	2,250	2,183	37	0.0000
BURTONSVILLE	0	500	0	**500**	7.5	3,750	3,638	61	0.0001
FORCEY MEM.	0	200	0	**200**	7.5	1,500	1,455	25	0.0000
TECH ROAD	0	155	0	**155**	7.5	1,163	1,128	19	0.0000
BELTWAY	0	265	0	**265**	7.5	1,988	1,928	33	0.0000
LAUREL VAN DUSEN	0	62	0	**62**	7.5	465	451	8	0.0000
ACCOKEEK	0	450	0	**450**	7.5	3,375	3,274	55	0.0001
ABC DRIVE IN	0	100	0	**100**	7.5	750	728	12	0.0000
BOWIE 20%	20	526	131	**657**	7.5	4,928	4,780	81	0.0001
CLINTON 50%	50	212	212	**424**	7.5	3,180	3,085	52	0.0001
OXON HILL 20%	20	519	130	**649**	7.5	4,868	4,721	80	0.0001
EQUESTRIAN CENTER 50%	50	150	150	**300**	7.5	2,250	2,183	37	0.0000
BOWIE MARKET PLACE	0	50	0	**50**	7.5	375	364	6	0.0000
FT.WASHINGTON	0	412	0	**412**	7.5	3,090	2,997	51	0.0001
MONTPELIER REC PARK	0	70	0	**70**	7.5	525	509	9	0.0000
RESTON	0	1547	0	**1547**	7.5	11,603	11,254	190	0.0002
GREENBRIAR	0	55	0	**55**	7.5	413	400	7	0.0000
FAIR OAKS	0	150	0	**150**	7.5	1,125	1,091	18	0.0000
ROLLING VALLEY	0	628	0	**628**	7.5	4,710	4,569	77	0.0001
SPRINGFIELD PLAZA	0	230	0	**230**	7.5	1,725	1,673	28	0.0000
FAIRLANES BOWL	0	35	0	**35**	7.5	263	255	4	0.0000
NOTTOWAY PARK	0	14	0	**14**	7.5	105	102	2	0.0000
HORNER RD	0	2397	0	**2397**	7.5	17,978	17,438	295	0.0003
LAKE RIDGE	0	555	0	**555**	7.5	4,163	4,038	68	0.0001
MINNIEVILLE RD 40%	40	336	224	560	7.5	4,200	4,074	69	0.0001
GORDON BLVD	0	156	0	156	7.5	1,170	1,135	19	0.0000
HILLENDALE	0	248	0	**248**	7.5	1,860	1,804	30	0.0000
POTOMAC MILLS	0	946	0	**946**	7.5	7,095	6,882	116	0.0001

Exhibit 2
WINTER
2002 PM AIR QUALITY EMISSIONS INVENTORY
AUTO ACCESS TO TRANSIT
FY2006-2011 TIP AND 2005 CLRP AIR QUALITY CONFORMITY

LOCATION	2002				AVERAGE TRIP LENGTH	2002 VMT	ADJ WINTER VMT	RUNNING Rate (gm/mile)	TOTAL (tons/day)
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total					
						Wk Days =	65	0.0169	
COMMUTER RAIL LOTS						Seasonal adj =	0.97		
List of new lots to be added in Conformity Document list									
PARK-AND-RIDE LOTS - MARYLAND									
PARK-AND-RIDE LOTS - MARYLAND						0	0	0	0.0000
CHARLES COUNTY						0	0	0	0.0000
301 Park & Ride	25	287	96	383	7.5	2,873	2,786	47	0.0001
Charles County Government Bl	25	26	9	35	7.5	263	255	4	0.0000
Food Lion Shopping Center	25	38	13	50	7.5	375	364	6	0.0000
La Plata Armory	25	15	5	20	7.5	150	146	2	0.0000
Laurel Springs Regional Park	25	38	13	50	7.5	375	364	6	0.0000
Life Wesleyan Church	25	38	13	50	7.5	375	364	6	0.0000
Mattawoman-Beantown Rd	25	435	145	580	7.5	4,350	4,220	71	0.0001
Smallwood Village	25	75	25	100	7.5	750	728	12	0.0000
St. Charles Towne	25	263	88	350	7.5	2,625	2,546	43	0.0000
PARK-AND-RIDE LOTS - MARYLAND									
FREDERICK COUNTY									
Frederick (north)	25	123	41	164	7.5	1,230	1,193	20	0.0000
Frederick (south)	25	173	58	230	7.5	1,725	1,673	28	0.0000
Monacacy Marcst	25	600	200	800	7.5	6,000	5,820	98	0.0001
PARK-AND-RIDE LOTS - MARYLAND									
MONTGOMERY COUNTY									
Colesville	0	190	0	190	7.5	1,425	1,382	23	0.0000
Damascus	50	0	0		7.5	0	0	0	0.0000
Gaithersburg	50	259	259	517	7.5	3,878	3,761	64	0.0001
Gaithersburg	50	175	175	350	7.5	2,625	2,546	43	0.0000
Germantown Town	50	0	0		7.5	0	0	0	0.0000
Greencastle	50	75	75	150	7.5	1,125	1,091	18	0.0000
Milestone Shopping	50	88	88	175	7.5	1,313	1,273	22	0.0000
PARK-AND-RIDE LOTS - MAYLAND									
PRINCE GEORGE'S COUNTY									
Hampton Mall	0	100	0	100	4.5	450	437	7	0.0000
Laurel (south)	25	513	171	684	7.5	5,130	4,976	84	0.0001
PARK-AND-RIDE LOTS - VIRGINIA						0	0	0	0.0000
ARLINGTON COUNTY						0	0	0	0.0000
Ballston Public Parking Garage	25	375	125	500	7.5	3,750	3,638	61	0.0001
Washington-Lee	50	178	178	356	7.5	2,670	2,590	44	0.0000
PARK-AND-RIDE LOTS - VIRGINIA									
FAIRFAX COUNTY									
American Legion	50	50	50	100	7.5	750	728	12	0.0000
Canterbury Woods Pk	50	17	17	34	7.5	255	247	4	0.0000
Centreville	50	185	185	370	7.5	2,775	2,692	45	0.0001
Centreville United Methodist Ch	50	74	74	147	7.5	1,103	1,069	18	0.0000
Fairfax County Government Ce	50	85	85	170	7.5	1,275	1,237	21	0.0000
Greenbriar Park	50	28	28	55	7.5	413	400	7	0.0000
Herndon-Monroe	50	873	873	1,745	7.5	13,088	12,695	215	0.0002
Michael's	50	100	100	200	7.5	1,500	1,455	25	0.0000
Parkwood Baptist	50	9	9	18	7.5	135	131	2	0.0000
South Run District Pk	50	170	170	340	7.5	2,550	2,474	42	0.0000
St Paul Chung Catholic Church	50	50	50	100	7.5	750	728	12	0.0000
Stringfellow Rd	50	181	181	361	7.5	2,708	2,626	44	0.0000
Sully Station	50	70	70	140	7.5	1,050	1,019	17	0.0000
Sydenstricker Rd	50	84	84	167	7.5	1,253	1,215	21	0.0000
Wakefield Chapel Pk	50	25	25	50	7.5	375	364	6	0.0000

Exhibit 2
WINTER
2002 PM AIR QUALITY EMISSIONS INVENTORY
AUTO ACCESS TO TRANSIT
FY2006-2011 TIP AND 2005 CLRP AIR QUALITY CONFORMITY

LOCATION	2002				AVERAGE TRIP LENGTH	2002 VMT	ADJ WINTER VMT	RUNNING	TOTAL
	OUTSIDE MSA (%)	INSIDE MSA	OUTSIDE MSA	Total				Rate (gm/mile)	(tons/day)
						Wk Days =	65	0.0169	
COMMUTER RAIL LOTS						Seasonal adj =	0.97		
PARK-AND-RIDE LOTS - VIRGINIA									
LOUDOUN COUNTY									
Ashburn Farm	50	10	10	20	7.5	150	146	2	0.0000
Ashburn Village	50	20	20	40	7.5	300	291	5	0.0000
Cascades	50	28	28	55	7.5	413	400	7	0.0000
Dulles North Transit	50	375	375	750	7.5	5,625	5,456	92	0.0001
Hamilton	50	25	25	50	7.5	375	364	6	0.0000
Innovation Avenue	50	38	38	75	7.5	563	546	9	0.0000
Leesburg	50	25	25	50	7.5	375	364	6	0.0000
Leesburg Kohls	50	600	600	1200	7.5	9,000	8,730	148	0.0002
Purcellville	50	18	18	35	7.5	263	255	4	0.0000
Sterling Park SC	50	23	23	45	7.5	338	327	6	0.0000
Sterling Shaw Rd	50	24	24	48	7.5	360	349	6	0.0000
PARK-AND-RIDE LOTS - VIRGINIA									
PRINCE WILLIAM COUNTY									
Brittany	50	48	48	95	7.5	713	691	12	0.0000
Dale City	50	294	294	587	7.5	4,403	4,270	72	0.0001
Harbor Drive	50	100	100	200	7.5	1,500	1,455	25	0.0000
Lindendale	50	108	108	216	7.5	1,620	1,571	27	0.0000
Montclair	50	25	25	50	7.5	375	364	6	0.0000
PRTC Transit Center	50	93	93	185	7.5	1,388	1,346	23	0.0000
Tackett's Mill	50	85	85	169	7.5	1,268	1,229	21	0.0000
Triangle	50	15	15	29	7.5	218	211	4	0.0000
I-95 / Rt 123	50	282	282	563	7.5	4,223	4,096	69	0.0001
US 1 / VA 234	50	137	137	274	7.5	2,055	1,993	34	0.0000
MARC TRAIN COMMUTER LOTS									
College Park	25	431	144	574	7.5	4,305	4,176	71	0.0001
Frederick	0	0	0	0	7.5	0	0	0	0.0000
Greenbelt	60	1346	2018	3364	7.5	25,230	24,473	414	0.0005
Harpers Ferry		98	0	98	7.5	735	713	12	0.0000
Muirkirk	60	260	390	650	7.5	4,875	4,729	80	0.0001
Seabrook	0	264	0	264	4.5	1,188	1,152	19	0.0000
Silver Spring	0	0	0	0	4.5	0	0	0	0.0000
Union Station	0	781	0	781	7.5	5,858	5,682	96	0.0001
VIRGINIA RAILWAY EXPRESS COMMUTER LOTS									
Backlick Road	50	110	110	220	7.5	1,650	1,601	27	0.0000
Broad Run	50	198	198	396	7.5	2,970	2,881	49	0.0001
Brooke	50	150	150	300	7.5	2,250	2,183	37	0.0000
Burke Center	50	275	275	550	7.5	4,125	4,001	68	0.0001
Franconia/Springfield (operated	50	1900	1900	3800	7.5	28,500	27,645	467	0.0005
Leeland Road	50	326	326	652	7.5	4,890	4,743	80	0.0001
Lorton	50	100	100	200	7.5	1,500	1,455	25	0.0000
Manassas	50	187	187	374	7.5	2,805	2,721	46	0.0001
Manassas Park	50	150	150	300	7.5	2,250	2,183	37	0.0000
Quantico	50	109	109	217	7.5	1,628	1,579	27	0.0000
Rippon	50	150	150	300	7.5	2,250	2,183	37	0.0000
Rolling Road	50	185	185	370	7.5	2,775	2,692	45	0.0001
Woodbridge	50	294	294	588	7.5	4,410	4,278	72	0.0001
METRORAIL PARKING LOTS									
Anacostia	25	861	287	1148	7.5	8,610	8,352	141	0.0002
Branch Avenue	50	1611	1611	3222	7.5	24,165	23,440	396	0.0004
Capitol Heights	50	194	194	387	7.5	2,903	2,815	48	0.0001
College Park	25	465	155	620	7.5	4,650	4,511	76	0.0001
Congress Heights	0	66	0	66	4.5	297	288	5	0.0000
Deanwood	0	194	0	194	7.5	1,455	1,411	24	0.0000
East Falls Church	50	221	221	442	7.5	3,315	3,216	54	0.0001
Forest Glen	50	329	329	658	7.5	4,935	4,787	81	0.0001
Franconia - Springfield	50	1987	1987	3973	4.5	17,879	17,342	293	0.0003
Glenmont	50	925	925	1850	4.5	8,325	8,075	136	0.0002
Greenbelt	50	1783	1783	3565	7.5	26,738	25,935	438	0.0005
Naylor Road	50	216	216	431	7.5	3,233	3,136	53	0.0001
Prince George's Plaza	25	927	309	1236	7.5	9,270	8,992	152	0.0002
Southern Avenue	50	1090	1090	2180	4.5	9,810	9,516	161	0.0002
Suitland	50	1033	1033	2065	4.5	9,293	9,014	152	0.0002
Van Dorn Street	50	204	204	407	4.5	1,832	1,777	30	0.0000
West Hyattsville	25	453	151	604	7.5	4,530	4,394	74	0.0001
Wheaton	25	759	253	1012	7.5	7,590	7,362	124	0.0001
				108,749		715,007		11,721.1016	0.0129
							Seasonal Total	(tons/season)	0.8398

Bold figures: New numbers taken from P & R directory
Figures in bracket: Carry forward figures from conformity doc.

ATTACHMENT F

ITEM 9 - Action
December 21, 2005

Review of Comments Received,
Acceptance of Recommended Responses, and
Approval of the Fine Particles (PM2.5) Air Quality Conformity Assessment of the 2005 Constrained Long Range Plan (CLRP) and FY 2006-2011 Transportation Improvement Program (TIP)

Staff Recommendation:

- Receive briefing on the public comments received and the recommended responses

- Adopt Resolution R9-2006 to accept the recommended responses for inclusion in the documentation, and to find that the 2005 CLRP and FY 2006-2011 TIP conform with the PM 2.5 requirements of the Clean Air Act Amendments of 1990.

Issues: None

Background: The draft results of the PM2.5 conformity assessment analysis of the 2005 CLRP and FY 2006-2011 TIP were released for public comment at the November 16 TPB meeting. The 30-day public comment period on these results ended on December 16, 2005.

At the July 20 meeting, the Board approved the scope of work for conducting the PM2.5 conformity analysis for the 2005 CLRP and FY 2006-2011 TIP.

TPB R9-2006
December 21, 2005

NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
777 North Capitol Street, N.E.
Washington, D.C. 20002

RESOLUTION FINDING THAT THE 2005 CONSTRAINED LONG RANGE PLAN AND THE TRANSPORTATION IMPROVEMENT PROGRAM FOR FY 2006-2011 CONFORM WITH THE FINE PARTICLES (PM 2.5) REQUIREMENTS OF THE CLEAN AIR ACT AMENDMENTS OF 1990

WHEREAS, the National Capital Region Transportation Planning Board (TPB) has been designated by the Governors of Maryland and Virginia and the Mayor of the District of Columbia as the Metropolitan Planning Organization (MPO) for the Washington Metropolitan Area; and

WHEREAS, the U.S. Environmental Protection Agency (EPA), in conjunction with the U.S. Department of Transportation (DOT), under the Clean Air Act Amendments of 1990 (CAAA), issued on November 24, 1993 "Criteria and Procedures for Determining Conformity to State or Federal Implementation Plans of Transportation Plans, Programs, and Projects Funded or Approved Under Title 23 U.S.C. or the Federal Transit Act," and, over the years, subsequently amended this guidance, most recently on July 1, 2004 and on April 5, 2005, which taken together provide the specific criteria for TPB to make a determination of conformity of its financially Constrained Long Range Transportation Plan (CLRP) and Transportation Improvement Program (TIP) with the air quality requirements in the Metropolitan Washington PM2.5 non-attainment area; and

WHEREAS, TPB staff developed a work program to address all procedures and requirements, including public and interagency consultation, and use of EPA's evaluation criterion in the interim period before state implementation plan (SIP) emissions budgets are available for use in conformity requiring that emissions predicted in the "Action" scenario are not greater than 2002 emissions, and the work program was released for public comment on June 15, 2005 and approved by the TPB at its July 20, 2005 meeting; and

WHEREAS, staff executed the work program and documented the results in the draft PM2.5 conformity report, *Fine Particles (PM 2.5) Standards Air Quality Conformity Assessment, Supplement to the Air Quality Conformity Determination of the 2005 Constrained Long Range Plan and the FY 2006-2011 Transportation Improvement Program for the Washington Metropolitan Region*, dated November 16, 2005, which was released on that date for a 30-day public comment period and interagency review, and the comments and staff responses to them were reviewed and accepted for inclusion in the CLRP and TIP by the TPB on December 21, 2005; and

WHEREAS, the analysis in the PM2.5 report demonstrates adherence to EPA's evaluation criterion that emissions estimated for the "Action" scenario of each forecast year are not greater than 2002 emissions, meets all regulatory, planning and interagency consultation requirements, and therefore provides the basis for a finding of conformity of the plan and program with the requirements of the CAAA; and

WHEREAS, in the attached letter of December 14, 2005, MWAQC has provided favorable comments on the PM2.5 conformity report, urging "... the States and local governments to maintain their commitments to TERMs and other emission reduction measures, regardless of whether implementation of these measures is necessary for conformity", and also urging continued consultation between TPB and MWAQC in the future regarding use of interim emissions tests and the potential inclusion of other pollutants as precursors to PM2.5;

NOW, THEREFORE, BE IT RESOLVED THAT THE NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD determines that the 2005 Constrained Long Range Plan and the Transportation Improvement Program for FY 2006-2011 conform with the PM 2.5 requirements of the Clean Air Act Amendments of 1990.

Adopted by the Transportation Planning Board at its regular meeting on December 21, 2005.

Metropolitan Washington Air Quality Committee

Suite 300, 777 North Capitol Street, N.E. Washington , D.C. 20002-4239 202-962-3358 Fax: 202-962-3203

December 14, 2005

Honorable Phil Mendelson, Chair
National Capital Region Transportation Planning Board
777 North Capitol Street, NE
Washington, D.C. 20002

Dear Chair Mendelson:

The Metropolitan Washington Air Quality Committee (MWAQC) has reviewed the November 16, 2005 (and December 2, 2005 supplement) draft *Fine Particles ($PM_{2.5}$) Standards Air Quality Conformity Assessment: Supplement to the Air Quality Conformity Assessment of the 2005 Constrained Long Range Plan Amendments and FY2006-2011 Transportation Improvement Program* for the Washington Metropolitan Region. We are pleased the proposed transportation plan meets the interim emissions test.

As agreed, the region selected the build no greater than 2002 interim emissions test in this year's conformity analysis. The conformity analysis indicates significant reductions in transportation emissions occurring by 2010 and beyond. Analysis indicates that emissions in 2010 are significantly below the 2002 emission levels. The magnitude of the difference may be temporary since the interim test will be replaced by new emissions budgets once the PM2.5 SIP has been formally submitted to EPA and the new emissions budgets found adequate.

For any $PM_{2.5}$ conformity analysis in the coming years of the interim period, MWAQC continues to urge TPB and the state air agencies to work together to determine which option is most appropriate for conformity analysis. For the current $PM_{2.5}$ conformity cycle, we also supported the TPB proposed approach of emissions analysis and conformity determination only for direct $PM_{2.5}$ and for precursor NOx. If in the coming year, the state air agencies and/or EPA determine that other components, namely VOCs, SO2, and/or ammonia contribute significantly to the fine particle problem in the Washington, DC region, those pollutants should be included in future conformity analyses.

Meeting the $PM_{2.5}$ standard is expected to require continuation of all mobile and non-mobile emission reduction commitments, and possibly new ones in the near future. States and local governments are urged to maintain their commitments to TERMs and other emission reduction measures, regardless of whether implementation of these measures is currently critical for conformity determination during the interim period.

Thank you for the opportunity to comment on the draft conformity analysis. We look forward to working closely with you on making further improvements to the region's air quality for attaining the new air quality standards and to integrate our new 8-hour and $PM_{2.5}$ standard planning efforts.

Sincerely,

Hon. T. Dana Kauffman, Chair
Metropolitan Washington Air Quality Committee

National Capital Region Transportation Planning Board

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 (202) 962-3310 Fax: (202) 962-3202

Memorandum

December 14, 2005

To: Transportation Planning Board

From: Michael J. Clifford
Systems Planning Applications Director

Subject: Air Quality Conformity Assessment of the 2005 Constrained Long Range Plan (CLRP) and the FY2006-2011 Transportation Improvement Program (TIP) with Respect to Fine Particles (PM2.5) Standards: Comments, and Responses to Comments

Introduction

This memo transmits: (1) draft final summary results of the fine particles (PM2.5) air quality conformity assessment of the 2005 CLRP and the FY2006-2011 TIP; (2) comments received to date on the draft report which was released for public comment on November 16, 2005; and (3) responses to those comments. The comment period extends through December 16th; should additional comments be received following this mailout for the December TPB meeting, we will provide such comments, and responses to the comments, to the Board prior to the December 21st meeting. The attached exhibits contain minor updates to summary tables contained in the draft report; the full report is on the COG website.

Background

While the 2005 CLRP and FY2006 – 11 TIP were subject to an air quality conformity assessment which was approved by the TPB on October 19, 2005, that assessment reflected requirements associated with the 8-hour ozone and Wintertime carbon monoxide standards. On December 17, 2004 EPA designated the Washington, DC-MD-VA area as nonattainment for the PM2.5 standards. On April 5, 2005 EPA published the final set of rules for transportation conformity associated with the new standards (complementing an initial set of conformity rule amendments published on July 1, 2004). EPA requirements include that the TPB demonstrate conformity to the new rule by April 5, 2006 or face a conformity lapse, i.e., limitations on transportation projects which may proceed toward implementation. These additional requirements, which became effective while the 8-hour conformity assessment was in progress, led to this supplemental air quality analysis of the plan and program.

Methods

The scope of work for this analysis, approved by the TPB at its July 20, 2005 meeting, identified methods to address the new PM2.5 requirements which are consistent with the 8-hour air quality assessment. Work tasks utilize the latest models and methods, i.e., COG's Round 7.0 Cooperative Forecasts, TPB's Version 2.1D #50 travel demand model, and EPA's Mobile6.2 emissions factor model.

Conformity assessment criteria for the PM2.5 standards provided in EPA's July 1, 2004 transportation conformity rule amendments include a demonstration that PM2.5 emissions (including both direct PM2.5 and NOx emissions as a precursor to fine particles) for each analysis year of the CLRP and TIP are not greater than base year 2002 emissions. EPA has provided these criteria for use during an interim period which will continue only until state air quality implementation plan (SIP) activities determine emissions reduction requirements to attain the fine particles standards, and establish new mobile emissions budgets for inclusion in the air quality plans for meeting the standards.

Results

The PM2.5 conformity assessment includes the estimation of direct PM2.5 and precursor NOx emissions for the 2002, 2010, 2020 and 2030 analysis years. Attached exhibits 1 – 3 present these emissions for each milestone year. Exhibits 1 and 2 present daily and seasonal emissions by travel component; exhibit 3 presents a bar chart (note the separate Y-axes) of the summary results for each pollutant. These exhibits have been updated slightly since the draft report was released for comment to provide additional detail and to reflect some minor corrections. The exhibits show that mobile emissions are well below the 2002 base year levels for each pollutant.

Comments / Responses

The Metropolitan Washington Air Quality Committee (MWAQC) provided written comments in its December 14, 2005 letter (attached) to the TPB.

Comments:

Their letter notes that the transportation plan meets the relevant emissions test during this interim period until emissions budgets are established, and urges transportation agencies to maintain their commitment to transportation emissions reduction measures.

The letter also urges continued consultation between TPB and MWAQC in the future, as regards use of interim emissions tests and the potential inclusion of other pollutants, such as volatile organic compounds, sulfur dioxide, and / or ammonia, as precursors to PM2.5.

Response:

The TPB appreciates the favorable comments and looks forward to continuing its close working relationship with MWAQC.

Summary

The analytical results described in this air quality assessment provide a basis for a determination by the TPB of conformity of the 2005 CLRP and the FY2006-2011 TIP with respect to fine particles standards. TPB approval action is scheduled for December 21, 2005. This schedule has been established to provide federal agencies with sufficient time to conduct their review and approval process in advance of the conformity lapse deadline of April 5, 2006.

Attached:

12/14/5 MWAQC letter
Exhibits 1 - 3

EXHIBIT 1

AIR QUALITY CONFORMITY SUMMARY TABLE

Direct PM2.5 Emissions

Mobile Source Emissions Inventories for 2005 CLRP and FY 2006-2011 TIP

(Tons)

			Direct PM2.5							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
WINTER	Major Roads	90	3.93	353.34	2.30	206.55	1.83	164.88	1.91	172.08
	Local Roads	90	0.17	15.66	0.12	11.16	0.12	11.16	0.13	12.06
	School Buses	58	0.34	19.64	0.06	3.60	0.02	1.37	0.02	1.13
	Transit Buses	90	0.27	23.87	0.04	3.80	0.02	1.92	0.02	1.57
	Auto Access	65	0.01	0.84	0.01	0.68	0.01	0.78	0.01	0.85
	Total (Daily)		4.72		2.53		2.01		2.10	
	SEASON TOTAL			413.35		225.78		180.11		187.69
SPRING	Major Roads	92	3.84	353.37	2.37	217.58	1.93	177.56	2.03	186.39
	Local Roads	92	0.17	15.27	0.13	12.05	0.13	12.24	0.14	12.88
	School Buses	58	0.33	18.90	0.06	3.47	0.02	1.36	0.02	1.13
	Transit Buses	92	0.26	23.64	0.04	3.78	0.02	1.94	0.02	1.60
	Auto Access	66	0.01	0.79	0.01	0.71	0.01	0.84	0.01	0.91
	Total (Daily)		4.60		2.61		2.12		2.22	
	SEASON TOTAL			411.98		237.59		193.93		202.91
SUMMER	Major Roads	92	4.02	369.38	2.45	225.40	2.02	185.38	2.11	194.49
	Local Roads	92	0.17	15.82	0.13	12.33	0.14	12.70	0.15	13.62
	School Buses	40	0.33	13.05	0.06	2.35	0.02	0.92	0.02	0.78
	Transit Buses	92	0.26	23.68	0.04	3.68	0.02	1.94	0.02	1.60
	Auto Access	66	0.01	0.81	0.01	0.73	0.01	0.86	0.01	0.94
	Total (Daily)		4.78		2.69		2.21		2.31	
	SEASON TOTAL			422.74		244.49		201.80		211.42
FALL	Major Roads	91	3.84	348.99	2.27	206.21	1.91	173.99	2.00	181.73
	Local Roads	91	0.17	15.65	0.13	11.56	0.13	12.01	0.14	12.74
	School Buses	58	0.28	16.51	0.05	3.16	0.02	1.22	0.02	1.13
	Transit Buses	91	0.23	21.30	0.04	3.35	0.02	1.78	0.02	1.58
	Auto Access	65	0.01	0.83	0.01	0.68	0.01	0.81	0.01	0.88
	Total (Daily)		4.54		2.49		2.10		2.19	
	SEASON TOTAL			403.28		224.96		189.81		198.07
	ANNUAL TOTAL			**1,651.35**		**932.82**		**765.65**		**800.09**

EXHIBIT 2

AIR QUALITY CONFORMITY SUMMARY TABLE

PM2.5 Precursor Emissions: NOx

Mobile Source Emissions Inventories for 2005 CLRP and FY 2006-2011 TIP

(Tons)

			NOx							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
WINTER	Major Roads-Starts	90	18.09	1627.83	7.95	715.32	3.56	320.49	2.76	247.95
	Major Roads-VMT	90	223.72	20135.07	107.47	9672.39	35.14	3162.24	26.75	2407.14
	Local Roads	90	11.06	995.04	5.69	512.01	2.44	219.60	2.06	185.40
	School Buses	58	5.63	326.26	3.61	209.25	0.69	39.96	0.27	15.93
	Transit Buses	90	6.30	566.79	4.22	379.88	1.15	103.55	0.34	30.45
	Auto Access	65	1.94	126.23	0.91	59.41	0.42	27.41	0.37	23.80
	Total (Daily)		266.73		129.85		43.40		32.54	
	SEASON TOTAL			23,777.22		11,548.26		3,873.25		2,910.66

			NOx							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
SPRING	Major Roads-Starts	92	15.34	1411.46	7.20	662.77	3.31	304.43	2.62	240.86
	Major Roads-VMT	92	209.27	19252.75	101.03	9294.30	33.98	3126.34	26.43	2431.28
	Local Roads	92	9.82	903.07	5.25	483.00	2.33	214.36	2.02	185.84
	School Buses	58	5.56	322.53	3.43	198.91	0.67	38.66	0.27	15.89
	Transit Buses	92	6.24	574.22	4.06	373.68	1.12	102.75	0.34	31.12
	Auto Access	66	1.65	108.62	0.82	54.33	0.40	26.16	0.35	23.20
	Total (Daily)		247.88		121.79		41.80		32.03	
	SEASON TOTAL			22,572.65		11,066.99		3,812.69		2,928.19

			NOx							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
SUMMER	Major Roads-Starts	92	13.85	1274.29	6.63	609.96	3.05	280.14	2.41	221.81
	Major Roads-VMT	92	214.72	19754.42	103.20	9494.31	34.86	3207.49	27.26	2507.46
	Local Roads	92	10.38	955.33	5.48	504.07	2.49	229.08	2.19	201.48
	School Buses	40	5.56	222.39	3.43	137.18	0.67	26.66	0.27	10.96
	Transit Buses	92	6.24	574.22	4.06	373.68	1.12	102.75	0.34	31.12
	Auto Access	66	1.61	106.23	0.81	53.14	0.39	25.96	0.35	23.26
	Total (Daily)		252.37		123.60		42.58		32.82	
	SEASON TOTAL			22,886.89		11,172.34		3,872.08		2,996.09

			NOx							
			2002		2010		2020		2030	
		Days	Daily	seasonal	Daily	seasonal	Daily	seasonal	Daily	seasonal
FALL	Major Roads-Starts	91	15.93	1449.27	6.68	607.88	3.10	282.37	2.54	230.69
	Major Roads-VMT	91	208.43	18967.13	91.87	8359.81	32.43	2950.77	25.57	2326.60
	Local Roads	91	10.27	934.75	4.85	441.08	2.21	201.11	1.96	178.36
	School Buses	58	5.48	318.00	3.16	183.43	0.56	32.36	0.27	15.89
	Transit Buses	91	6.02	548.07	3.81	346.87	1.04	94.65	0.34	30.79
	Auto Access	65	1.75	113.43	0.76	49.24	0.37	24.32	0.34	22.11
	Total (Daily)		247.88		111.12		39.71		31.01	
	SEASON TOTAL			22,330.64		9,988.30		3,585.59		2,804.43

ANNUAL TOTAL			91,567.40		43,775.88		15,143.61		11,639.37

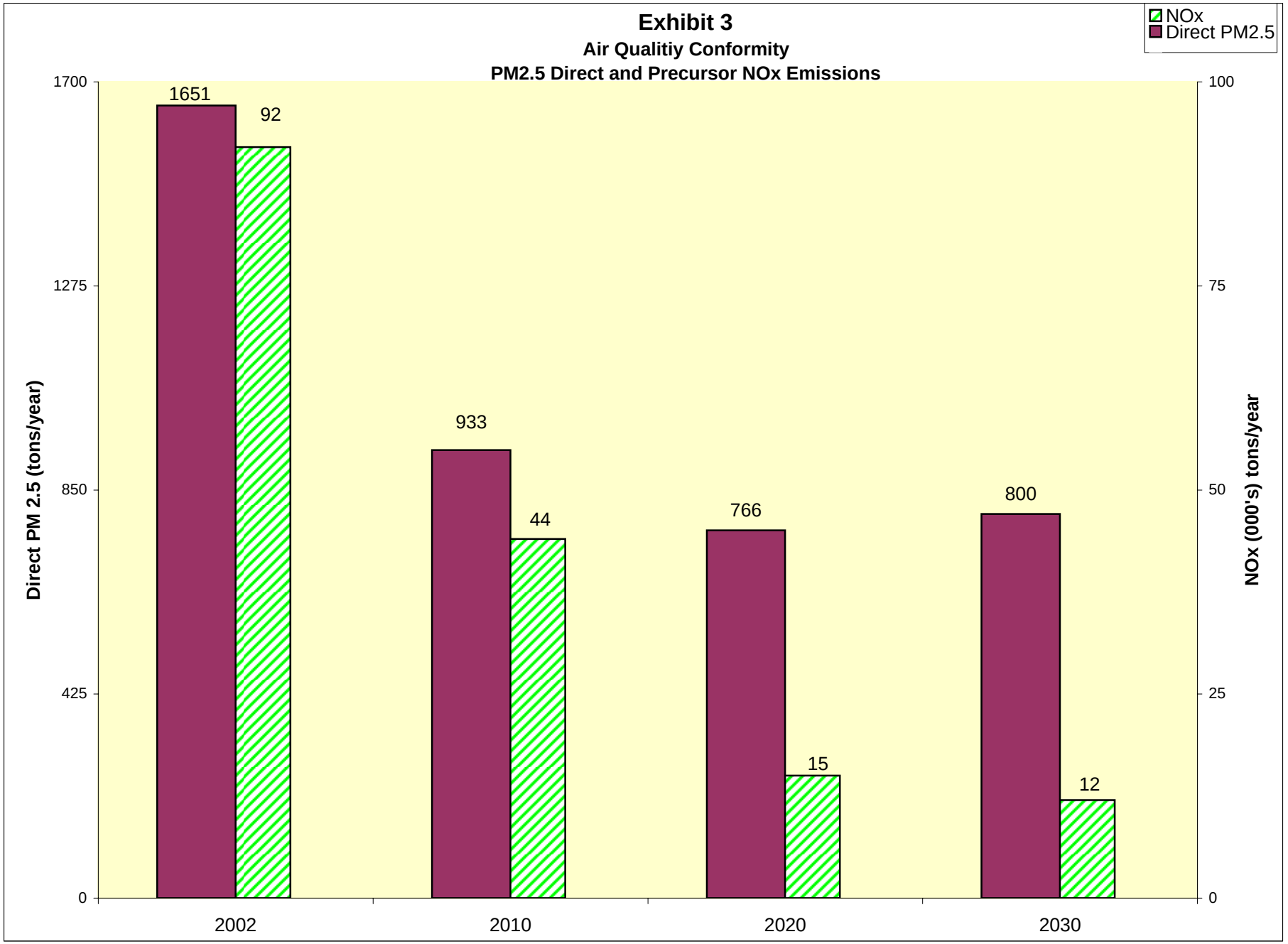
Exhibit 3
Air Qualitiy Conformity
PM2.5 Direct and Precursor NOx Emissions
NOx
Direct PM2.5
Direct PM 2.5 (tons/year)
NOx (000's) tons/year
1700
1275
850
425
0
100
75
50
25
0
1651
92
933
44
766
15
800
12
2002
2010
2020
2030

National Capital Region Transportation Planning Board

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4290 - (202) 962-3310 - Fax: (202) 962-3202
TDD: (202)962-3213

ITEM 9

M E M O R A N D U M

December 21, 2005

TO: Transportation Planning Board

FROM: Ronald F. Kirby
Director, Department of
Transportation Planning

SUBJECT: Draft Responses to Comments Received Through the Close of the Public Comment Period on December 16, 2005 on Fine Particles (PM2.5) Air Quality Conformity Assessment of the 2005 Constrained Long Range Transportation Plan (CLRP) and the FY 2006-2011 Transportation Improvement Program(TIP)

Introduction

The draft results of the PM2.5 conformity assessment analysis of the 2005 CLRP and FY 2006-2011 TIP were released for public comment at the November 16 TPB meeting. The 30-day public comment period on these results ended on December 16, 2005. The Board will be briefed on the public comments received, asked to accept the recommended responses for inclusion in the documentation, and asked to approve the PM2.5 conformity determination for the 2005 CLRP and FY 2006-2011 TIP.

Public comments have been posted as received on the COG web site at http://www.mwcog.org/transportation/public/comments.asp Board members are invited to review these comments on the web. This memorandum provides draft responses to comments received through the close of the public comment period on December 16.

The mailout for this item includes a December 14, 2005 letter from the Metropolitan Washington Air Quality Committee (MWAQC) with comments and responses. Comments from an EarthJustice letter of December 16, 2005 (copy attached) and recommended responses are presented below:

1. Comment: "We previously commented on TPB's fiscal constraint analysis for the 2004 CLRP and FY 2005-2010 TIP. Because the same defects relating to fiscal constraint were carried forward from last year's CLRP and TIP, we attach those comments and hereby incorporate them by reference. As mentioned above, while TPB continues to rely on the Metro Matters funding agreement in its conformity analysis, Metro Matters falls $2.9 billion short of funding WMATA's basic capital needs."

   Response: A response was provided to the previous comments by EarthJustice in conjunction with the approval of the 2004 CLRP and the FY 2005-2010 TIP by the TPB on November 17, 2004, and incorporated in the FY 2005-2010 TIP documents. In addition, in response to letters of January 18, 2005 and March 9, 2005 from EarthJustice to the Federal Highway Administration and the Federal Transit Administration, TPB staff provided more detailed information on TPB's fiscal constraint analysis in a letter to EarthJustice of June 13, 2005 (copy attached).

   In a letter to the TPB of June 14, 2005, the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) approved the conformity determination of the 2004 CLRP and FY 2005-2010 TIP. With respect to the fiscal constraint requirements, this approval letter stated:

> "Based upon our review of funds available and reasonably expected to be available, as well as projected expenditures in the 2004 CLRP and FY 2005-2010 MTIP, we also find in accordance with 23 USC Section 134, 49 USC Section 5303, and 23 CFR Part 450, that the fiscal constraint requirements have been met."

   With respect to the Metro Matters funding agreement, the June 13, 2005 letter to EarthJustice stated the following:

> "During 2004, WMATA and the region's jurisdictions took significant steps to identify and commit specific funding for Metro's near-term needs in the Metro Matters program, and to address longer term needs through a Metro Funding Panel. The 2004 CLRP and FY 2005-2010 TIP were approved by TPB on November 17, 2004. Because the air quality conformity analysis for the plan began on September 9, 2004, before the Metro Matters funding agreement was approved the WMATA Board (on October 21, 2004) and before the Metro Funding Panel completed its report on (on January 6, 2005), the TPB once again accounted for the funding uncertainties affecting the Metrorail system capacity and levels of service beyond 2005 with the transit ridership constraint.

At the February 16, 2005 TPB meeting, a letter was distributed from WMATA regarding this ridership constraint. The WMATA letter states:

> "Since this constraint was imposed on the model, the 600 Series rail cars have been ordered and the Metro Matters program has been adopted, which will purchase 120 more rail cars. With the receipt of these cars, the Metrorail system will have capacity to accommodate ridership growth through 2010. Therefore, we are asking that TPB change the capacity constraint on the core Metrorail system from 2005 to 2010."

2. Comment: "Thus, not only does TPB fail to provide factual support for its assertion that the CLRP provides for adequate operation and maintenance of the existing transit system, it fails to address evidence to the contrary."

Response: The assertion in the comment quoted above was made previously in comments in letters from EarthJustice of October 29, 2004, January 18, 2005 and March 9, 2005 on the conformity determination of the 2004 CLRP and FY 2005-2010 TIP. A full and detailed response was provided to this comment in the attached letter to EarthJustice of June 13, 2005. As noted in the response to Comment 1 above, FHWA and FTA on June 14, 2004 found that for the 2004 CLRP and FY 2005-2010 TIP "the fiscal constraint requirements have been met."

3. Comment: "TPB has not demonstrated that funding for proposed projects included in the first two years of the TIP are "available or committed", or that funding for projects beyond the first two years of the TIP "can reasonably be expected to be available. — As a result of this deficiency, the CLRP and TIP contain proposed projects that do not comply with fiscal constraint requirements. For example, the funding table for the proposed Intercounty Connector includes a budget of $1.25 billion for projects or actions programmed for FY 2006-2008. Ronald F. Kirby, Memorandum re. Significant Changes for the 2005 CLRP and FY 2006-2011 TIP (Sept. 15, 2005) (attachment at 13-14). Anticipated funding is listed under general categories (i.e. "GARVEE (AC)," "MdTA," "Special Federal," and "State") along with the percentage of funding anticipated from each source. There is no indication whether the listed amounts have been currently authorized or instead are anticipated; whether they represent existing or new sources of funding; and if they are new sources of funding, whether they are a "reasonably available new source."

Response: As noted in the response to Comment 1 above, the Federal Highway Administration (FHWA) and the Federal Transit Administration

(FTA) have reviewed the procedures used by the TPB in demonstrating fiscal constraint for the 2004 CLRP and the FY 2005-2010 TIP, and have found that “the fiscal constraint requirements have been met.” With respect to the example cited concerning the funding for the Inter County Connector (ICC) included in the 2005 CLRP and the FY 2006-2011 TIP, the TPB received the attached letter of February 4, 2005 from Trent M. Kittleman, Executive Secretary of the Maryland Transportation Authority, identifying the sources and commitments for ICC funding. This letter was included in the FY 2006-2011 TIP document in support of the demonstration that the fiscal constraint requirements had been met.

4. Comment: "Thus, even if the Davis Bill or a substantially similar enactment is adopted, TPB should not rely on it as an anticipated source of funding in this or any future CLRP unless the conditions of the bill are met and funds are "available or committed."

Response: As correctly noted earlier in the paragraph containing this comment, the Davis bill “is not relied upon in the current CLRP and TIP.” This comment is therefore not relevant to actions related to the 2005 CLRP and the FY 2006-2010 TIP.

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS

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June 13, 2005

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Falls Church
Loudoun County
Manassas
Manassas Park
Prince William County

Mr. David Baron
EarthJustice
1625 Massachusetts Ave., N.W.
Suite 702
Washington DC 20036-2212

Re: Response to Letters of January 18, 2005 and March 9, 2005 on the Conformity Determination for the 2004 Constrained Long Range Transportation Plan (CLRP) and the FY 2005-2010 Transportation Improvement Program(TIP) for the National Capital Region

Dear Mr. Baron:

By copy of a letter to you of April 25, 2005, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) have asked that the TPB respond to you directly on the specific concerns raised in your letters of January 18, 2005 and March 9, 2005 on the above-referenced conformity determination, adopted by the National Capital Region Transportation Planning Board (TPB) on November 17, 2004. On behalf of the TPB, I am pleased to provide the following responses to the comments made in your letters.

Comment: "TPB has failed to respond to the very specific deficiencies we raised, and has offered nothing to demonstrate that the TIP and CLRP provide adequate funding for the existing metro area transportation system. Instead, TPB relies heavily on the Metro Matters funding agreement and the recommendations of the Metro funding panel sponsored by the agency to identify potential funding sources. Neither addresses immediate deficiencies in the regional transit system, and neither provides the requisite specific plans of action for ensuring that all the necessary funds will be available within the timeframe shown in the financial plan."

Response: Contrary to the assertion in the comment quoted above, the demonstration of fiscal constraint for the 2004 CLRP and FY2005-2010 TIP does not rely in any way on the Metro Matters funding agreement or on the recommendations of the Metro Funding Panel. The fact that the CLRP does not provide all of the funding requested by the Washington Metropolitan Area Transit Authority (WMATA) has been addressed by the TPB in successive CLRP updates and amendments, beginning in the year 2000, through the imposition of a constraint on transit ridership growth, as discussed below.[1]

[1] A more detailed description of the transit ridership constraint procedure and its application in the air quality conformity analysis is provided in an attachment to this letter.

In conducting the air quality conformity analysis for the 2000 CLRP, the TPB explicitly accounted for the funding uncertainties affecting the Metrorail system capacity and levels of service beyond 2005. The demand analysis methodology for conformity uses a "transit ridership constraint" under which future ridership levels for trips to or through the core are constrained to 2005 levels for the analysis years of 2015, 2020 and 2030. The constrained transit ridership growth results in more automobile trips, VMT, and emissions levels. This constraint explicitly recognizes the funding shortfall facing Metro and fulfills the requirement of Section 450.322 (b)(11) of the Metropolitan Planning Rule that the CLRP shall "include a financial plan that demonstrates the consistency of proposed transportation investments with already available and projected sources of revenue". FHWA and FTA approved the conformity determination for the 2000 CLRP in January 2001.

In documenting the 2000 CLRP, the TPB reported on funding challenges facing Metro and on the results of implementing the transit ridership constraint. (See "2000 Update to the Financially Constrained Long Range Transportation Plan for the National Capital Region," pp 5-5 & 5-6, at www.mwcog.org under transportation/publications/CLRP/TIP.) In early 2001, the TPB published a brochure, "A System in Crisis: The Funding Shortfall for the Washington Area Transportation System," along with its *Region* magazine annual report to inform the public and elected officials in the region about these funding needs.

In developing the 2003 CLRP, the TPB conducted an updated financial analysis that forecasted revenues and costs for operating and maintaining the existing transportation system and for expanding it over the entire 27-year planning period. (See "2003 Update to the Financially Constrained Long-Range Transportation Plan for the National Capital Region", pp 2-6 through 2-10, at www.mwcog.org under transportation/publications/CLRP/TIP.) The 2003 CLRP financial analysis showed that "the requests by WMATA for operating, preservation, and system access and capacity are nearly funded over the 27-year period", but that "these aggregate expenditures and revenues do not fully address year-by-year expenditure requirements relative to year-by-year availability of revenues." Consequently, for the air quality conformity analysis for the 2003 CLRP, the TPB again explicitly accounted for the funding uncertainties affecting the Metrorail system capacity and levels of service beyond 2005 with the transit ridership constraint. On December 17, 2003, the TPB adopted the 2003 CLRP, and on February 23, 2004, FHWA and FTA approved the conformity determination.

During 2004, WMATA and the region's jurisdictions took significant steps to identify and commit specific funding for Metro's near-term needs in the Metro Matters program, and to address longer term needs through a Metro Funding Panel. The 2004 CLRP and FY 2005-2010 TIP were approved by the TPB on November 17, 2004. Because the air quality conformity analysis for the plan

began on September 9, 2004, before the Metro Matters funding agreement was approved by the WMATA Board (on October 21, 2004) and before the Metro Funding Panel completed its report (on January 6, 2005), the TPB once again accounted for the funding uncertainties affecting the Metrorail system capacity and levels of service beyond 2005 with the transit ridership constraint.

At the February 16, 2005 TPB meeting, a letter was distributed from WMATA regarding this ridership constraint. The WMATA letter states:

> " Since this constraint was imposed on the model, the 6000 Series rail cars have been ordered and the Metro Matters program has been adopted, which will purchase 120 more rail cars. With the receipt of these cars, the Metrorail system will have capacity to accommodate ridership growth through 2010. Therefore, we are asking that TPB change the capacity constraint on the core Metrorail system from 2005 to 2010."

Based on WMATA's request, for the upcoming 2005 CLRP and FY 2006-2011 TIP the TPB will change the ridership constraint to 2010, which will still recognize the Metro funding uncertainties beyond 2010.

Comment: "The comments we previously submitted to TPB demonstrate that neither the TIP nor CLRP assure adequate maintenance of the existing Metro system and other transportation systems. See 23 CFR 450.324(e)(TIP financial plan must show that projects can be implemented with existing and proposed revenue sources "while the existing transportation system is being adequately operated and maintained.")."

Response: Requirements for operation, maintenance and repairs of the WMATA system are addressed through WMATA's annual budget process. Article VIII of the WMATA Compact dealing with annual budgets includes the following requirement with regard to the current expense budget:

> "The Board shall annually adopt a current expense budget for each fiscal year. Such budget shall include the Board's estimated expenditures for administration, operation, maintenance and repairs, debt service requirements and payments to be made into any funds required to be maintained. The total of such expenses shall be balanced by the Board's estimated revenues and receipts from all sources, excluding funds included in the capital budget or otherwise earmarked for other purposes."

For the 2003 financial analysis, WMATA submitted cost estimates for operating, preserving, and expanding the transit system over the 27 year time-frame of the CLRP. For the operating costs, the total funding estimated to be available for the CLRP was 94 percent of the total requested by WMATA. The TPB concluded

that this level of funding provided the appropriate framework under the CLRP for the development of annual WMATA budgets. The WMATA annual operating and maintenance budget is negotiated and agreed upon each year by WMATA and its funding jurisdictions, with the anticipated operating and maintenance costs and fare revenues brought into balance with the available subsidy funding. The WMATA jurisdictions have historically fully funded WMATA's operating and maintenance subsidy as determined through this annual budget process.

At the June 18, 2003 TPB meeting, this commitment to funding the annual operating expenses was discussed. Some specific statements as recorded in the minutes included:

> "Ms. Kaiser (Board member from the Maryland Department of Transportation) ... said that operating expenses are handled on a year-to-year basis. She said that when Maryland's share of the bill comes in, it will pay that share of the bill."
>
> "Vice Chairman Hanley (Board member from Fairfax County) reiterated Mr. Zimmerman's point that operating expenses should be the least of the region's worries regarding WMATA funding. .... She emphasized that when the local governments get their WMATA bills, they pay them."

In projecting the growth in WMATA's funding needs from 2005 to 2015, the January 6, 2005 Metro funding panel report assumes that the year to year operating and maintenance expenses will be funded as currently and that the new dedicated funding will be primarily for core capacity enhancement projects:

> "The operating projections are based upon the following assumptions:
>
> - Cost Recovery -- WMATA will maintain its current 57 percent cost recovery (i.e., proportion of operating expenses met from revenues-fares, parking fees and other ancillary operating revenues)...
> - Maintenance of Effort -- the baseline operating projections assume that WMATA's funding partners will continue to meet basic subsidy requirements of the existing system and its planned extensions. ...
>
> Under these assumptions, new dedicated funding primarily will serve to cover the subsidy requirements of core capacity enhancement projects needed to serve expanded demand for the current system."

Until new dedicated funding for WMATA is identified, TPB and WMATA are expected to continue to impose the transit ridership constraint in the conformity analysis for the CLRP to reflect the limitations on transit system capacity resulting from the shortfall in funding.

Comment: "...with respect to plans for funding MetroAccess in the future the Panel merely "recommends a concerted effort, perhaps involving the formation of a new panel with expertise on this issue to focus on existing federal, state and local social service funding." TPB cannot rely on mere recommendations for funding MetroAccess without identifying a specific plan of action for ensuring that the necessary funds will be available within the timeframe shown in the financial plan."

Response: As noted in the previous response, requirements for operation, maintenance, and repairs of the WMATA system are addressed through WMATA's annual budget process. These requirements include MetroAccess. The WMATA jurisdictions have historically fully funded WMATA's operating and maintenance subsidy as determined through this annual budget process.

In January 2004, the TPB transmitted to the WMATA Board the TPB Access for All Committee's recommendations for transit services for people with disabilities. A key recommendation called for a study of MetroAccess to examine if there are more cost-effective ways to better serve the greatest number of people with disabilities with the current budget. In March 2005, the TPB amended the current FY 2005 Unified Planning Work Program (UPWP) and approved the FY 2006 UPWP as requested by WMATA to conduct this study. The study, which is scheduled for completion in December 2005, will examine innovative approaches to improving MetroAccess, including contracting practices and coordination opportunities. It will recommend cost-effective ways for MetroAccess and other regional paratransit services to better serve more people with disabilities.

Comment: "There is no available or committed funding identified for the Metro system security improvements WMATA says are necessary."

Response: WMATA is addressing the security improvements it says are necessary through a variety of initiatives, many of which are outside the current CLRP and TIP processes, including seeking federal Homeland Security and other federal or state funding.

Comment: "The TIP and CLRP fail to provide for other aspects of the existing transportation system, including $300 million in "emergency" bridge repairs needed in the District of Columbia. TPB, *Time to Act – The National Capital Region's Six-Year Transportation Funding Needs*, 2005-2010 (Feb. 2004)."

Response: The FY 2005-2010 TIP as adopted by the TPB on November 17, 2004 includes $365 million in funding for 65 bridge projects in the District of Columbia. These maintenance and repair projects are programmed with over $215 million in federal Bridge Replacement and Rehabilitation Program funds, plus over $140 million in Interstate Maintenance, National Highway System, and Surface Transportation Funds. (In addition, over $300 million in Special Project

funds are programmed for the 11th Street Bridge and Interchange Replacement and for modifying or reconstructing the South Capitol Street Bridge.)

The TPB appreciates your interest in the conformity determination for the 2004 CLRP and FY 2005-2010 TIP.

Sincerely,

Ronald F. Kirby
Director, Department of
Transportation Planning

cc: Gary Henderson
Division Administrator
Federal Highway Administration

Susan Borinsky
Regional Administrator
Federal Transit Administration

Attachment

DESCRIPTION OF THE TRANSIT RIDERSHIP CONSTRAINT USED IN THE AIR QUALITY CONFORMITY ANALYSIS OF THE FINANCIALLY CONSTRAINED LONG-RANGE TRANSPORTATION PLAN (CLRP) FOR THE NATIONAL CAPITAL REGION

June 13, 2005

Why Was the Transit Ridership Constraint Developed?

As required under current federal regulations, the region has updated the financially constrained long-range plan (CLRP) every three years, in 1994, 1997, 2000, and 2003. It has also amended the CLRP in other years, most recently in 2004. For each three-year update, a financial analysis is conducted to ensure that the plan is financially realistic with respect to expected transportation costs and revenues and only includes new facilities that can be funded while maintaining the existing transportation system. The projects submitted for the plan must be "constrained" to the revenues that are reasonably expected to be available.

For the 2000 CLRP update, the Washington Metropolitan Area Transit Authority (WMATA) estimated the costs for preserving the transit system and to accommodate Metrorail ridership growth over the 25-year time frame of the plan. In the Spring of 2000, WMATA submitted these funding requests for consideration in the financial analysis of the CLRP. Because the $1.5 billion requested for the rail cars and station improvements to accommodate the projected Metrorail ridership was not funded in the CLRP,[1] WMATA expressed concern that the transit system would be unable to accommodate the significant ridership increases previously forecast between 2000 and 2020.

To address the fact that funding was not identified to accommodate all of the projected ridership growth, a method was required to limit the projected ridership to be consistent with the available funding for the capacity improvements. WMATA and TPB staff developed a travel demand analysis methodology to "constrain" transit ridership into and through the core area, the most congested part of the system, after 2005. In this method, the forecasted transit person trips that cannot be accommodated are allocated back to the automobile trip forecasts.

How Does the Transit Ridership Constraint Work?

The transit constraint method is applied during the travel demand modeling process as part of the air quality conformity analysis of the CLRP[2]. First, unconstrained origin and destination trip tables are produced for the years 2005, 2015, and 2025. Constrained transit trip tables are then created for 2015 and 2025 by inserting 2005 totals for the transit trip patterns that

[1] See Cambridge Systematics, Inc., *Analysis of Resources for the Financially Constrained Long Range Transportation Plan for the Washington Area,* prepared for the TPB, October 2000.

[2] See Attachment B to the TPB approved Scope of Work in Appendix A of the report: *Air Quality Conformity Determination of the 2000 Constrained Long-Range Plan and the FY 2001-2006 Transportation Improvement Program for the Washington Metropolitan Region*, Oct 18, 2000.

correspond to trips into or through the core area[3] containing the maximum load points in the rail system. The transit person trips that cannot be accommodated are then allocated back to the auto person trip tables, resulting in increased daily automobile trips and vehicle emissions.

When this method was applied for the 2000 CLRP[4], transit work trips were forecast to increase by 18 percent from 2001 to 2025 under the constraint, but would increase 36 percent without the constraint. The constraint caused 104,000 additional daily trips to be absorbed by the highway system, causing an increase in emissions.

How Was the Transit Ridership Constraint Method Reviewed and Approved?

During the Spring of 2000, the Board was briefed on several occasions on the method during the process of approving the scope of work for conducting the air quality conformity analysis for the CLRP[5].

At the June 21, 2000 TPB meeting, the method was discussed and approved. Some specific statements as recorded in the minutes included[6]:

> "Mr. Kirby (Director of Transportation Planning) reported to the Board that this method would be used to account for the constraint on Metrorail ridership growth in the core beyond 2005."
>
> Ms Hanley (a Board member from Fairfax County) "commented that the constraints on the future use of Metro should not be interpreted as people not wanting to use it; it's a question of money needed for more rail cars and capacity."
>
> In response to another Board member, Mr. Kirby "stated that hopefully in practice we will eventually find a way to avoid having the constraint on Metro ridership growth in the core beyond 2005. But,

[3] The core area includes the area directly surrounding downtown Washington D.C., and a small portion of Arlington County.

[4] These results were highlighted on page 10 in the TPB's 2001 *Region* magazine. Also see pages 5-5 and 5-6 in the plan document: *2000 Update to the Financially Constrained Long-Range Transportation Plan for the National Capital Region*, which is found at www.mwcog.org under transportation/publications/CLRP/TIP.

[5] On April 19, the Board was briefed on the draft scope of work, which included the transit constraint method, and released it for public comment. On June 7, a special TPB work session was held to discuss developing a process to address key funding issues associated with the 2000 CLRP which included a briefing on the staff memo proposing the method. On June 21a special TPB work session was held prior to the TPB meeting which included a discussion of the conformity work scope and the transit constraint methodology and implications for the CLRP.

[6] See page 13 in minutes for the June 21, 2000 TPB meeting

> for the moment, in order to be consistent with the financial projections, we have a method to estimate what will happen to the ridership growth if the supply of rail cars is limited by funding."

During the Fall of 2000, the Board was briefed on several occasions on the results of the air quality conformity analysis, including the effects of the transit constraint on projected daily vehicle trips and miles traveled, during the process of approving the conformity determination[7].

At the September 20, 2000 TPB meeting, the conformity results and the effects of the transit constraint were discussed. A specific statement recorded in the minutes included[8]:

> "Ms Hanley (a Board member from Fairfax County) recapped some of the discussion from the morning work session. She referenced page 6 of the mailout material which illustrated the effect of constraining WMATA transit ridership. She mentioned that at the morning work session, staff were asked to run the travel demand analysis again without constraining WMATA transit ridership to see what the effect would be on air quality."

At the October 18, 2000 meeting, the Board approved the 2000 CLRP, along with the TIP and air quality conformity determination. The Board also approved a resolution expressing its "serious concerns over the inability of the CLRP to meet the goals of the TPB Vision due to a shortfall in transportation funding," and committed to a high-level meeting of state DOT officials, state legislators, representatives from Congress, and other regional leaders to review and discuss the region's transportation needs[9]. The presentation materials from this meeting were made into a brochure[10] and included in a video which was shown on many of the local cable TV networks.

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[7] On September 14 the draft air quality conformity assessment was released for public comment. On September 20, a special TPB work session was held prior to the TPB meeting to review the results of the air quality conformity analysis which included a discussion of the effects of the transit constraint on projected daily vehicle trips and miles traveled.

[8] See page13 in minutes for the September 20, 2000 TPB meeting.

[9] See the 2001 *Region* magazine for a synopsis of the meeting held at Union Station on November 30.

[10] "A System in Crisis: The Funding Shortfall for the Washington Area Transportation System" February 2001. (The results of the transit constraint due to the lack of funding to accommodate transit growth are highlighted on page 8.)

MARYLAND TRANSPORTATION AUTHORITY

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Andrew N. Barrow
Susan M. Affleck Bauer, Esq.

Trent M. Kittleman
Executive Secretary

2310 Broening Highway
Suite 150
Baltimore MD 21224
410-537-1000
410-537-1090 (fax)
410-355-7024 (TTY)
1-866-713-1596

e-mail: mdta@mdtransportationauthority.com

www.mdtransportationauthority.com

February 4, 2005

The Honorable Phil Mendelson, Chairman
National Capital Region Transportation Planning Board
Metropolitan Washington Council of Governments
777 North Capitol Street, N.E.; Suite 300
Washington, D.C. 20002-4290

Attention: Mr. Ronald F. Kirby

Dear Sirs:

In addition to issuing GARVEES for the Intercounty Connector Project (ICC), the Maryland Transportation Authority (Authority) will fund approximately $1.24 billion of project costs (including $1.12 billion in the FY 2005 –FY 2010 period). This funding will be provided from Authority toll revenue bonds (and potentially cash), supported by Authority revenues (primarily toll revenues). The funding for the ICC is included in the Authority's FY 2005-2010 capital program, which includes an additional $1.61 billion in other Authority projects.

With recent toll increases and a proven revenue stream, the Authority is able to undertake its capital program obligations including the ICC. Annual Authority revenues are projected to be $292 million in FY 2005 and $301 million in FY 2006. The Authority has been conservative in its use of debt and adheres to strict financial goals and standards, including those imposed in its trust agreement and bond indentures. The Authority's goal is to maintain cash reserves approximately equal to annual toll revenues, and a coverage factor of net revenues being two times annual debt service.

In 2004, the Authority received its highest-ever bond ratings, including Aa3 (Moody's Investors Service) and AA- (Fitch Ratings). The A+ rating from Standard and Poors was unchanged. These ratings took into consideration the Authority's intent to undertake the ICC project.

The Authority was established by the Maryland General Assembly as an independent state agency in 1971. It consists of six members appointed by the Governor with the advice and consent of the State Senate. Each member serves a three-year term. Maryland's Secretary of Transportation serves as the Authority's chairman.

Pursuant to the enabling legislation, the Authority is responsible for the construction, operation, maintenance and repair of revenue-producing transportation facilities projects. All existing highway toll facilities in

Maryland are owned, operated and maintained by the Authority, which has the exclusive right to levy tolls within the State. Current toll facilities include:

- John F. Kennedy Memorial Highway (I-95);
- Thomas Hatem Memorial Bridge (US 40);
- Fort McHenry Tunnel (I-95);
- Baltimore Harbor Tunnel (I-895);
- Francis Scott Key Bridge (MD 695);
- William Preston Lane Jr. Memorial (Bay) Bridge (US 50/301); and
- Governor Harry W. Nice Memorial Bridge (US 301).

The Intercounty Connector will be the Authority's eighth toll facility.

Acting on behalf of the Department, the Authority has various powers and duties relating to the supervision, financing, construction, operation, maintenance and repair of transportation facilities projects. In addition to its existing transportation facilities projects, the Authority may authorize the acquisition, financing, or construction of any other projects for transportation facilities, including airport, highway, port, rail and transit facilities, as "transportation facilities projects." The Authority is empowered to finance the cost of transportation facilities projects by the issuance and sale of revenue bonds, notes, or other obligations.

If additional information is needed, please do not hesitate to contact me.

Sincerely,

Trent M. Kittleman
Executive Secretary

EARTHJUSTICE
Because the earth needs a good lawyer

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SEATTLE, WASHINGTON TALLAHASSEE, FLORIDA WASHINGTON, D.C.

December 16, 2005

National Capital Region Transportation Planning Board
Metropolitan Washington Council of Governments
777 North Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4290

Re: Draft Supplement to the Air Quality Conformity Analysis for the 2005 Constrained Long Range Plan Amendments and FY 2006-2011 Transportation Improvement Plan (Nov. 16, 2005)

We are writing to comment on the above-referenced draft PM2.5 conformity analysis for the 2005 Constrained Long Range Plan (CLRP) and FY 2006-2011 Transportation Improvement Plan (TIP), presented for public review on November 16, 2005. For the reasons discussed below, the CLRP and TIP do not satisfy the requirement that "transportation plans and TIPs must be fiscally constrained consistent with DOT's metropolitan planning regulations at 23 CFR part 450," and therefore cannot be found to meet the conformity requirements of the Clean Air Act, 42 U.S.C. § 176(c), and implementing regulations, 40 C.F.R. § 93.108. These comments are also submitted on behalf of the Washington, D.C. chapter of the Sierra Club.

Under DOT's metropolitan planning regulations, "[t]he TIP shall be financially constrained by year and include a financial plan that demonstrates which projects can be implemented using current revenue sources and which projects are to be implemented using proposed revenue sources (while the existing transportation system is being adequately operated and maintained)." 23 C.F.R. § 450.324(e). Further, "[o]nly projects for which construction and operating funds can reasonably be expected to be available may be included." Finally, because the Washington D.C.–MD–VA metropolitan area is in nonattainment status for PM2.5 and ozone standards, projects included for the first two years of the current TIP must be limited to those for which funds are "available or committed." TPB has not demonstrated that the projects included in the CLRP meet the foregoing requirements.

1. TPB has not demonstrated that projects in the CLRP can be implemented "while the existing transportation system is being adequately operated and maintained."

As an initial matter, TPB makes only a conclusory finding that the CLRP provides for adequate operation and maintenance of the existing transportation system, stating:

> [T]he FY 2006-2011 TIP has been developed to meet the financial requirements in the Metropolitan Planning Rules and includes projects or identified phases of projects only if full funding can reasonably be anticipated to be available for their completion with already available and projected sources of transportation revenues while the existing transportation system is being adequately operated and maintained.

1625 MASSACHUSSETTES AVENUE, SUITE 702 WASHINGTON, DC 20036-2212
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TPB, Resolution Approving the TIP for FY 2005-2010 (Oct. 19, 2005). However, 23 C.F.R. § 450.324(e) places a priority on ensuring that the existing transit system will be adequately operated and maintained *before* other projects are added to the CLRP. TPB's conclusory statement, without documentation or analysis of its conclusion, falls far short of demonstrating that the CLRP meets this requirement.

Publications and statements by TPB and WMATA officials highlighting the continued funding shortfall facing the Metro transit system contradict TPB's assertion. For example:

-- TPB acknowledges that "substantial additional financial commitment at federal, state, regional, and local levels is necessary to meet WMATA's capital funding needs." *Resolution Endorsing Continuing Efforts to Identify Dedicated Funding for WMATA*, TPB R3-2006 (Sept. 21, 2005). Indeed, TPB recently emphasized the critical need to "identify additional funding to meet the preservation, rehabilitation, safety, security and capacity needs of the Metrorail and Metrobus system."

-- In a presentation to TPB on September 21 of this year, the Washington Metropolitan Area Transit Authority (WMATA) emphasized that "Metro is exceeding beyond expectations – yet literally falling apart." WMATA, *Dedicated Funding for the Washington Metropolitan Area Transit Authority* (PowerPoint Presentation) (September 21, 2005).

-- WMATA estimates that Metro faces a $300 million annual shortfall in needed operating and capital funds, even after assuming 5.3% growth in state/local funding and modest fare increases. *Id*. Despite $3.3 billion funded through the Metro Matters funding agreement, "$2.9 [billion] in basic capital needs remain unfunded." *Id.* Thus, a new funding agreement would be required in 2008 in order to have funding available for needed expenditures after 2010. *Id.*

-- WMATA's Capital Improvement Program (CIP) for FY 2006-2011 calls for a total of $12 million to be spent on its System Expansion Program (SEP) during the CIP program years. However, the CIP notes that the Metro Matters agreement does not provide funding for the SEP beyond fiscal year 2005. WMATA, *FY 2006 Capital Budget and FY 2006-2011 CIP and 2006 Metro Matters Annual Work Plan (*March, 2005).

Thus, not only does TPB fail to provide factual support for its assertion that the CLRP provides for adequate operation and maintenance of the existing transit system, it fails to address evidence to the contrary.

2. TPB has not demonstrated that funding for proposed projects included for the first two years of the TIP are "available or committed, or that funding for projects beyond the first two years of the TIP "can reasonably be expected to be available."

TPB does not attempt to make a specific demonstration that anticipated funds for each project meet the fiscal constraint requirements. The fiscal constraint rule sets up two separate and specific regimes for demonstrating conformity with fiscal constraint requirements:

1) For each year of the CLRP, "[o]nly projects for which construction and operating funds can reasonably be expected to be available may be included."
2) In nonattainment areas like the DC-MD-VA metropolitan area, projects included for the first two years of the current TIP must be limited to those for which funds are "available or committed."

23 C.F.R. §450.324(e). The Conformity Rule contains specific factors for determining compliance. *See* 58 Fed. Reg. 62188 (Nov. 24, 2003). For example, "[f]or Federal funds that are distributed on a discretionary basis… any funding beyond that currently authorized and targeted to the area should be treated as a new source and must be demonstrated to be a "reasonably available new source." 58 Fed. Reg. at 62203-04.

In contrast to these specific requirements, TPB claims that it "demonstrate[s] funding can reasonably be expected to be available," by "examin[ing] the projects in the TIP tables "by the proposed funding categories." WMATA, 2005 CLRP Financial Plan at 229. Based on this examination, the Financial Plan purports to show that funding needs for proposed projects in the first year are "consistent with the anticipated TEA-21 funding authorized for FY 2006," and funding needs for proposed projects in the remaining program years are "consistent with the anticipated federal dollars authorized by the states." *Id.* Even if this finding meets fiscal constraint requirements on its face, and we do not believe it does, it is unclear what standard or analysis TPB follows to determine such "consistency." Moreover, as discussed above, the fiscal constraint rule sets forth specific requirements for 1) the first two years of the TIP; and 2) all remaining program years beyond the first two years. These requirements are not satisfied merely by identifying general sources of potential funding and asserting that projects are "consistent with anticipated funding."

As a result of this deficiency, the CLRP and TIP contain proposed projects that do not comply with fiscal constraint requirements. For example, the funding table for the proposed Intercounty Connector includes a budget of $1.25 billion for projects or actions programmed for FY 2006-2008. Ronald F. Kirby, Memorandum re. Significant Changes for the 2005 CLRP and FY 2006-2011 TIP (Sept. 15, 2005) (attachment at 13-14). Anticipated funding is listed under general categories (i.*e.* "GARVEE (AC)," "MdTA," "Special Federal," and "State") along with the percentage of funding anticipated from each source. There is no indication whether the listed amounts have been currently authorized or instead are anticipated; whether they represent existing or new sources of funding; and if they are new sources of funding, whether they are a "reasonably available new source."

3. The transit ridership constraint does not satisfy fiscal constraint requirements.

TPB also claims to meet the fiscal constraint requirements by "explicitly account[ing] for the funding uncertainties affecting the Metrorail system capacity and levels of service" beyond 2010 though the "transit ridership constraint." TPB, *Resolution Finding That the 2005 CLRP and FY 2006-2011 TIP Conform With the Requirements of the Clean Air Act Amendments of 1990*, TPB R5-2006 (October 19, 2005). According to TPB, the transit ridership constraint is applied during the travel demand modeling process as part of the air quality conformity analysis for the CLRP. TPB, *Description of the Transit Ridership Constraint* (June 13, 2004). In plain terms, the constraint creates an assumption in the travel demand model that future transit trips through the core area

will remain at 2010 totals. *Id.*; TPB R5-2006. The "unconstrained" transit demand predicted by the model is then allocated to automobile trip totals, resulting in increased model totals for daily automobile trips. *Id*. Whatever validity this technique has in predicting vehicle trips, it is not a substitute for compliance with the *fiscal constraint* requirements set forth in 40 C.F.R. § 93.108 and the FHWA Conformity Guidance. TPB cannot override fiscal constraint requirements by modeling.

Finally, although it is not relied upon in the current CLRP and TIP, it is worth noting here TPB's recent citation to a bill submitted by Congressman Tom Davis, titled H.R. 3496 (National Capital Transportation Amendments Act of 2005) (introduced on July 28, 2005, and reported on Oct. 20, 2005). *See* TPB, *Certification of the Urban Transportation Planning Process* (Oct. 19, 2005). TPB notes that "the commitment of the $1.5 billion in federal and $1.5 billion state and local capital funding [from the Davis Bill] would address the funding uncertainties affecting the Metrorail system capacity and levels of service beyond 2010, and permit the TPB to remove the transit ridership constraint in the air quality conformity analysis for the CLRP." *Id.* However, the Davis Bill is contingent on 1) amending the WMATA Compact to add a requirement that each of the jurisdictions approve "dedicated funding sources" for WMATA; 2) establishment of an inspector general to report to the WMATA Board; and 3) the addition of two seats on the WMATA board for representatives from the Federal government. *See Minutes of the TPB* at 6 (Sept. 21, 2005). As those minutes demonstrate, the state jurisdictions and WMATA have not committed to the Davis Bill's conditions, either formally or in principal. *Id.* at 6-7. Thus, even if the Davis Bill or a substantially similar enactment is adopted, TPB should not rely on it as an anticipated source of funding in this or any future CLRP unless the conditions of the bill are met and funds are "available or committed."

We previously commented on TPB's fiscal constraint analysis for the 2004 CLRP and FY 2005-2010 TIP. Because the same defects relating to fiscal constraint were carried forward from last year's CLRP and TIP, we attach those comments and hereby incorporate them by reference. As mentioned above, while TPB continues to rely on the Metro Matters funding agreement in its conformity analysis, Metro Matters falls $2.9 billion short of funding WMATA's basic capital needs. For example, the urgent need for funding $150 million in high-priority security improvements for Metrorail and Metrobus still has not been fulfilled. *See* Michael Alison Chandler, *Transit Security Funding is Urged,* Washington Post, Thursday, September 22, 2005; Page B04; *Minutes of the TPB* at 12 (May 18, 2005).

For all the foregoing reasons, the 2005 TIP and FY 2006-2011 CLRP do not comply with the conformity requirements of the Clean Air Act. We request that TPB address the specific deficiencies described in these comments prior to final approval of the Draft Supplement to the Air Quality Conformity Analysis for the CLRP and TIP.

Sincerely,

/s/ David S. Baron
David S. Baron
Jennifer C. Chavez
Earthjustice

/s/ Chris Carney
Chris Carney
Sierra Club Metro D.C.
Healthy Communities Campaign

EARTHJUSTICE

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ENVIRONMENTAL LAW CLINIC AT STANFORD UNIVERSITY

October 29, 2004

Transportation Planning Board
Metropolitan Washington Council of Governments
777 North Capitol Street, N.E.
Washington, D.C. 20002

RE: Draft Air Quality Conformity Determination of the 2004 Constrained Long Range Plan and the FY2005-2010 Transportation Improvement Program for the Washington Metropolitan Region (Oct. 1, 2004)(Conformity Determination); Draft Transportation Improvement Program for the Washington Metropolitan Region FY 2005-2010 (Oct. 1. 2004)(TIP); 2004 Fiscally Constrained Long Range Transportation Plan (CLRP).

We are writing to comment on the above-referenced drafts. For reasons further discussed below, these drafts and the analyses therein do not comply with the conformity and planning requirements of the Clean Air Act, the Intermodal Surface Transportation Efficiency Act (ISTEA)(as amended by the Transportation Equity Act for the 21st Century (TEA-21)), and regulations promulgated thereunder.

We are particularly concerned that COG and its member jurisdictions are proposing billions of dollars for new road building while neglecting to fund projects that are urgently needed to maintain the region's existing transportation infrastructure. According to Metro officials, the Washington area's transit system is on "life support," and will not be able to maintain even its current degraded level of service without a major infusion of funds. "Emergency" bridge repairs needed in the District of Columbia are left unfunded by these plans. Yet at the same time, the TIP and CLRP propose massive new spending for new and bigger roads. As further discussed below, these warped priorities violate explicit provisions of federal law and defy common sense. They also threaten to prolong our region's violation of health standards for smog, a fact obscured by TPB's inaccurate and seriously flawed transportation model.

1. Federal law requires the TIP and CLRP to assure adequate maintenance of existing transportation systems

In order to be found in conformity for purposes of the Clean Air Act, "[t]ransportation plans and TIPs must be fiscally constrained consistent with DOT's metropolitan planning regulations at 23 CFR part 450." 40 C.F.R. §93.108 (2003). The DOT metropolitan planning regulations require, among other things, that CLRPs and TIPS include financial plans showing that funds are in fact available or (for the longer term) are reasonably expected for all of the projects in such plans. 23 C.F.R. § 450.322(b)(11); 450.324(e); 58 Fed. Reg. 58040, 58059-60

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(1993). The regulations further mandate that priority be given to maintaining the existing system:

> The financing plan must demonstrate which projects can be implemented annually using current revenue sources and which projects are to be implemented using proposed new revenue sources **while the existing transportation system is being adequately operated and maintained**. This means that **priority should be given to the maintenance and operation of the existing system, including capital replacement.**

59 Fed. Reg. at 58060 (emphasis added); 23 C.F.R. § 450.324(e)(TIP financial plan must show that projects can be implemented with existing and proposed revenue sources "while the existing transportation system is being adequately operated and maintained"). See 23 U.S.C. §§ 134(f)(1), (g)(2), (h)(1)-(3).

2. Neither the TIP nor the CLRP assure adequate maintenance and operation of the existing Metro system

In a recent presentation to COG's Transportation Planning Board (TPB), the general manager of the Washington Metropolitan Area Transit Authority (WMATA) demonstrated that funding levels provided by the TIP and CLRP are insufficient to adequately maintain and operate the region's transit system. According to WMATA:

- "Metro is seriously overcrowded." Rail service on all lines is "highly congested," meaning that railcars are seriously overcrowded
- "Due to funding shortfalls, Metro is deferring necessary capital investments that keep existing assets in a 'state of good repair'
- "Metro's service performance has been steadily declining in the last couple of years"
- "Approximately 42% of Metrobus riders have difficulty obtaining a seat every day"

Richard A. White, General Manager/CEO, WMATA, *WMATA Performance and Funding Requirements Update* (powerpoint presentation to TPB, Sept. 15, 2004)(hereinafter, "WMATA Update") at 2, 4, 5.[1] These findings are no surprise to anyone who uses the metrorail or metrobus systems. Hardly a day goes by without breakdowns somewhere in these systems, leading to delays that sometimes stretch on for hours. WMATA figures show that the mean distance between rail failures has plummeted by nearly 30% in just the last two years. Id. at 7. According to published reports, Metro's rail cars are breaking down nearly twice as often as they did three years ago, creating increasing delays across all lines when ridership is surging. "Localities Kick in for Metro Upgrade," Washington Post, Oct. 15, 2004, B1. A 2004 Brookings Institution report notes that "WMATA has been hounded in recent years by a series of setbacks: mechanical problems and breakdowns on buses and trains, overcrowding on certain rail lines, communications and information troubles, and ongoing elevator and escalator hassles." Brookings Institution, *Washington's Metro*: *Deficits by Design* (June 2004) at 1.

[1] All documents cited are incorporated herein by reference. We will separately submit copies of some of these documents for convenience, but all are on file at COG or otherwise publicly available.

WMATA projects that, without a major infusion of new funding, the situation will become even worse over the next five years. According to WMATA estimates, overcrowding will become "unmanageable" on the Orange line by 2008, on the Blue line by 2009, on the Red and Yellow lines by 2010, and on the Green line by 2011. WMATA Update at 4. These time frames fit squarely within both the TIP and CLRP.

To address these and other urgent needs for maintenance and operation of the existing system, WMATA needs at least an additional $1.5 billion over the next five years. According to WMATA, these funds are needed for the following (among other things):

- Replacement and rehabilitation of existing assets: "Many critical infrastructure assets are already becoming stressed because of deferred rehabilitation and replacement cycles. Without additional funding of $516 million, Metro service will deteriorate **and the system will fail**."
- Additional rail cars: "Metro desperately needs eight-car trains to relieve severe overcrowding and keep pace with ridership growth. The cost of 120 new railcars and support systems needed for eight-car trains is $625 million. Another $171 million is needed to support the bus system.
- Security and emergency response: Metro needs "$150 million in critical infrastructure protection to eliminate potential vulnerabilities in the Metro operating system and improve Metro's ability to respond and recovery during a regional emergency.

Metro Matters Fact Sheet (emphasis added).

TPB itself has acknowledged the critical need for additional funding to adequately maintain and operate the existing transit system. In a report earlier this year, TPB stated that the region's "critical" unfunded transportation needs include "[r]ehabilitating and maintaining the region's Metrorail and Metrobus system to keep it in a state of good repair; maximizing available system capacity to reduce overcrowding; and securing the system against potential threats." TPB, Time to Act – The National Capital Region's Six-Year Transportation Funding Needs, 2005-2010 (Feb. 2004) at 2-3. TPB further stated that WMATA's needs "are particularly critical," and that the region "urgently requires additional capital funding in order to meet [WMATA] needs totaling $4.1 billion over six years, of which $1.9 billion is funded and $2.2 billion remains unfunded." Id. 3.
A resolution slated for approval by the TPB Board on October 20, 2004 "[d]eclares that funding must be identified to meet the preservation, rehabilitation, and capacity expansion needs of the Metrorail and Metrobus system." TPB R3-2005.

TPB's October 20 resolution tacitly acknowledges that neither the TIP nor the CLRP identifies funding to adequately maintain and operate the existing regional transit system. Nor do the TIP and CLRP financial plans show that such funding can be reasonably expected. Accordingly, the TIP and CLRP do not comply with the fiscal constraint requirements of the DOT metropolitan planning rules cited above, and therefore cannot be found to meet the conformity requirements of the Clean Air Act.

3. The proposed "Metro Matters" funding agreement, while an important step forward, does not resolve the fiscal constraint deficiencies in the TIP and CLRP.

Staff for WMATA and Washington area governments have recently negotiated a proposed "Metro Matters Funding Agreement" to provide additional local funding of WMATA's near term needs. The agreement calls for local jurisdictions to provide $917 million in additional funds for WMATA over the next 6 years. Although this agreement is a welcome step forward, it does not fully resolve the funding shortfalls identified above, for several reasons.

First, the agreement will not become final until approved by all of the participating jurisdictions. At least two jurisdictions – Arlington and Fairfax counties - are depending on voter approval of funding at the upcoming November 2 election. "In N. Va., It's Rail Vs. Road Repairs: Fairfax, Arlington Face Bond Issues," Washington Post, Oct. 20, 2004, B1. Others will need approval from their governing bodies.

Second, even if approved by all of the jurisdictions, the agreement does not provide the full $1.5 billion that WMATA says is required for its most urgent needs over the next 6 years. Full funding "depends on significant assistance from the federal government: $260 million on top of what Metro already receives for rail cars, plus $143 million for security needs." Metro Press Release, 10-15-04, http://www.wmata.com/about/MET_NEWS/PressReleaseDetail.cfm?ReleaseID=521 (hereinafter, "Metro Press Release"). WMATA has not shown where these federal funds will come from, or that they can be reasonably expected. WMATA speculates that such funds might be provided in a future Congressional transportation bill, but there is no reason to believe this is anything more than wishful thinking. Equally speculative is WMATA's suggestion that, if federal funds are not provided, WMATA might cover the entire $260 million for capital costs using grant anticipation bonds. If there is no new federal grant or grant program, then WMATA will have no basis for issuing bonds in anticipation of grants from such a non-existent program.

Third, Metro Matters will not provide immediate relief from overcrowding, system breakdowns, delays, and other problems that transit riders are currently experiencing. The vast bulk of new rail cars under the program will not be delivered until fiscal years 2007 and 2008. Most of the additional buses provided under the program will not be put in service until the 2008-2010 period. Thus, it will take years before daily riders notice improvements attributable to Metro Matters. "In the meantime, we have to keep the system alive, and that's going to be a struggle," according to WMATA's general manager. "Localities Kick in for Metro Upgrade," Washington Post, Oct. 15, 2004, B1. Neither WMATA nor COG explain how the TIP and CLRP can be found to assure adequate maintenance and operation of the existing transit system, when that system is *currently* being *in*adequately maintained and operated, when neither the TIP nor the CLRP contain sufficient programs or funding to correct those inadequacies, and when even the Metro Matters program will not address many of those inadequacies for at least 3 years.

Fourth, the Metro Matters agreement does not provide funding beyond the next six years. According to WMATA:

> Metro Matters is only a six-year commitment and does not fully-fund critical rehabilitation needs beyond 2010. Only a small portion of needed capacity improvements

> is funded. A plan for dealing with Metro's long-term capital and operating needs is still unresolved. The Metro Matters agreement buys approximately six years before more problems reoccur and does not cover security issues.

Metro Press Release. Thus, there is as yet no plan, let alone available or reasonably expected funding, for assuring adequate maintenance of operation of the existing transit system after 2010.

For all these reasons, the Metro Matters agreement will not resolve the fiscal constraint deficiencies in the TIP and CLRP. As noted above, these plans must provide for funding to adequately maintain and operate the existing transit system, and must show that funding therefor is either currently available/committed or reasonably expected. Moreover, because the Washington area is nonattainment for ozone, the TIP financial plan must assure that, for the first two years of the TIP, funds to adequately maintain and operate the existing system are available or committed. 23 C.F.R. § 450.324(e); 58 Fed. Reg. at 58060. Here, neither WMATA nor COG have shown how the transit system will be adequately operated and maintained (or how such adequate operation and maintenance will be funded) during the first two years of the TIP, when most of the Metro Matters improvements will not be implemented until well after that. In addition, the need for adequate security in the metro system is immediate, yet there is no available or committed funding in the TIP to implement the $143 million security program that WMATA says is necessary.

Although funding for periods beyond years 1 and 2 of the TIP and CLRP does not have to be currently available or committed, it must be "reasonably available." 58 Fed. Reg. at 58060. See 23 U.S.C. §134(g)(2)(B). New funding sources may be considered for this purpose, but it is not enough to simply identify potential new funding sources without identifying strategies for ensuring their availability. Id. There must be a specific plan of action describing the steps that will be taken to ensure that the funds will be available within the timeframe shown in the financial plan. Id. Here, no such specific plan of action has been provided to ensure that any of the unfunded portions of Metro Matters will be funded, or to ensure that WMATA's funding needs beyond 2010 will be addressed. Indeed, CLRP does not even address WMATA's unmet needs for adequate operation and maintenance beyond 2010. Moreover, new funding sources will not generally be considered "reasonably available" where past efforts to enact new revenue sources have generally been unsuccessful, the extent of current support indicates that passage of a pending funding measure is doubtful, or no specific plan of action or other information is available demonstrating a strong likelihood that funds will be secured. Id. Here, full financing of the Metro Matters agreement and programs beyond 2010 hinges on additional funding that goes well beyond what has been provided in the past, and there is no plan or other information showing that such funding is strongly likely.

Failure to fully fund Metro to assure adequate operation and maintenance is all the more inexcusable when the proposed TIP and CLRP includes billions of dollars for new, capacity-increasing highway projects. The fiscal constraint rules require that first priority be given to adequate maintenance and operation of existing systems. Yet COG is proposing a multi-billion expansion while the existing system is broken. COG cannot lawfully adopt a TIP and CLRP that provide for billions in new road capacity when funding is not provided to fix existing systems that are falling apart.

4. The conformity determination fails to account to ridership losses due to inadequate operation and maintenance of the transit system

WMATA predicts that failure to correct inadequacies in the regional transit system will drive people away from using public transit and back into cars. WMATA, *America's transit system stands at the precipice of a fiscal and service crisis* (Sept. 2003). Yet the air quality analysis in the draft conformity determination assumes that transit ridership will be maintained. That assumption plainly cannot stand, given the lack of adequate funding in the TIP and CLRP to relieve overcrowding in the transit system and adequately operate and maintain that system. The conformity analysis must therefore be reworked to reflect the increased number of motor vehicle trips and VMT (and associated increased VOC and NOx emissions) that will result due to deficiencies in the transit system.

5. The TIP and CLRP fail to comply with fiscal constraint requirements in other key respects

As noted above, DOT's metropolitan planning rules require TIPs and CLRPs to show that sufficient funds are available or reasonably expected to adequately maintain and operate the existing transportation system. The TIP and CLRP here fail to meet this requirement not only with respect to the regional transit system, but also with respect to other parts of the Washington area transportation network. For example, the TIP and CLRP fail to fund $300 million in "emergency" bridge repairs needed in the District of Columbia. TPB, *Time to Act* (Feb. 2004) at 4. COG cannot seriously claim that the TIP and CLRP provide for adequate maintenance and operation of the existing system, when they fail to provide for "emergency" repairs in major system components like bridges.

In addition, the draft TIP fails to show that funds are available or committed for all projects in the first two years of the TIP, as required by 23 C.F.R.§ 450.324(e). For most road projects, the draft TIP shows funding needs only for FY 2005, and does not show that fund are available or committed even as to those. The TIP financial plan merely shows categories of funding sources, and does not show that funds are actually available or committed from these sources in amounts sufficient to cover all costs in the first two years of the TIP. Nor does the TIP financial plan show that adequate funds are reasonably expected for TIP projects in 2007-10.

Likewise, the CLRP fails to show that funds are reasonably expected for all of the projects enumerated therein. The document posted on COG's web site in publicly noticing the CLRP revision ("Proposed Significant Changes for the 2004 CLRP"), merely lists proposed additions to the CLRP, without addressing funding. Although sheets containing additional information on these projects were circulated under cover of an April 15, 2004 memo from Ronald Kirby, those sheets also fail to show that funding is reasonably expected for each project. For most projects, the sheets merely identify funding sources in vague terms, such as "federal and state." This plainly does not satisfy the above-cited DOT requirements for a showing that funding will be reasonably available. 23 C.F.R. § 450.322(b)(11); 58 Fed. Reg. at 58060. To the extent that COG is relying on other information to show the plan is fiscally constrained, that information must be documented in a financial plan that is part of the CLRP, and that is made available for public review and comment as part of the proposed CLRP amendment. 23 C.F.R.

§450.322(b)(11)(CLRP must "include" financial plan). COG cannot merely rely on documentation or information that might be available elsewhere.

6. The Conformity Determination is based on flawed and inaccurate travel modeling that underestimates air pollution from motor vehicles

Comments previously submitted by Environmental Defense to TPB and the Metropolitan Washington Air Quality Committee (MWAQC) detail a number of serious flaws in the model used by TPB staff to predict future motor vehicle traffic and emissions, and the conformity analysis relying on that model. Among other things, those comments demonstrate that:

* The TPB model fails to account in any way for increased in-commuting that will result from the additional 56,000 jobs that planners predict will be induced by 2030 with the addition of the ICC to the CLRP

* The latest TPB model does not accurately or even passably simulate real world conditions: Rather, it underestimates traffic by 26% on the 20 highest volume freeway links, and by 41% on the 10 highest volume major arterials.

* The model fails to accurately replicate traffic entering and leaving the metro core, and other basic travel patterns.

These and other major deficiencies in the TPB model are set forth in October 25, 2004 comments by Environmental Defense to MWAQC, along with the attachments thereto, all of which are incorporated herein by reference ("ED comments").

Because of these deficiencies, the Conformity Determination does show conformity as required by EPA rules. Pursuant to those rules, a conformity demonstration requires a showing that the TIP and CLRP are consistent with the region's motor vehicle emissions budgets. E.g., 40 C.F.R. § 93.118. Such consistency "must be demonstrated by including emissions from the entire transportation system, including all regionally significant projects contained in the transportation plan and all other regionally significant highway and transit projects expected" in the timeframe of the plan. Id. § 93.118(d). Here, because of the model deficiencies cited above, the draft conformity determination does not include emissions from the entire transportation system. Rather it unlawfully excludes substantial quantities of such emissions by failing to include emission from expected additional vehicle trips and by grossly underestimating future traffic volume (and associated emissions).

Moreover, consistency with the motor vehicle emissions budgets "must be demonstrated with a regional emissions analysis that meets the requirements of " 40 C.F.R. §93.122. Id. §93.118(d)(1), Under 40 C.F.R. § 93.122, such a regional emissions analysis must be made at a minimum "using network-based travel models according to procedures and methods that are available and in practice and supported by current and available documentation." Id. § 93.122(b)(1). Such models "must be validated against observed counts (peak and off-peak, if possible)," and "must be analyzed for reasonableness and compared to historical tends and other factors…" Id. § 93.122(b)(1)(i). "Land use, population, employment, and other network-based

travel model assumptions must be documented and based on the best available information." Id. §93.122(b)(1)(ii). "Scenarios of land development and use must be consistent with the future transportation system alternatives for which emissions are being estimated," and the "distribution of employment and residences for different transportation options must be reasonable." Id. § 93.122(b)(1)(iii). And the model "must be reasonably sensitive to changes in the time(s), costs(s), and other factors affecting travel choices." Id. §93.122(b)(1)(vi).

The TPB travel model does not meet the foregoing requirements for all the reasons set for in the ED comments. The model does not comport with procedures and methods that are available and in practice, but rather conflicts with sound modeling methodologies recommended by the National Academy of Sciences and discussed in the ED comments. The model is not supported by current and available documentation, but rather conflicts with that documentation, as explained in the ED comments. Moreover, the model has not been validated against observed counts: Rather, the ED comments show that the model does *not* accurately simulate such counts, and is not reasonable compared to other factors. Model assumptions are not based on the best available information, and the model is not reasonably sensitive to the factors affecting travel choices, but rather the model ignores key information about the impact of new jobs and additional commuting that will be induced by the ICC and other projects, as well as other factors cited in the ED comments.

Accordingly, the Conformity Determination does not demonstrate that the TIP and CLRP are consistent with the region's motor vehicle emissions budget in the manner required by EPA rules, and therefore the TIP and CLRP cannot be found in conformity. Moreover, any conformity finding by COG or DOT would be arbitrary and capricious, for all the reasons set forth in the ED comments.

Finally, we note that TPB has failed to make available for public review the full model information used to develop the proposed October 1, 2004 Conformity Determination, even though this information was requested in writing by Environmental Defense and others. Accordingly, we ask that the comment period on the Conformity Determination, TIP, and CLRP be extended until at least 30 days after this information is provided and made publicly available. The failure to provide this information violates the public participation and consultation requirements of EPA and DOT rules, including 40 C.F.R. §§93.105(e),.110(f), & .112, and 23 C.F.R. §§ 450.212, .316(b)(1), .322(c), .324(c), and .326.

Conclusion

For all the foregoing reasons, the proposed TIP and CLRP do not meet the conformity requirements of the Clean Air Act and do not comply with DOT's metropolitan planning regulations. Moreover, a finding of conformity would be arbitrary and capricious because it is not supported by substantial evidence or by an explanation showing a rational connection between the facts and a finding of conformity.

These comments are submitted on behalf of Environmental Defense, Sierra Club, Audubon Naturalist Society, and Chesapeake Bay Foundation.

Sincerely,

/s/ *David S. Baron*

David S. Baron
Attorney