Appendix D
Conformity Analysis

SYRACUSE METROPOLITAN TRANSPORTATION COUNCIL

Regional Emissions Analysis

for

SMTC Long-Range Transportation Plan – 2004 Update
2003-2006 Transportation Improvement Program

Using EPA's MOBILE 6 Emissions Model

and

The Latest Emissions Control Programs
for Onondaga County per NYSDEC

Prepared by:

The NYSDOT Environmental Analysis Bureau

and

The Syracuse Metropolitan Transportation Council

April 2004

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Introduction

This regional emissions analysis is prepared to comply with the requirements of the Federal Clean Air Act Amendments of 1990 and the associated Federal and State Transportation conformity regulations. The regulations, both the Environmental Protection Agency's (EPA) transportation conformity rule (40 CFR Parts 51 and 93) and the New York State Department of Environmental Conservation's (NYSDEC) transportation conformity regulation (6 NYCRR Part 240) require that each time the Syracuse Metropolitan Transportation Council (SMTC) adopts or approves a Transportation Improvement Program (TIP), Long-Range Transportation Plan (LRTP) or an amendment to the TIP or LRTP, it be determined that the proposed action is in conformity with the applicable State Implementation Plan (SIP) for air quality prepared by NYSDEC.

The remainder of this report presents the results and documentation of the regional emissions analysis and the air quality conformity determination conducted for the SMTC's LRTP 2004 Update and the 2003-2006 TIP.

Status of Applicable SIP

The proposed 2003-2013 State Implementation Plan (SIP) for air quality for Onondaga County contains estimated existing and future emissions of carbon monoxide (CO) as part of the Clean Air Act requirement to produce a "Maintenance Plan" when the NYSDEC demonstrated to the EPA that Syracuse and Onondaga County had attained the National Ambient Air Quality Standards (NAAQS). This Maintenance Plan establishes a comparison between existing "base year" emissions, (per the Clean Air Act this year is 1990) and future estimated emissions. The Maintenance Plan must demonstrate that emissions of CO in future years will remain below the levels established in the base year when the standards are first attained, therefore assuring the continued maintenance of the standards, or NAAQS.

The Onondaga County SIP of 1992, which established the 1993-2003 Maintenance Plan, used a now outdated version of EPA's emissions model, "MOBILE" version 4.1. In addition, the NYSDEC changed some of the proposed future emission control programs, most notably the vehicle inspection and maintenance program that was anticipated in the Maintenance Plan. It has now been changed to a "gas-cap integrity test" to check for emissions leaks, as part of the New York State annual vehicle safety and emissions inspection program. It includes testing of the vehicle's emissions control equipment for evidence of tampering, and will include testing of new vehicle on-board diagnostic systems related to the vehicle's emissions control system.

The conformity analysis must use the latest planning assumptions and the latest emissions model,

both of which have changed significantly and are reflected in the Mobile 6 model and the 2003-2013 SIP. During the development of the new proposed 2003-2013 SIP the SMTC worked closely with the Interagency Consulting Group (ICG) consisting of representatives of the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), US Environmental Protection Agency (EPA), New York State Department of Environmental Conservation (NYSDEC), and the New York State Department of Transportation Environmental Analysis Bureau (EAB).

The involved Federal, State, and local agencies have agreed that the updated regional emissions analysis that incorporates the latest planning assumptions, latest future emissions control programs estimated by NYSDEC, and the latest EPA emissions model must be used to demonstrate conformity of the SMTC TIP and LRTP with the SIP.

Use of Latest Planning Assumptions

All conformity determinations must be based upon the latest available planning assumptions in force at the time of the conformity determination. Section 176(c)(1)(B)(iii) of the Clean Air Act (CAA) states that "...[t]he determination of conformity shall be based on the most recent estimates of emissions, and such estimates shall be determined from the most recent population, employment, travel, and congestion estimates as determined by the MPO or other agency authorized to make such estimates." The CAA requires that transportation investments be based on the most recent information that is available, in order to protect public health over the long-term.

The latest planning assumptions requirements apply to all assumptions used in demonstrating conformity, including assumptions that are used in transportation demand and emissions modeling. Examples of assumptions are land use, vehicle age and fleet mix, and the most recent information regarding the implementation of control measures in approved SIPs (e.g., inspection and maintenance (I/M) and fuels programs, transportation control measures).

Specific latest planning requirements are outlined in 40 CFR 93.110 (b)-(f):

"(b) Assumptions must be derived from the estimates of current and future population, employment, travel, and congestion most recently developed by the MPO or other agency authorized to make such estimates and approved by the MPO. The conformity determination must also be based on the latest assumptions about current and future background concentrations.

SMTC Action: *The data forecasts used in the model are derived from several sources. Current Population estimates were obtained via the 2000 census while future population estimates for the horizon year were forecasted by a working group of local professionals with experience in demographic analysis. This working group included the Syracuse-Onondaga County Planning Agency (SOCPA), New York State Department of Transportation (NYSDOT), SMTC, Central New York Regional Planning & Development Board (CNYRPDB), and others.*

Land use data in the model (e.g. type of employers and number of employees) was similarly calculated for both the base and future scenarios utilizing the above-mentioned working group

with the addition of key economic development agencies and personnel. Some of the key additions to the working group included the Director of the Onondaga County Industrial Development Agency and the CNYRPDB's Director of Economic Development.

Travel data for transit was included in the modeling, taking into account Central New York Regional Transportation Authority (CNYRTA) fixed route service, as well as bicycling and walking. CNYRTA's paratransit service is treated as shared ride trips.

The CO emissions estimates for Onondaga County were developed by NYSDEC using the latest EPA emissions model, MOBILE 6. These emissions estimates include an updated inventory of Daily Vehicle Miles Traveled (DVMT) produced by NYSDOT, based on the Highway Performance Monitoring System (HPMS) data produced for the USDOT FHWA, and updated future forecasts of DVMT produced for the historical trend of existing HPMS traffic counts.

(c) The conformity determination for each transportation plan and TIP [transportation improvement program] must discuss how transit operating policies (including fares and service levels) and assumed transit ridership have changed since the previous conformity determination.

SMTC Action: *The CNYRTA has not had a fare increase since 1995. In November 2002, service was added as part of a major restructuring of bus lines and service hours. As a result of that restructuring, CNYRTA ridership is up approximately 4% overall. Finally, CNYRTA will continue to pursue the service concepts proposed in the ReMAP Study completed in 1999 to the extent possible, given adequate funding. These concepts include small bus community circulators in suburban settings, express services between downtown and outlying locations and the development of key hubs. There has been limited success to date with some of those service concepts. Two new bus routes were added; one is doing moderately well, while the other was cancelled due to lack of sufficient ridership.*

(d) The conformity determination must include reasonable assumptions about transit service and increases in transit fares and road and bridge tolls over time.

SMTC Action: *The CNYRTA has not had a fare increase since 1995. According to the CNYRTA, there would be no fare increase in the foreseeable future as fares are raised only as a last resort. CNYRTA ridership is up approximately 4% overall over the previous year. CNYRTA will continue to pursue the improved service concepts proposed in the ReMAP Study. A goal of the Long-Range Transportation Plan is for increased utilization of transit. To achieve that goal SMTC will examine, as yet undefined projects, to implement that strategy.*

(e) The conformity determination must use the latest existing information regarding the effectiveness of the transportation control measures (TCMs) and other implementation plan measures, which have already been implemented.

SMTC Action*: Table 4 on page 11 presents the status of the official Transportation Control Measures (TCMs) contained in the original 1993-2003 SIP for Syracuse and Onondaga County. The referenced Federal and State air quality conformity regulations require that each time the SMTC adopts or approves a new TIP or LRTP, a determination that all required TCMs are*

being implemented in a timely fashion be made. As the TCM table shows, all of the required TCMs have been completed and are shown for informational purposes only. As required by law the TCM's were included in the model network run and the emissions analysis shows a continued reduction in CO emissions.

(f) Key assumptions shall be specified and included in the draft documents and supporting materials used for the interagency and public consultation required by §93.105.

SMTC Action: *The SMTC utilizes the Tmodel 2 travel demand modeling platform to generate VMT and speed data for peak and off-peak hours. Tmodel 2 incorporates the four-step modeling process (Trip Generation, Trip Distribution, Mode Choice and Assignment), and provides for future-year scenario modeling based on the horizon year roadway network characteristics as well as the previously mentioned land use and population projections that were developed for use in the modeling process. The 2000 Census, current employment data, and current road network conditions were used for the base year calibration.*

The future year (horizon year) of the modeling efforts are characterized by the inclusion of the following assumptions:

- *Future household growth by TAZ as determined by working group of local demographic experts.*
- *Future employment growth by TAZ as determined by local experts in the area of economic development.*
- *Future road network changes as determined by the Transportation Improvement Program and the Capital Plans of appropriate SMTC member agencies as well as the SMTC's LRTP Vision.*

In 2002, the SMTC spearheaded a statewide initiative to evaluate various modeling platforms available to MPOs to determine which was the most favorable for New York State MPO usage. Following the evaluation process, the SMTC purchased the TransCAD software, and is currentlyin the process of migrating their travel demand modeling activities to the TransCAD modeling/GIS platform, which is a more powerful, modern, and user-friendly software package than TModel 2. The new TransCAD model will have both a highway and transit network which more accurately depicts the SMTC planning area with respect to employment, housing and transportation system characteristics. As part of the process, training will be provided to both SMTC and member agency staff to allow for in-house utilization of the model, thus allowing for a faster turnaround time for modeling scenarios in a more cost effective manner. It is anticipated that the highway portion of the model will be completed by Fall 2004.

Interagency Consultation Process

The conformity process requires a high degree of coordination between Federal, State and local entities and therefore has rules for the establishment of formal procedures for Interagency Consultation to ensure that all groups are involved. Consultation also ensures that air quality concerns are addressed throughout the planning process so that the resulting conformity determinations meet federal criteria before presentation to FHWA/FTA for approval.

Procedures for the Interagency Consulting Group (ICG) in the State of New York are contained in 6 NYCRR Part 240.6. The ICG consists of representatives of the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), US Environmental Protection Agency (EPA), New York State Department of Environmental Conservation (NYSDEC), and the New York State Department of Transportation Environmental Analysis Bureau (NYSDOT-EAB) and was extensively consulted throughout the process working through the EAB staff.

The involved Federal, State, and local agencies have agreed that the updated regional emissions analysis that incorporates the latest planning assumptions, latest future emissions control programs estimated by NYSDEC, and the latest EPA emissions model must be used to demonstrate conformity of the SMTC TIP and LRTP with the SIP. The latest planning assumption requirement must be met before USDOT can make a conformity determination.

The consultation process is currently in progress.

Results of the Regional Emissions Analysis

The following attached pages show the complete results of the regional emissions analysis of the SMTC's LRTP 2004 Update and the 2003-2006 TIP, using EPA's MOBILE 6 model and the latest SMTC transportation demand model results. The existing and future estimated emissions are presented in Table 1 and Table 2, and the non-exempt transportation projects included in the analysis are presented in Table 3. This analysis demonstrates that with the adopted update to the SMTC LRTP and 2003-2006 TIP, CO emissions in future years will remain below the levels established for each applicable milestone year in the SIP Motor Vehicle Emissions Budget. Therefore, continued maintenance of the CO NAAQS is assured, and the SMTC LRTP 2004 Update and 2003-2006 TIP remain in conformity with the SIP.

Conclusions

In conclusion, the SMTC Long-Range Transportation Plan 2004 Update and 2003-2006 Transportation Improvement Program have complied with the requirements of the Clean Air Act, and are in conformity with the New York State Implementation Plan (SIP) for air quality. The following pages provide the documentation of the required regional emissions analysis conducted to determine air quality conformity. This analysis demonstrates that with the adopted update to the SMTC LRTP and 2003-2006 TIP, CO emissions in future years will remain below the levels established for each applicable milestone year in the SIP Motor Vehicle Emissions Budget. Therefore, continued maintenance of the CO NAAQS is assured, and the SMTC LRTP 2004 Update and 2003-2006 TIP remain in conformity with the SIP.

Table 1

SMTC LRTP 2025 MOBILE 6 Regional Emissions Analysis Summary
April 2004

Note: MVEB = DEC Proposed 11-2003
Note: Emissions with NYSDOT 12-2003 M6 Tables

1990 Base Year	VMT	CO Sum (g/day)				
Peak	3,902,845	227,077,991				
Off-Peak	8,596,519	501,759,084				
1990 Base Total	**12,499,364**	**728,837,075**	**=**	**803.39**	**tons per day**	**SIP N/A**

2005 Build	VMT	CO Sum (g/day)				
Peak	4,291,452	123,065,015				
Off-Peak	9,502,898	273,928,593				
2005 Build Total	**13,794,350**	**396,993,608**	**=**	**437.60**	**tons per day**	**MVEB = 495**
						PASS

2009 Build	VMT	CO Sum (g/day)				
Peak	4,345,210	77,393,203				
Off-Peak	9,622,815	172,318,870				
2009 Build Total	**13,968,025**	**249,712,073**	**=**	**275.26**	**tons per day**	**MVEB = 372**
						PASS

2013 Build	VMT	CO Sum (g/day)				
Peak	4,470,100	63,114,016				
Off-Peak	9,891,939	139,655,815				
2013 Build Total	**14,362,039**	**202,769,831**	**=**	**223.51**	**tons per day**	**MVEB = 357**
						PASS

2015 Build	VMT	CO Sum (g/day)				
Peak	4,532,548	59,384,882				
Off-Peak	10,026,484	132,651,740				
2015 Build Total	**14,559,032**	**192,036,622**	**=**	**211.68**	**tons per day**	**MVEB = 357**
						PASS

2020 Build	VMT	CO Sum (g/day)				
Peak	4,613,856	52,362,826				
Off-Peak	10,206,638	116,501,149				
2020 Build Total	**14,820,494**	**168,863,975**	**=**	**186.14**	**tons per day**	**MVEB = 357**
						PASS

2025 Build	VMT	CO Sum (g/day)				
Peak	4,707,573	51,410,838				
Off-Peak	10,415,115	114,439,348				
2025 Build Total	**15,122,688**	**165,850,186**	**=**	**182.82**	**tons per day**	**MVEB = 357**
						PASS

Table 2

SMTC LRTP 2025 + 2004-2006 TIP with MOBILE 6 + 2003 Registration Data
April 2004

1990 - Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	42.70	388,406	59.02	22,922,945.31
14	37.20	362,331	57.75	20,924,035.52
19	32.80	304,086	57.63	17,525,449.26
TOTAL PEAK HOUR		**1,054,823**		**61,372,430.09**
TOTAL PEAK PERIOD		**3,902,845**		**227,077,991.31**
			tons/day	**250.31**

1990 - Off Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	44.20	199,469	59.38	11,844,070.28
14	37.70	174,618	57.86	10,103,292.71
19	33.10	150,091	57.62	8,647,703.09
TOTAL PEAK HOUR		**524,178**		**30,595,066.08**
TOTAL PEAK PERIOD		**3,902,845**		**501,759,083.77**
			tons/day	**553.09**

2005 Build - Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	42.25	436,098	28.84	12,577,066.32
14	37.07	384,405	28.63	11,005,515.15
19	32.77	339,349	28.52	9,678,233.48
TOTAL PEAK HOUR		**1,159,852**		**33,260,814.95**
TOTAL PEAK PERIOD		**4,291,452**		**123,065,015.32**
			tons/day	**135.65**

2005 - Off Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	44.12	225,340	29.14	6,566,227.33
14	37.61	186,236	28.72	5,348,332.90
19	33.08	167,869	28.52	4,788,402.79
TOTAL PEAK HOUR		**579,445**		**16,702,963.02**
TOTAL PEAK PERIOD		**9,502,898**		**273,928,593.49**
			tons/day	**301.95**

2009 Build - Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	42.09	445,844	17.85	7,958,315.40
14	37.11	389,067	17.82	6,933,173.94
19	32.77	339,470	17.75	6,025,592.50
TOTAL PEAK HOUR		**1,174,381**		**20,917,081.84**
TOTAL PEAK PERIOD		**4,345,210**		**77,393,202.81**
			tons/day	**85.31**

2009 - Off Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	44.08	231,086	18.05	4,171,102.30
14	37.64	187,903	17.87	3,357,116.34
19	33.08	167,768	17.76	2,979,029.53
TOTAL PEAK HOUR		**586,757**		**10,507,248.17**
TOTAL PEAK PERIOD		**9,622,815**		**172,318,869.98**
			tons/day	**189.95**

2013 Build - Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	41.80	458,871	14.08	6,461,087.23
14	37.04	402,522	14.14	5,692,949.15
19	32.71	346,742	14.14	4,903,805.67
TOTAL PEAK HOUR		**1,208,135**		**17,057,842.05**
TOTAL PEAK PERIOD		**4,470,100**		**63,114,015.58**
			tons/day	**69.57**

2013 - Off Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	43.95	238,805	14.08	3,362,469.92
14	37.63	193,661	14.14	2,738,986.26
19	33.07	170,701	14.14	2,414,142.31
TOTAL PEAK HOUR		**603,167**		**8,515,598.49**
TOTAL PEAK PERIOD		**9,891,939**		**139,655,815.13**
			tons/day	**153.94**

2015 Build - Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	41.66	465,385	13.10	6,096,543.50
14	37.00	409,250	13.02	5,328,435.00
19	32.68	350,378	13.20	4,624,989.60
TOTAL PEAK HOUR		**1,225,013**		**16,049,968.10**
TOTAL PEAK PERIOD		**4,532,548**		**59,384,881.97**
			tons/day	**65.46**

2015 - Off Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	43.89	242,664	13.25	3,215,856.13
14	37.62	196,540	13.23	2,599,956.91
19	33.06	172,167	13.20	2,272,707.70
TOTAL PEAK HOUR		**611,371**		**8,088,520.74**
TOTAL PEAK PERIOD		**10,026,484**		**132,651,740.02**
			tons/day	**146.22**

2020 Build - Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	41.53	475,242	11.30	5,370,234.60
14	36.97	415,321	11.37	4,722,199.77
19	32.63	356,425	11.39	4,059,680.75
TOTAL PEAK HOUR		**1,246,988**		**14,152,115.12**
TOTAL PEAK PERIOD		**4,613,856**		**52,362,825.94**
			tons/day	**57.72**

2020 - Off Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	43.86	248,331	11.43	2,839,386.85
14	37.62	199,319	11.41	2,273,671.70
19	33.05	174,706	11.39	1,990,670.05
TOTAL PEAK HOUR		**622,356**		**7,103,728.60**
TOTAL PEAK PERIOD		**10,206,638**		**116,501,149.00**
			tons/day	**128.42**

2025 Build - Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	41.37	485,815	10.86	5,275,950.90
14	36.91	423,043	10.94	4,628,090.42
19	32.59	363,459	10.98	3,990,779.82
TOTAL PEAK HOUR		**1,272,317**		**13,894,821.14**
TOTAL PEAK PERIOD		**4,707,573**		**51,410,838.22**
			tons/day	**56.67**

2025 - Off Peak				
FC	Avg. Speed	VMT	CO (g/mi)	CO Sum
11	43.81	254,310	11.00	2,796,326.64
14	37.61	202,768	10.98	2,226,583.24
19	33.04	177,990	10.98	1,955,099.12
TOTAL PEAK HOUR		**635,068**		**6,978,009.00**
TOTAL PEAK PERIOD		**10,415,115**		**114,439,347.57**
			tons/day	**126.15**

Table 3

Non-Exempt Projects Included in the Analysis			
PIN	Project	General Scope	In TCM?
375285	Geddes/Genesee Sts Signal Interconnection	Upgrading of signals and inclusion in existing interconnect system.	
375272	Lodi St/North Salina St. Signal Improvements	Upgrading of signals and inclusion in existing interconnect system.	
375281	Kirkpatrick/Court/Solar	Realign Court/Kirkpatrick, expand Kirkpatrick to 4 lanes, rehabilitate Solar Street.	
303756	Rt. 31 Over Seneca River (Belgium Bridge)	Widening of Route 31 to reduce vehicle hours of delay and safety deficiencies.	
Source: Syracuse Metropolitan Transportation Council, 2003-2006 Transportation Improvement Program. "PIN" stands for project identification number; "TCM" indicates whether the project is a Transportation Control Measure.			

Table 4

Transportation Control Measures (TCMs) Update				
PIN	Project	1994-1999	1999-2004	Comments
303519	RT 57, phase IV, Gaskin to RT 31	Construction 11/96		Implemented
310412	RT 635, RT 5 to RT 298	Construction 11/94	Construction 6/98	Implemented
310413	RT 298, Syracuse to Carrier Circle	Construction 11/98	Construction 4/02	Implemented
375206	Harrison Street Traffic Signal	Construction 9/95		Implemented
375207	Buckley Road Improvements at Bear Road	Construction 11/95		Implemented
380272	Oncenter Signs	Construction 1/94		Implemented
380275	Downtown Syracuse Signal Interconnect System	Engineering 11/96	Construction 7/96	Implemented
380307	Connections Ride Sharing Program			Implemented
380312	AVL System	Construction 10/96		Implemented
382074	Fare Collection System	Construction 10/96		Implemented
382089	Shelter Schedule Panels	Construction 10/94		Implemented
Source: Syracuse Metropolitan Transportation Council, 1999-2004 Transportation Improvement Program.				

Table 5

Syracuse Metropolitan Transporation Council

Long-Range Transportation Plan 2004 Update

Tmodel 2 Vehicle Miles Traveled (VMT) and Speed Outputs for Base and Future Years

Road Type		2005		2009		2015		2020		2025	
		Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak	Peak	Off Peak
Interstates, Ramps, Major Arterials	VMT's	436,098	225,340	445,844	231,086	465,385	242,664	475,242	248,331	485,815	254,310
	Avg. Speed	42.25	44.12	42.09	44.08	41.66	43.89	41.53	43.86	41.37	43.81
Arterials	VMT's	384,405	186,236	389,067	187,903	409,250	196,540	415,321	199,319	423,043	202,768
	Avg. Speed	37.07	37.61	37.11	37.64	37.00	37.62	36.97	37.62	36.91	37.61
Local Streets	VMT's	339,349	167,869	339,470	167,768	350,378	172,167	356,425	174,706	363,459	177,990
	Avg. Speed	32.77	33.08	32.77	33.08	32.68	33.06	32.63	33.05	32.59	33.04