Air Quality Conformity

An air quality analysis is performed on the 2035 Long Range Transportation Plan (LRTP) amendment and the new 2011-2014 Transportation Improvement Program (TIP) in order to determine the impact of major transportation system improvements on vehicle emissions. The Federal Highway Administration (FHWA) and the United States Environmental Protection Agency (USEPA) require that the implementation of projects in the TIP and the LRTP do not result in mobile source emissions greater than the current emission budget assigned for the Grand Rapids Metropolitan Area in the State Implementation Plan (SIP).

The Grand Rapids Metropolitan Area was previously designated as a Maintenance Area for Ozone under the one-hour rule. The new 8-hour designations administered by the USEPA have tied both Kent and Ottawa counties under the more lenient sub-part 1 "Basic" non-attainment classification. The new designation still requires careful monitoring of air quality in the region. Therefore, the TIP and LRTP air quality conformity analysis examines changes in Volatile Organic Compounds (VOCs) and Oxides of Nitrogen (NOx). The emission levels are then compared to numerical emission budgets developed by the state in the regional maintenance plan.

Air Quality Assessment Criteria

The LRTP conformity demonstration was made in compliance with all applicable conformity requirements. The Transportation Plan satisfies the following conformity criteria and procedures set forth in the USEPA's Transportation Conformity Rule:

1. The conformity demonstration was based on the latest planning assumptions.

2. The conformity demonstration was based on the latest emission model available.

3. The conformity demonstration was made according to the consultation procedures of the final conformity rule and the implementation plan revision.

4. The determination was made that the LRTP amendment and the new TIP do not increase the frequency or severity of the existing violation of the National Ambient Air Quality Standards (NAAQS) for which the area is designated in non-attainment. Completing the components of the Transportation Plan does not increase emissions over the emission budget.

Background

The following documentation describes the best practices available for the travel demand estimation and analysis in Kent and Ottawa Counties. The Grand Valley Metropolitan Council (GVMC), the Macatawa Area Coordinating Council (MACC), and the West Michigan Shoreline Regional Development Commission (WestPlan) have approved socioeconomic data for 2000, 2002, 2011, 2014, 2018, 2025 and 2035. This data is the basis for forecasting travel demand in the respective study areas, which in turn generates the inputs required for air quality conformity analysis. These inputs are

the amount of travel expressed as Vehicle Miles of Travel (VMT) and average speed by National Functional Classification (NFC) or a combination of similar functional classified facilities grouped together to address the new Mobile 6.2 model input data structure. One of the latest travel demand forecasting technologies available, the TransCad model has been used in all urban area travel demand forecasting efforts. However, air quality conformity analysis must be performed on a county wide basis, and the urban area travel demand forecast models cover all of Kent and a portion of Ottawa Counties.

The VMT and speed data generated by the TransCad model for the GVMC, MACC, and WestPlan areas, and county wide Highway Performance Monitoring System (HPMS) VMT figures provide the basis for the estimation of present and future VMT and speeds by NFC for the entire counties. The air quality conformity analysis performed for the 2035 LRTP and TIP includes the following assumptions:

1- Emission budget for VOC of 40.70tons/day, based on Federal Register Vol. 72, No.94, May 16, 2007, Sec 52.1174
2- Emission budget for NOx of 97.87 tons/day, based on Federal Register Vol. 72, No. 94, May 16, 2007, Sec 52.1174
3- Projects are included in year 2007, 2011, 2018, 2025, or 2035 depending when they could be built, and open to traffic.
4- Include off model credits from 1995-2000 approved CMAQ projects and Transit fleet turnover.
5- No Inspection/Maintenance (I/M) Program.

Modeling Procedures

GVMC has developed and calibrated the travel demand model (TransCad) which covers all of Kent and the eastern part of Ottawa Counties. The travel demand model uses the standard four-step transportation planning process.

1- Trip generation model
2- Trip distribution model
3- Mode choice model
4- Highway assignment model

The *trip generation model* uses a combination of local and QRS (NCHRP 187) trip generation rates. The trip generation variables used in the model are Dwelling units, Retail Employment, and Non-Retail Employment. The *trip distribution model* uses the standard model to estimate origin/destination tables. It also uses Friction Factors for trip attractiveness. The *mode choice model* is a single mode model. It uses vehicle occupancy rate to estimate vehicle trips on the network. Transit trips are estimated separately using different post processing methods. The *trip assignment model* uses two different techniques, all-or- nothing and capacity restrained algorithms. The model was calibrated according to the strict calibration standards used by MDOT and suggested by FHWA. The model includes 783 traffic analysis zones and 11,644 roadway links. The network is coded to output information based on area type, facility type, number of lanes, speeds, national functional classification, capacity, street names, and vehicle assignment. The MACC and WestPlan have similar models which were developed and calibrated by the Michigan Department of Transportation (MDOT).

Model Data

The modeled VMT and speeds for the portions of each study area within Kent and Ottawa Counties are summarized in tables 1 and 2. The overall modeled speeds by NFC are determined by dividing total VMT by total VHT generated by the travel demand models. In some instances, where modeled speeds are unrealistic, speeds were adjusted to reflect real time speeds.

Table 1 **Kent County Vehicle Miles of Travel & Speeds for Analysis Years**

KENT COUNTY 2002 NFC	HPMS 2000 VMT	MODELED 2000 VMT	MODELED 2002 VMT	NORMALIZED 2002 VMT	2002 SPEED
Rural Interstate/Freeway	698,481	691,383	629,657	**631,614**	**56.25**
Rural Major & Minor Arterial/Collector/Local Street	2,186,004	2,475,598	2,620,639	**2,132,114**	**34.87**
Urban Interstate/Freeway	3,353,463	4,493,660	4,332,637	**3,242,300**	**53.88**
Urban Principal & Minor Arterial/Collector/Local Street	7,863,924	8,723,593	9,839,788	**8,957,407**	**30.44**
TOTALS	**14,101,872**	**16,384,234**	**17,422,721**	**14,963,436**	

KENT COUNTY 2011 NFC	HPMS 2000 VMT	MODELED 2000 VMT	MODELED 2011 VMT	NORMALIZED 2011 VMT	2011 SPEED
Rural Interstate/Freeway	698,481	691,383	562,727	**564,178**	**55.05**
Rural Major & Minor Arterial/Collector/Local Street	2,186,004	2,475,598	2,759,104	**2,379,997**	**33.79**
Urban Interstate/Freeway	3,353,463	4,493,660	3,491,036	**2,638,220**	**49.57**
Urban Principal & Minor Arterial/Collector/Local Street	7,863,924	8,723,593	10,473,726	**10,538,759**	**31.27**
TOTALS	**14,101,872**	**16,384,234**	**17,286,593**	**16,121,154**	

KENT COUNTY 2014 NFC	HPMS 2000 VMT	MODELED 2000 VMT	MODELED 2014 VMT	NORMALIZED 2014 VMT	2014 SPEED
Rural Interstate/Freeway	698,481	691,383	563,358	**564,850**	**54.58**
Rural Major & Minor Arterial/Collector/Local Street	2,186,004	2,475,598	2,801,344	**2,437,769**	**33.64**
Urban Interstate/Freeway	3,353,463	4,493,660	3,501,037	**2,649,888**	**50.45**
Urban Principal & Minor Arterial/Collector/Local Street	7,863,924	8,723,593	10,657,108	**10,751,780**	**30.50**
TOTALS	**14,101,872**	**16,384,234**	**17,522,847**	**16,404,287**	

KENT COUNTY 2018 NFC	HPMS 2000 VMT	MODELED 2000 VMT	MODELED 2018 VMT	NORMALIZED 2018 VMT	2018 SPEED
Rural Interstate/Freeway	698,481	691,383	564,161	**565,522**	**54.50**
Rural Major & Minor Arterial/Collector/Local Street	2,186,004	2,475,598	2,889,563	**2,570,789**	**33.40**

Urban Interstate/Freeway	3,353,463	4,493,660	3,543,336	**2,679,988**	**50.37**
Urban Principal & Minor Arterial/Collector/Local Street	7,863,924	8,723,593	10,934,812	**11,127,035**	**30.04**
TOTALS	**14,101,872**	**16,384,234**	**17,931,872**	**16,943,333**	

KENT COUNTY 2025 NFC	**HPMS 2000 VMT**	**MODELED 2000 VMT**	**MODELED 2025 VMT**	**NORMALIZED 2025 VMT**	**2025 SPEED**
Rural Interstate/Freeway	698,481	691,383	594,537	**595,279**	**54.50**
Rural Major & Minor Arterial/Collector/Local Street	2,186,004	2,475,598	3,181,264	**2,724,411**	**33.15**
Urban Interstate/Freeway	3,353,463	4,493,660	3,787,634	**2,863,645**	**50.50**
Urban Principal & Minor Arterial/Collector/Local Street	7,863,924	8,723,593	11,980,209	**12,246,640**	**29.76**
TOTALS	**14,101,872**	**16,384,234**	**19,543,644**	**18,429,975**	

KENT COUNTY 2035 NFC	**HPMS 2000 VMT**	**MODELED 2000 VMT**	**MODELED 2035 VMT**	**NORMALIZED 2035 VMT**	**2035 SPEED**
Rural Interstate/Freeway	698,481	691,383	635,899	**641,601**	**54.25**
Rural Major & Minor Arterial/Collector/Local Street	2,186,004	2,475,598	3,490,597	**2,970,510**	**32.96**
Urban Interstate/Freeway	3,353,463	4,493,660	4,171,906	**3,147,560**	**50.30**
Urban Principal & Minor Arterial/Collector/Local Street	7,863,924	8,723,593	13,043,678	**13,495,073**	**29.43**
TOTALS	**14,101,872**	**16,384,234**	**21,342,080**	**20,254,744**	

Table 2 Ottawa County Vehicle Miles of Travel & Speeds for Analysis Years

OTTAWA COUNTY 2002 NFC	HPMS 2000 VMT	MODELED 2000 VMT	MODELED 2002 VMT	NORMALIZED 2002 VMT	2002 SPEED
Rural Interstate/Freeway	1,172,996	1,229,887	1,278,555	**1,211,502**	**64.95**
Rural Major & Minor Arterial/Collector/Local Street	948,229	1,289,548	1,326,211	**994,959**	**48.35**
Urban Interstate/Freeway	376,165	485,525	488,822	**351,306**	**59.95**
Urban Principal & Minor Arterial/Collector/Local Street	2,640,317	2,964,743	3,020,128	**2,814,935**	**34.90**
TOTALS	**5,137,707**	**5,969,703**	**6,113,716**	**5,372,702**	

OTTAWA COUNTY 2011 NFC	HPMS 2000 VMT	MODELED 2000 VMT	MODELED 2011 VMT	NORMALIZED 2011 VMT	2011 SPEED
Rural Interstate/Freeway	1,172,996	1,229,887	1,400,226	**1,335,403**	**65.55**
Rural Major & Minor Arterial/Collector/Local Street	948,229	1,289,548	1,417,867	**1,037,152**	**47.98**
Urban Interstate/Freeway	376,165	485,525	497,065	**397,099**	**62.47**
Urban Principal & Minor Arterial/Collector/Local Street	2,640,317	2,964,743	3,158,587	**2,786,262**	**33.88**
TOTALS	**5,137,707**	**5,969,703**	**6,473,745**	**5,555,916**	

OTTAWA COUNTY 2014 NFC	HPMS 2000 VMT	MODELED 2000 VMT	MODELED 2014 VMT	NORMALIZED 2014 VMT	2014 SPEED
Rural Interstate/Freeway	1,172,996	1,229,887	1,507,868	**1,437,970**	**65.50**
Rural Major & Minor Arterial/Collector/Local Street	948,229	1,289,548	1,536,932	**1,126,225**	**50.20**
Urban Interstate/Freeway	376,165	485,525	510,216	**408,187**	**61.10**
Urban Principal & Minor Arterial/Collector/Local Street	2,640,317	2,964,743	3,357,000	**2,958,835**	**34.63**
TOTALS	**5,137,707**	**5,969,703**	**6,912,016**	**5,931,217**	

OTTAWA COUNTY 2018 NFC	HPMS 2000 VMT	MODELED 2000 VMT	MODELED 2018 VMT	NORMALIZED 2018 VMT	2018 SPEED
Rural Interstate/Freeway	1,172,996	1,229,887	1,678,684	**1,599,873**	**64.50**
Rural Major & Minor Arterial/Collector/Local Street	948,229	1,289,548	1,620,289	**1,188,148**	**46.82**
Urban Interstate/Freeway	376,165	485,525	517,081	**413,834**	**62.20**
Urban Principal & Minor Arterial/Collector/Local Street	2,640,317	2,964,743	3,390,022	**2,993,972**	**33.06**
TOTALS	**5,137,707**	**5,969,703**	**7,206,076**	**6,195,827**	

OTTAWA COUNTY	HPMS	MODELED	MODELED	NORMALIZED	2025

2025 NFC	2000 VMT	2000 VMT	2025 VMT	2025 VMT	SPEED
Rural Interstate/Freeway	1,172,996	1,229,887	1,790,410	**1,706,310**	**63.40**
Rural Major & Minor Arterial/Collector/Local Street	948,229	1,289,548	1,772,097	**1,298,076**	**45.87**
Urban Interstate/Freeway	376,165	485,525	544,744	**435,689**	**62.10**
Urban Principal & Minor Arterial/Collector/Local Street	2,640,317	2,964,743	3,655,218	**3,222,122**	**32.26**
TOTALS	**5,137,707**	**5,969,703**	**7,762,469**	**6,662,197**	

OTTAWA COUNTY 2035 NFC	HPMS 2000 VMT	MODELED 2000 VMT	MODELED 2035 VMT	NORMALIZED 2035 VMT	2035 SPEED
Rural Interstate/Freeway	1,172,996	1,229,887	1,937,798	**1,846,904**	**63.00**
Rural Major & Minor Arterial/Collector/Local Street	948,229	1,289,548	1,989,024	**1,458,472**	**44.48**
Urban Interstate/Freeway	376,165	485,525	577,892	**462,059**	**60.79**
Urban Principal & Minor Arterial/Collector/Local Street	2,640,317	2,964,743	3,989,154	**3,508,275**	**31.02**
TOTALS	**5,137,707**	**5,969,703**	**8,493,868**	**7,275,710**	

Highway Performance Monitoring System (HPMS) Data

HPMS data provides estimates of 2000 VMT for the entire Kent and Ottawa counties, stratified by NFC. Between 1990 and 2000, the NFC coding used to tabulate HPMS data changed due to the expanding urban boundaries of the urbanized areas. The model is based in 2000 and the 8-hour budget is based on the 2000 base model. The 2000 HPMS VMT distribution was normalized to 2002, 2011, 2014, 2018, 2025, and 2035 distribution among the functional classes. Thus, the 2000 total HPMS VMT remained the same while the distribution changed to reflect what it would have been had the 2000 NFC coding been identical in the model.

The Environmental Protection Agency (EPA) and the United States Department of Transportation (USDOT) have both endorsed HPMS as the appropriate source of VMT estimates. HPMS is the FHWA's annual program to collect roadway data in all 50 states to assess the condition of the highway system in terms of traffic congestion, accessibility, and pavement condition. The FHWA requires counts to determine the area wide VMT for all urban areas. MDOT supplements the counts outside the urbanized area with additional counts in small cities, rural areas, and especially in rural areas of counties with nonattainment status. These supplemental counts follow the same random selection procedures as those inside the urban areas.

The HPMS data used is from MDOT's Universe file and is stratified by NFC. MDOT is currently undertaking a data improvement process to update the HPMS universe, non-sample traffic data. Shown in Tables 1 and 2 are the original 2000 HPMS VMT estimates for Kent and Ottawa Counties.

Methodology to Scale Total Model VMT to HPMS VMT

The base year modeled VMT from the GVMC, WestPlan, and MACC models are combined and compared to the 2000 HPMS VMT for each functional class. The HPMS data by NFC by county for the base year (calibrated year) of the travel demand models is obtained from MDOT. The VMT by NFC from the urban models base year and the VMT from the statewide model are added together to generate a "county-wide" travel demand model VMT by NFC for the base year. Then, the base year HPMS VMT by NFC is divided by the base year "county-wide" travel demand model VMT for corresponding NFC. These divisions produce ratios, proportions, or "factors" for each NFC. For each conformity analysis year, these factors are multiplied to each travel demand model's VMT to produce a scaled VMT by NFC. For each year, the scaled travel demand model's VMT by NFC are aggregated to a "county-wide" total. Thus the VMT is aggregated so each NFC has a county-wide total. Then the scaled VMT by NFC are collapsed into four groups to meet the requirements of MOBILE 6.2. These groups are:1) rural interstate, 2) rural major & minor arterials/collectors/local streets, 3) urban interstate/freeway, and 4) urban principal & minor arterials/collectors/ local streets. This is done for all interim and future analysis years. To get scaled VHT (Vehicle Hours of Travel) the factors developed above are applied to each travel demand model's VHT by NFC. The process follows the same steps and arrives at VHT by NFC collapsed into four groups. Next, to arrive at a speed, each individual group VMT is divided by the corresponding VHT. Thus, achieving the variables needed to express demand for travel within a county, VMT and speed, as required for input into MOBILE 6.2.

The speeds on un-modeled rural links are assumed to be the same as the speeds on modeled rural links. In addition, these speeds in rural Ottawa County are assumed to be constant over time, as substantial excess capacity generally exists on rural roads.

Conformity Analysis

GVMC staff combined Mobile 6.2 output for each VOC and NOx to get a total for each compound for the maintenance area. The conformity is performed using the MOBILE 6.2 program. MOBILE 6.2 is a computer program that estimates volatile organic compounds (VOC), carbon monoxide (CO), and oxides of nitrogen (NOx) emission factors for gasoline-fueled and diesel highway motor vehicles. The model was developed by the United States Environmental Protection Agency (USEPA). MOBILE 6.2 calculates emission factors for eight individual vehicle types in two regions of the country. MOBILE 6.2 emission factor estimates depend on various conditions such as ambient temperatures, average travel speed, operating modes, fuel volatility, and mileage accrual rates. Many of the variables affecting vehicle emissions can be specified by the user. The analyses cover 2002, 2011, 2014, 2018, 2025, and 2035. The analysis is based on comparing the total emissions from the Long Range Transportation Plan and the Transportation Improvement Program projects to the official emission budget in the SIP and a calculated budget by Mobile 6.2, and the analysis does not include an I/M Program. Tables 3 and 6 reflect the emissions of VOC and NOx with the implementation of projects included in the Long Range Transportation Plan and the Transportation Improvement Program.

***Table 3* Kent County Year 2002, 2011, 2014, 2018, 2025 & 2035 VOC & NOX Emissions**

Functional Classification	Budget Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	**2002**	**1,001.01**	**1,959.28**
Rural Major & Minor Arterial/Collector/Local Street	**2002**	**3,816.35**	**5,037.03**
Urban Interstate/Freeway	**2002**	**5,242.48**	**9,933.93**
Urban Principal & Minor Arterial/Collector/Local Street	**2002**	**16,856.48**	**21,387.17**
TOTALS		**26,916.32**	**38,317.41**

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	**2011**	**405.63**	**722.92**
Rural Major & Minor Arterial/Collector/Local Street	**2011**	**1,937.78**	**2,492.76**
Urban Interstate/Freeway	**2011**	**1,954.54**	**3,210.34**
Urban Principal & Minor Arterial/Collector/Local Street	**2011**	**8,809.70**	**11,107.28**
TOTALS		**13,107.65**	**17,533.29**

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	**2014**	**327.93**	**512.96**
Rural Major & Minor Arterial/Collector/Local Street	**2014**	**1,593.98**	**1,851.57**
Urban Interstate/Freeway	**2014**	**1,571.76**	**2,336.70**
Urban Principal & Minor Arterial/Collector/Local Street	**2014**	**7,255.34**	**8,231.64**
TOTALS		**10,749.01**	**12,932.87**

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	**2018**	**265.37**	**348.91**
Rural Major & Minor Arterial/Collector/Local Street	**2018**	**1,364.20**	**1,362.84**
Urban Interstate/Freeway	**2018**	**1,284.84**	**1,614.01**
Urban Principal & Minor Arterial/Collector/Local Street	**2018**	**6,122.80**	**5,957.64**
TOTALS		**9,037.20**	**9,283.40**

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	**2025**	**212.68**	**247.63**
Rural Major & Minor Arterial/Collector/Local Street	**2025**	**1,119.29**	**1,015.87**
Urban Interstate/Freeway	**2025**	**1,047.04**	**1,174.85**
Urban Principal & Minor Arterial/Collector/Local Street	**2025**	**5,240.81**	**4,623.84**
TOTALS		**7,619.83**	**7,062.20**

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	**2035**	**220.76**	**218.53**
Rural Major & Minor Arterial/Collector/Local Street	**2035**	**1,179.93**	**932.19**
Urban Interstate/Freeway	**2035**	**1,108.80**	**1,063.63**
Urban Principal & Minor Arterial/Collector/Local Street	**2035**	**5,601.11**	**4,304.48**
TOTALS		**8,110.60**	**6,518.83**

Table 4 Ottawa County Year 2002, 2007, 2011, 2018, 2025 & 2035 VOC & NOX Emissions

Functional Classification	Budget Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	2002	1,869.78	4,370.10
Rural Major & Minor Arterial/Collector/Local Street	2002	1,635.99	2,546.08
Urban Interstate/Freeway	2002	556.48	1,215.19
Urban Principal & Minor Arterial/Collector/Local Street	2002	5,038.56	6,650.16
TOTALS		9,100.82	14,781.53

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	2011	932.26	2,064.27
Rural Major & Minor Arterial/Collector/Local Street	2011	771.64	1,174.35
Urban Interstate/Freeway	2011	282.29	599.77
Urban Principal & Minor Arterial/Collector/Local Street	2011	2,266.43	2,917.62
TOTALS		4,252.62	6,756.00

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	2014	812.81	1,561.21
Rural Major & Minor Arterial/Collector/Local Street	2014	666.40	936.80
Urban Interstate/Freeway	2014	234.59	433.94
Urban Principal & Minor Arterial/Collector/Local Street	2014	1,917.08	2,242.17
TOTALS		3,630.880	5,174.112

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	2018	732.89	1,150.23
Rural Major & Minor Arterial/Collector/Local Street	2018	577.50	665.34
Urban Interstate/Freeway	2018	192.54	294.82
Urban Principal & Minor Arterial/Collector/Local Street	2018	1,593.48	1,588.50
TOTALS		3,096.42	3,698.90

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	2025	596.26	787.48
Rural Major & Minor Arterial/Collector/Local Street	2025	484.60	502.84
Urban Interstate/Freeway	2025	154.59	203.15
Urban Principal & Minor Arterial/Collector/Local Street	2025	1,337.28	1,204.92
TOTALS		2,572.73	2,698.39

Functional Classification	Year	VOC Kg/Day	Nox Kg/Day
Rural Interstate/Freeway	2035	621.25	678.95
Rural Major & Minor Arterial/Collector/Local Street	2035	529.02	468.97
Urban Interstate/Freeway	2035	157.73	172.37
Urban Principal & Minor Arterial/Collector/Local Street	2035	1,427.08	1,109.41
TOTALS		2,735.08	2,429.69

Table 5 Conformity Analysis Total Results Tons/Day

Model Year	Total VOC Before Credit Tons/Day	Total NOx Before Credit Tons/Day	VOC Credits Tons/Day	NOx Credits Tons/Day	Adjusted VOC Tons/Day	Adjusted NOx Tons/Day	VOC Emission Budget Tons/Day	Nox Emission Budget Tons/Day
2002 W/O IM	39.703	58.533	-0.19	-0.17	39.52	58.36	**40.7**	**97.87**
2011 W/O IM	19.116	26.767	-0.19	-0.17	18.95	26.60	**40.7**	**97.87**
2014 W/O IM	15.851	19.960	-0.19	-0.17	15.66	19.79	**40.7**	**97.87**
2018 W/O IM	13.375	14.311	-0.19	-0.17	13.19	14.14	**40.7**	**97.87**
2025 W/O IM	11.236	10.759	-0.19	-0.17	11.05	10.59	**40.7**	**97.87**
2035 W/O IM	11.956	9.864	-0.19	-0.17	11.77	9.69	**40.7**	**97.87**

Table 6 Conformity Analysis Total Results Kgs/Day

Model Year	Total VOC Before Credit Kg/Day	Total NOx Before Credit Kg/Day	VOC Credits Kg/Day	NOx Credits Kg/Day	Adjusted VOC Kg/Day	Adjusted NOx Kg/Day	VOC Emission Budget Kg/Day	Nox Emission Budget Kg/Day
2002 W/O IM	36,017.133	53,098.942	-168.73	-154.22	35,852.53	52,942.66	**36,921.57**	**88,784.14**
2011 W/O IM	17,341.355	24,281.984	-168.73	-154.22	17,191.54	24,135.08	**36,921.57**	**88,784.14**
2014 W/O IM	14,379.891	18,106.980	-168.73	-154.22	14,211.16	17,952.76	**36,921.57**	**88,784.14**
2018 W/O IM	12,133.618	12,982.306	-168.73	-154.22	11,964.89	12,828.09	**36,921.57**	**88,784.14**
2025 W/O IM	10,192.554	9,760.589	-168.73	-154.22	10,023.82	9,606.37	**36,921.57**	**88,784.14**
2035 W/O IM	10,845.678	8,948.524	-168.73	-154.22	10,676.95	8,794.30	**36,921.57**	**88,784.14**

Conclusion

Tables 3 thru 6 clearly indicate that implementing the Long Range Transportation Plan and 2011-14 TIP projects will result in lower emissions than the emission budgets approved by the EPA as listed in the Federal Register for each of the milestone years. Consequently, the Grand Valley Metropolitan Council, West Michigan Shoreline Regional Development Commission (WestPlan), and the Macatawa Area Coordinating Council's 2035 LRTPs and 2011-2014 TIPs comply with the transportation plan and TIP conformity criteria contained in the USDOT/USEPA Conformity Guidance, and therefore meet the requirement of the CAAA and related ISTEA, TEA-21, and SAFETEA-LU provisions.