16. Air Quality Conformity

The Clean Air Act Amendments (CAAA) of 1990 mandated coordination between metropolitan air quality and long range transportation planning to demonstrate long range plans conform to State Implementation Plans (SIP) to reduce pollutant emissions to meet National Ambient Air Quality Standards (NAAQS). The long range plan and TIP must demonstrate vehicle emissions will not exceed the eight hour emissions budget.

Effective June 15, 2004 the Tri-County area was classified a basic non-attainment area for the eight hour ozone standard. On May 16, 2007 the Tri-County area was redesignated to attainment/maintenance for ozone with a 2018 vehicle emissions budget.

Ozone is formed when volatile organic compounds (VOC) and oxides of nitrogen (NOx) combine with sunlight and high temperatures. One way to lower ozone is to reduce VOCs and NOx emitted from automobiles. VOC and NOx emissions are directly related to roadway congestion. When congestion increases and roadway speeds are lowered, VOC and NOx emissions increase. Therefore, VOC and NOx levels and, in turn, ozone levels can be decreased by reducing roadway congestion, improving traffic flow and by providing alternative transportation services such as walking, bicycling, transit and ridesharing.

The Federal Highway Administration (FHWA) and United States Environmental Protection Agency (USEPA) require demonstration that projects in the TIP and the Regional 2035 Transportation Plan do not result in mobile source emissions greater than the emissions budget. The Tri-County Regional Planning Commission (TCRPC) is the Metropolitan Planning Organization (MPO) for the Lansing area responsible for development of the plan and TIP.

Air quality conformity analysis examines changes in Volatile Organic Compounds (VOC) and Oxides of Nitrogen (NOx) which result from projects in the Regional 2035 Transportation Plan. Since roadway capacity improvement projects and approved Transportation Improvement Programs must be drawn from and consistent with a conforming long range plan, a conformity demonstration on the approved plan is in turn demonstrating conformity on an approved Transportation Improvement Program. Emission levels are compared to a numerical emissions budget.

Since the area is now a designated maintenance area, conformity is demonstrated when modeled emissions resulting from the approved Plan and the approved TIP are lower than those allowed within the emissions budget. This section demonstrates conformity of the Regional 2035 Transportation Plan and 2008-2011 TIP, which is hereby amended to be consistent with projects shown in this approved conforming Plan.

Air Quality Assessment Criteria

This Regional 2035 Transportation Plan and TIP conformity demonstration was made in

compliance with all applicable conformity requirements, and the Regional 2035 Transportation Plan and 2008-2011 TIP have been determined to satisfy the following conformity criteria and procedures, as set forth in the USEPA transportation conformity rule:

1. The conformity demonstration was based on the latest regional planning assumptions for current and future population and employment.

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

3. The conformity demonstration was made according to consultation procedures of the final conformity rule and State Implementation Plan (SIP) conformity procedures.

4. The demonstration supports the requirement that the Regional 2035 Transportation Plan and 2008-2011 TIP do not exceed the approved 8 hour conformity budget.

5. Each project contained in the Regional 2035 Transportation Plan and 2008-2011 TIP as amended was reviewed by the Interagency Work Group (IAWG), consistent with consultation procedures established in the Conformity State Implementation Plan. During this review, a determination was made by the IAWG that each project in the 2008-2011 TIP as amended was consistent with the Regional 2035 Transportation Plan or was exempt from regional emissions modeling requirements in the EPA conformity rule. Hence, based on the determination that the Regional 2035 Transportation Plan demonstrates conformity, and that all projects in the 2008-2011 TIP as amended were included in the conformity demonstration made on the Regional 2035 Transportation Plan, conformity is also demonstrated as required on the 2008-2011 TIP by this analysis. If no new additional capacity projects are contained in the Draft 2010-2014 TIP being prepared by TCPRC, the same analysis will be submitted with the 2010-2014 TIP, since conformity on it would also be demonstrated by this analysis.

Background

The following documentation summarizes best practices available for travel demand estimation and analysis in Clinton, Eaton and Ingham Counties. The Tri-County Regional Planning Commission has approved socioeconomic data for 2005, 2010, 2018, 2025, 2030 and 2035. This data was the basis for forecasting travel demand in the study area which, in turn, is used to generate inputs required for air quality conformity analysis. These inputs are amounts of travel expressed as vehicle miles of travel (VMT), vehicle hours of travel (VHT) and average speed by National Functional Classification (NFC) by county to provide a combination of similar functionally classified facilities grouped together to address the EPA MOBILE 6.2 emissions model input data structure. TCRPC's regional travel demand model was used to estimate vehicle miles

of travel, vehicle hours of travel and travel speeds used in this analysis. The air quality conformity analysis must be performed on a county and regional basis. The urban travel demand forecast model covers all of Clinton, Eaton and Ingham Counties. For this analysis, all travel model results were aggregated by county.

VMT, VHT and speed data generated by the TCRPC model are normalized using county Highway Performance Monitoring System (HPMS) VMT data which provides the basis for estimation of present and future VMT, VHT and speeds by NFC by county. The air quality conformity analysis assumes transportation projects are included in the milestone year they are presumed to open to traffic.

Conformity Determination

The air quality conformity analysis performed for the 2035 Regional Transportation Plan and 2008-2011 TIP and 2010-2014 TIP which demonstrates and summarizes data resulting in conformity determination is shown in Table 16-1.

The table shows forecast emissions for the two ozone precursors – volatile organic compounds (VOC) and nitrogen oxides (NOx) are all well below the established budget for all analysis years. This demonstrates conformity of the Regional 2035 Transportation Plan as amended. Since the 2008-2011 TIP projects were reviewed by the Interagency Work Group and each project was determined to be either drawn from the Regional 2035 Transportation Plan or exempt from regional emissions model analysis, the determination made that the Regional 2035 Transportation Plan demonstrates conformity also permits a determination that the 2008-2011 TIP as amended demonstrates conformity.

As noted, if no additional projects are included in the 2010-2014 TIP that were not included in this same analysis, the analysis will be resubmitted to demonstrate conformity on that document which also will permit a determination that the 2010-2014 TIP demonstrates conformity when it is submitted separately.

Table 16-1: Results of Regional Transportation Conformity Analysis for the Lansing Metropolitan Maintenance Area, 8 Hour Ozone Standard, Regional 2035 Transportation Plan and 2008-2011 Transportation Improvement Program

	Emissions*		
Scenario	VOC	NO_x	DAILY VMT**
8 Hour Conformity Budget	25,691.90	48,145.10	-----
2010 Action	9,943.86	17,759.99	23,990.13
2018 Action	6,115.14	7,825.93	24,347.51
2025 Action	4,766.88	5,394.62	24,743.59
2030 Action	4,668.01	4,681.52	24,962.79
2035 Action	4,674.42	4,510.84	25,183.05

* Units for emissions are shown as kilograms/day.
**Modeled Vehicle Miles of Travel (VMT) (in (000's).

The remainder of this report provides additional technical details and documentation as necessary to support this determination.

Modeling Procedures

TCRPC has developed and calibrated a travel demand model which covers all of Clinton, Eaton and Ingham Counties. The travel demand model uses the standard four-step transportation modeling process, as follows.

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

Each of these steps and calibration of the TCRPC Travel Demand Model is summarized in more detail in Chapter 9 of the Regional 2035 Transportation Plan.

In general, trip generation is performed based on population, retail and non-retail employment, households and vehicles available for base and future forecast years for 1082 internal traffic analysis zones. Trip generation rates are from National Cooperative Highway Research Program (NCHRP) Project Report 365, the USDOT Quick Response Freight Manual and local rates for special generators, such as Lansing Community College, Michigan State University and automobile manufacturing plants.

Trip distribution is based on the gravity model derived from Newton's law of gravity. Person trips are next converted to vehicle trips using auto occupancy factors and a time of day model allocates trips to time periods for AM Peak, PM Peak and Off Peak periods. A park-walk model is also used to refine distribution based on parking locations in the Lansing CBD, MSU, East Lansing and some other special generators, which relates attractions to available parking supply and walk distance to employment zones.

Mode choice is then determined based on a multinomial logit model which allocates trips to auto or bus transit modes based on trip purpose, highway and transit travel times, routing and frequency of transit service and transit/parking costs.

In assignment, auto and transit trip tables are assigned to the highway or transit network using an equilibrium capacity restrained assignment algorithm based on interzonal travel times.

The model generates traffic volumes based on area type, facility type, number of lanes, speeds, national functional classification and highway capacity (derived from the 2000 Highway Capacity Manual) by time period of day. Time period data has been aggregated to daily totals for this emissions analysis. The TCRPC model has been calibrated to meet accepted industry standards as determined by MDOT and FHWA

based on comparing traffic volumes to assigned volumes for a base year and is considered valid for forecasting future travel demand.

The adopted Regional 2035 Transportation Plan was based on results of a land use scenario analysis and eight separate transportation network evaluations. As a result of the land use scenario analysis completed as part of the national demonstration **"Regional Growth: Choices for Our Future"** (refer to Chapter 2 of the plan) project, a "wise growth" land use scenario was adopted which reallocates adopted trend forecasts into a more environmentally friendly city-centered development pattern. The Commission also adopted mechanisms to tie future federal transportation investments to implementation of this regionally preferred land use scenario.

The adopted transportation network alternative includes a series of "medium" strategic transit system improvements which were simulated by reductions in headways based on each transit route's ridership propensity.

The adopted transportation network scenario (see Chapter 11) also assumed a series of strategically applied demand reduction measures, management and operations improvements, ITS and other traffic flow improvements, mode shift to non-motorized travel modes and additional trip reductions due to higher density mixed use development which result from the "wise growth" land use scenario. These measures were simulated by a net reduction of 20-30 percent for Michigan State University traffic zones and then a reduction of ten percent of remaining regional trip rate growth through 2035, which was applied strategically to the zonal trip table. These strategic demand reductions ranged from zero percent on external links and up to 30 percent at MSU and 16 percent for CBD areas based on a dynamic area type procedure which calculates population and employment density and demand reduction propensity – for example, higher trip reductions were assumed for MSU's north campus zones due to the University's intent to remove parking from north campus to fringe commuter lots, where their current reductions have already reduced trips by 30 to 40 percent.

In addition, the adopted transportation network included all roadway capacity improvements in the financially constrained plan.

Additional details on this land use scenario and transportation alternatives analysis are documented in Chapters 2 and 11 of this Regional 2035 Transportation Plan.

Since these demand reductions and transit improvements were part of the adopted transportation plan for 2035, they were also assumed in conformity model runs. Based on decisions made in the consultation process by the Interagency Work Group, no attempt was made to proportion or disaggregate transit service improvements and demand reductions to interim milestone year analysis networks. However, adjustments were made to milestone year demographic forecasts to reflect consistency with the 2035 wise growth land use pattern using a simple proportional interpolation technique, as also agreed to by the Interagency Work Group.

Highway Performance Monitoring System (HPMS) Data

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 Federal Highway Administration's (FHWA) 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 traffic counts to determine area wide VMT for all urban areas. MDOT supplements counts in the urbanized area with additional counts in small cities, rural areas and especially in rural areas of counties with nonattainment status. These supplemental traffic 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 a data improvement process to update the HPMS Universe, non-sample traffic data.

To maintain consistency between HPMS and modeled VMT, and among milestone years, the 2005 HPMS VMT distribution was used to normalize the 2010, 2018, 2025, 2030 and 2035 distribution of VMT among functional classes. Thus, the 2005 total HPMS VMT remained the same while future modeled VMT distribution changed to reflect HPMS VMT. Shown in Tables 16-2 through 16-18 are original 2005 HPMS VMT and normalized modeled VMT for 2010, 2018, 2025, 2030 and 2035 for Clinton, Eaton and Ingham Counties.

Modeled VMT and speeds for, Clinton, Eaton and Ingham Counties, are summarized in Tables 16-2 through 16-18. Speeds were generated by dividing normalized VMT by VHT. MOBILE 6.2 input factors are shown in the two right hand columns. Values in the first three columns are aggregated VMT from national functional types to the four categories which meet requirements of Mobile 6.2. Values may not sum due to rounding.

Table 16-2: **Clinton County – Year 2005 Vehicle Miles of Travel & Speed**

CLINTON COUNTY	HPMS	MODELED	NORMALIZED	2005
2005	**2005 VMT**	**2005 VMT**	**2005 VMT**	**SPEED**
NFC				
Rural Interstate/Freeway	411,871	806,845	411,871	69.0
Rural Major & Minor Arterial/Collector/Local Street	1,439,292	2,806,099	1,439,292	56.5
Urban Interstate/Freeway	825,584	1,609,330	825,584	66.7
Urban Principal & Minor Arterial/Collector/Local Street	560,996	920,452	560,996	44.6
TOTALS	3,237,743	6,142,726	3,237,743	57.4

Table 16-3: Clinton County – Year 2010 Vehicle Miles of Travel & Speed

CLINTON COUNTY	HPMS	MODELED	MODELED	NORMALIZED	2010
2010	**2005 VMT**	**2005 VMT**	**2010 VMT**	**2010 VMT**	**SPEED**
NFC					
Rural Interstate/Freeway	411,871	806,845	775,136	395,685	69.1
Rural Major & Minor Arterial/Collector/Local Street	1,439,292	2,806,099	2,533,463	1,303,296	56.7
Urban Interstate/Freeway	825,584	1,609,330	1,492,677	767,098	66.9
Urban Principal & Minor Arterial/Collector/Local Street	560,996	920,452	807,903	492,439	44.9
TOTALS	3,237,743	6,142,726	5,609,179	2,958,518	57.9

Table 16-4: Clinton County – Year 2018 Vehicle Miles of Travel & Speed

CLINTON COUNTY	HPMS	MODELED	MODELED	NORMALIZED	2018
2018	**2005 VMT**	**2005 VMT**	**2018 VMT**	**2018 VMT**	**SPEED**
NFC					
Rural Interstate/Freeway	411,871	806,845	791,595	404,087	69.1
Rural Major & Minor Arterial/Collector/Local Street	1,439,292	2,806,099	2,554,402	1,318,252	56.7
Urban Interstate/Freeway	825,584	1,609,330	1,524,027	783,190	66.9
Urban Principal & Minor Arterial/Collector/Local Street	560,996	920,452	826,183	504,947	44.8
				0	0.0
TOTALS	3,237,743	6,142,726	5,696,208	3,010,475	57.8

Table 16-5: Clinton County – Year 2025 Vehicle Miles of Travel & Speed

CLINTON COUNTY	HPMS	MODELED	MODELED	NORMALIZED	2025
2025	**2005 VMT**	**2005 VMT**	**2025 VMT**	**2025 VMT**	**SPEED**
NFC					
Rural Interstate/Freeway	411,871	806,845	804,803	410,829	69.0
Rural Major & Minor Arterial/Collector/Local Street	1,439,292	2,806,099	2,578,495	1,335,138	56.7
Urban Interstate/Freeway	825,584	1,609,330	1,555,782	799,462	66.9
Urban Principal & Minor Arterial/Collector/Local Street	560,996	920,452	844,238	517,427	44.6
				0	
TOTALS	3,237,743	6,142,726	5,783,317	3,062,857	57.8

Table 16-6: Clinton County – Year 2030 Vehicle Miles of Travel & Speed

CLINTON COUNTY 2030 NFC	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2030 VMT	NORMALIZED 2030 VMT	2030 SPEED
Rural Interstate/Freeway	411,871	806,845	811,223	414,106	69.0
Rural Major & Minor Arterial/Collector/Local Street	1,439,292	2,806,099	2,587,795	1,342,871	56.7
Urban Interstate/Freeway	825,584	1,609,330	1,575,012	809,325	66.8
Urban Principal & Minor Arterial/Collector/Local Street	560,996	920,452	854,516	524,467	44.6
TOTALS	3,237,743	6,142,726	5,828,547	3,090,769	57.7

Table 16-7: Clinton County – Year 2035 Vehicle Miles of Travel & Speed

CLINTON COUNTY 2035 NFC	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2035 VMT	NORMALIZED 2035 VMT	2035 SPEED
Rural Interstate/Freeway	411,871	806,845	819,464	418,313	69.0
Rural Major & Minor Arterial/Collector/Local Street	1,439,292	2,806,099	2,627,302	1,364,859	58.0
Urban Interstate/Freeway	825,584	1,609,330	1,595,625	820,264	66.8
Urban Principal & Minor Arterial/Collector/Local Street	560,996	920,452	866,954	531,369	44.6
TOTALS	3,237,743	6,142,726	5,909,346	3,134,805	58.3

Table 16-8: Eaton County – Year 2005 Vehicle Miles of Travel & Speed

EATON COUNTY 2005 NFC	HPMS 2005 VMT	MODELED 2005 VMT	NORMALIZED 2005 VMT	2005 SPEED
Rural Interstate/Freeway	348,232	706,706	348,232	68.4
Rural Major & Minor Arterial/Collector/Local Street	865,096	2,505,035	865,096	54.1
Urban Interstate/Freeway	907,436	2,041,804	907,436	67.0
Urban Principal & Minor Arterial/Collector/Local Street	1,101,829	1,961,250	1,101,829	45.0
TOTALS	3,222,593	7,214,795	3,222,593	54.5

Table 16-9: Eaton County – Year 2010 Vehicle Miles of Travel & Speed

EATON COUNTY 2010	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2010 VMT	NORMALIZED 2010 VMT	2010 SPEED
NFC					
Rural Interstate/Freeway	348,232	706,706	715,006	352,322	68.8
Rural Major & Minor Arterial/Collector/Local Street	865,096	2,505,035	2,192,734	749,132	54.1
Urban Interstate/Freeway	907,436	2,041,804	2,034,077	904,002	67.5
Urban Principal & Minor Arterial/Collector/Local Street	1,101,829	1,961,250	1,727,243	962,846	45.2
TOTALS	3,222,593	7,214,795	6,669,060	2,968,302	55.3

Table 16-10: Eaton County – Year 2018 Vehicle Miles of Travel & Speed

EATON COUNTY 2018	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2018 VMT	NORMALIZED 2018 VMT	2018 SPEED
NFC					
Rural Interstate/Freeway	348,232	706,706	723,724	356,618	68.8
Rural Major & Minor Arterial/Collector/Local Street	865,096	2,505,035	2,194,283	748,058	54.1
Urban Interstate/Freeway	907,436	2,041,804	2,037,769	905,643	67.5
Urban Principal & Minor Arterial/Collector/Local Street	1,101,829	1,961,250	1,747,839	970,612	45.1
TOTALS	3,222,593	7,214,795	6,703,615	2,980,931	55.3

Table 16-11: Eaton County – Year 2025 Vehicle Miles of Travel & Speed

EATON COUNTY 2025	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2025 VMT	NORMALIZED 2025 VMT	2025 SPEED
NFC					
Rural Interstate/Freeway	348,232	706,706	733,228	361,300	68.8
Rural Major & Minor Arterial/Collector/Local Street	865,096	2,505,035	2,197,639	748,064	54.1
Urban Interstate/Freeway	907,436	2,041,804	2,054,856	913,237	67.5
Urban Principal & Minor Arterial/Collector/Local Street	1,101,829	1,961,250	1,768,316	981,169	45.0
TOTALS	3,222,593	7,214,795	6,754,038	3,003,771	55.2

Table 16-12: Eaton County – Year 2030 Vehicle Miles of Travel & Speed

EATON COUNTY 2030 NFC	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2030 VMT	NORMALIZED 2030 VMT	2030 SPEED
Rural Interstate/Freeway	348,232	706,706	736,204	362,767	68.8
Rural Major & Minor Arterial/Collector/Local Street	865,096	2,505,035	2,195,581	745,999	54.1
Urban Interstate/Freeway	907,436	2,041,804	2,065,783	918,093	67.5
Urban Principal & Minor Arterial/Collector/Local Street	1,101,829	1,961,250	1,776,872	984,257	44.9
TOTALS	3,222,593	7,214,795	6,774,439	3,011,115	55.2

Table 16-13: Eaton County – Year 2035 Vehicle Miles of Travel & Speed

EATON COUNTY 2035 NFC	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2035 VMT	NORMALIZED 2035 VMT	2035 SPEED
Rural Interstate/Freeway	348,232	706,706	744,167	366,691	68.8
Rural Major & Minor Arterial/Collector/Local Street	865,096	2,505,035	2,226,094	759,395	54.1
Urban Interstate/Freeway	907,436	2,041,804	2,080,097	924,455	67.4
Urban Principal & Minor Arterial/Collector/Local Street	1,101,829	1,961,250	1,790,992	994,143	45.0
TOTALS	3,222,593	7,214,795	6,841,350	3,044,684	55.2

Table 16-14: Ingham County – Year 2005 Vehicle Miles of Travel & Speed

INGHAM COUNTY 2005 NFC	HPMS 2005 VMT	MODELED 2005 VMT	NORMALIZED 2005 VMT	2005 SPEED
Rural Interstate/Freeway	476,875	733,192	476,875	69.3
Rural Major & Minor Arterial/Collector/Local Street	1,137,806	2,676,520	1,137,806	56.9
Urban Interstate/Freeway	1,530,872	3,030,355	1,530,872	58.5
Urban Principal & Minor Arterial/Collector/Local Street	4,046,633	6,368,589	4,046,633	37.2
TOTALS	7,192,185	12,808,656	7,192,185	44.4

Table 16-15: Ingham County – Year 2010 Vehicle Miles of Travel & Speed

INGHAM COUNTY 2010	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2010 VMT	NORMALIZED 2010 VMT	2010 SPEED
NFC					
Rural Interstate/Freeway	476,875	733,192	704,144	457,982	69.5
Rural Major & Minor Arterial/Collector/Local Street	1,137,806	2,676,520	2,392,468	1,020,246	57.3
Urban Interstate/Freeway	1,530,872	3,030,355	2,971,749	1,500,660	59.1
Urban Principal & Minor Arterial/Collector/Local Street	4,046,633	6,368,589	5,643,526	3,576,809	37.6
TOTALS	7,192,185	12,808,656	11,711,888	6,555,697	45.2

Table 16-16: Ingham County – Year 2018 Vehicle Miles of Travel & Speed

INGHAM COUNTY 2018	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2018 VMT	NORMALIZED 2018 VMT	2018 SPEED
NFC					
Rural Interstate/Freeway	476,875	733,192	718,836	467,537	69.4
Rural Major & Minor Arterial/Collector/Local Street	1,137,806	2,676,520	2,410,495	1,030,377	57.4
Urban Interstate/Freeway	1,530,872	3,030,355	3,032,710	1,531,559	58.9
Urban Principal & Minor Arterial/Collector/Local Street	4,046,633	6,368,589	5,785,644	3,663,399	37.4
TOTALS	7,192,185	12,808,656	11,947,684	6,692,873	45.0

Table 16-17: Ingham County – Year 2025 Vehicle Miles of Travel & Speed

INGHAM COUNTY 2025	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2025 VMT	NORMALIZED 2025 VMT	2025 SPEED
NFC					
Rural Interstate/Freeway	476,875	733,192	731,934	476,057	69.3
Rural Major & Minor Arterial/Collector/Local Street	1,137,806	2,676,520	2,442,098	1,045,402	57.3
Urban Interstate/Freeway	1,530,872	3,030,355	3,060,538	1,545,876	58.9
Urban Principal & Minor Arterial/Collector/Local Street	4,046,633	6,368,589	5,971,667	3,784,648	37.2
TOTALS	7,192,185	12,808,656	12,206,238	6,851,983	44.8

***Table 16-18: Ingham* County – Year 2030 Vehicle Miles of Travel & Speed**

INGHAM COUNTY 2030 NFC	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2030 VMT	NORMALIZED 2030 VMT	2030 SPEED
Rural Interstate/Freeway	476,875	733,192	737,855	479,908	69.3
Rural Major & Minor Arterial/Collector/Local Street	1,137,806	2,676,520	2,452,342	1,051,208	57.4
Urban Interstate/Freeway	1,530,872	3,030,355	3,088,117	1,560,189	58.8
Urban Principal & Minor Arterial/Collector/Local Street	4,046,633	6,368,589	6,081,489	3,851,371	37.2
TOTALS	7,192,185	12,808,656	12,359,802	6,942,676	44.7

***Table 16-19: Ingham* County – Year 2035 Vehicle Miles of Travel & Speed**

INGHAM COUNTY 2035 NFC	HPMS 2005 VMT	MODELED 2005 VMT	MODELED 2035 VMT	NORMALIZED 2035 VMT	2035 SPEED
Rural Interstate/Freeway	476,875	733,192	744,368	484,144	69.3
Rural Major & Minor Arterial/Collector/Local Street	1,137,806	2,676,520	2,485,162	1,067,406	57.3
Urban Interstate/Freeway	1,530,872	3,030,355	3,106,810	1,569,588	58.8
Urban Principal & Minor Arterial/Collector/Local Street	4,046,633	6,368,589	6,096,014	3,860,041	37.2
TOTALS	7,192,185	12,808,656	12,432,353	6,981,179	44.7

Modeled Vehicle Miles of Travel (VMT)

Modeled VMT from the TCRPC model by urban and rural functional classifications are compared to 2005 HPMS VMT for each functional class. Adjustment factors are calculated for each NFC to fit modeled VMT estimates to HPMS VMT estimates. Adjustment factors are applied to forecast years to appropriately scale forecasts.

Conformity Analysis

TCRPC prepared estimates of VMT and speed for Clinton, Eaton and Ingham Counties as inputs to the MOBILE 6.2 emissions model. The conformity analysis is performed using the MOBILE 6.2 computer program. MOBILE 6.2 volatile organic compounds (VOC) and oxides of nitrogen (NOx) emission factors for diesel and gasoline-fueled 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 and 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 variables affecting vehicle emissions are specified by the model user. The analyses cover 2010, 2018, 2025, 2030 and 2035. The analysis evaluates total emissions as calculated by the MOBILE 6.2 emissions model using data from the Regional 2035 Transportation Plan and 2008-2011 Transportation Improvement Program projects compared to the approved 8 hour conformity budget.

A summary of MOBILE 6.2 input assumptions are shown below:

1. Ambient temperature = 86.8° F
   Maximum temperature = 95.0° F
   Minimum temperature = 71.0° F
2. Reid Vapor Pressure value = 9.0

3. Emission factors are based on an off-peak time of day during July.

4. The national default vehicle fleet distribution was assumed.

Tables 16-20 through 16-22 show emissions of VOC and NOx with implementation of projects included in the Regional 2035 Transportation Plan and 2008-2011 Transportation Improvement Program. A listing of projects as modeled is shown in Table 16-24.

***Table 16-20: Clinton* County – Year 2005, 2010, 2018, 2025, 2030 & 2035 VOC & NOX Emissions**

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2005	462.6710	1160.9179
Rural Major & Minor Arterial/Collector/Local Street	2005	1666.6731	3251.9571
Urban Interstate/Freeway	2005	948.7472	2270.3490
Urban Principal & Minor Arterial/Collector/Local Street	2005	694.3132	1090.7112
TOTALS		3772.4045	7773.9352
Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2010	296.9039	690.1817
Rural Major & Minor Arterial/Collector/Local Street	2010	1002.9242	1857.9643
Urban Interstate/Freeway	2010	586.4885	1306.4398
Urban Principal & Minor Arterial/Collector/Local Street	2010	402.0289	603.8637
TOTALS		2288.3455	4458.4496

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2018	184.9369	292.8141
Rural Major & Minor Arterial/Collector/Local Street	2018	614.4499	819.2400
Urban Interstate/Freeway	2018	364.3753	557.9807
Urban Principal & Minor Arterial/Collector/Local Street	2018	248.1361	278.1153
TOTALS		1411.8981	1948.1500

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2025	143.1613	193.4040
Rural Major & Minor Arterial/Collector/Local Street	2025	473.7305	564.4303
Urban Interstate/Freeway	2025	283.6796	372.7879
Urban Principal & Minor Arterial/Collector/Local Street	2025	194.7321	198.8234
TOTALS		1095.3036	1329.4455

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2030	139.7959	164.2902
Rural Major & Minor Arterial/Collector/Local Street	2030	461.6752	488.9662
Urban Interstate/Freeway	2030	278.2360	319.1956
Urban Principal & Minor Arterial/Collector/Local Street	2030	191.4252	175.6302
TOTALS		1071.1324	1148.0823

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2035	140.2166	156.7207
Rural Major & Minor Arterial/Collector/Local Street	2035	464.2670	478.9272
Urban Interstate/Freeway	2035	280.0228	306.0053
Urban Principal & Minor Arterial/Collector/Local Street	2035	192.6305	170.9215
TOTALS		1077.1369	1112.5747

***Table 16-21: Eaton* County – Year 2005, 2010, 2018, 2025, 2030 & 2035 VOC & NOX Emissions**

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2005	391.1828	981.5422
Rural Major & Minor Arterial/Collector/Local Street	2005	1012.9156	1877.4195
Urban Interstate/Freeway	2005	1042.8102	2495.4413
Urban Principal & Minor Arterial/Collector/Local Street	2005	1360.4629	2147.4159
TOTALS		3807.3714	7501.8189

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2010	264.3663	614.5449
Rural Major & Minor Arterial/Collector/Local Street	2010	582.5295	1022.3208
Urban Interstate/Freeway	2010	691.1591	1539.6002
Urban Principal & Minor Arterial/Collector/Local Street	2010	784.7083	1184.0623
TOTALS		2322.7632	4360.5282

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2018	163.2119	258.4166
Rural Major & Minor Arterial/Collector/Local Street	2018	351.5816	449.1183
Urban Interstate/Freeway	2018	421.3459	645.2218
Urban Principal & Minor Arterial/Collector/Local Street	2018	476.1861	535.6309
TOTALS		1412.3256	1888.3876

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2025	125.9020	170.0875
Rural Major & Minor Arterial/Collector/Local Street	2025	267.7138	307.9904
Urban Interstate/Freeway	2025	324.0513	425.8410
Urban Principal & Minor Arterial/Collector/Local Street	2025	368.3854	377.6586
TOTALS		1086.0525	1281.5774

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2030	122.4646	143.9223
Rural Major & Minor Arterial/Collector/Local Street	2030	258.7032	265.5593
Urban Interstate/Freeway	2030	315.6291	362.0934
Urban Principal & Minor Arterial/Collector/Local Street	2030	358.5801	329.9979
TOTALS		1055.3771	1101.5730

Functional Classification	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2035	122.9131	137.3806
Rural Major & Minor Arterial/Collector/Local Street	2035	261.5388	258.3349
Urban Interstate/Freeway	2035	315.5917	344.8745
Urban Principal & Minor Arterial/Collector/Local Street	2035	359.5138	320.2357
TOTALS		1059.5575	1060.8256

Table 16-22: Ingham County – Year 2005, 2010, 2018, 2025, 2030 & 2035 VOC & NOX Emissions

Functional **Classification**	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2005	535.6926	1344.1411
Rural Major & Minor Arterial/Collector/Local Street	2005	1314.8314	2594.5856
Urban Interstate/Freeway	2005	1772.9661	3996.5234
Urban Principal & Minor Arterial/Collector/Local Street	2005	5263.8313	7547.6810
TOTALS		8887.3213	15482.9311
Functional **Classification**	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2010	343.6487	798.8446
Rural Major & Minor Arterial/Collector/Local Street	2010	783.3991	1470.3413
Urban Interstate/Freeway	2010	1152.8801	2461.7683
Urban Principal & Minor Arterial/Collector/Local Street	2010	3052.8189	4210.0587
TOTALS		5332.7468	8941.0128
Functional **Classification**	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2018	213.9758	338.7920
Rural Major & Minor Arterial/Collector/Local Street	2018	479.3362	646.7745
Urban Interstate/Freeway	2018	715.2091	1054.5950
Urban Principal & Minor Arterial/Collector/Local Street	2018	1882.3928	1949.2282
TOTALS		3290.9139	3989.3896
Functional **Classification**	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2025	165.8913	224.1110
Rural Major & Minor Arterial/Collector/Local Street	2025	370.3324	444.8339
Urban Interstate/Freeway	2025	550.5379	702.3110
Urban Principal & Minor Arterial/Collector/Local Street	2025	1498.7599	1412.3442
TOTALS		2585.5216	2783.6001
Functional **Classification**	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2030	162.0096	190.3962
Rural Major & Minor Arterial/Collector/Local Street	2030	360.6886	385.2688

Urban Interstate/Freeway	2030	538.4630	601.1261
Urban Principal & Minor Arterial/Collector/Local Street	2030	1480.3365	1255.0749
TOTALS		2541.4978	2431.8660
Functional **Classification**	Year	VOC Kg/day	NOX Kg/day
Rural Interstate/Freeway	2035	162.2829	181.3843
Rural Major & Minor Arterial/Collector/Local Street	2035	363.7681	372.4416
Urban Interstate/Freeway	2035	537.9067	573.6347
Urban Principal & Minor Arterial/Collector/Local Street	2035	1473.7705	1209.9828
TOTALS		2537.7282	2337.4433

Conformity Determination

The following table, derived from tables 16-2 through 16-22 clearly demonstrates Regional 2035 Transportation Plan and 2008-2011 Transportation Improvement Program projects (as amended) result in lower emissions in each milestone year than the budget, consistent with USDOT/USEPA conformity rules. As amended, neither the 2008-2011 TIP or the 2010-2014 TIP contain capacity projects not included in this Regional 2035 Transportation Plan conformity analysis or are projects not subject to regional emissions modeling, based on a review by the IAWG. Results demonstrate that the plan, the TIP and the projects contained therein, are in conformity with applicable requirements of the State Implementation Plan and in accord with the Clean Air Act and federal transportation law.

Table 16-23: Results of Regional Transportation Conformity Analysis for the Lansing Metropolitan Maintenance Area, 8 Hour Ozone Standard, Regional 2035 Transportation Plan and 2008-2011 Transportation Improvement Program

	Emissions*		
Scenario	VOC	NO_x	DAILY VMT**
8 Hour Conformity Budget	26,691.90	48,145.10	----
2010 Action	9,943.86	17,759.99	23,990.13
2018 Action	6,115.14	7,825.93	24,347.51
2025 Action	4,766.88	5,394.62	24,743.59
2030 Action	4,668.01	4,681.52	24,962.79
2035 Action	4,674.42	4,510.84	25,183.05

* Units for all emissions are shown as kilograms/day.
**Modeled Vehicle Miles of Travel (VMT) in (000's)

Public Participation and Consultation Processes

Notice of public availability of this Regional 2035 Transportation Plan and this revised conformity determination was published in the Lansing State Journal on December 21, 2009. Opportunities were made available for the public to comment and materials were provided in accord with the adopted Metropolitan Transportation Planning Public Participation Plan as revised and adopted on February 28, 2007. A copy of the notice is in Chapter 5. Any related comments considered by the Commission at the time of action are also attached.

In accord with the Conformity State Implementation Plan, a consultation process between the Metropolitan Planning Organization, the MDOT, the MDEQ, local public transit agencies, FHWA and EPA, acting as the Interagency Work Group (IAWG), was used to review and determine the scope of work and all projects and methods considered in this conformity determination. Projects considered by the IAWG are included at the end of this Chapter.

Additional Technical Documentation

Copies of MOBILE 6.2 input and output files and other technical documentation have been transmitted to MDOT/FHWA separately accompanying transmittal of the adopted plan.

MPO Action

Results of this conformity analysis were presented and considered by the Capital Area Regional Transportation Study (CARTS) Technical Advisory Committee on January 5, 2010 and by the Transportation Review Committee on January 13, 2010. Based on recommendations of their advisory committees, the Tri-County Regional Planning Commission considered and accepted results of this conformity analysis and made a finding and determination of conformity on January 21, 2010 and directed staff to finalize this report and submit it to appropriate state and federal agencies. A resolution and certification of Commission action is included in the Plan appendices.

All of these meetings were open to public comment and any comments presented at these meetings were considered at the time of action. A summary disposition of any comments received is attached.

Based on all materials contained in this document, the Tri-County Regional Planning Commission has made a finding and a determination that the Regional 2035 Transportation Plan, 2008-2011 TIP and the 2011-2014 TIP demonstrate conformity with the State Implementation Plan.

Table 16-24: CAPACITY EXPANDING LONG RANGE PLAN PROJECTS FOR ALTERNATIVES ANALYSIS *

12-15-09

Conformity Period, Anticipated Year Open to Traffic	County	Submitting Agency	Road	Location	Length (miles)	Project/Improvement	Is project exempt from regional emissions modeling?	Is project regionally significant?
2010 Baseline								
2009		Lansing	Dunckel Road	at US 127/I-496		Widen from 2 to 4 lanes	No	Yes
2010		East Lansing	Coleman Road	West to Wood	0.78	Construct 2 lane roadway including bike lanes	No	Yes
2010		Lansing	Holmes Road	Waverly to Cedar (except Wash to Logan Sq)	2.30	Reduce from 4 to 3 lanes (grinding, striping, signage)	No	Yes
2010		Lansing	Mt. Hope Avenue	at Washington		Add left turn lanes	Yes	No
2010		MSU	Farm Lane	Mt. Hope to Trowbridge	0.80	Widen from 2 to 4 lanes with grade seperation of the railroads (under construction)	No	Yes
2010		ECRC	Michigan Avenue	Canal to Creyts	1.00	Construct 3 lane roadway	No	Yes
2010		ECRC	Nixon Road	St. Joe to Rockbridge	0.40	Widen from 2 to 3 lanes	No	No
2011-2018 Conformity Period								
2011		Lansing	Jolly Road	Waverly to MLK	1.80	Reduce from 4 to 3 lanes (grinding, striping, signage)	No	Yes
2011		Lansing	Mt. Hope Avenue	Moores River to Washington	2.30	Reduce from 4 to 3 lanes (grinding, striping, signage)	No	Yes
2011		ECRC	Canal Road	Windsor Highway to Lansing Road	1.00	Widen from 2 to 3 lanes	No	Yes
2011		ICRC	Okemos Road	Sandhill to I-96	0.25	Widen from 2 to 3 lanes from Sandhill North to the existing multilane portion of Okemos Road (center left turn lane)	No	Yes
2011		ICRC	Waverly Road	Miller to Jolly	1.00	Widen from 2 to 3 lanes with paved shoulders	No	Yes
2011		Charlotte	Parkland Drive	Lipsey to Packard	0.76	Construct new 2 lane road in industrial park	Yes	No
2011		St. Johns	Townsend Road	Oakland Street to US 127 BR	0.50	Widen from 2 to 3 lanes with non-motorized improvements	No	No
2011		Mason	Franklin Farms Drive	LaVonne Drive to Kipp Road	0.20	Construct 2 lane extension from end of LaVonne	Yes	No
2012		Lansing	Capitol Avenue	Main to Oakland	1.25	Switch from one way to two way (intersection improvements, signal upgrades, signing & striping)	No	Yes
2012		Lansing	Grand Avenue	St. Joe to Lenawee	0.15	Switch from one way to two way (intersection improvements, signal upgrades, signing & striping)	No	Yes
2012		Lansing	Grand Avenue	Lenawee to Oakland	1.05	Switch from one way to two way (intersection improvements, signal upgrades, signing & striping)	No	Yes
2012		Lansing	Townsend Street	Elm to Main	0.25	Reduce from 4 to 3 lanes (grinding, striping, signage)	No	No
2012		ICRC	Cedar Street	Holt to Aurelius	0.64	Reduce from 4 to 3 lanes; includes bike lanes	No	Yes
2012		Lansing	Washington	Mt. Hope to Main	0.89	Reduce from 5 to 3 lanes, including bike lanes	No	Yes
2012		Charlotte	Reynolds Road; Kalamo Hwy	Reynolds from current end extended 0.50 mile south to Kalamo; Kalamo from Reynolds to Cochran	1.30	Construct Reynolds extension; pave 0.80 mile of Kalamo Highway and upgrade Kalamo bridge	No	Yes
2013		ICRC	Lake Lansing Road	at Okemos		Add possible roundabout at Okemos-Lake Lansing	Yes	No
2013		ICRC for Meridian Township DDA	Okemos Road	Hamilton Road intersection		Possible modern roundabout (2 to 3 lanes)	Yes	No
2013		ECRC	St. Joe Highway	Broadbent to Canal	1.00	Widen from 2 to 3 lanes	No	Yes
2013		ICRC	Lake Lansing Road	Lac du Mont to Marsh	1.10	Reduce from 4 to 3 lanes	No (roundabouts are exempt)	Yes
2013		Eaton Rapids	State Street	.09 mile west of Miller .36 mile east to city limit	0.36	Reconstruct and add center left turn lane from Miller east .27 mile	No	No

* This list was reviewed and approved by the Interagency Work Group (IAWG) as projects to be modeled as part of the Alternatives Analysis.

Table 16-24: CAPACITY EXPANDING LONG RANGE PLAN PROJECTS FOR ALTERNATIVES ANALYSIS *

12-15-09

Conformity Period, Anticipated Year Open to Traffic	County	Submitting Agency	Road	Location	Length (miles)	Project/Improvement	Is project exempt from regional emissions modeling?	Is project regionally significant?
2013		East Lansing	Harrison Avenue	Saginaw to Lake Lansing Road	1.04	Reconstruct and reduce from 4 to 3 lanes	No	Yes
2014		ICRC	Lake Lansing Road	I-69 BL (Saginaw) to Lac du Mont	0.70	I-69 BL to Lac du Mont: widen from 2 to 3 lanes	No	Yes
2014		ICRC	Michigan Avenue	Waverly to Lansing city limit	1.00	Reduce from 4 to 3 lanes; includes bike lanes	No	Yes
2015		ICRC	Forest/Farm Lane Corridor	College at Forest		With possible roundabout at Forest and College	Yes	No
2015		MSU	Wilson Road	Wilson - Fee intersection to Hagadorn	0.28	Construct 4 lane boulevard connecting Wilson to Hagadorn	No	Yes
2015		Webberville	Webberville Road Extension	Grand River extending south .57 mile into existing business park.	0.57	Construct new 2 lane road	Yes	No
2015		ECRC	St. Joe Highway	Broadbent to Nixon	1.00	Widen from 2 to 3 lanes	No	Yes
2015		ICRC	Forest/Farm Lane Corridor	College to Farm Lane; Forest to Mt. Hope	0.88	Widen from 2 to 4 lanes	No	Yes
2016		Lansing	MLK Blvd	at Willow		Construct roundabout	Yes	No
2016		CCRC	State Road	DeWitt Road to US 127 BR	1.30	Widen from 2 to 4 lanes	No	Yes
2016		Lansing	Pine Street	Shiawassee to Oakland	0.43	Switch from one way to two way (intersection improvements, signal upgrades, signing & striping)	No	Yes
2016		Lansing	Pine Street	Main to Shiawassee	0.82	Switch from one way to two way (intersection improvements, signal upgrades, signing & striping)	No	Yes
2016		Lansing	Walnut Street	Main to Shiawassee	0.82	Switch from one way to two way (intersection improvements, signal upgrades, signing & striping)	No	Yes
2016		Lansing	Walnut Street	Shiawassee to Oakland	0.43	Switch from one way to two way (intersection improvements, signal upgrades, signing & striping)	No	Yes
2016		Lansing	Willow Street	Sunset to MLK Blvd	0.60	Intersection improvements; acquire right of way	Yes	No
2016		ECRC	Mt. Hope Highway	Canal to Guinea	1.00	Widen from 2 to 3 lanes and add paved shoulders	No	Yes
2016		ICRC	Willow Road	Waverly to Lansing city limit	0.95	Reduce from 4 to 3 lanes, includes bike lanes	No	Yes
2017		ECRC	Mt. Hope Highway	Guinea to Nixon	1.00	Widen from 2 to 3 lanes and add paved shoulders	No	Yes
2018		Lansing	East Grand River	Wood to Howard	0.60	Reduce from 4 to 3 lanes (striping & signage only)	No	Yes
2018		Lansing	East Grand River Avenue	Railroad tracks east of Larch to Massachusetts	0.35	Reduce from 4 to 3 lanes (grinding, striping, signage)	No	Yes
2018		Lansing	Kalamazoo Street	ML King Blvd to Sycamore	0.15	Add left turn lanes at intersection	Yes	No
2018		Lansing	Michigan Avenue	Detroit Street to Friendship Circle	0.60	Boulevard reduced from 3 lanes to 2 lanes in each direction with the addition of bike lanes	No	Yes
2018		Lansing	MLK Jr. Blvd.	North of Oakland to Grand River	1.10	Reduce from 4 to 3 lanes (grinding, striping, signage)	No	Yes
2018		Lansing	Mt. Hope Avenue	at Cedar		Add left turn lanes	Yes	No
2018		Lansing	Mt. Hope Avenue	Aurelius to east city limit	0.85	Reduce from 4 to 3 lanes (grinding, striping, signage)	No	Yes
2018		Lansing	Pleasant Grove Road	MLK to Jolly	1.15	Reduce from 4 to 3 lanes (grinding, striping, signage)	No	Yes
2018		Lansing	Saginaw Street	West of Stanley to Grand Avenue	1.55	Reduce from 4 to 3 lanes (striping & signage only)	No	Yes
2018		Lansing	Saginaw Street	Larch to Merrill	1.60	Reduce from 4 to 3 lanes (striping & signage only)	No	Yes
2018		Lansing	Cedar/Pennsylvania/Edgewood Complex	Cedar at Pennsylvania/American; Pennsylvania at I-96 ramps; Cedar at Edgewood	0.60	Construct 3 roundabouts; reconstruct Cedar and Edgewood between roundabouts	Yes	No
2018		ECRC	Creyts Road	Lansing Road to Dimondale village limit	2.00	Widen from 2 to 3 lanes	No	Yes
2018		ECRC	St. Joe Highway	Royston to Nixon	1.00	Widen from 2 to 3 lanes	No	Yes
2019-2025 Conformity Period								
2019		ECRC	Nixon Road	Rockbridge to M-43	0.60	Widen from 2 to 3 lanes	No	Yes

* This list was reviewed and approved by the Interagency Work Group (IAWG) as projects to be modeled as part of the Alternatives Analysis.

Table 16-24: CAPACITY EXPANDING LONG RANGE PLAN PROJECTS FOR ALTERNATIVES ANALYSIS *

12-15-09

Conformity Period, Anticipated Year Open to Traffic	County	Submitting Agency	Road	Location	Length (miles)	Project/Improvement	Is project exempt from regional emissions modeling?	Is project regionally significant?
2019		ECRC	Willow Highway	M-100 to Canal	4.00	Widen from 2 to 3 lanes and add bike lanes and sidewalk	No	Yes
2019		ICRC	Hagadorn Road	Bennett to Mt. Hope	1.10	Widen from 2 to 4 lanes with possible roundabout at intersection with Bennett; includes bike lanes	No (Roundabouts are exempt)	Yes
2020		ECRC	Mt. Hope Highway	Nixon to M-100	2.00	Widen from 2 to 3 lanes and add paved shoulders	No	Yes
2020		ICRC	Aurelius Road	Harper (west leg) to Holt Road	1.50	Harper to Wilcox: widen from 2 to 3 lanes; Wilcox to Holt: reduce from 4 to 3 lanes; add possible roundabout at Holt-Aurelius intersection; bike lanes on both sides	No (Roundabouts are exempt)	Yes
2020		MSU	Bogue Street	Service Road to Mount Hope	0.52	Construct new 3 lane road	No	Yes
2020		Mason	West Columbia Street	Extension through Maple Grove Cemetary	0.25	Construct 2 lane road to connect with existing Columbia alignment	No	No
2022		ECRC	Canal Road	Willow to Delta Commerce	0.64	Widen from 2 to 3 lanes, add bike lanes and sidewalk	No	Yes
2025		Lansing	Pennsylvania Avenue	at Miller		Add north bound right turn lane	Yes	No
2025		Lansing	Cedar Street	at Willoughby		Add west bound right turn lane; convert south bound right turn lane to through/right turn lane	Yes	No
2025		East Lansing	Lake Lansing Road	US 127 to Harrison	0.75	Widen from 4 to 5 lanes; add intersection turn lanes; possible roundabout Lake Lansing and Coolidge	No (Roundabouts are exempt)	Yes
2025		ECRC	St. Joe Highway	Royston to M-100	1.00	Widen from 2 to 3 lanes	No	Yes
2025		Lansing	Waverly Road	Jolly to Moores River	1.80	Add center left turn; acquire right of way	No	Yes
2026-2030 Conformity Period								
2026		Lansing	Aurelius Road	at Miller		Construct roundabout	Yes	No
2026		ICRC	Jolly Road	Collins to Hagadorn	2.10	Widen from 2 to 4 lanes; possible roundabout at College and Jolly intersection; bike lanes on both sides.	No (Roundabouts are exempt)	Yes
2028		ICRC	Holt Road	Washington to Eifert	1.25	Widen from 2 to 4 lanes with center left turn lanes where necessary; possible roundabouts (not included in estimate)	No (Roundabouts are exempt)	Yes
2029		ECRC	East-West Collector	Creyts to Mall Drive West	0.60	Construct 3 lane roadway	No	Yes
2030		MSU	North Shaw and South Shaw (two way pair)	Red Cedar to Farm Lane	0.25	Eliminate North Shaw; reduce south Shaw to emergency and bus access only	No	Yes
2030		ECRC	East-West Collector	Canal to Creyts	1.00	Construct 3 lane roadway	No	Yes
2031-2035 Conformity Period								
2031		ICRC	Okemos Road	Central Park to Haslett	1.50	Raise grade and install turn pockets	Yes	No
2033		ECRC	St. Joe Highway Bridge	at I-69/96		Widen bridge from 2 to 4 lanes	No	Yes
2034		ECRC	Nixon Road and bridge	Willow to North Highway	0.50	Construct new bridge and roadway	No	Yes
2035		Eaton Rapids	Eaton Rapids bridge and approaches	Extensions of Grandview and Barnes Roads to serve as approaches to new bridge; includes bike lanes	0.19	Construct 2 lane bridge and approaches, including bike lanes	No	Yes

* This list was reviewed and approved by the Interagency Work Group (IAWG) as projects to be modeled as part of the Alternatives Analysis.

Table 16-24: CAPACITY EXPANDING LONG RANGE PLAN PROJECTS FOR ALTERNATIVES ANALYSIS *

12-15-09

Conformity Period, Anticipated Year Open to Traffic	County	Submitting Agency	Road	Location	Length (miles)	Project/Improvement	Is project exempt from regional emissions modeling?	Is project regionally significant?
2035		MDOT	US 127	Kinley to Gratiot County Line (continuing to Ithaca, outside our region; cost is for Clinton County portion)	6.00	Expansion to limited access freeway	No	Yes
2035		ECRC	Snow Road Bridge	at I-496		Widen bridge from 2 to 4 lanes and add non-motorized pathways	No	Yes
2035		ICRC	Marsh Road	Central Park to Tihart	0.50	Widen from 4 to 5 lanes; add possible roundabouts at Central Park, Times Square and Tihart intersections with Marsh	No (Roundabouts are exempt)	Yes

* This list was reviewed and approved by the Interagency Work Group (IAWG) as projects to be modeled as part of the Alternatives Analysis.