

Congestion Management Process and LRTP Projects Technical Report



**Genesee County Congestion Management Process and LRTP
Projects Technical Report**

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Congestion Management Plan

One of the main components of the Long Range Transportation Plan is an analysis of congested roadways in Genesee County and the Management Process to address these congested areas. The Congestion Management Process is a guideline for the development of capacity improvement projects in Genesee County. Because of the limited financial resources available to communities in Genesee County to address roadway congestion, GCMA carefully reviews projects to determine their suitability for widening and selects only the most critical areas recommended by road and transit agencies to become part of the list of capacity improvement projects in Genesee County. The Congestion Management Process is a tool used by road and transit agencies to determine what level of capacity improvement is most suitable for a corridor and uses data from the Genesee County Travel Demand Model to analyze the submitted capacity improvement projects included in this document.

This document is divided into the following sections:

- Identifying the Causes of Congestion
- Implementation Plan for the CMP
- CMP Checklist
- Genesee County Speed Study
- Transportation Deficiency Analysis
- Call for Long Range Transportation Plan Projects
- Congestion Management Checklist
- Alternative Analysis
- List of LRTP Projects



Identifying the Causes of Congestion

Federal Highway Administration lists the following as the major sources of traffic congestion in the United States:

Bottlenecks—points where the roadway narrows or regular traffic demands cause traffic to backup—are the largest source of congestion (40%)

Traffic incidents—crashes, stalled vehicles, debris on the road—cause about 1/4 of congestion problems (25%)

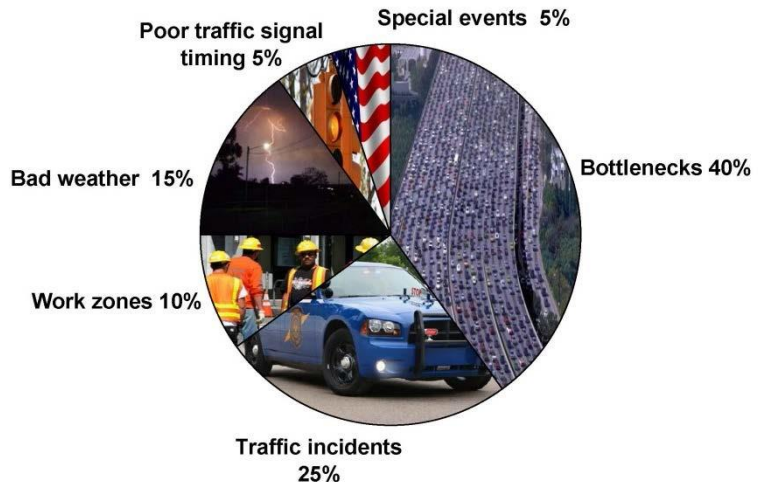
Work zones—for new road building and maintenance activities like filling potholes—are caused by necessary activities, but the amount of congestion caused by these actions can be reduced by a variety of strategies (10%)

Bad weather cannot be controlled, but travelers can be notified of the possibility of increased congestion (15%).

Poor traffic signal timing—is a source of congestion on major and minor streets when there is faulty operation of traffic signals or green/red lights. This occurs when the time allocation for a road does not match the volume of traffic on that road (5%).

Special events cause "spikes" in traffic volumes and changes in traffic patterns. These irregularities either cause delay on days, times or locations where there usually is no delay, or add to regular congestion problems (5%).

Causes of Congestion in the U.S.



Is Congestion the Same Everywhere?

Highway congestion, very simply, is caused when traffic demand approaches or exceeds the available capacity of the highway system. Though this concept is easy to understand, congestion can vary significantly from day to day because traffic demand and available highway capacity are constantly changing. Traffic demands vary significantly by time of day, day of the week, and season of the year, and are also subject to significant fluctuations due to recreational travel, special events, and emergencies (e.g. evacuations). Available highway capacity, which is often viewed as being fixed, also varies constantly, being frequently reduced by incidents (e.g. crashes and disabled vehicles), work zones, adverse weather, and other causes.

To add even more complexity, the definition of highway congestion also varies significantly from time to time and place to place based on user expectations. An intersection that may seem very congested in a rural community may not even register as an annoyance in a large metropolitan area. A level of congestion that users expect during peak commute periods may be unacceptable if experienced on Sunday morning. Because of this, congestion is difficult to define precisely in a mathematical sense – it actually represents the difference between the highway system performance that users expect and how the system actually performs.

Congestion can also be measured in a number of ways; level of service, speed, travel time, and delay are commonly-used measures. However, travelers have indicated that more important than the severity, magnitude, or quantity of congestion is the reliability of the highway system. People in a large metropolitan area may accept that a 20-mile freeway trip takes 40 minutes during the peak period, as long as this predicted travel time is reliable and is not 25 minutes one day and 2 hours the next. This focus on reliability is particularly prevalent in the freight community, where the value of time under certain just-in-time delivery circumstances may exceed \$5 per minute.

Sources of traffic congestion (FHWA)

http://www.fhwa.dot.gov/congestion/describing_problem.htm

<http://ops.fhwa.dot.gov/congsymp/sld004.htm>

http://www.ops.fhwa.dot.gov/congestion_report_04/executive_summary.htm

Highway Congestion

Recurring Congestion occurs when traffic is greater than the roadway capacity; this can include peak hour congestion. The urban travel demand model predicts future recurring congestion and transportation planners use this tool to

develop recurring capacity deficiencies which are then analyzed for the best transportation capacity improvement projects to alleviate the congestion.

Non-recurring Congestion – Road closures, construction detours, traffic crashes, weather conditions, special events and disabled vehicles are main causes of non-recurring congestion. Road closures and construction detours can be modeled for their effects on the transportation system and strategies to minimize the effects of road closures and construction detours are routinely developed on a project-by-project basis. The other types of non-recurring congestion (traffic crashes, weather conditions and disabled vehicles) are difficult to forecast and require different strategies than recurring congestion.

Some types of non-recurring congestion are accepted by the general public, such as the CRIM Festival of Races in downtown Flint. The CRIM draws 50,000 people on the fourth Saturday in August, and many streets are closed for the race. Travel throughout downtown Flint is by walking or bicycling only.

In this plan we focus on the types of recurring highway congestion caused by:

- Intersection delays, turning movements and signal timing issues
- Travel demand greater than general roadway capacity for either the entire 24-hour period, or one of the peak periods (AM, Midday, or PM) in both the current and future roadway systems.

In central and southern Michigan, we also incur congestion in the summer months on our highway system as a large percentage of the population in this area travels to northern Michigan. This vacation/tourist traffic causes delay particularly on the weekends. This is not reflected in the travel demand model which only represents weekday traffic. However, this summer traffic is a persistent form of congestion for a certain period of the year.

Multi-Modal Congestion

The transportation system in Genesee County is multi-modal and includes transit, bicycling, and walking as well as freight transportation. The Genesee County Travel Demand Model includes a mode split with a full fixed route transit model as well as a trucking-freight model and bicycling and walking projected travel for the entire network. We cover much of these items in other technical reports which include the Transit Technical Report, Intermodal Freight Technical Report, Non-Motorized Technical Report, and the Complete Streets Technical Report including deficiencies for each mode of travel and freight.

Transit

Fixed-route transit service can cause delays to the transportation system when a bus makes frequent stops on a roadway that does not include at least four travel lanes or a bus lane. One local example of a project that included additional capacity for the roadway while improving quality transit service is the Miller Road reconstruction project in Flint Township's Business District. This project included the addition of a dedicated bus lane / turn lane for westbound travel and bus pull-outs with new bus shelters for eastbound travel. This project took the bus stops out of the travel lane and improved roadway safety and capacity for one of the largest volume local segments of non-highway. In the Complete Streets Technical Report, we include the need for all transportation projects to be evaluated for their effect on all modes of travel, including transit. Additional transit amenities should be considered where appropriate as well as consultation with the MTA on roads that include its fixed routes.

Bicycling and Walking

In areas where appropriate, the addition of bicycling and walking facilities such as non-motorized pathways, bike lanes and sidewalks can take traffic off congested roadways and move people onto alternative forms of transportation. This is one way in which traffic congestion can be alleviated. See the Non-Motorized Technical Report for further details about these forms of travel in Genesee County.

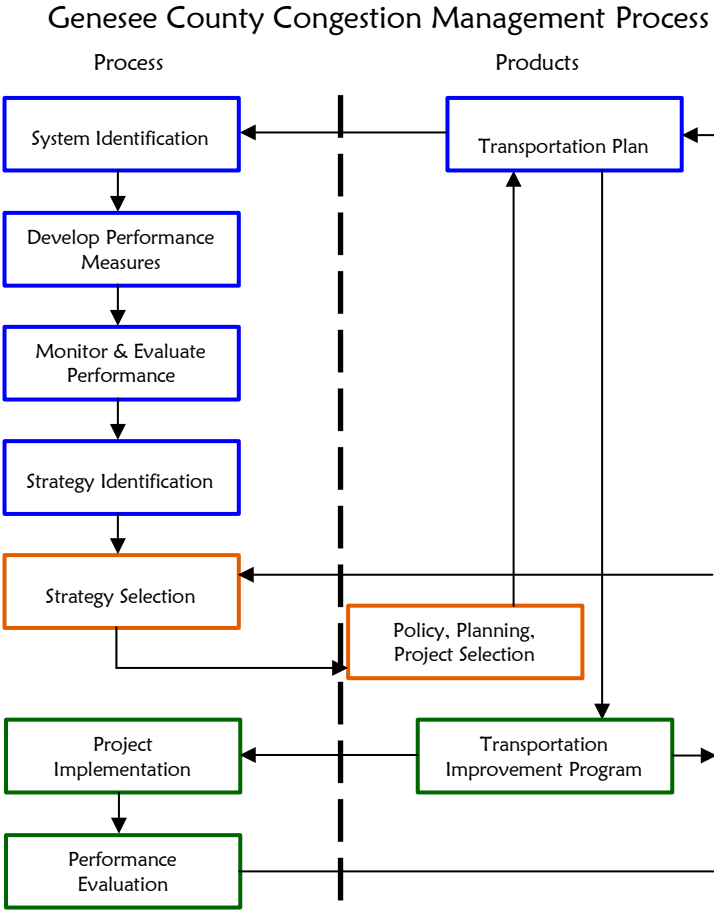
Commercial Trucking/Freight

Our Urban Travel Demand Model includes a truck-freight model and future traffic volumes for trucking freight in Genesee County are included in the Intermodal Freight Technical Report. Inadequate turning radii for trucks, loading and unloading delivery vehicles, and heavy commercial vehicle loads can contribute to congestion problems. Congestion can result in economic impacts on manufacturing facilities or other regional businesses when just-in-time deliveries are delayed. This may create significant losses in productivity. The Intermodal Freight Hub at Bishop International Airport can assist in moving commodities between modes such as rail freight and air cargo to reduce congestion on our roadway truck routes.

Congestion Management Process (CMP) – IMPLEMENTATION PLAN

System Identification





Through a CMP literature review during the last LRTP update, it was found that most other MPOs use the federal-aid road network to define the CMP network. The CMP network was expanded from the select group of corridors used in the previous CMP to include the entire federal-aid road network. This network was used to evaluate congestion on a system-wide basis for the base year and horizon year of the Long Range Transportation Plan. In the future, staff may identify specific corridors within the network for further analysis.



Develop Performance Measures

GCMA uses “Level of Service” (LOS) as a performance measure for congestion in the CMP. The LOS is derived from volume to capacity ratios as illustrated in the following table. A grade of “A” through “F” is assigned to all roadways in the CMP network. Roadways assigned a LOS “A” demonstrate free-flow traffic while LOS “F”, being the worst rating, signifies a system failure where the roadway is completely shut down with congestion. The LOS on any given roadway in the CMP network was calculated through the use of the Genesee County Urban Travel Demand Model. Staff will continue the use of this performance measure to evaluate congestion on Genesee County roadways in future analysis. See also the Performance Measures section on Page 54.

Volume to Capacity Severity Ranges

Volume to Capacity Severity Ranges	Volume to Capacity Ratio	Operating Conditions Severity	Level of Service (LOS)	STABLE FLOW
 	<p>0 to 0.84</p> <p>0.85 to 0.99</p>	<p>Traffic at free to stable flow</p> <p>High density of traffic, but stable flow (Approaching Congestion)</p>	<p>A-C</p> <p>D</p>	
	<p>1.00 to 1.24</p>	<p>Unstable flow – lower speed some stops</p>	<p>E</p>	CONGESTED
	<p>1.25 and greater</p>	<p>Forced or breakdown traffic flow – many stops</p>	<p>F</p>	

Monitor and Evaluate Performance

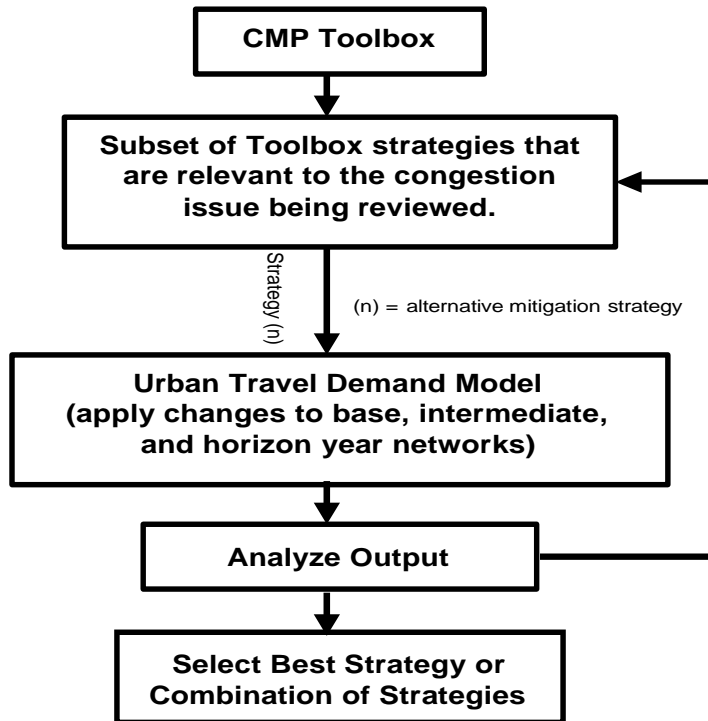
An inventory identifying the current performance of the roadway was built to begin to properly monitor the roadway performance within the CMP network. The LOS on any given roadway in the CMP network is calculated through the use of the Genesee County Urban Travel Demand Model. LOS grades of “A”, “B”, and “C” are considered congestion-free. An LOS grade of “D” is considered to be approaching congestion along a roadway. A roadway receiving an LOS grade of “E” or “F” is considered congested. Most of the efforts of the GCMA CMP are aimed at relieving congested segments (LOS “E” or “F”), while some proactive efforts will be investigated to mitigate future congestion along those roadways approaching congestion (LOS “D”). The process to develop the official 2040 Deficiency Map is explained later in the report on page 42.

A Speed Study Performance Program was implemented in 2008 and concentrated on select roadways and corridors that are slated for improvement projects in the Long Range Transportation Plan (LRTP) and the Transportation Improvement Program (TIP) to help evaluate roadway performance. To build an adequate inventory of data, staff included a survey of select high-volume, congested corridors in Genesee County. To monitor the future performance on a system-wide basis, LOS grades will be re-determined during every Long Range Transportation Plan update. As a system-wide benchmark for the CMP, the GCMA will manage the network to operate at a LOS “D” or better.

Strategy Identification

The GCMA CMP includes 5 different strategy categories that could be used to manage congestion in Genesee County. The structure of the CMP “toolbox” has the strategies assembled for use in a top-down approach. This approach ensures that solutions that reduce or shift auto trips or improve roadway operations are evaluated before adding roadway capacity. Congestion Management solutions will include the implementation of Transportation System Management (TSM), Travel Demand Management (TDM), and Intelligent Transportation System (ITS) improvements. Staff used the toolbox to determine if the strategies presented in the proposed projects were indeed suitable to help manage congestion in Genesee County.

Travel Demand Model Strategy Selection



Congestion Management Checklist and Toolbox

All project applications that were submitted for the 2040 long Range Transportation Plan were required to complete the Congestion Management Checklist as part of their completed application. A copy of the checklist is included here.

Congestion Management Checklist

2040 Long Range Transportation Plan

AGENCY

Applicant Agency:

Contact Person:

PROJECT INFORMATION

Project Name:

Project Description:

Project Purpose:

Please provide the current and one historical traffic count from this corridor:

Current Data:
Year Count

Historical Data:
Year Count

*Note: Historical count must have been collected at least five years prior to current count

Proposed Project Year:

Is the corridor identified as being congested (Level of Service E or F) in the 2005 or 2040 Capacity Deficiencies Map?

Yes No

What do you feel is the primary cause of congestion along this corridor?

CMP TOOLBOX STRATEGIES

To begin the strategy evaluation, a “toolbox” of congestion mitigation measures was assembled that includes a variety of strategies that could be used. Following an approach used by the New Jersey DOT, the strategy “toolbox” is arranged so that the measures on top take precedence over those on the bottom. The general categories for the “toolbox” are as follows:

GENESEE COUNTY CMP “TOOLBOX” STRATEGIES:

- Strategy #1:** Reduce Person Trips or Vehicle Miles Traveled (VMT)
- Strategy #2:** Shift Automobile Trips to Other Modes
- Strategy #3:** Shift Trips from SOV to HOV Auto/ Van
- Strategy #4:** Improve Roadway Operations (signal timing, turning lanes, etc.)
- Strategy #5:** Adding Thru-Lane Capacity

1) Reduce Person Trips or Vehicle Miles Traveled

- Are land use policies in place to encourage the creation of sidewalks, bike paths, and/or transit facilities along the proposed corridor? Check all that apply.

Sidewalks Bike Paths Transit None

- Have major businesses along the corridor been informed about strategies to reduce traffic such as telecommuting, flextime scheduling, or a compressed work week?
 Yes No

If “No” was checked for any of the #1 CMP Toolbox Strategies, please explain below why the particular option has not been used to decrease congestion and improve traffic flow along the corridor.

Comments:

2) Shift Automobile Trips to Other Modes

- Are there available transit options along the proposed project corridor?

Yes No

- Are there sidewalks, bicycle lanes, or other non-motorized facilities currently in place along the proposed corridor? Check all that apply

Sidewalks Bike Paths Other Non-Motorized None

If “No” was checked for any of the #2 CMP Toolbox Strategies, please explain below why the particular option has not been used to decrease congestion and improve traffic flow along the corridor.

Comments:

3) Shift Trips from Single Occupancy Vehicles to High Occupancy Vehicles

- Are there programs and facilities in place to encourage the use of High Occupancy Vehicles?

Yes No

- Is there the potential to offer transportation demand management solutions such as ridesharing, preferential parking, employer-provided shuttles, or additional car pool lots along the corridor?

Yes No

If “No” was checked for any of the #3 CMP Toolbox Strategies, please explain below why the particular option has not been used to decrease congestion and improve traffic flow along the corridor.

Comments:

4) Improve Roadway Operations

- Have the traffic signals along the corridor been timed for optimal traffic flow?

Yes No

If yes, when?

- Is there the potential to improve traffic flow at intersections along the corridor through dedicated turn lanes and/or turning restrictions?

Yes No

- If so, which intersections?

- Have Intelligent Transportation Systems been implemented along the corridor to help address accidents and other non-recurring congestion?

Yes No

- Has access management been implemented along the corridor to help reduce conflict points and improve traffic flow?

Yes No

If “No” was checked for any of the #4 CMP Toolbox Strategies, please explain below why the particular option has not been used to decrease congestion and improve traffic flow along the corridor.

Comments:

Strategy Selection

Strategy selection was performed using our Urban Travel Demand Model. Through the use of the model, the data gathered helped to demonstrate the current congestion conditions on the CMP network. It also provided a glimpse into the horizon year. The selection of one particular strategy over another was supported by both qualitative and quantitative data illustrating where one strategy is more effective than the other, and to what degree. Quantitative data was provided by the travel demand model. The model was utilized to evaluate alternative strategies that may potentially reduce congestion on the CMP network. The use of qualitative data, such as nationally recognized statistics, helped to assess the potential impact a strategy had on the system in instances where modeling was not feasible and/or local data was not available. Also, analyzing data from the "monitoring and evaluation" component of the CMP helped staff to better deduce which strategies worked for particular situations.

Policy, Planning, and Project Selection

This particular step brings much of the process together. In the past, prior to project selection, staff has provided considerable information regarding congested corridors throughout the county as well as possible congestion mitigation strategies to state, local road, and transit agencies. However, it was up to the road agency to consider congestion strategies when developing project applications and ultimately implement them during construction.

GCMA guided the implementation of the process through education, alternative analysis, project planning, and finally a recommendation to the project selection committee to improve on this phase of the overall process. Staff worked hand-in-hand with local agencies to incorporate the CMP during these initial phases to ensure projects are designed to effectively mitigate congestion. By way of education and collaborative planning, capacity projects were analyzed and ultimately improved through the application of the CMP process prior to their application for entry into the LRTP and TIP. As an example, staff had previously completed a 4-to-3 lane road conversion study for the Complete Streets Technical Report. This report helped to educate transportation agencies on how some roads may benefit from a turn lane rather than having additional through lanes. The local transportation agencies completed an alternative analysis for their projects and selected projects that added center-left turn lanes rather than just expanding lanes to accommodate through traffic. For these projects, the transportation agency had previously

considered and tried various strategies from the Congestion Management Toolbox, or strategies were not feasible due to restricted rights-of-way. A left-center turn lane was the next option for most of the projects. The projects were well-analyzed prior to model analysis. This illustrates a change in the thought process of local transportation agencies as of result of the CMP. The alternative model analysis showed that the projects that were submitted best addressed the identified deficiencies.

Long Range Transportation Plan and Transportation Improvement Program

The Congestion Mitigation Process is a significant part of the transportation planning process and exists within the Long Range Transportation Plan (LRTP). The GCMA has fully integrated the CMP as part of the LRTP development process and it is further utilized to provide system performance information throughout the planning process. All projects that are selected for the TIP must come directly from the LRTP.

Project Implementation

Project implementation currently happens through the Long Range Transportation Plan and the Transportation Improvement Program. Staff will work with local road agencies to ensure programmed projects move forward from the programming stages through to project implementation and changes to the system will be updated in the CMP as well as in the urban travel demand model.

Performance Evaluation

All elements of the GCMA CMP will be reviewed and updated periodically to reflect changes to the region's transportation goals and objectives and transportation systems. These updates will include, at a minimum, an analysis of the CMP network performance and an update of both the CMP road network and the urban travel demand network every four years, in advance of each update to the Long Range Transportation Plan.

Genesee County Speed Study

A speed study program for Genesee County was initiated in 2008 as part of the Congestion Management Process. Data collected for the study is used for the monitoring of congestion on the Genesee County transportation network and is used in the development and refinement of the transportation model. Data is collected on a comprehensive list of segments each year. These segments are a combination of high-traffic corridors and corridors that will be improved in the near future.

The speed study is an annual activity conducted as part of the Congestion Management Process. Data is now collected on a two-year cycle with one-half of the system being collected each year. Staff will analyze the system on an annual basis and determine if new segments need to be added to the study.

The following section provides a summary of the study methodology and results.

Speed Study Methodology

The methodology for the study was adapted from the Travel Time Survey Pilot Study prepared by the Roanoke Valley Area Metropolitan Planning Organization and is as follows:

Driving Instructions:

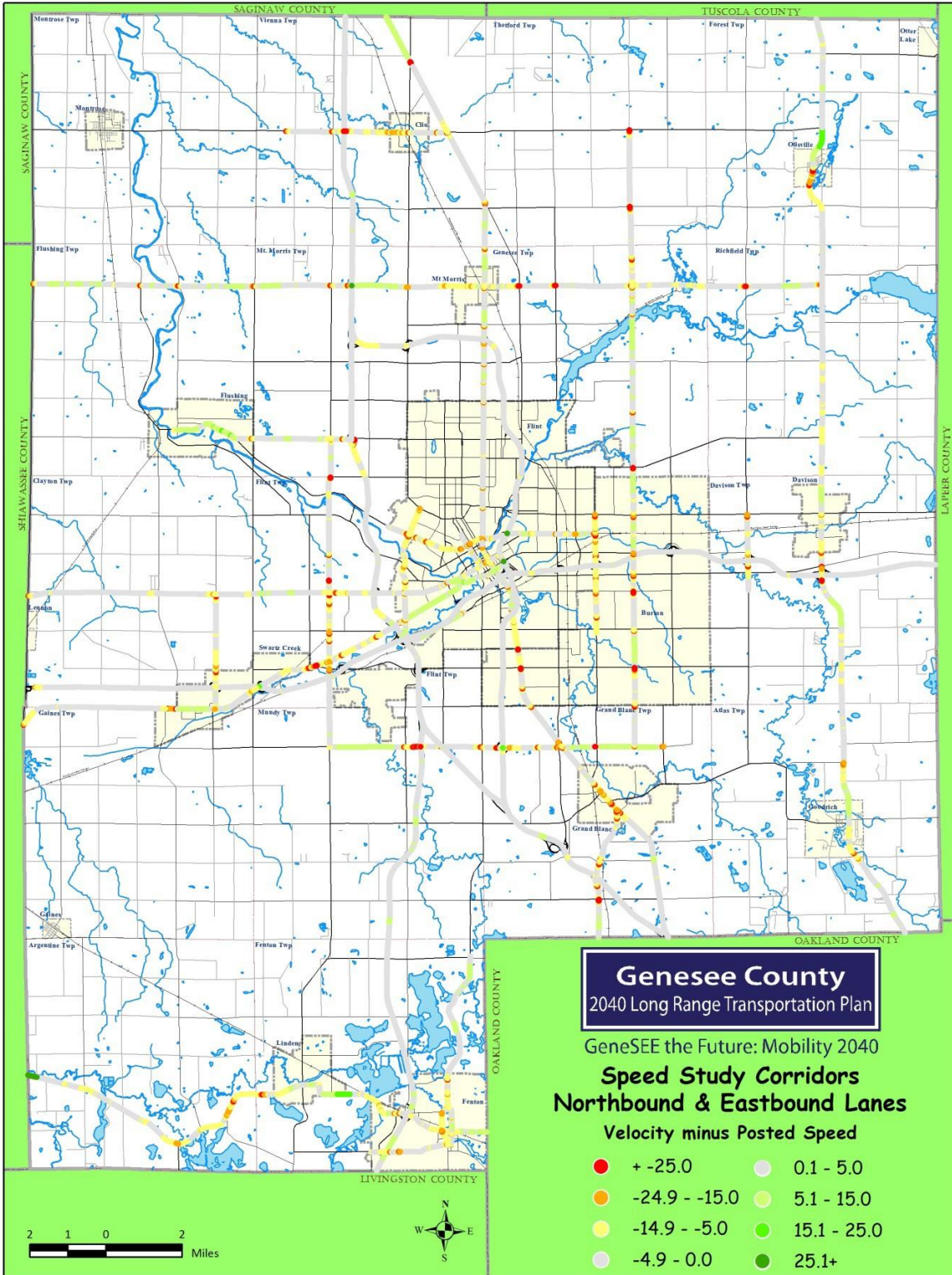
It is important to maintain a consistent driving style. In general, the driver should match the flow of traffic. If no traffic is present, the posted speed limit should be followed. Pass about the same number of cars that are passing you. Do not block traffic in the left lane. In other words, if no one is in front of you and there are cars behind you, move to the right lane. A good technique is to pick a vehicle and match its speed or follow it at a close, but safe distance. Do not exceed the posted speed limit and do not drive aggressively or follow too closely. To avoid distractions to the driver, a second person will operate the GPS unit.

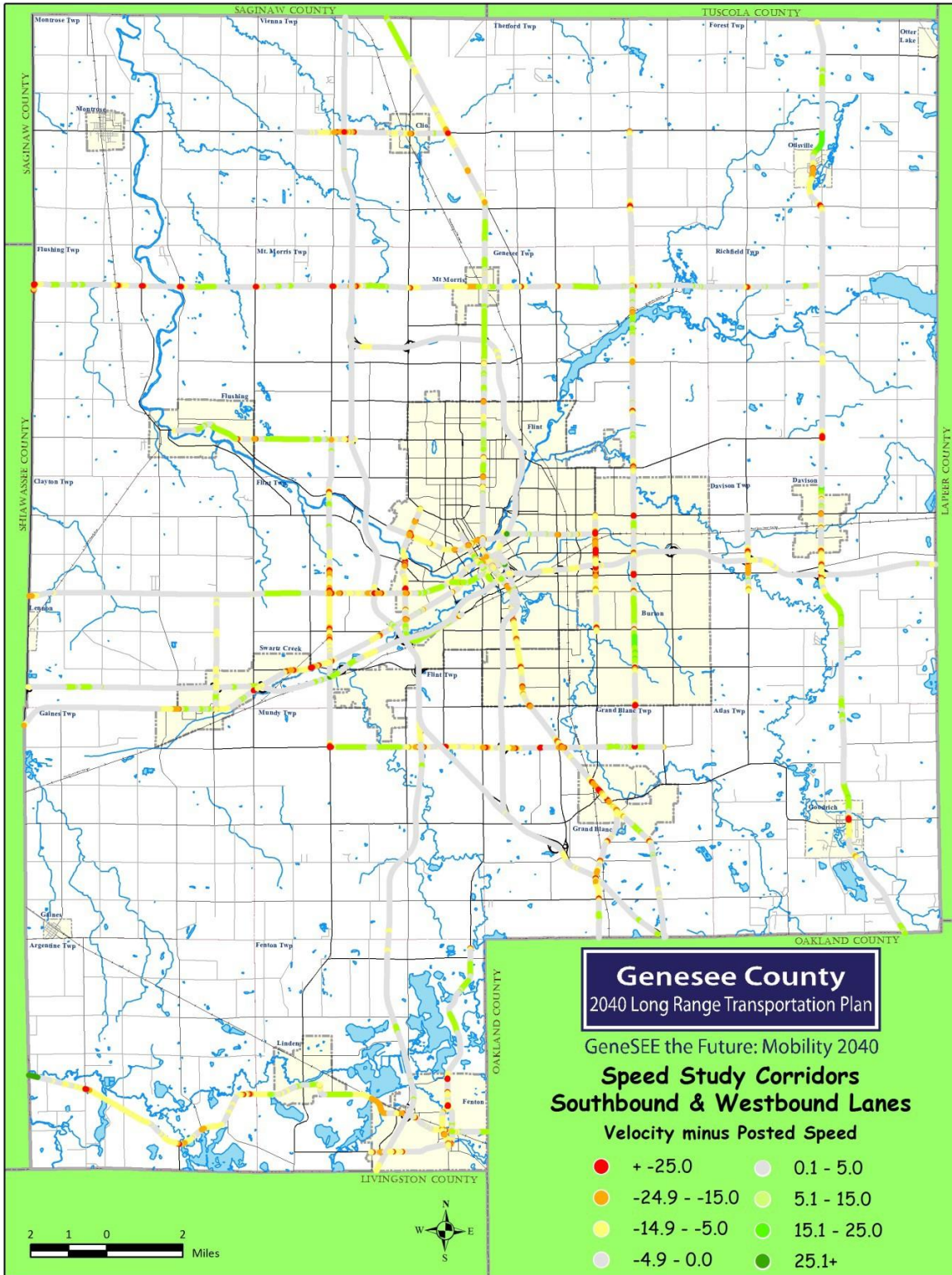
GPS Instructions:

Begin logging GPS data after crossing the intersection at the start of the segment. The person operating the GPS unit will log all signalized intersections along the route. To log intersections the operator will have to press "Options" and select "Segment" *after passing through the intersection*.

The primary data collected for the study was velocity in miles per hour. Staff compared the velocity data collected to the posted speed limits in the model. The following two maps illustrate the difference between posted speeds and collected velocities for each direction of travel on a corridor. The first map

shows north and east bound data while the second map shows south and west bound data. A speed study summary is provided in the section following the maps. The summary shows the average speeds of the corridors over the past six years. The information is then presented in graph form.





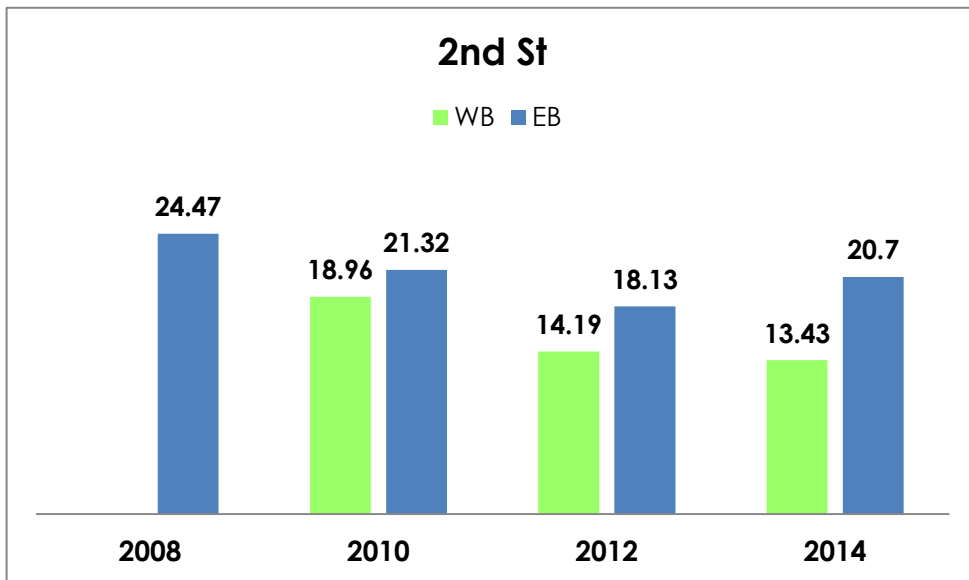
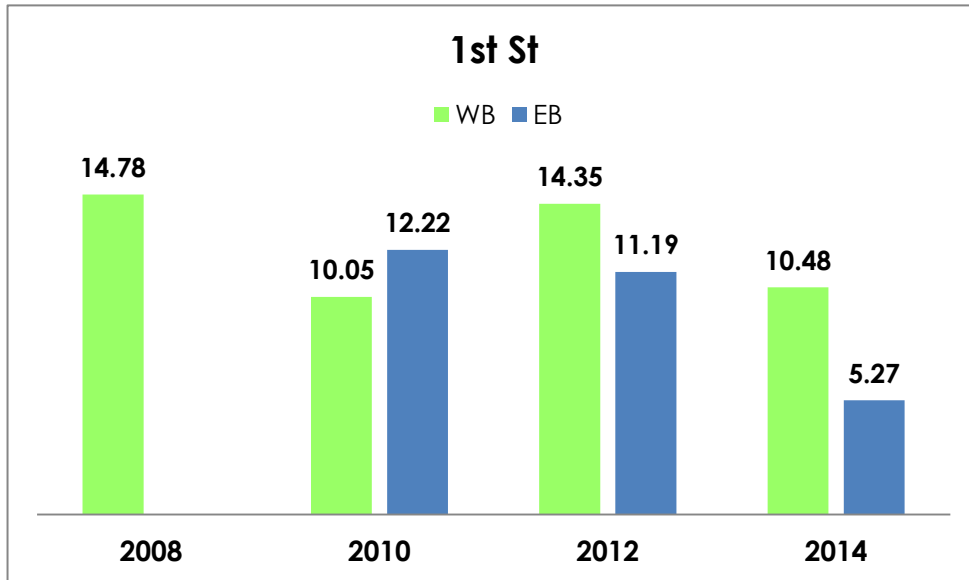
The following is a list of corridors where speed study data was analyzed. The summary charts of speed study data refer to these corridors below. All data below is displayed in average miles per hour (MPH) for each corridor.

- 1st Street – Grand Traverse St to NB Chavez Dr
- 2nd Street – Chevrolet Ave to NB Chavez Dr
- 3rd Street – Grand Traverse St to NB Chavez Dr
- Adelaide Street – North Rd to Shiawassee Ave
- Ballenger Highway – Welch Blvd to Miller Rd
- Center Road – Atherton Rd to Davison Rd
- Flushing Road / 5th Avenue – I-75 to Center Rd
- Genesee Road – M-57 to Hill Rd
- Grand Traverse Street – 12th St to 5th Ave
- Hill Road – Linden Rd to Belsay Rd
- Holly Road – Saginaw St to South County Line
- I-475 – North I-75 Interchange to South I-75 Interchange
- I-69 (west of I-75) – West County Line to I-75
- I-69 (east of I-75) – I-75 to East County Line
- I-75 – North County Line to South County Line
- Irish Road – Lippincott Blvd to Davison Rd
- Kearsley Street – Court St to Robert T. Longway Blvd
- Leroy Street / Fenton Road – Thompson Rd to Shiawassee Ave
- Linden Road – Pierson Rd to Hill Rd
- M-15 (north of Davison Road)- Davison Rd to North County Line
- M-15 (south of Davison Road)- Davison Rd to South County Line
- M-21- West County Line to I-475
- M-57 – Webster Road to Saginaw Rd
- Miller Road – West County Line to Court St
- Morrish Road – Miller Rd to Beecher Rd
- Mt. Morris Road – West County Line to M-15
- Owen Road / Shiawassee Avenue – Silver Parkway to Leroy St
- Pierson Road – Flushing Rd to Dort Hwy
- Saginaw Street (north of 12th Street)- 12th St to North County Line
- Saginaw Street (south of 12th Street)- 12th St to South County Line
- Silver Lake Road / Main Street – West County Line to East County Line
- US-23 – South County Line to I-75 Split

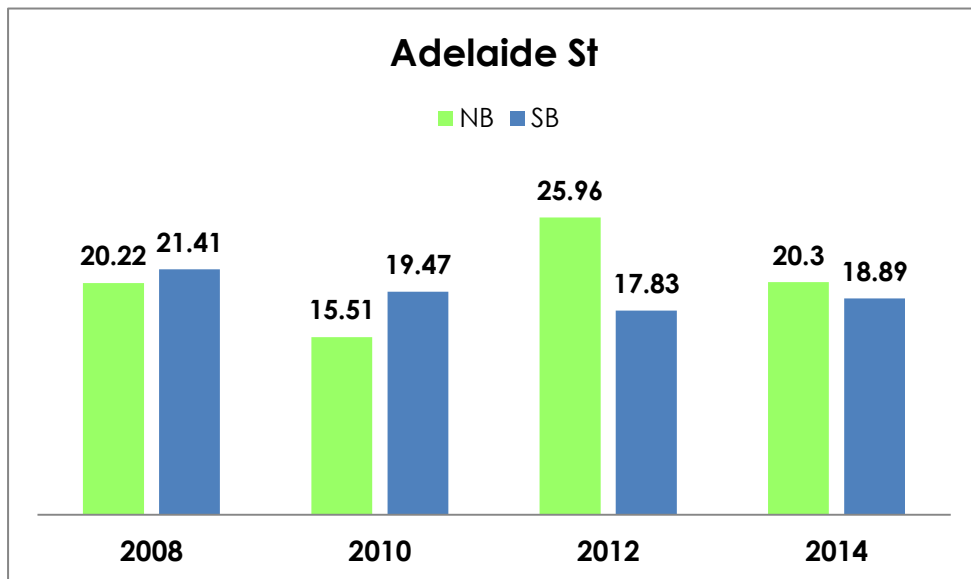
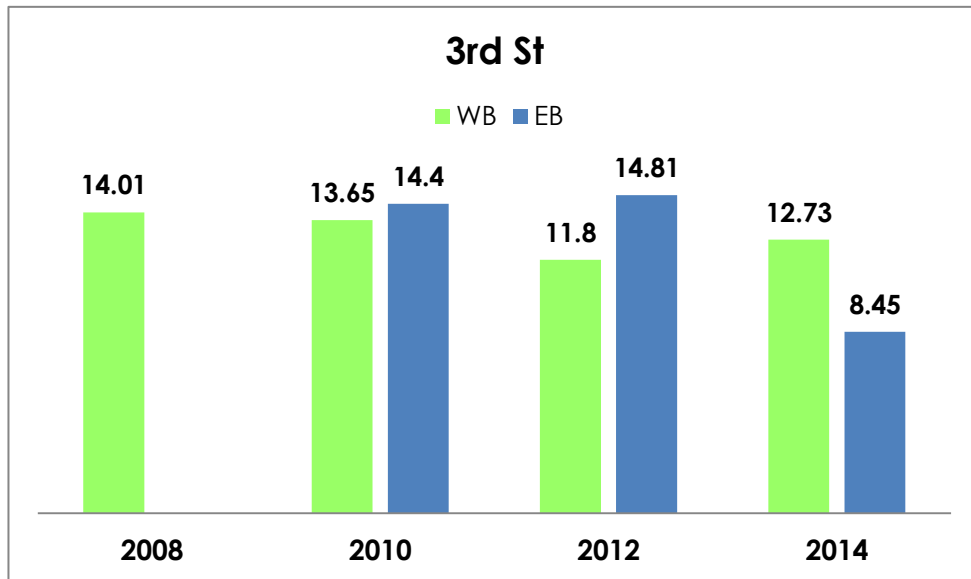
Corridor	Average Speed (MPH)					
	2008	2010	2011	2012	2013	2014
1st St WB	14.78	10.05	-	14.35	-	10.48
1st St EB	-	12.22	-	11.19	-	5.27
2nd St EB	24.47	21.32	-	18.13	-	20.7
2nd St WB	-	18.96	-	14.19	-	13.43
3rd St WB	14.01	13.65	-	11.8	-	12.73
3rd St EB	-	14.4	-	14.81	-	8.45
Adelaide St NB	20.22	15.51	-	25.96	-	20.3
Adelaide St SB	21.41	19.47	-	17.83	-	18.89
Ballenger Hwy NB	26.89	25.93	-	21.42	-	22.29
Ballenger Hwy SB	16.48	19.9	-	20.27	-	20.93
Center Rd NB	-	26.13	25.17	-	28.54	-
Center Rd SB	-	29.07	24.94	-	31.79	-
Flushing Rd / 5th Ave WB	25.32	24.2	-	20.26	-	24.18
Flushing Rd / 5th Ave EB	25.86	31.19	-	21.58	-	25.29
Genesee Rd NB	38.55	38.24	34.02	-	37.9	-
Genesee Rd SB	37.99	36.31	37.55	-	39.87	-
Grand Traverse St NB	-	14.77	-	21	-	12.21
Grand Traverse St SB	-	10.25	-	17.76	-	17.13
Hill Rd EB	31.57	33.16	32.75	-	34.35	-
Hill Rd WB	32.85	27.79	31.54	-	37.68	-
Holly Rd NB	33.43	32.99	35.59	-	39.24	-
Holly Rd SB	29.52	32.48	32.4	-	36.41	-
I-475 NB	-	-	70.45	-	70.45	-
I-475 SB	-	-	71.74	-	70.8	-
I-69 (W of I-75) WB	74.17	72.93	71.44	-	71.44	-
I-69 (E of I-75) WB	67.92	-	71.57	71.66	68.27	70.33

Corridor	Average Speed (MPH)					
	2008	2010	2011	2012	2013	2014
I-69 (W of I-75) EB	71.72	73.7	71.86	-	70.49	-
I-69 (E of I-75) EB	69.79	-	70.25	70.3	68.88	68.93
I-75 NB	71.9	71.54	-	72.57	-	72.6
I-75 SB	70.4	69.57	-	72.35	-	71.06
Irish Rd NB	36.36	20.6	34.27	-	28.06	-
Irish Rd SB	35.11	30.2	29.09	-	30.33	-
Kearsley St WB	16.16	23.5	-	22.71	-	16.69
Kearsley St EB	-	13.81	-	14.31	-	11.76
Fenton Rd / Leroy NB	34.55	33.94	33.28	-	34.43	-
Fenton Rd / Leroy SB	31.88	30.25	26.78	-	35	-
Linden Rd NB	29.66	33.44	34.03	-	31.22	-
Linden Rd SB	35.69	31.66	25.56	-	29.13	-
M-15 (S of Davison) NB	45.47	42.21	-	39.92	42.6	42.34
M-15 (S of Davison) SB	44.31	48.98	-	46.02	46.02	43.71
M-15 (N of Davison) NB	49.68	47.93	43.23	-	48.86	-
M-15 (N of Davison) SB	46.25	48.17	45.37	-	46.34	-
M-21 WB	35.97	39.45	24.22	-	40.94	-
M-21 EB	39.41	38.84	39.69	-	35.55	-
M-57 WB	33.49	33.64	-	32.14	-	28.8
M-57 EB	31.72	33.33	-	35.21	-	33.8
Miller Rd 11am WB	35.08	36.51	-	34.24	-	29.05
Miller Rd 11am EB	36.23	32.73	-	33.61	-	30.7
Miller Rd 5pm WB	-	-	-	32.48	-	23.09
Miller Rd 5pm EB	-	-	-	31.84	-	30.31
Morrish Rd NB	38.85	40.13	-	46.14	-	38.27
Morrish Rd SB	47.59	36.14	-	46.98	-	37.1
Mt Morris Rd WB	39.28	40.76	-	40.47	-	39.01
Mt Morris Rd EB	39.97	38.31	-	41.81	-	36.78

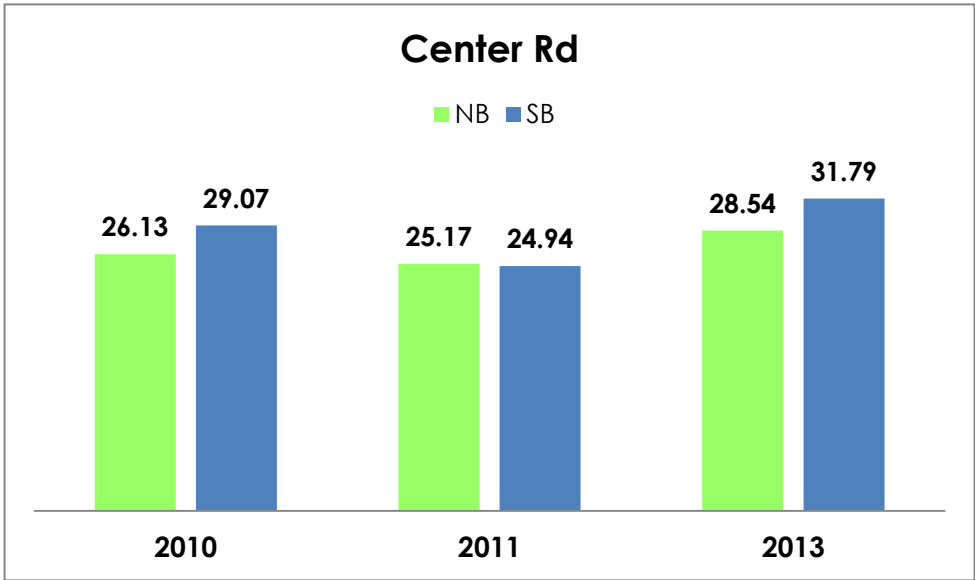
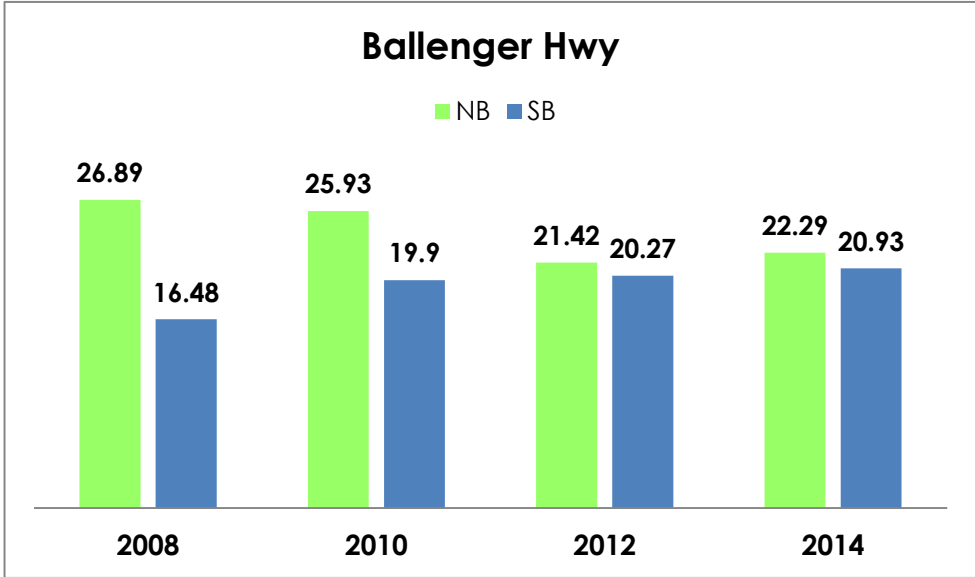
Corridor	Average Speed (MPH)					
	2008	2010	2011	2012	2013	2014
Owen Rd /Shiawassee	23.04	23.92	27.76	-	24.08	-
Owen Rd/ Shiawassee EB	26.38	24.95	28.33	-	23.75	-
Pierson Rd 11am WB	30.5	30.67	-	30.92	-	29.77
Pierson Rd 11am EB	34.42	31.92	-	31.9	-	30.57
Pierson Rd 4pm WB	-	-	-	27.93	-	26.39
Pierson Rd 4pm EB	-	-	-	36.43	-	30.33
N Saginaw St NB	24.2	30.85	30.54	-	33.27	-
N Saginaw St SB	36.12	30.14	32.73	-	30.76	-
S Saginaw St NB	29.97	30.69	32.25	-	30.84	-
S Saginaw St SB	32.89	32.5	31.19	-	30.69	-
Silver Lake Rd WB	37.82	37.27	-	37.36	-	35.28
Silver Lake Rd EB	38.49	37.36	-	35.79	-	33.45
US-23 NB	73	71.48	-	75.58	-	71.94
US-23 SB	70.1	75.61	-	75.99	-	69.46



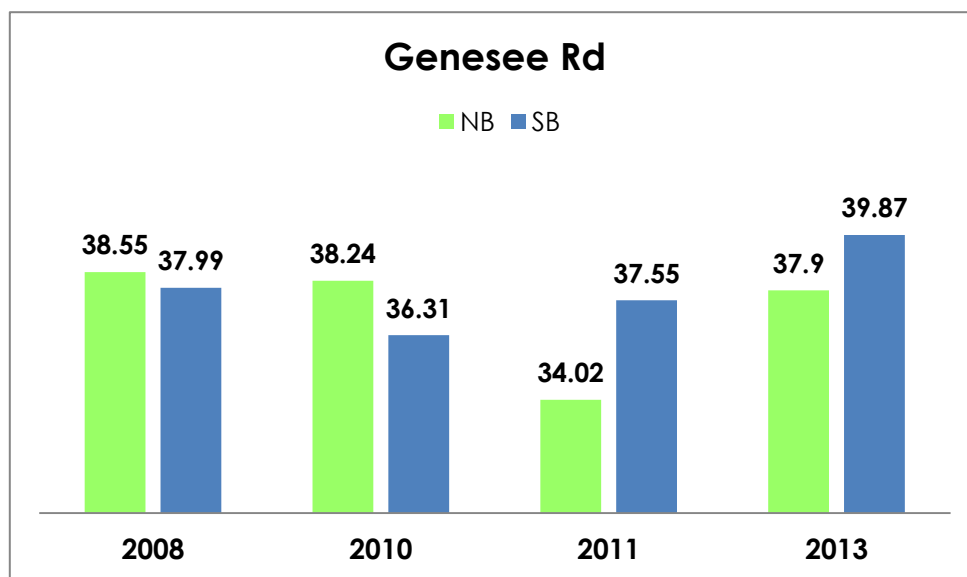
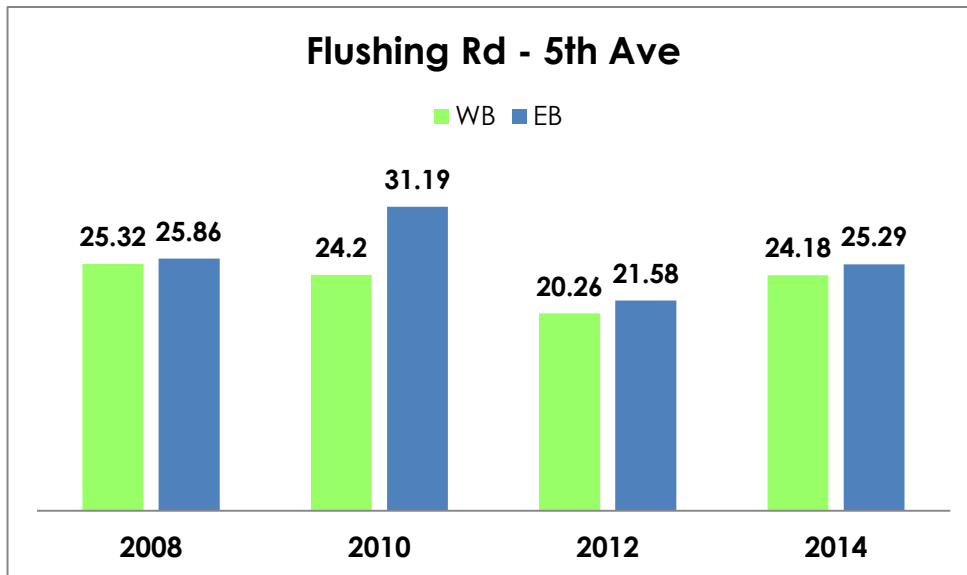
*All Values in miles per hour (MPH)



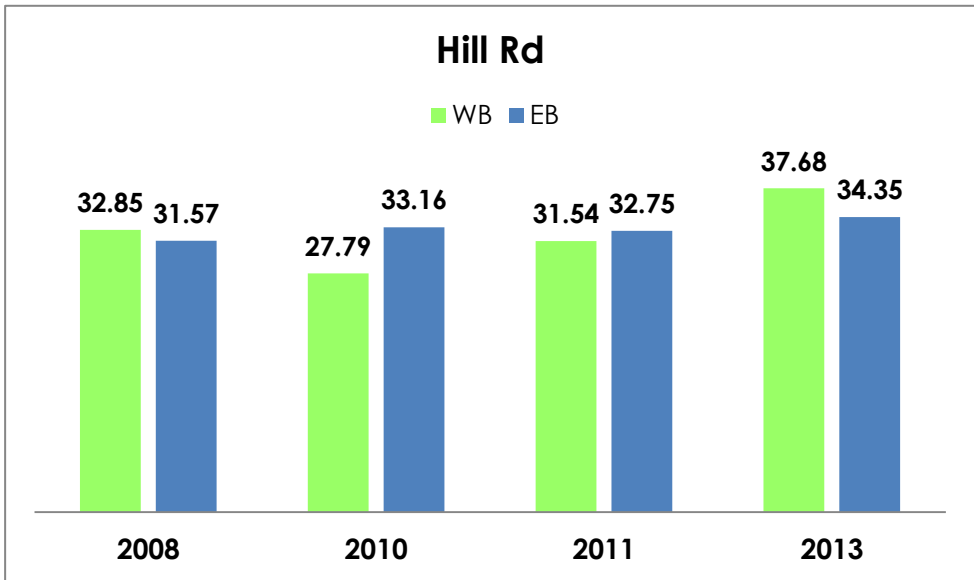
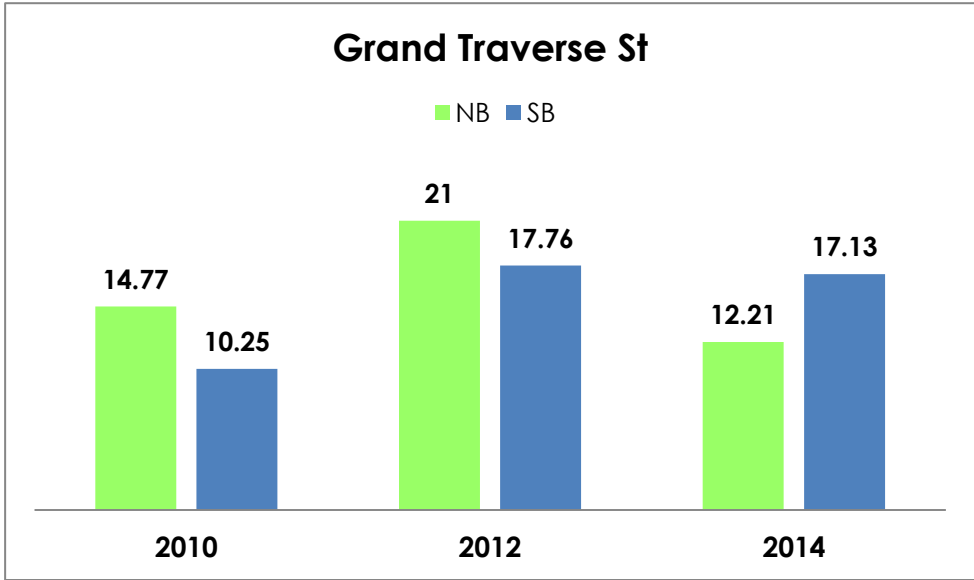
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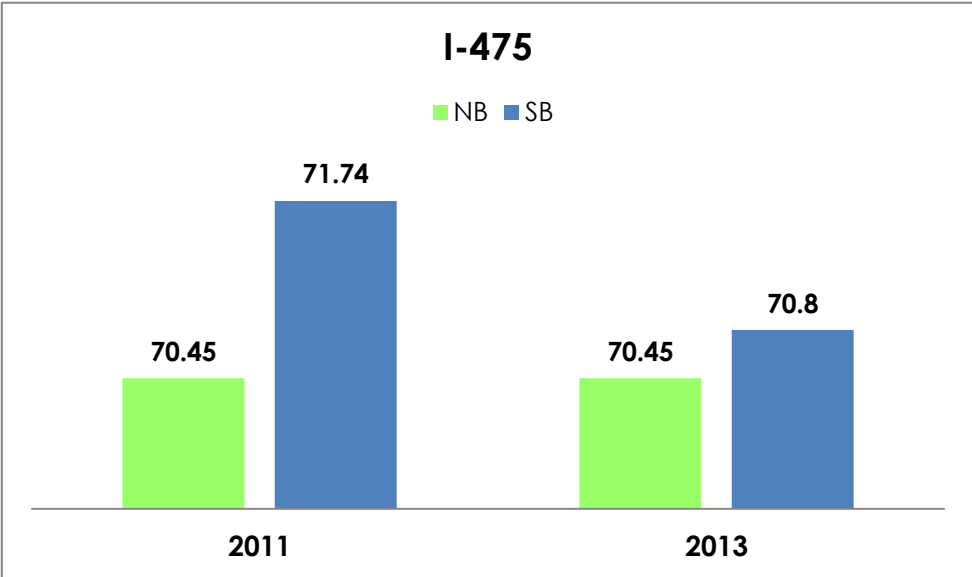
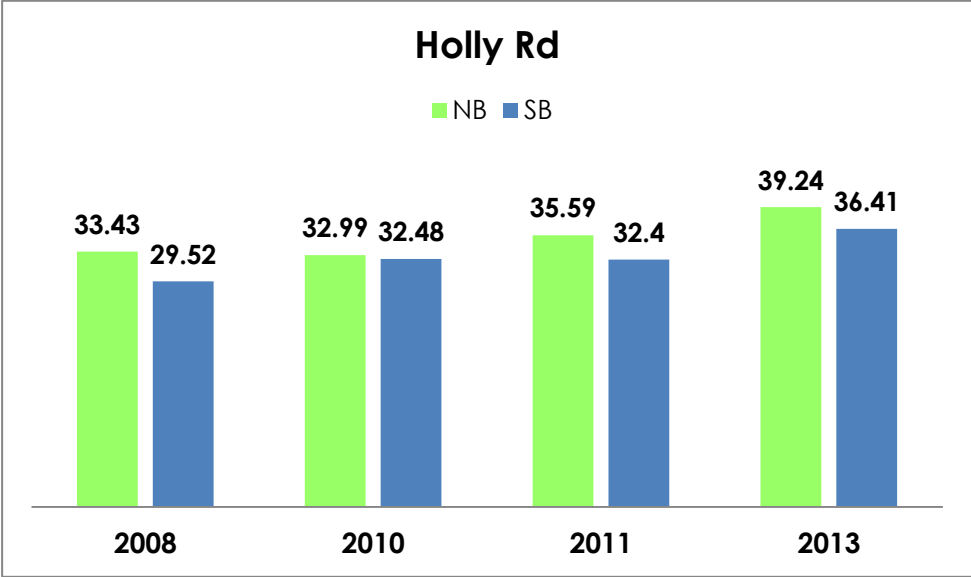
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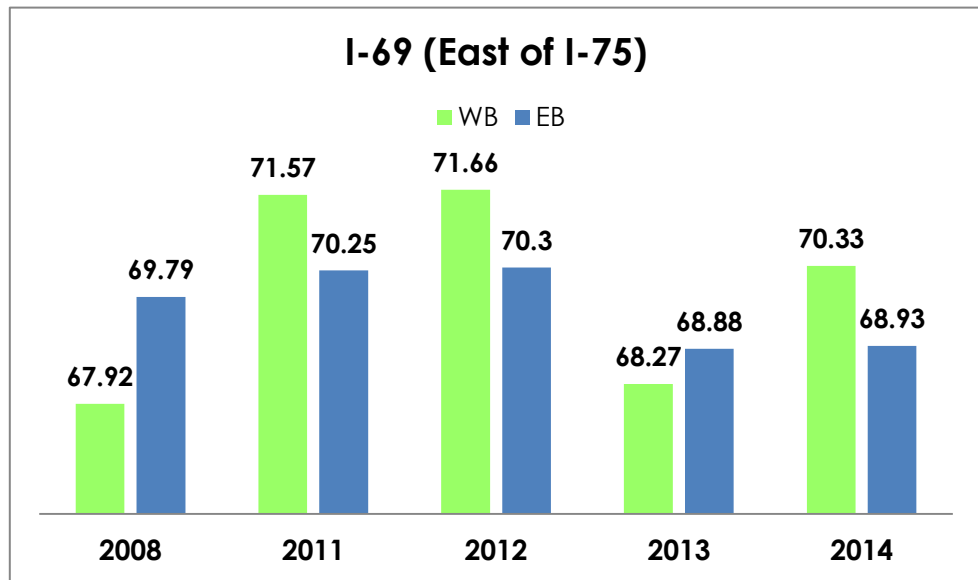
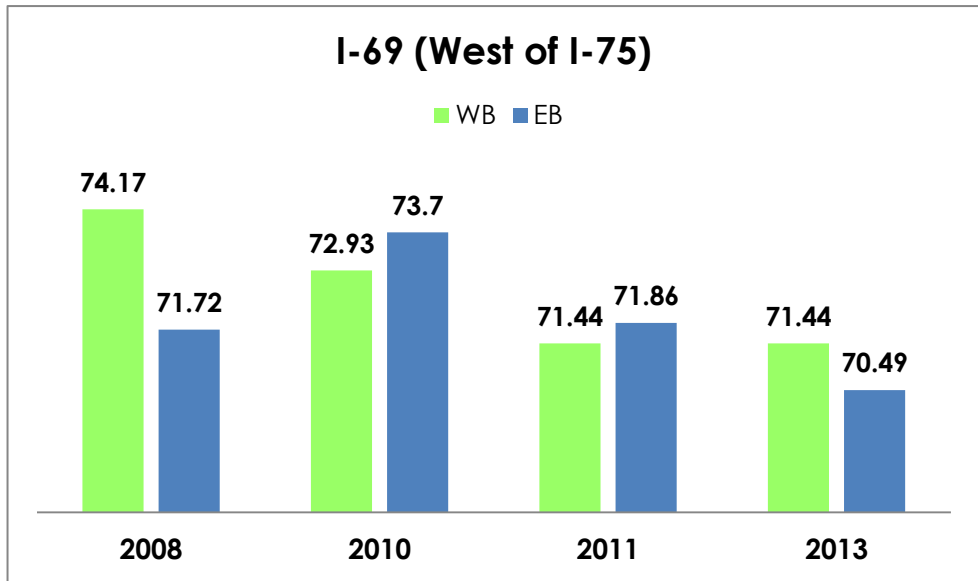
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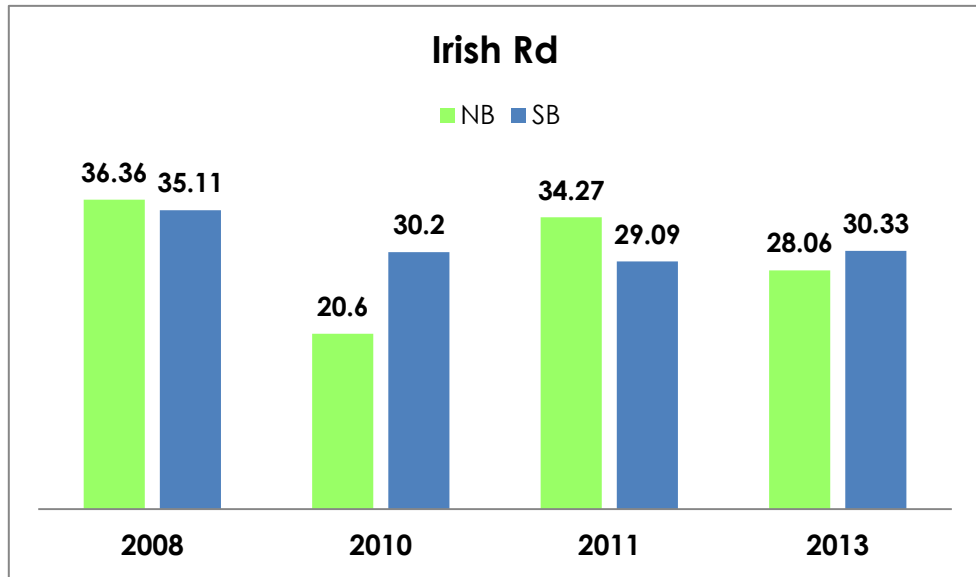
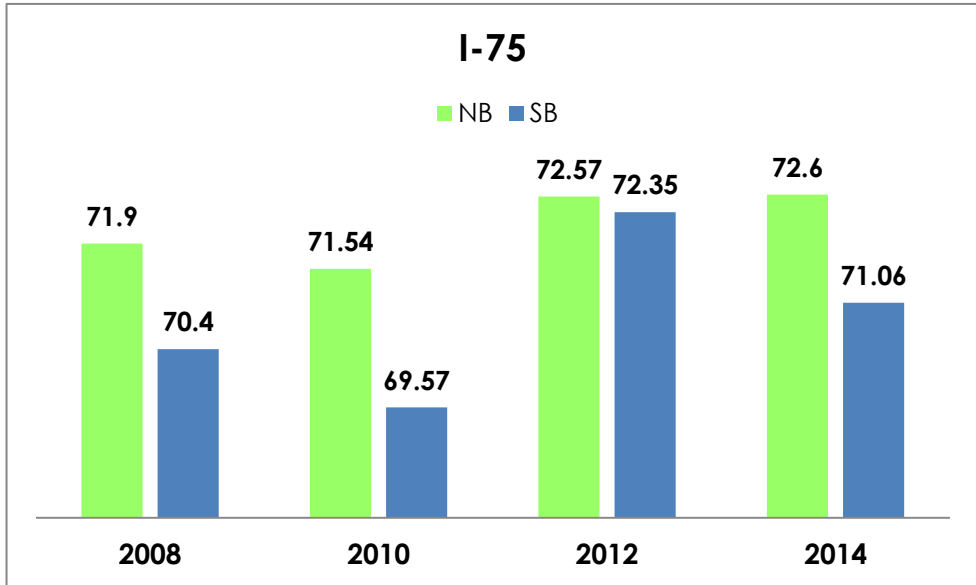
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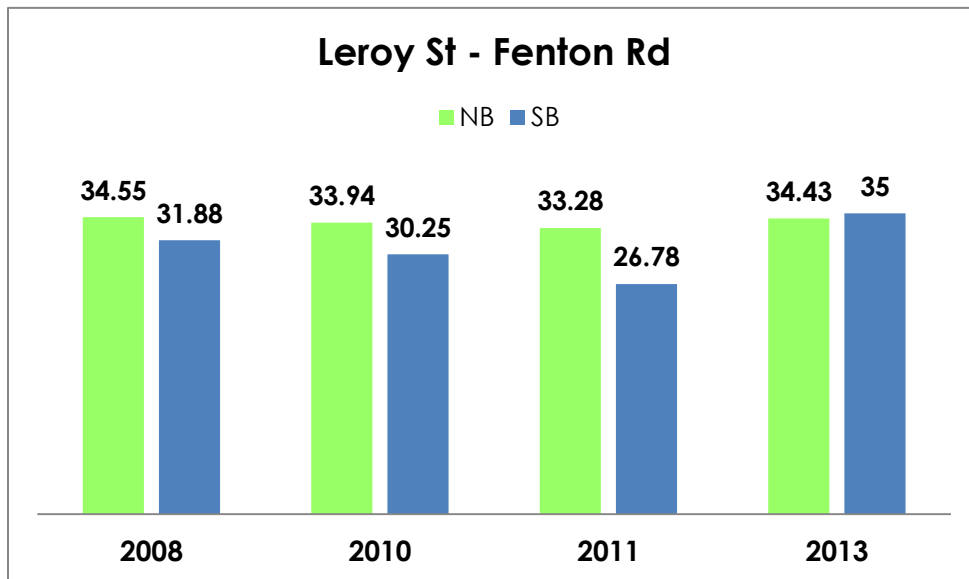
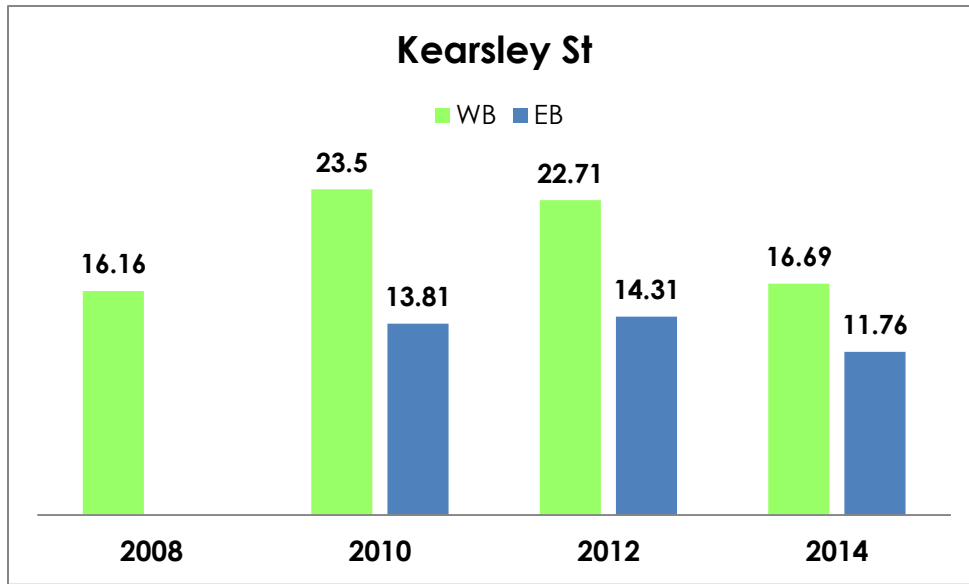
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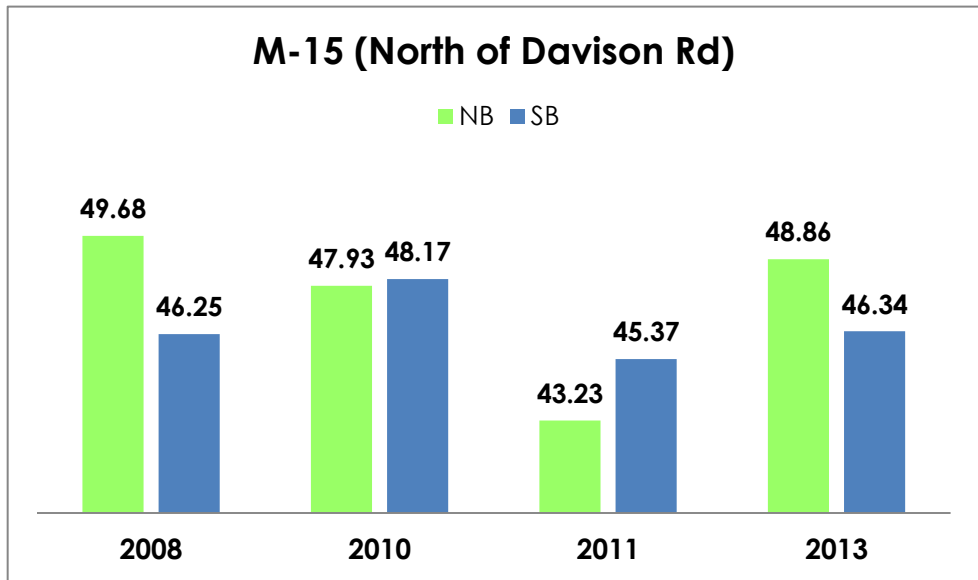
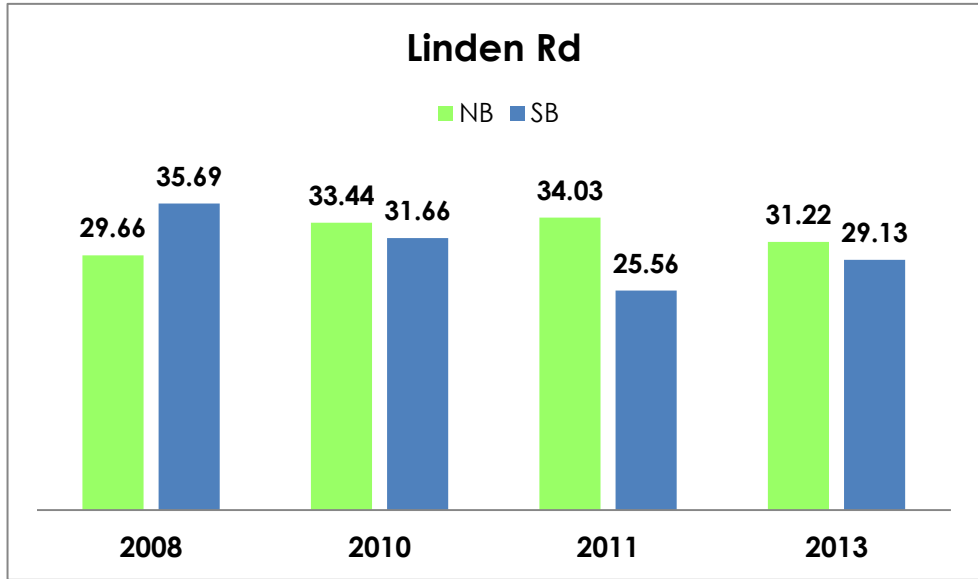
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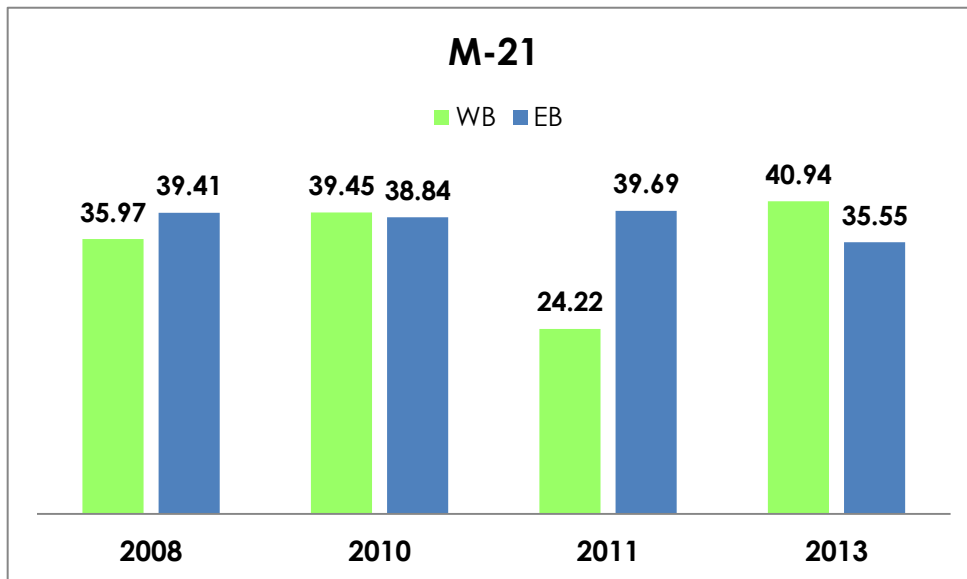
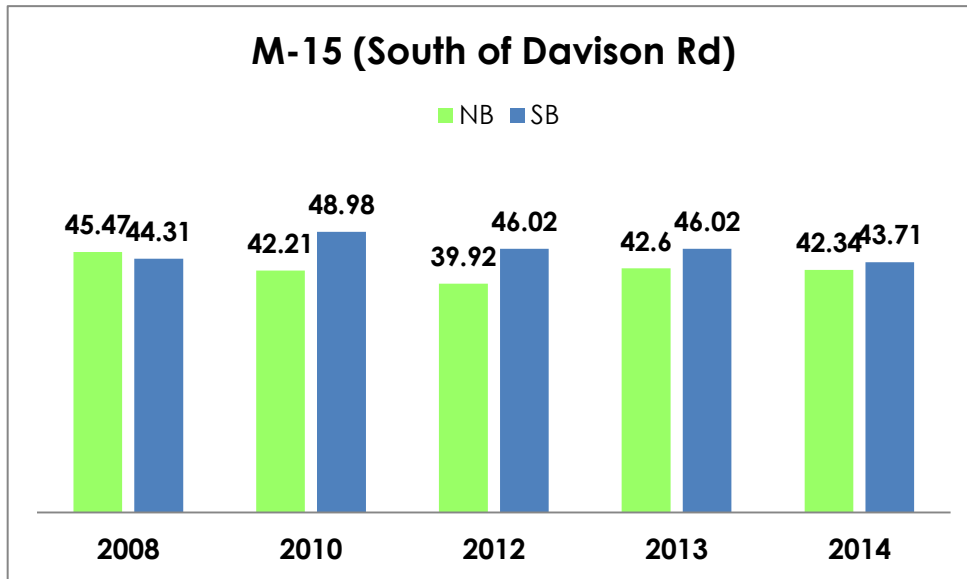
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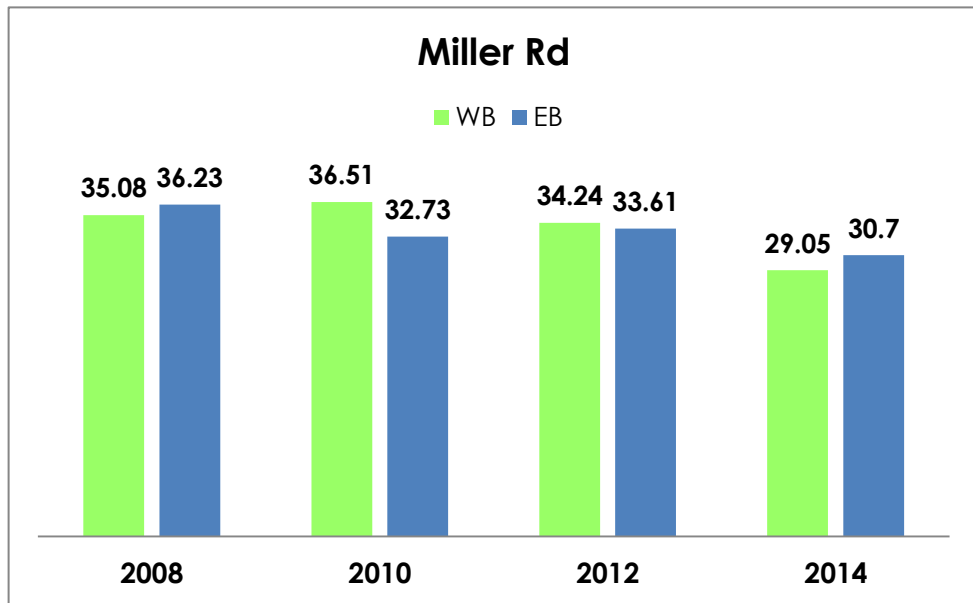
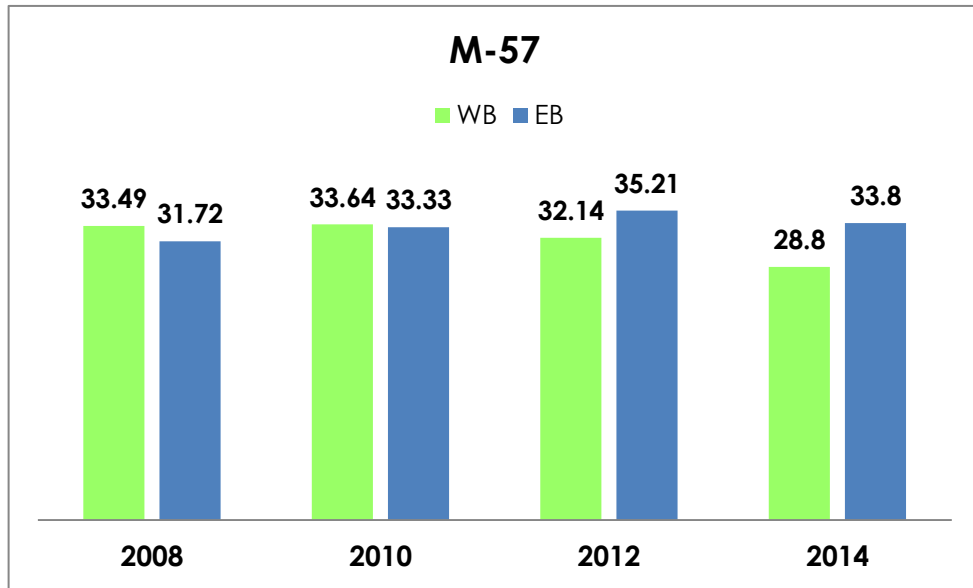
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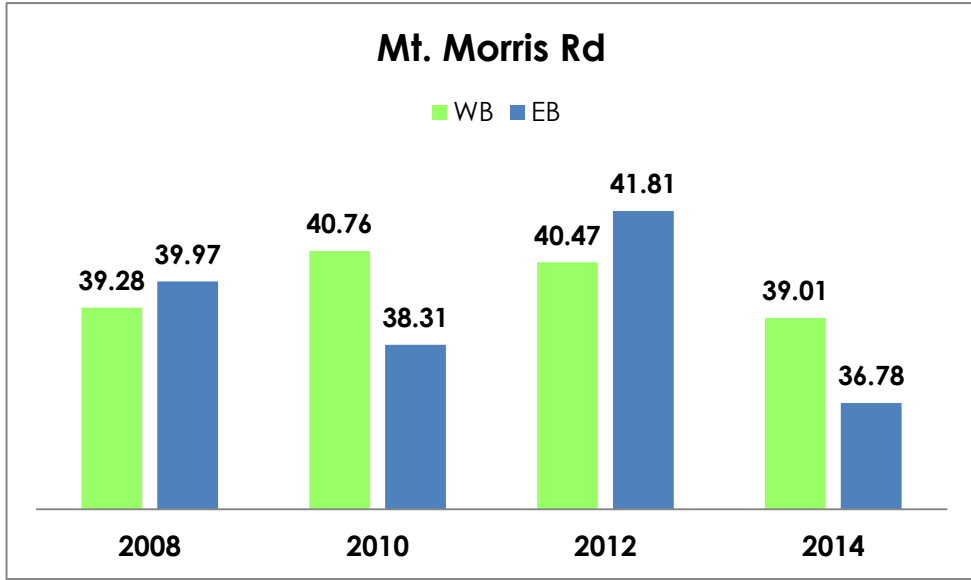
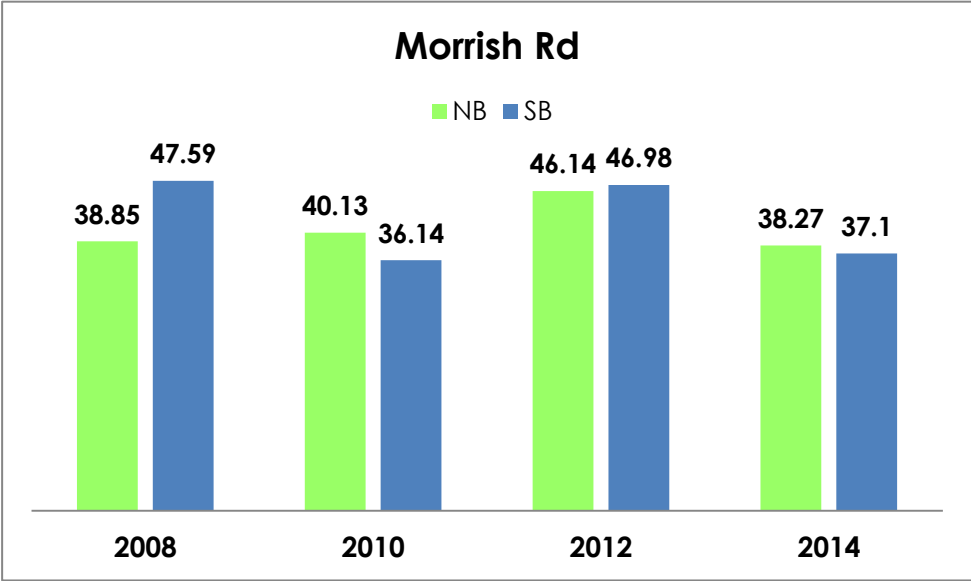
*All Values in miles per hour (MPH)



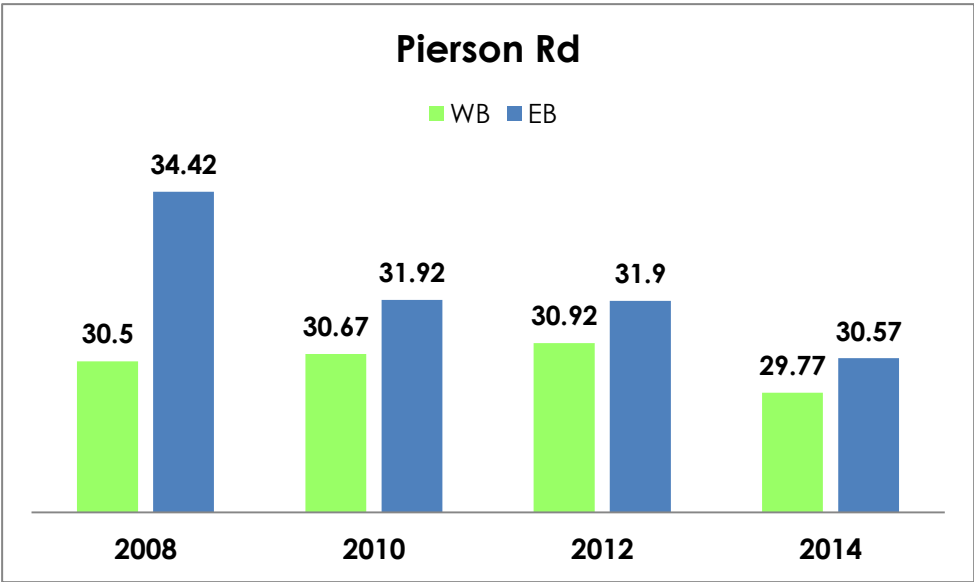
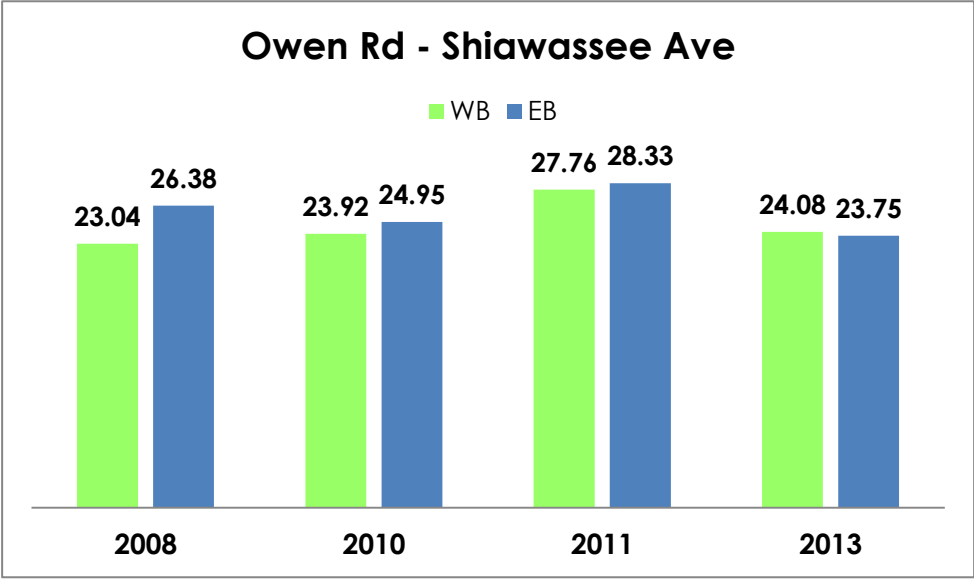
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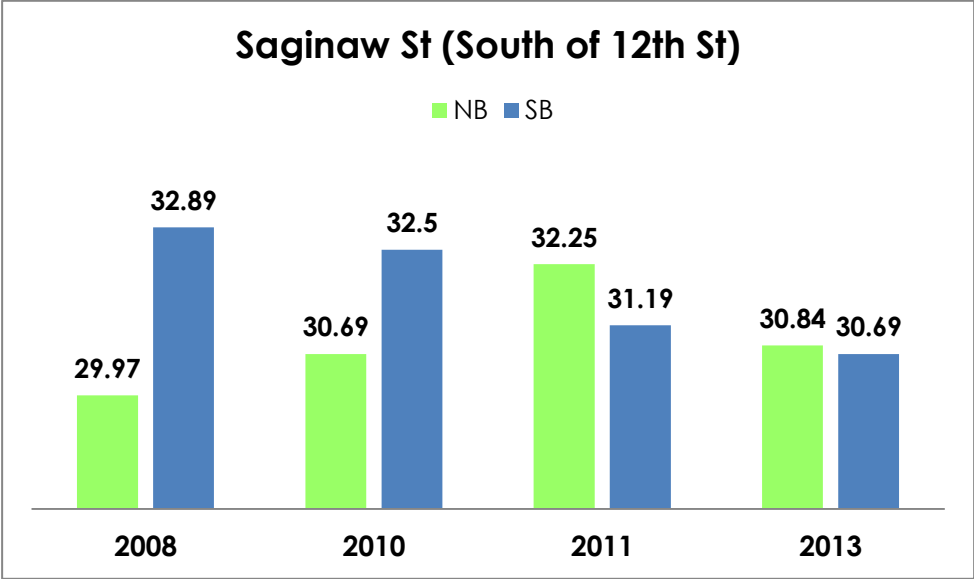
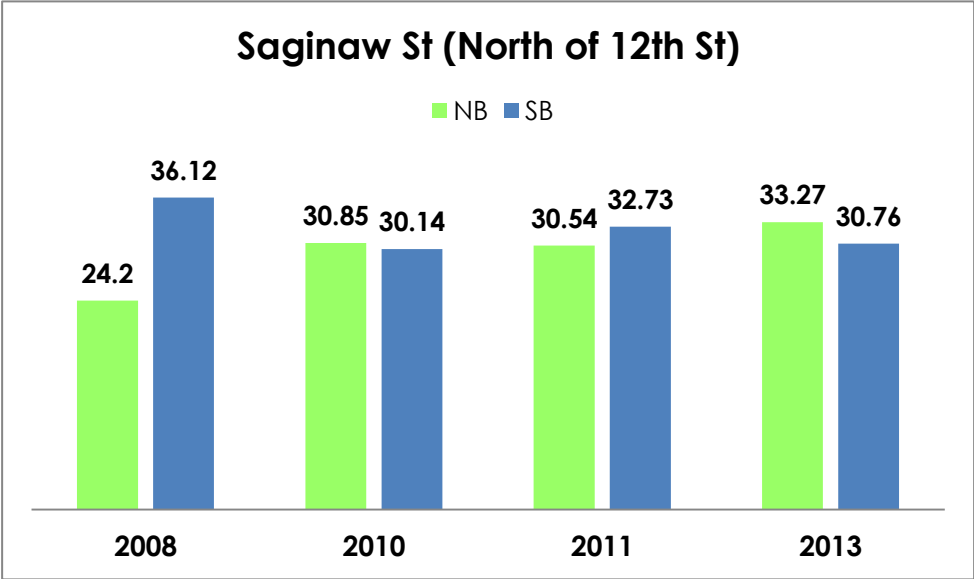
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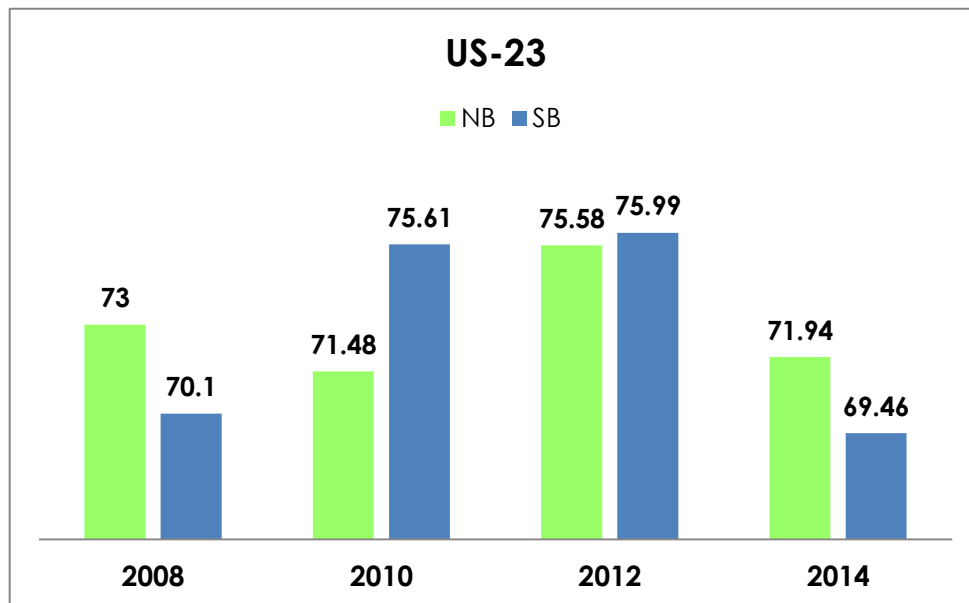
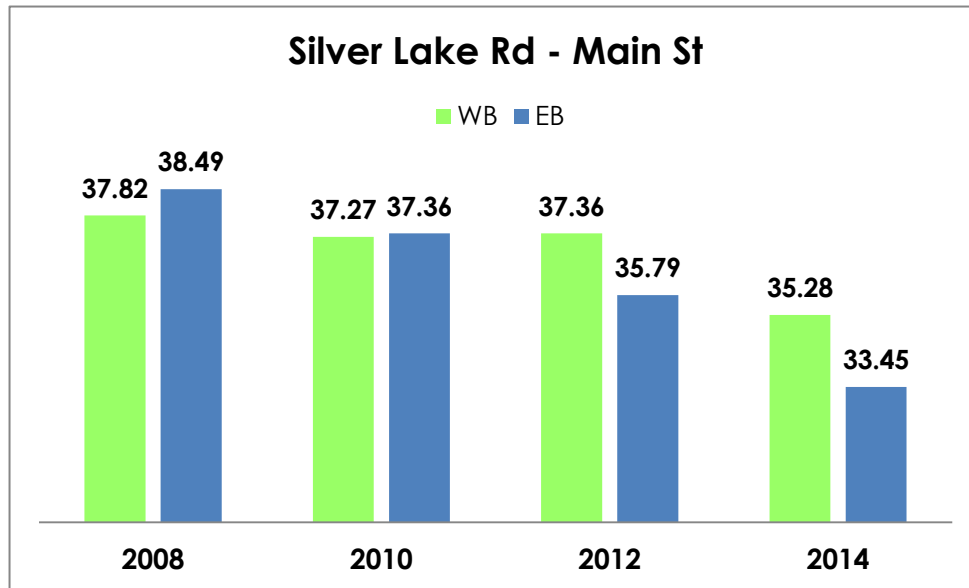
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*All Values in miles per hour (MPH)



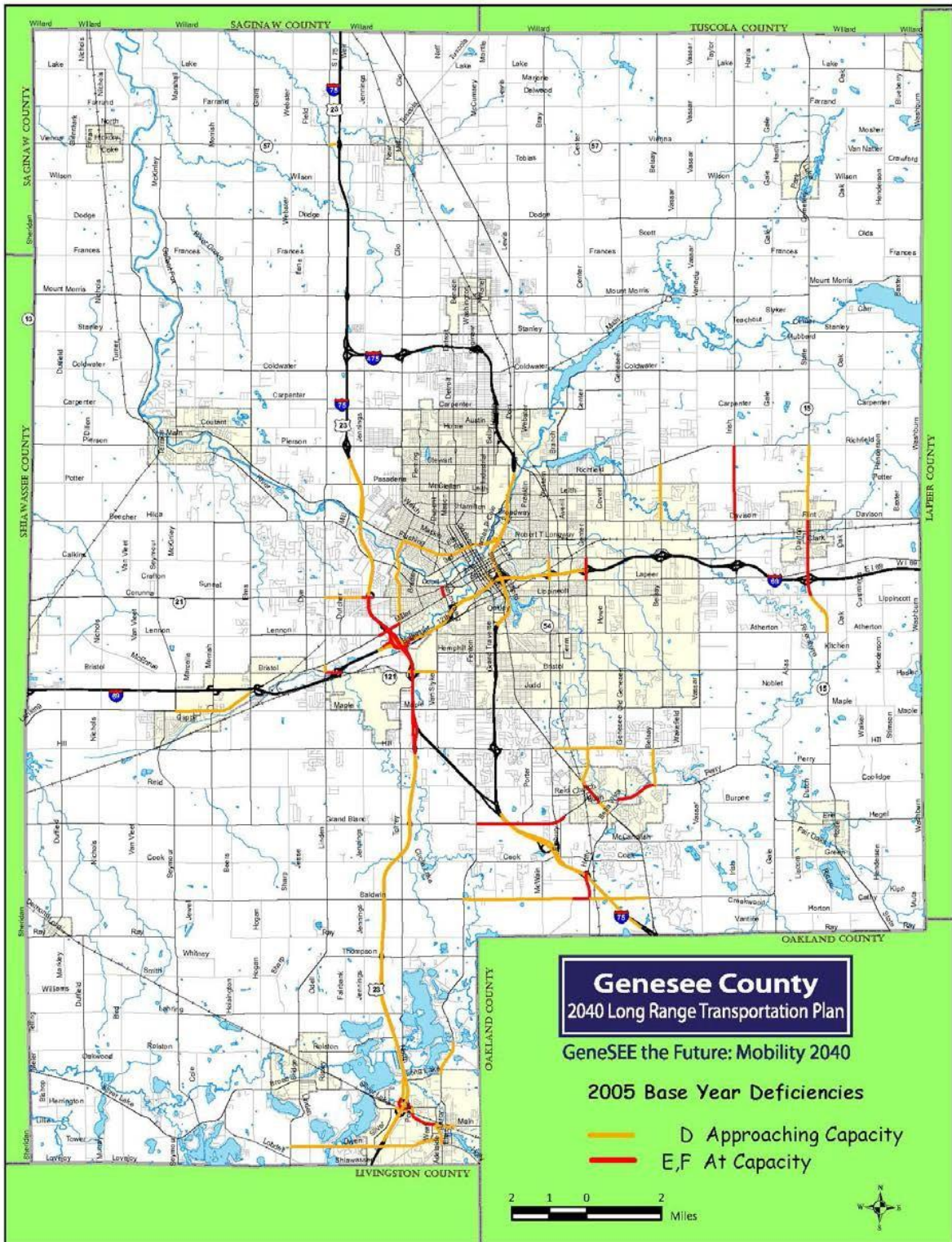
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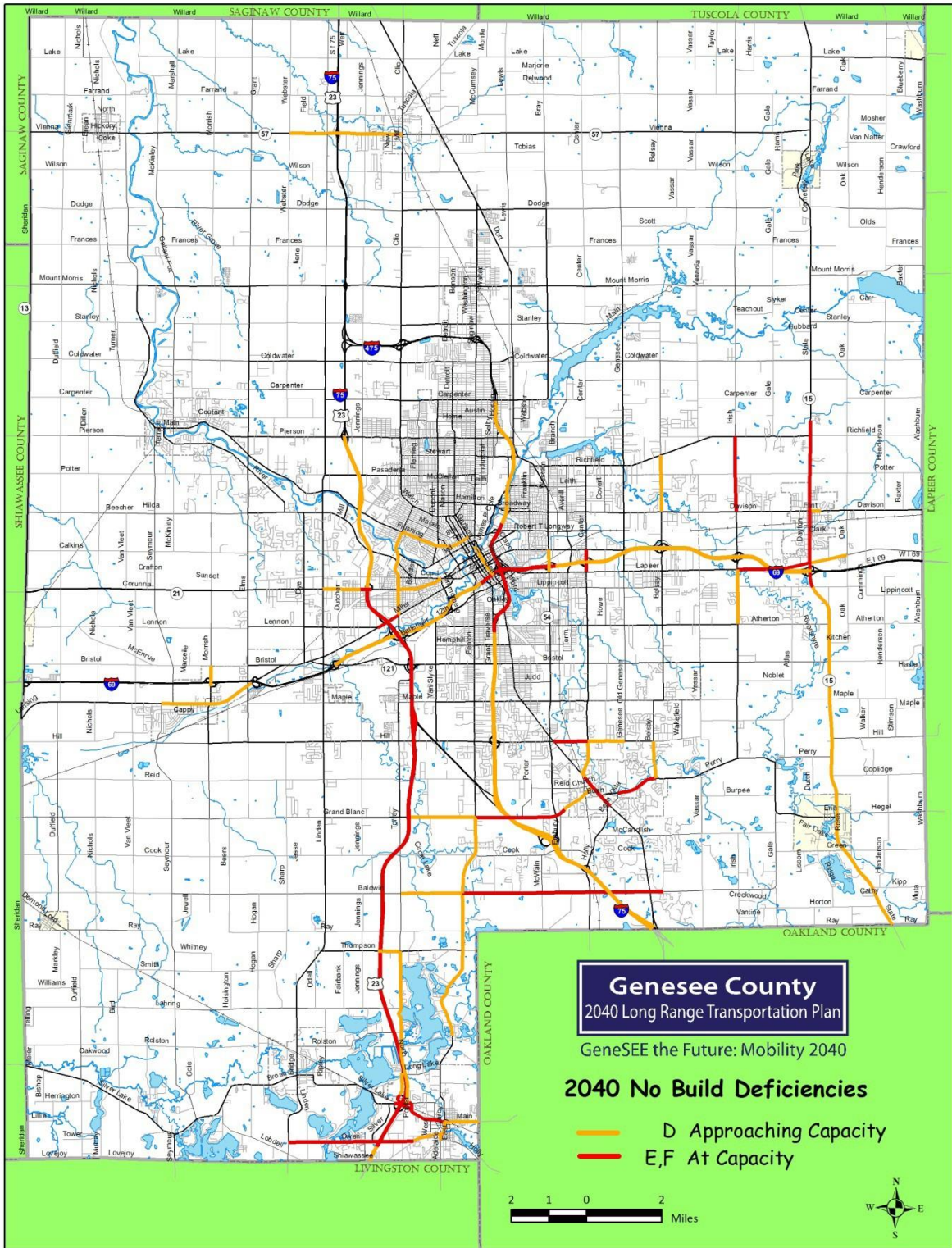
Transportation Deficiency Analysis

Using the outputs of the Genesee County Travel Demand Model, staff analyzed the corridors in Genesee County for their level of existing congestion using the base year of the model, 2005, and future congestion using the out year of the plan, 2040. The data is provided in map form on Pages 41 and 42 and included in a list of congested areas on Pages 43 and 44.

Areas were considered approaching congestion if they were at a level of service D and over capacity if the level of service was E or F. Areas that were congested during AM or PM peak periods or areas that were showing congestion for the entire 24-hour period were treated as a congested corridor.

Development of the list and maps of deficiencies began with staff review of the corridors and comparison of the 2005 congested areas map to the 2005 calibration results map. Staff used local knowledge of the roadway system and comparison of model results to traffic counts to check the model data for errors. Due to the placement of centroid connectors in the model, some areas showed congestion on only part of the corridor where staff knew congestion was prevalent along the entire corridor. Centroid connectors depict local roads, driveways and parking areas in the model with one link representing hundreds of access points along a corridor. Staff used the principle of smoothing of the congested areas to match real-world roadway congestion and extended the lines to the nearest federal-aid roadway or to the point where roadway configurations change (i.e. number of lanes changed). The Long Range Transportation Plan Steering Committee, Technical Advisory Committee, and Genesee County Metropolitan Alliance approved the deficiencies for use in the Long Range Transportation Plan and Call for Projects.





2005 Capacity Deficiency Corridors

Street	From	To	LOS	Functional Class	Surface Condition	Current ADT	Current ADT Year	Historic ADT	Historic ADT Year	EJZone	Arterial
5th Ave	Prospect	Boulevard	D	Urban Other Principal Freeway	3	24,091	2007	25,131	2001	Yes	Yes
Adelaide	Silver Lake	S.Holly Rd	D	Urban Collector	3	7,764	2006	8,500	2004	No	No
Baldwin	Hasley	S Holly Rd	E	Urban Minor Arterial	3	10,455	2008	9,916	2004	No	Yes
Baldwin	Fenton	Hasley	D	Urban Minor Arterial	3	11,264	2008	11,313	2004	Yes	Yes
Baldwin	Holly	Saginaw	D	Urban Minor Arterial	3	9,438	2007	11,170	2004	Yes	Yes
Ballenger	Miller	Flushing	D	Urban Other Principal Freeway	3	20,738	2008	24,141	2004	Yes	Yes
Belsay	Davison	Richfield	D	Urban Minor Arterial	5	10,061	2008	12,120	2004	Yes	Yes
Belsay	Perry	Hill	D	Urban Minor Arterial	9	9,819	2008	11,068	2004	Yes	Yes
Bristol	Linden	I-69 EB Ramps	E	Urban Other Principal Freeway	4	23,144	2008	25,804	2004	Yes	Yes
Bristol	Torrey	Van Slyke	D	Urban Other Principal Freeway	4	29,230	2008	36,299	2004	Yes	Yes
Center	Lapeer	Court	E	Urban Other Principal Freeway	3	27,627	2006	31,252	2003	Yes	Yes
Center	Saginaw	Hill	D	Urban Minor Arterial	4	8,580	2008	10,308	2004	Yes	Yes
Corunna	Linden	Graham	D	Urban Other Principal Freeway	7	27,203	2007	34,309	2003	Yes	Yes
Corunna	Graham	NB I75 Ramps	E	Urban Other Principal Freeway	7	27,203	2007	34,309	2003	Yes	Yes
Dort	Lapeer	Court	D	Urban Other Principal Freeway	6	25,021	2007	24,482	2004	Yes	Yes
E I 69 ES	Center	I75	D	Urban Interstate	4	47,657	2007	40,900	2004	Yes	Yes
Fenton	S. Long Lake	Pomona	D	Urban Minor Arterial	3	11,726	2007	12,438	2004	Yes	Yes
Fenton	Pomona	Grand Blanc	C	Urban Minor Arterial	4	10,862	2008	13,329	2004	Yes	Yes
Flushing	Ballenger	5th Ave	D	Urban Other Principal Freeway	8	NA	NA	15,844	1999	Yes	Yes
Grand Blanc	Fenton	Grand Blanc City Limits	E	Urban Minor Arterial	2	16,332	2008	14,829	2004	Yes	Yes
Hill	Saginaw	Genesee	D	Urban Minor Arterial	4	13,025	2008	14,325	2004	Yes	Yes
Holly Rd	Baldwin	I75 NB Ramp	E	Urban Other Principal Freeway	4	23,639	2008	25,409	2004	Yes	Yes
Irish	Davison	Richfield	E	Urban Minor Arterial	3	14,627	2008	14,948	2004	Yes	Yes
Linden	Bristol	Miller	D	Urban Other Principal Freeway	7	18,182	2008	21,172	2004	Yes	Yes
Main	East	Leroy	D	Urban Minor Arterial	8	12,922	2003	11,880	1999	Yes	Yes
Miller	Lennon	Ballenger	E	Urban Other Principal Freeway	3	32,878	2007	32,907	2004	Yes	Yes
Miller	Seymour	Elms	D	Urban Minor Arterial	5	12,206	2007	16,242	2004	Yes	Yes
N I 475	Atherton	Stewart	D	Urban Interstate	4	36,050	2007	41,100	2004	Yes	Yes
N I 75	Corunna	Pierson	D	Urban Interstate	8	35,207	2007	41,188	2004	Yes	Yes
N I 75	Hill	Corunna	E	Urban Interstate	8	44,871	2007	49,000	2004	Yes	Yes
N I 75	S County Line	I-475	D	Urban Interstate	7	26,062	2007	25,273	2004	Yes	Yes
N US 23	Owen	Hill	D	Urban Other Freeway	7	27,962	2007	27,854	2004	Yes	Yes
N US 23	Hill	Maple	E	Urban Other Freeway	8	44,871	2007	45,482	2004	Yes	Yes
North	Ponemah	US23 Ramp	D	Urban Collector	6	4,612	2007	6,371	2004	No	No
North	US23 Ramp	Poplar	E	Urban Collector	4	10,732	2008	10,168	2004	Yes	No
Owen	Linden	Shiawassee	D	Urban Minor Arterial	3	15,244	2008	14,087	2004	Yes	Yes
Perry	Bella Vista	Belsay	E	Urban Minor Arterial	3	18,110	2008	17,563	2004	Yes	Yes
Pershing	Miller	Court	E	Urban Minor Arterial	6	7,026	2006	11,865	2001	Yes	Yes
Poplar	Silver Lake	North	D	Urban Collector	3	4,138	2006	9,097	2001	No	No
S I 475	Stewart	Atherton	D	Urban Interstate	3	36,050	2007	41,100	2004	Yes	Yes
S I 75	Pierson	Corunna	D	Urban Interstate	8	35,207	2007	41,188	2004	Yes	Yes
S I 75	Corunna	Hill	E	Urban Interstate	5	44,871	2007	49,000	2004	Yes	Yes
S I 75	I475	S. County Line	D	Urban Interstate	6	26,062	2007	25,273	2004	Yes	Yes
S US 23	Maple	Hill	E	Urban Other Freeway	8	44,871	2007	45,482	2004	Yes	Yes
S US 23	Hill	Owen	D	Urban Other Freeway	4	27,962	2007	27,854	2004	Yes	Yes
Saginaw	Center	Perry	E	Urban Other Principal Freeway	4	39,355	2007	38,472	2004	Yes	Yes
Saginaw	Perry	Bella Vista	D	Urban Other Principal Freeway	4	26,943	2006	31,419	2004	Yes	Yes
Saginaw	9th St	Court	D	Urban Other Principal Freeway	8	16,748	2006	16,704	2002	Yes	Yes
Shiawassee	Owen	Adelaide	D	Urban Minor Arterial	6	NA	NA	9,184	2004	No	Yes
Silver Lake	Poplar	Adelaide	E	Urban Minor Arterial	9	NA	NA	18,011	2004	No	Yes
Silver Lake	Alloy	NB US23 Ramps	D	Urban Minor Arterial	3	NA	NA	18,282	2001	Yes	Yes
Silver Lake	Adelaide	Leroy	D	Urban Minor Arterial	8	14,874	2006	11,846	2001	Yes	Yes
State	Davison	Lippincott	E	Urban Other Principal Freeway	5	19,942	2007	27,300	2003	Yes	Yes
State	Lippincott	Atherton	D	Urban Other Principal Freeway	7	14,108	2007	15,391	2003	Yes	Yes
State	Richfield	Davison	D	Urban Minor Arterial	6	15,243	2007	15,000	2003	Yes	Yes
Torrey	North	US23 NB Ramp	E	Urban Collector	4	14,853	2005	10,597	2003	Yes	No
Vienna	Linden	SB I75 Ramps	D	Urban Minor Arterial	8	15,496	2007	17,790	2003	No	Yes
W I 69 ES	I75 SB Ramps	Center	D	Urban Interstate	4	47,657	2007	40,900	2004	Yes	Yes

2040 Capacity Deficiency Corridors										
2040 Long Range Transportation Plan										
Name	From	To	LOS	Functional Class	Current ADT	Current ADT Year	Historic ADT	Historic ADT Year	EJ Zone	Arterial
5th Ave	Prospect	Martin Luther King	D	Urban Other Principal Arterial	19,636	2003	20,855	2000	Yes	Yes
Adelaide	Shiawassee	S. Holly Rd	D	Urban Collector	5,615	2012	NA	NA	No	No
Baldwin	Torrey	Fenton	D	Rural Major Collector	9,813	2013	9,916	2004	Yes	No
Baldwin	Fenton	Braemore	E	Urban Minor Arterial	10,752	2013	11,313	2004	Yes	Yes
Ballenger	Miller	Flushing	D	Urban Other Principal Arterial	18,801	2013	24,141	2004	Yes	Yes
Belsay	Davison	Richfield	D	Urban Minor Arterial	10,061	2008	12,120	2004	Yes	Yes
Belsay	Perry	Hill	D	Urban Minor Arterial	10,111	2013	11,068	2004	Yes	Yes
Center	Lapeer	Court	E	Urban Other Principal Arterial	27,627	2006	31,252	2003	Yes	Yes
Center	Saginaw	Hill	D	Urban Other Principal Arterial	7,266	2013	10,308	2004	Yes	Yes
Corunna	Linden	Graham	D	Urban Other Principal Arterial	32,069	2012	27,203	2007	Yes	Yes
Corunna	Graham	NB I75 Ramps	E	Urban Other Principal Arterial	32,069	2012	27,203	2007	Yes	Yes
Corunna	Ballenger	Court	D	Urban Other Principal Arterial	10,456	2012	12,299	2010	Yes	Yes
Dort	Lapeer	Court	D	Urban Other Principal Arterial	25,327	2012	29,076	2010	Yes	Yes
E I 69	Bristol	9th	D	Urban Interstate	72,200	2012	83,200	2010	Yes	Yes
E I 69	9th St	Dort	E	Urban Interstate	91,100	2012	83,500	2010	Yes	Yes
E I 69	Dort	M15	D	Urban Interstate	80,600	2012	72,700	2010	Yes	Yes
Fenton	Pomona	Grand Blanc	D	Urban Minor Arterial	9,628	2013	13,329	2004	Yes	Yes
Flint	M15	Church	D	Urban Minor Arterial	16,295	2010	NA	NA	No	Yes
Flushing	Ballenger	5th Ave	D	Urban Other Principal Arterial	13,234	2004	15,844	1999	Yes	Yes
Grand Blanc	US23	Fenton	D	Urban Minor Arterial	13,205	2013	12,963	2005	Yes	Yes
Grand Blanc	Fenton	Grand Blanc City Limits	E	Urban Minor Arterial	12,448	2013	14,480	2004	Yes	Yes
Grand Blanc	Grand Blanc City Limits	Saginaw	D	Urban Minor Arterial	14,924	2010	NA	NA	Yes	Yes
Hill	Saginaw	Center	E	Urban Minor Arterial	13,246	2013	12,302	2004	Yes	Yes
Hill	Center	Genesee	D	Urban Minor Arterial	13,148	2013	14,325	2004	Yes	Yes
Irish	Davison	Richfield	E	Urban Minor Arterial	12,324	2012	14,948	2004	Yes	Yes
Irish	Atherton	Lapeer	D	Urban Minor Arterial	11,875	2007	18,045	2004	Yes	Yes
Lapeer	Irish	State	E	Urban Minor Arterial	12,312	2014	11,423	2004	Yes	Yes
Lapeer	State	Oak	D	Urban Collector	5,594	2013	11,423	2004	Yes	No
Leroy	Shiawassee	Silver Lake	D	Urban Minor Arterial	10,360	2012	10,724	2009	No	Yes
Main	East	E County Line	D	Urban Minor Arterial	13,560	2012	12,922	2003	Yes	Yes
Miller	Lennon	Ballenger	E	Urban Other Principal Arterial	28,853	2013	32,907	2004	Yes	Yes
Miller	Seymour	I69 EB ramps	D	Urban Minor Arterial	13,916	2010	14,650	2007	Yes	Yes
Morrish	I69	Bristol	D	Urban Collector	8,045	2009	7,278	2007	Yes	Yes
NI 475	Robert T. Longway	Carpenter	D	Urban Interstate	51,800	2012	52,600	2010	Yes	Yes
NI 475	Atherton	Robert T. Longway	E	Urban Interstate	51,300	2012	57,400	2010	Yes	Yes
NI 475	I75	Atherton	D	Urban Interstate	39,100	2012	41,600	2010	Yes	Yes
NI 75	Corunna	Pierson	D	Urban Interstate	72,385	2012	73,383	2010	Yes	Yes
NI 75	Jct US 23	Corunna	E	Urban Interstate	119,200	2012	98,500	2010	Yes	Yes
NI 75	S County Line	I475	D	Urban Interstate	58,484	2012	57,516	2010	Yes	Yes
NUS 23	Owen	Jct I 75	E	Urban Other Freeway	56,400	2012	57,839	2010	Yes	Yes
NUS 23	S. County Line	Owen	D	Urban Other Freeway	46,428	2012	52,719	2010	Yes	Yes
North	Ponemah	US23 SB Ramps	D	Urban Collector	4,612	2007	6,371	2004	No	No
North	US23 SB Ramps	Poplar	E	Urban Collector	10,740	2013	10,017	2009	Yes	No
Owen	Linden	Shiawassee	E	Urban Minor Arterial	13,433	2012	14,087	2004	Yes	Yes
Perry	Bella Vista	Belsay	E	Urban Minor Arterial	14,586	2013	17,563	2004	Yes	Yes
Poplar	Silver Lake	North	E	Urban Collector	8,912	2013	7,088	2010	Yes	No
S I 475	Carpenter	Robert T. Longway	D	Urban Interstate	51,800	2012	52,600	2010	Yes	Yes
S I 475	Robert T. Longway	Atherton	E	Urban Interstate	51,300	2012	57,400	2010	Yes	Yes
S I 475	Atherton	I75	D	Urban Interstate	39,100	2012	41,600	2010	Yes	Yes
S I 75	Pierson	Corunna	D	Urban Interstate	72,385	2012	73,383	2010	Yes	Yes
S I 75	Corunna	Jct US 23	E	Urban Interstate	119,200	2012	98,500	2010	Yes	Yes
S I 75	I475	S. County Line	D	Urban Interstate	58,484	2012	57,516	2010	Yes	Yes
S US 23	Owen	Jct I75	E	Urban Other Freeway	56,400	2012	57,839	2010	Yes	Yes
S US 23	SCL	Owen	D	Urban Other Freeway	46,428	2012	52,719	2010	Yes	Yes
Saginaw	Center	Bella Vista	E	Urban Other Principal Arterial	33,396	2009	38,472	2004	Yes	Yes
Saginaw	9th St	Martin Luther King	D	Urban Other Principal Arterial	26,645	2014	16,704	2003	Yes	Yes
Shiawassee	Owen	Adelaide	D	Urban Minor Arterial	14,232	2012	9,184	2004	No	Yes
Silver Lake	SB US23 Ramps	Leroy	E	Urban Minor Arterial	13,780	2012	13,152	2010	Yes	Yes
Silver Lake	Leroy	East	D	Urban Minor Arterial	9,392	2012	11,795	2010	No	Yes
State	S County Line	Lippincott	D	Rural Other Principal Arterial	13,790	2012	15,951	2010	Yes	Yes
State	Lippincott	Harding	E	Urban Minor Arterial	30,408	2012	27,659	2010	Yes	Yes
Thompson	US23	Torrey	D	Urban Minor Arterial	11,337	2013	10,947	2010	Yes	Yes
Torrey	North	Thompson	D	Urban Collector	9,642	2013	8,831	2004	Yes	No
Vienna	Webster	Mill	D	Urban Minor Arterial	21,438	2012	21,767	2010	Yes	Yes
W I 69	9th St	Bristol	D	Urban Interstate	72,200	2012	83,200	2010	Yes	Yes
W I 69	Dort	9th St	E	Urban Interstate	91,100	2012	83,500	2010	Yes	Yes
W I 69	M15	Dort	D	Urban Interstate	80,600	2012	72,700	2010	Yes	Yes

Genesee County 2040 Long Range Transportation Plan Call for Projects

In June of 2014, an announcement was made to road and transit agencies in Genesee County for a Call for Projects for the 2040 Long Range Transportation Plan. The intent of this Call was to solicit projects that local and state agencies were interested in implementing during the life of this plan out to the year 2040. The Project Application which has been included at the end of this report includes the full Congestion Management Process and the list of Capacity Deficiencies. All road agencies were encouraged to submit applications for the list of identified deficiencies. From the list of applications received, staff analyzed the projects using the travel demand model to determine if the projects improved capacity and to what extent this occurred. Alternatives to the projects were also analyzed to determine the best project for each deficiency.



Long Range Transportation Projects Received

On the following pages are project lists received from road and transit agencies proposed for the 2040 Long Range Transportation Plan.

Projects Received from the Genesee County Road Commission

GCRC Priority	Road	Limits	Existing Lanes	Proposed Lanes
1	Hill Rd.	Saginaw Rd. to Center Rd.	2	3 and 5
2	Miller Rd.	Lennon Rd. to Ballenger Rd.	5	7
3	Irish Rd.	Davison Rd. to Richfield Rd.	2	5
4	Grand Blanc Rd.	US-23 to Grand Blanc CL	2	5
5	Lapeer Rd.	Irish Rd. to State Rd.	2	5
6	North Rd.	US-23 Ramps to Fenton CL	2	3
7	Owen Rd.	Linden Rd. to Jennings Rd.	2	3
8	Perry Rd.	Bella Vista to Belsay Rd.	2 and 4	5
9	Baldwin Rd.	Fenton Rd. to Braemoor Dr.	2	5
10	Belsay Rd.	Perry Rd to Hill Rd.	2	5
11	Thompson Rd.	US-23 to Torrey Rd.	2	5
12	Torrey Rd.	Fenton CL to Thompson Rd.	2	3
13	Mt. Morris Rd.	Dort Hwy. to Bray Rd.	2	3

Projects from MDOT's 2014-2018 Five-Year Plan

County	Route	Location	Type of Work
Bridge Replacement and Rehabilitation			
Genesee	I-475	I-475 over Atherton Rd.	Superstructure Repair
Genesee	I-475	I-475 over left-turn lane No. 3	Substructure Repair
Genesee	I-69	Lapeer Rd. over I-69	Deck Replacement
Genesee	I-69	I-69 over CSX railroad	Widen--Maint. Lanes
Genesee	I-69	I-69 EB over Averill Ave.	Widen--Maint. Lanes
Genesee	I-69	I-69 WB over Averill Ave.	Widen--Maint. Lanes
Genesee	I-69	I-69 over M-54 (Dort Hwy.)	Bridge Replacement
Genesee	I-69	I-69 EB over Center Rd.	Bridge Replacement
Genesee	I-69	I-69 WB over Center Rd.	Bridge Replacement
Genesee	I-69	I-69 EB over Hammerberg Rd.	Widen--Maint. Lanes
Genesee	I-69	I-69 WB over Hammerberg Rd.	Widen--Maint. Lanes
Genesee	M-15	M-15 over Paddison Co. Drain	Culvert Replacement
Repair and Rebuild Roads			
Genesee	I-475	Saginaw St. to Clio Rd.	Restoration & Rehabilitation
Genesee	I-475	Carpenter Rd. to Saginaw St.	Restoration & Rehabilitation
Genesee	I-69	M-54 to Center Rd.	Reconstruction
Genesee	I-69	Ballenger Hwy. to Fenton Rd.	Reconstruction

Projects Received from the Mass Transportation Authority

Agency	Project	Year
MTA	Purchase Hydrogen Fuel Cell Bus	2015
MTA	Purchase 4 Wheel Drive SUV's	2015
MTA	Conversion Vans	2015
MTA	Gasoline/Electric Hybrid Cars	2015
MTA	Fixed Route Study-MPO	2015
MTA	LEED Storage Facility	2015
MTA	Construction of Davison Service Center	2015
MTA	Purchase Diesel Electric Hybrid Buses	2016
MTA	Purchase CNG Buses	2016
MTA	Purchase Gillig Diesel Electric Hybrids	2016
MTA	Eldorados	2016
MTA	Static Fuel Cell Power System	2016
MTA	I-69 Corridor Study-MPO	2017
MTA	Purchase Shop Equipment	2018
MTA	BRT Flint to Detroit	2025
MTA	Purchase Computer Hardware	2015-2018
MTA	Preventive Maintenance	2015-2040
MTA	Rehab/Renovate Vehicles	2015-2040
MTA	Rehab/Renovate Facilities	2015-2040
MTA	Purchase Capital Parts	2015-2040
MTA	Purchase Computer Software	2015-2040
MTA	Bus Shelters	2015-2040
MTA	Security	2015-2040
MTA	JARC	2015-2040
MTA	Operating Assistance	2015-2040
MTA	Enhanced Services	2015-2040
MTA	Purchase Replacement Vehicles	2015-2040
MTA	Purchase Shop Equipment	2019-2040
MTA	Purchase Computer Hardware	2019-2040

Alternative Analysis

Staff compared alternative congestion management strategies for the capacity improvement projects that were submitted as part of the Long Range Transportation Plan Call for Projects. Projects were analyzed for their appropriate congestion strategies using alternatives described in the Congestion Management Process. Below is a brief description of the scenarios:

No-Build Scenario

This scenario represents all of the capacity improvement projects completed in Genesee County to date and the projects that are currently in the approved FY 2014-2017 Transportation Improvement Program including any new regionally significant roadways. The 2011 transportation network using the socio-economic data for 2040 provides us with a look at what would happen if no new capacity projects were completed, this is the do-nothing scenario. The 2040 Capacity Deficiency Map on Page 42 is based from the results of this scenario.

Signal Timing Scenario

The signal timing scenario represents the impact on the roadway system if all the signals on the corridor projects were optimized for an increase of 5 mph in speed. This is based on the Congestion Mitigation and Air Quality (CMAQ) Program signal interconnect and optimization project standard corridor speed improvement. In the signal timing scenario, additional speed and capacity improvements were evident but they did not provide enough benefit to change the level of service.

Adding a Center Turn Lane Scenario

In this scenario, all of the 2 to 5 lane capacity improvement projects were modeled as a three-lane roadway to see if the projects could reach an acceptable level of service with the addition of a turn lane. In some cases it provided a benefit, but the improvement was not significant enough to solve the capacity issues.

Long Range Transportation Project Scenario

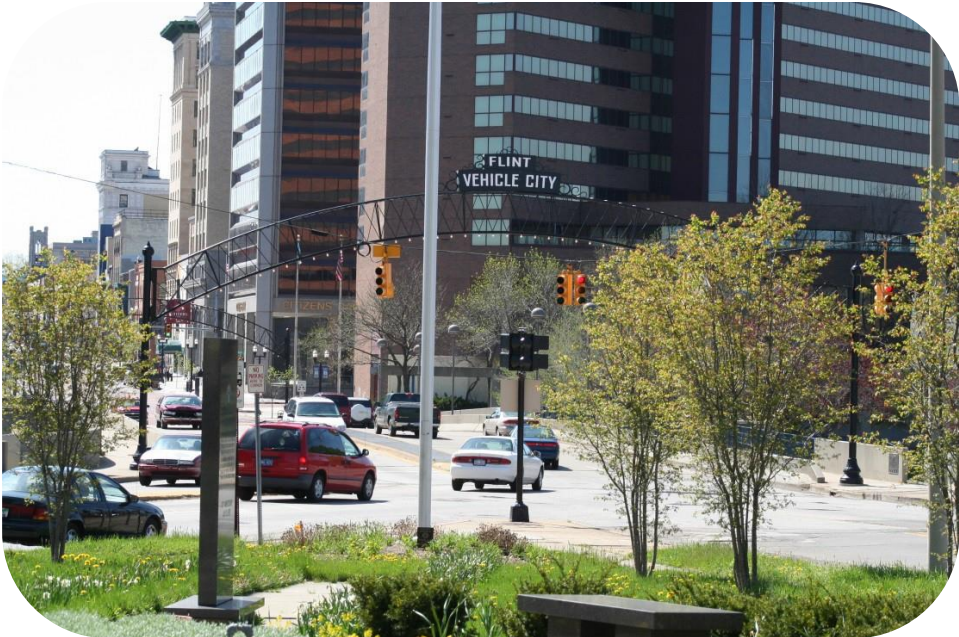
The Long Range Transportation Project scenario included the full list of capacity improvement projects with the proposed projects submitted by local road and transit agencies. These projects were developed utilizing the Congestion Management Checklist and are a direct result of the Congestion Management Process. In most cases the level of service improved and congestion was alleviated or reduced significantly.

Staff noted that the alternative analysis completed by the transportation agencies when developing the project applications resulted in a diverse mix of projects. A good portion of the projects submitted addressed the deficiencies by improving signals or adding turn lanes rather than adding lanes for through traffic. The Long Range Transportation Project scenario represents a good mix of projects to address capacity issues so staff felt confident that an additional scenario with a mix of projects was not needed.

The Level of Service ranging from A–F, as outlined on Page 7, was used as a performance measure to analyze the improvements each type of congestion management strategy. To calculate the level of service, model runs for each scenario compared peak hour volume to capacity, daily volume to capacity, hours of delay, peak hour speed, vehicles per day, level of service, vehicle miles traveled, and vehicle hours traveled were all compared for each scenario and summarized by level of service for the Congestion Management Process. The list on Page 51 summarizes the alternative analysis from the model for the capacity projects submitted.

Current TIP Projects

Projects listed in the current FY 2014-2017 Transportation Improvement Program (TIP) are added to the 2011 road network which was used as the base scenario for all alternative analysis. It is assumed that since these projects have funding attached to them, that they will be constructed before the end year of the TIP.



2040 Long Range Transportation Plan Capacity Improvement Project Scenario Analysis					2040 No-Build Scenario	Signal Timing Scenario	Adding Center Turn Lane Scenario	L RTP Project Scenario
	Agency	Project	Description	Limits	Level of Service	Level of Service	Level of Service	Level of Service
1	GCRC	Hill Rd.	2 to 3 and 5	Saginaw Rd. to Center Rd.	E	F	E	D
2	GCRC	Miller Rd.	5 to 7	Lennon Rd. to Ballenger Rd.	E	E	3-see below	D
3	GCRC	Irish Rd.	2 to 5	Davison Rd. to Richfield Rd.	E	E	E	B
4	GCRC	Grand Blanc Rd.	2 to 5	US-23 to Grand Blanc CL	E	D	D	B
5	GCRC	Lapeer Rd.	2 to 5	Irish Rd. to State Rd.	E	F	E	B
6	GCRC	North Rd.	2 to 3	US-23 Ramps to Fenton CL	E	1-see below	4-see below	D
7	GCRC	Owen Rd.	2 to 3	Linden Rd. to Jennings Rd.	E	2-see below	4-see below	C
8	GCRC	Perry Rd.	2 and 4 to 5	Bella Vista to Belsay Rd.	D	D	F	C
9	GCRC	Baldwin Rd.	2 to 5	Fenton Rd. to Braemoor Dr.	D	E	E	B
10	GCRC	Belsay Rd.	2 to 5	Perry Rd to Hill Rd.	D	2-see below	E	B
11	GCRC	Thompson Rd.	2 to 5	US-23 to Torrey Rd.	D	E	D	A
12	GCRC	Torrey Rd.	2 to 3	Fenton CL to Thompson Rd.	D	2-see below	4-see below	C
13	GCRC	Mt. Morris Rd.	2 to 3	Dort Hwy. to Bray Rd.	B	2-see below	4-see below	C

1 - No light on segment; therefore changing the signal timing could not be considered an alternative to the proposed project.

2 - Only one light on segment; therefore changing the signal timing was not considered an alternative to the proposed project.

3 - This project already included a center-turn lane and therefore adding a center turn-lane scenario vs. not a valid alternative

4 - These projects were proposed as a project adding a center turn-lane; therefore adding a center turn-lane could not be considered an alternative to the proposed project.

Congestion Management Summary

The alternatives modeled as part of the Congestion Management Process provided increased speed and capacity on the roadways listed but to very different degrees of improvement.

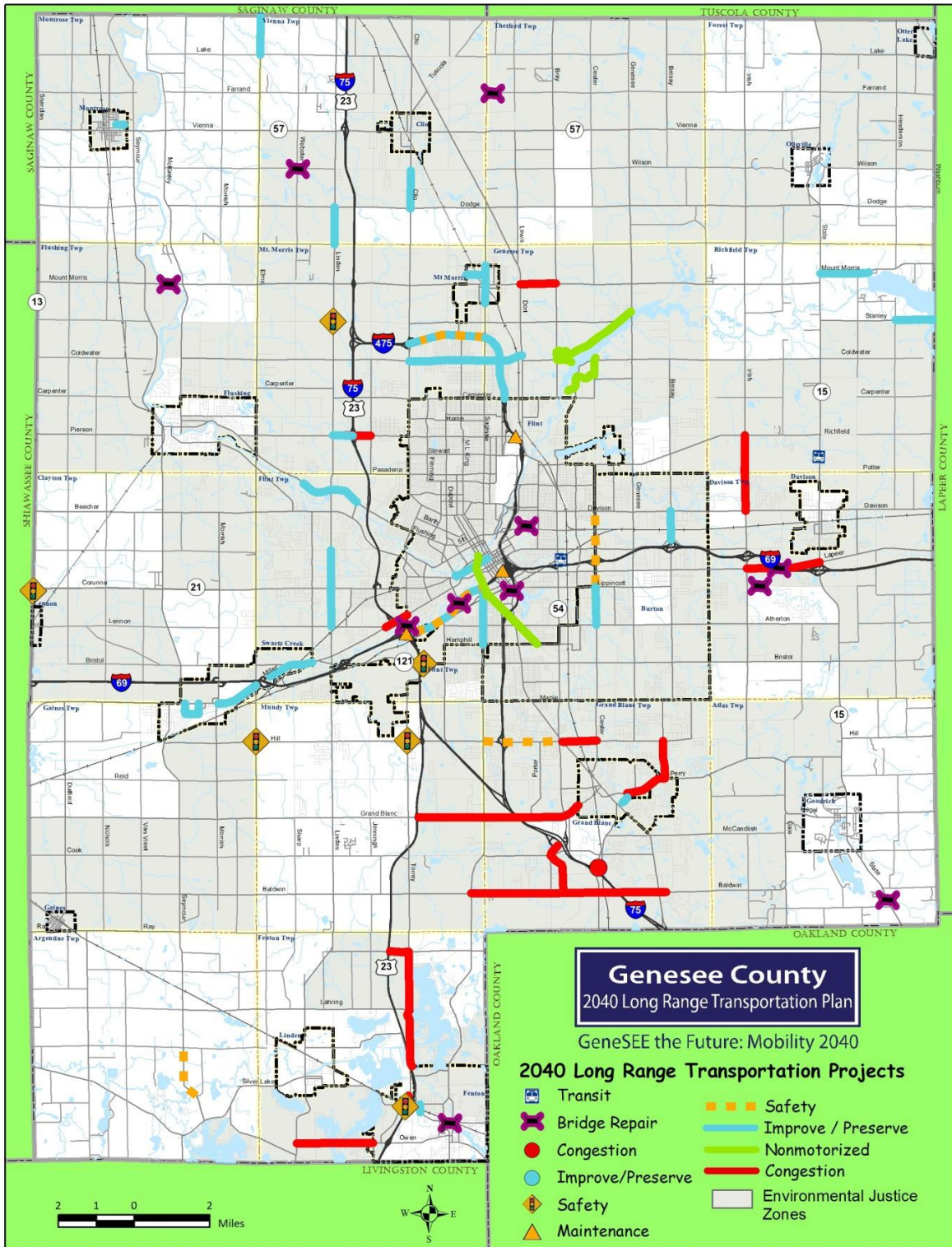
Signal timing has an effect on corridors that are longer and include more frequent signals, but in areas where signals are sparse (over 1-mile apart) the effect was minimal. If a roadway was already congested to a level of service D – F, the effect of timing signals rarely provided enough benefit to improve one level of service, such as from a D to a C.

Adding a center-turn lane had a benefit in some areas and not in others. Depending on the traffic volumes, a center-turn lane sometimes provided a more significant improvement over a signal timing project, but did not alleviate the congestion in very congested areas. In some situations a local road agency could have benefited more with a 5-lane expansion project, but due to the constraints of available right-of-way, other existing structures, the surrounding land use and local planning decisions keep communities from moving to a 5-lane roadway. Three lanes is an appropriate configuration in some areas should a 5-lane roadway not be desired and the local community is often willing to live with some level of congestion when three-lane improvement is the only feasible or preferred option.

The Genesee County Travel Demand Model is calibrated as an area-wide model; analysis on individual corridors must take into account the calibration of each corridor which can vary from corridor to corridor and within one corridor itself. As a next step for future long range plans, staff recommends looking into additional modeling add-on features for corridor roadway congestion analysis which could provide more accurate alternative analysis and congestion management tools.

2040 Long Range Transportation Plan Projects

Page 53 contains a map of the 2040 Long Range Transportation Plan Projects. The complete list of Long Range Transportation Plan Projects, including the estimated costs and proposed years for implementation, is in Appendix B. The year range for each project was determined first by the year proposed on the project application. When the total project costs in a certain year range exceeded the projected funding, the projects were then prioritized by their application score. The projects with a high score were given priority and lower scoring projects were moved to future years. The project list and years are the result of this process and are fiscally constrained














Performance Measures



A key feature of MAP-21 is the establishment of a performance-and-outcome-based program. The objective of this performance-and-outcome-based program is for states and Metropolitan Planning Organizations (MPO) to invest resources in projects that collectively will make progress toward the achievement of the national goals. MAP-21 requires state Department of Transportation (DOT) agencies to establish performance measures within 18 months of enactment of MAP-21. Within 180 days of performance targets being set by states or providers of public transportation, MPOs are required to set performance targets in relation to the performance measures (where applicable). These targets are required to be included in the MPO's Long Range Transportation Plan.

At the time the Genesee County 2040 Long Range Transportation Plan was developed and approved, no official federal guidance on the performance measure requirements of MAP-21 had been released. Also, the State of Michigan did not have performance targets in place. The Genesee County Metropolitan Alliance recognizes these MAP-21 requirements. Without official federal guidance in place, (and without targets set at the state level), the MPO through the Long Range Transportation Plan (LRTP) and the Transportation Improvement Program, has established funding goals that generally target the areas specified. These goals were established in the LRTP and implemented through the FY 2014-2017 TIP as closely as possible given the limitations on the availability and restrictions of local, state, and federal funding sources.

Staff will continue to gather Level of Service data and Speed Study data as mentioned on specific segments for the development of performance measures. For overall system performance, staff will develop Level of Service data for congested lane miles (type E and F), vehicle miles traveled, daily hours of traffic delay, on-road mobile source emissions data, and transit.

Technical Report	Performance Measure	Year		Trend
Congestion Management & Projects	Level of Service (Congested Lane Miles: Type E and F)	2005	2011	
		227	235	
	Vehicle Miles Travelled (Thousands)	2008	2012	
		4,386,305	3,997,631	
	Daily Hours of Traffic Delay	2005	2011	
		5,103	5,240	
	On-Road Mobile Source Emissions (Hydrocarbons)	2005	2011	
		16,108	10,240	
	On-Road Mobile Source Emissions (Nitrogen Oxides)	2005	2011	
		28,036	16,360	

Key		
Positive	 	Negative  
Neutral	 	

Technical Report	Performance Measure	Year		Trend
Congestion Management & Projects - Transit Related	Overall Transit Ridership Attainment	2009	2013	
		5,819,226	6,164,121	
	Population Reach (within a 1/4 mile of Primary Fixed Route services)	2000	2010	
		50%	47%	

Appendix A

2040 Long Range Transportation Plan Project Application and CMP Checklist

CMP Checklist & Project Application

Applicant Agency: _____

Project: _____



Please complete and return both the Congestion Management Process (CMP) Checklist and the Project Application.

Information for road corridors that have been identified as congested has been included with this packet with the intent to help applicant agencies fill out the checklist and application without the assistance of an engineering consultant. The project costs provided should be estimates based on average project costs. Please feel free to contact Sharon Gregory of staff at (810) 257-3010 with any questions related to filling out the CMP Checklist and/or Project Application.

The CMP Checklist is a self-assessment of the current condition of the proposed corridor as it relates to congestion management and should be completed prior to filling out the project application. The checklist walks the applicant through the CMP toolbox to help determine the best option for improving the operation of the corridor.

The Project Application requests information on improvements proposed for the project corridor. A portion of the application is scored to help prioritize the submitted projects.

Congestion Management Checklist

2040 Long Range Transportation Plan

AGENCY

Applicant Agency:

Contact Person:

PROJECT INFORMATION

Project Name:

Project Description:

Project Purpose:

Please provide the current and one historical traffic count from this corridor:

Current Data:
Year Count

Historical Data:
Year Count

*Note: Historical count must have been collected at least five years prior to current count

Proposed Project Year:

Is the corridor identified as being congested (Level of Service E or F) in the 2005 or 2040 Capacity Deficiencies Map?

Yes No

What do you feel is the primary cause of congestion along this corridor?

CMP TOOLBOX STRATEGIES

To begin the strategy evaluation, a “toolbox” of congestion mitigation measures was assembled that includes a variety of strategies that could be used. Following an approach used by the New Jersey DOT, the strategy “toolbox” is arranged so that the measures on top take precedence over those on the bottom. The general categories for the “toolbox” are as follows:

GENESEE COUNTY CMP “TOOLBOX” STRATEGIES:

Strategy #1: Reduce Person Trips or Vehicle Miles Traveled (VMT)

Strategy #2: Shift Automobile Trips to Other Modes

Strategy #3: Shift Trips from SOV to HOV Auto/Van

Strategy #4: Improve Roadway Operations (signal timing, turning lanes, etc.)

Strategy #5: Adding Thru-Lane Capacity

5) Reduce Person Trips or Vehicle Miles Traveled

- Are land use policies in place to encourage the creation of sidewalks, bike paths, and/or transit facilities along the proposed corridor? Check all that apply.

Sidewalks Bike Paths Transit None

- Have major businesses along the corridor been informed about strategies to reduce traffic such as telecommuting, flextime scheduling, or a compressed work week?
 Yes No

If “No” was checked for any of the #1 CMP Toolbox Strategies, please explain below why the particular option has not been used to decrease congestion and improve traffic flow along the corridor.

Comments:

6) Shift Automobile Trips to Other Modes

- Are there available transit options along the proposed project corridor?

Yes No

- Are there sidewalks, bicycle lanes, or other non-motorized facilities currently in place along the proposed corridor? Check all that apply

Sidewalks Bike Paths Other Non-Motorized None

If “No” was checked for any of the #2 CMP Toolbox Strategies, please explain below why the particular option has not been used to decrease congestion and improve traffic flow along the corridor.

Comments:

7) Shift Trips from Single Occupancy Vehicles to High Occupancy Vehicles

- Are there programs and facilities in place to encourage the use of High Occupancy Vehicles?

Yes No

- Is there the potential to offer transportation demand management solutions such as ridesharing, preferential parking, employer-provided shuttles, or additional car pool lots along the corridor?

Yes No

If “No” was checked for any of the #3 CMP Toolbox Strategies, please explain below why the particular option has not been used to decrease congestion and improve traffic flow along the corridor.

Comments:

8) Improve Roadway Operations

- Have the traffic signals along the corridor been timed for optimal traffic flow?

Yes No

If yes, when?

- Is there the potential to improve traffic flow at intersections along the corridor through dedicated turn lanes and/or turning restrictions?

Yes No

- If so, which intersections?

- Have Intelligent Transportation Systems been implemented along the corridor to help address accidents and other non-recurring congestion?

Yes No

- Has access management been implemented along the corridor to help reduce conflict points and improve traffic flow?

Yes No

If “No” was checked for any of the #4 CMP Toolbox Strategies, please explain below why the particular option has not been used to decrease congestion and improve traffic flow along the corridor.

Comments:

9) Adding Thru-Lane Capacity

This is considered a “last resort” after all the other strategies have been considered.

Project Application

A large, solid green rectangular area that serves as a background for the logos. The logos are positioned in the bottom left, bottom center, and bottom right corners of this area.

GCMPC
GENESEE COUNTY METROPOLITAN
PLANNING COMMISSION

Genesee County
2040 Long Range Transportation Plan
GeneSEE the Future: Mobility 2040

Please provide a list of any alternatives to the proposed improvement and a brief explanation as to their shortcomings. (Please refer to the Congestion Management Checklist and indicate which strategies from the toolbox have been tried.)

Please note that staff will also analyze various alternatives for the project using the transportation model once the application has been submitted.

The following sections of the application will be scored to aid in prioritizing projects. There is a total of **100 points** available and the amount of points for each section is identified. Please use the information provided with this application to help fill in the questions below.

Capacity (45 points) is available for either a segment or an intersection.

Capacity will be rated in terms of the ability of the segment under consideration to carry existing traffic volumes without undue delay and interruption of smooth flow. Please use the Level of Service (LOS) provided on the attached list of congested road segments and intersections to fill in the information below.

Segment Capacity Information: LOS _____

Intersection Capacity Information for the:

North and South Legs: LOS _____

East and West Legs: LOS _____

Pavement Condition (10 Points)

2013 PASER Rating: _____

Segment Points

- Level of Service "A" and 0 points
- Level of Service "B" and 5 points
- Level of Service "C" and 10 points
- Level of Service "D" and 20 points
- Level of Service "E" and 30 points
- Level of Service "F" and 45 points

Intersection Points Per Leg

- Level of Service "A" and 0 points
- Level of Service "B" and 3 points
- Level of Service "C" and 9 points
- Level of Service "D" and 13 points
- Level of Service "E" and 17 points
- Level of Service "F" and 22.5 points

PASER Rating	Points
1-4	10
5-6	5
7-10	0

Livability Section—45 points are available under this section

A. SAFETY (10 Points)

Points will be given to projects that will improve safety along a corridor as less accidents result in less congestion. Are there safety issues that are being addressed with this project? Please explain.

B. ACCESS MANAGEMENT (10 Points)

Points will be given to projects that employ access management techniques as the use of these techniques can help reduce traffic congestion, preserve the flow of traffic, improve traffic safety, prevent crashes and preserve existing road capacity. Does this project address access management? Please explain:

C. COMPLETE STREETS (10 Points)

Complete Streets are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and transit riders of all ages and abilities must be able to safely move along and across a complete street. Complete Streets policies encourage pedestrian trips helping to reduce congestion. Are there Complete Streets policies being integrated into the project? Please explain:

D. TRANSIT FACILITIES (10 Points Available)

Transit service helps to reduce the amount of vehicles on the road, helping to reduce congestion. Are there any transit elements such as access to non-motorized facilities, bus stops, and/or bus pull-outs planned as part of this project? Please explain:

E. AREAWIDE IMPACT - (5 Points)

Agency judgment shall be considered for (but is not limited to) certain important and significant criteria which do not fit any of the above categories but which should be included in establishing priorities. This criteria includes the following:

1. Is this project being proposed for a segment classified as an arterial? **Yes No**
2. Is the project located in an Environmental Justice (EJ) Zone? **Yes No**
If so, what are the effects of the project, both positive and negative, and how do you plan to mitigate the negative effects?

3. Please identify any capacity-related bridge improvements that will need to be made in conjunction with this project. Please include information on current bridge condition and capacity.

Listing of Congested Corridors

2040 LRTP Capacity Deficiencies Corridors				
Name	From	To	LOS	Functional Class
5th Ave	Prospect	Martin Luther King	D	Urban Other Principal Arterial
Adelaide	Shiawassee	S. Holly Rd	D	Urban Collector
Baldwin	Torrey	Fenton	D	Rural Major Collector
Baldwin	Fenton	Braemoor	E	Urban Minor Arterial
Ballenger	Miller	Flushing	D	Urban Other Principal Arterial
Belsay	Davison	Richfield	D	Urban Minor Arterial
Belsay	Perry	Hill	D	Urban Minor Arterial
Center	Lapeer	Court	E	Urban Other Principal Arterial
Center	Saginaw	Hill	D	Urban Minor Arterial
Corunna	Linden	Graham	D	Urban Other Principal Arterial
Corunna	Graham	NB I75 Ramps	E	Urban Other Principal Arterial
Corunna	Ballenger	Court	D	Urban Other Principal Arterial
Dort	Lapeer	Court	D	Urban Other Principal Arterial
E I 69	Bristol	9th	D	Urban Interstate
E I 69	9th St	Dort	E	Urban Interstate
E I 69	Dort	M15	D	Urban Interstate
Fenton	Pomona	Grand Blanc	D	Urban Minor Arterial
Flint	M15	Church	D	Urban Minor Arterial
Flushing	Ballenger	5th Ave	D	Urban Other Principal Arterial
Grand Blanc	US 23	Fenton	D	Urban Minor Arterial
Grand Blanc	Fenton	Grand Blanc City Limits	E	Urban Minor Arterial
Grand Blanc	Grand Blanc City Limits	Saginaw	D	Urban Minor Arterial
Hill	Saginaw	Center	E	Urban Minor Arterial
Hill	Center	Genesee	D	Urban Minor Arterial
Irish	Davison	Richfield	E	Urban Minor Arterial
Irish	Atherton	Lapeer	D	Urban Minor Arterial
Lapeer	Irish	State	E	Urban Minor Arterial
Lapeer	State	Oak	D	Urban Collector
Leroy	Shiawassee	Silver Lake	D	Urban Minor Arterial
Main	East	E County Line	D	Urban Minor Arterial
Miller	Lennon	Ballenger	E	Urban Other Principal Arterial
Miller	Seymour	I 69 EB ramps	D	Urban Minor Arterial
N I 475	Robert T. Longway	Carpenter	D	Urban Interstate
N I 475	Atherton	Robert T. Longway	E	Urban Interstate
N I 475	I 75	Atherton	D	Urban Interstate
N I 75	Corunna	Pierson	D	Urban Interstate

Name	From	To	LOS	Functional Class
N I 75	Jct US 23	Corunna	E	Urban Interstate
N I 75	S County Line	I 475	D	Urban Interstate
N US 23	Owen	Jct I 75	E	Urban Other Freeway
N US 23	S. County Line	Owen	D	Urban Other Freeway
North	Ponemah	US23 SB Ramps	D	Urban Collector
North	US23 SB Ramps	Poplar	E	Urban Collector
Owen	Linden	Shiawassee	E	Urban Minor Arterial
Perry	Bella Vista	Belsay	E	Urban Minor Arterial
Poplar	Silver Lake	North	E	Urban Collector
S I 475	Carpenter	Robert T. Longway	D	Urban Interstate
S I 475	Robert T. Longway	Atherton	E	Urban Interstate
S I 475	Atherton	I 75	D	Urban Interstate
S I 75	Pierson	Corunna	D	Urban Interstate
S I 75	Corunna	Jct US 23	E	Urban Interstate
S I 75	I475	S. County Line	D	Urban Interstate
S US 23	Owen	Jct I75	E	Urban Other Freeway
S US 23	SCL	Owen	D	Urban Other Freeway
Saginaw	Center	Bella Vista	E	Urban Other Principal Arterial
Saginaw	9th St	Martin Luther King	D	Urban Other Principal Arterial
Shiawassee	Owen	Adelaide	D	Urban Minor Arterial
Silver Lake	SB US23 Ramps	Leroy	E	Urban Minor Arterial
Silver Lake	Leroy	East	D	Urban Minor Arterial
State	S County Line	Lippincott	D	Rural Other Principal Arterial
State	Lippincott	Harding	E	Urban Minor Arterial
Thompson	US23	Torrey	D	Urban Minor Arterial
Torrey	North	Thompson	D	Urban Collector
Vienna	Webster	Mill	D	Urban Minor Arterial
W I 69	9th St	Bristol	D	Urban Interstate
W I 69	Dort	9th St	E	Urban Interstate
W I 69	M15	Dort	D	Urban Interstate

Appendix B

2040 Long Range Transportation Plan List of Projects and Illustrative Projects

Genesee County 2040 LRTP List of Projects (Page 1 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
GCMPC	Rideshare Program	Free Computerized Carpool and Vanpool Program	Genesee and Lapeer Counties	\$78,500	2015
GCRC	Dort Highway Extension	Construction of a 4-lane highway	I-75 at Dort Highway South to Baldwin Road	\$443,750	2015
GCRC	Dort Highway Extension	Construction of a 4-lane highway	I-75 at Dort Highway South to Baldwin Road	\$730,000	2015
GCRC	Pierson Road	Upgrade 5 intersections and realign driveway	Linden Road to Jennings Road	\$797,299	2015
Road Agency	Congestion Relief	Congestion Relief	Genesee County	\$68,547	2015
City of Fenton	Silver Lake Road	Bridge Replacement	over Shiawassee River	\$2,196,000	2015
City of Flint	Barton Street	Preventative Maintenance	over Thread Creek	\$220,500	2015
City of Flint	Kearsley Park Blvd.	Preventative Maintenance--Deck and concrete repairs	Over Gilkey Creek	\$124,200	2015
GCRC	Ballenger Highway	Replacement	over Swartz Creek	\$1,889,000	2015
GCRC	Farrand Rd. bridge	Bridge Replacement	Over Pine Run	\$650,000	2015
GCRC	Lippincott Rd. bridge	Bridge Replacement	Over Kearsley Creek	\$725,000	2015
GCRC	Mt. Morris Road	Preventative Maintenance	over Flint River	\$1,105,500	2015
GCRC	Seymour Rd.	Install Sign Mounted Flashing Beacons and Upgrade Permanent Signing and Add Reflective Sheeting on the Sign Posts	Cole Rd. to Rolston Rd.	\$45,415	2015
GCRC	Wilson Road	Rehabilitation	Wilson Road over Brent Run	\$595,500	2015
City of Burton	Belsay Road - CON	Road Reconstruction	Court Street to Davison Road	\$3,819,536	2015
City of Mt. Morris	Saginaw Street - PE	Road Resurfacing	South City Limits to North City Limits	\$125,790	2015
City of Swartz Creek	Miller Road - CON	Road Resurfacing	Morrish Road to Elms Road	\$1,017,840	2015
City of Swartz Creek	Miller Road - CON	Road Resurfacing	Tallmadge Court to Dye Road	\$1,022,281	2015
GCRC	Flushing Road	Road Rehabilitation	Warner Road to Mill Road	\$1,604,240	2015

2014-2017 Transportation Improvement Program projects are programmed in the 2015, 2016, and 2017 years. Please note that the Genesee County Road Commission (GCRC) is responsible for Township Roads.

Genesee County 2040 LRTP List of Projects (Page 2 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
GCRC	Pierson Road	Road Rehabilitation	Linden Road to I-75	\$1,190,049	2015
GCRC	Stanley Road	Road Rehabilitation	Henderson Road to E County Line	\$725,329	2015
GCRC	Hill Rd. at Elms Rd.	Construct Roundabout	Hill Rd. at Elms Rd.	\$560,000	2015
GCRC	Hill Road at Torrey Road	Upgrade signal with 12" heads, upgrade permanent signing and pavement markings	Hill Road at Torrey Road	\$90,500	2015
GCRC	Stanley Road at Linden Rd.	Installation of Flashers on Warning and Stop Signs, Permanent Signing, Pavement Markings and Reflective Sheeting on Sign Posts	Stanley Road at Linden Rd.	\$30,000	2015
GCRC	Flint River Trail	Install a 10 Ft wide non-motorized pathway	Stepping Stone Falls to Bluegill Boat Launch	\$841,280	2015
Road Agency	Non-Motorized	Non-Motorized	Genesee County	\$1,303,876	2015
MDOT	I-475	Pump Station Rehabilitation	at 8th St, & Pierson (D02 & D04), city of Flint	\$1,760,000	2015
MDOT	I-75	Construct Loop Ramp to NB I-75	I-75 at Holly Rd	\$1,700,000	2015
MDOT	Michivan	FY 2016 Michivan marketing and capital CMAQ Program	Genesee County	\$35,000	2015
Road Agency	Local Road System Maintenance (MTF)	Local Road System Maintenance (MTF)	Genesee County	\$ 30,010,310	2015
Road Agency	Operations & Maintenance	Operations & Maintenance	Genesee County	\$ 49,500,000	2015
Transportation Agency	Studies	Studies	Genesee County	\$136,318	2015
MTA	Equipment	Purchase Capital Parts	Genesee County	\$840,000	2015
MTA	Equipment	Purchase Shop Equipment	Genesee County	\$180,000	2015
MTA	Equipment	Purchase Computer Hardware	Genesee County	\$165,000	2015
MTA	Equipment	Purchase Computer Software	Genesee County	\$662,500	2015
MTA	Facility	Rehab/Renovate Facilities	Genesee County	\$365,000	2015
MTA	Facility	Bus Shelter and Signage Enhancement	Genesee County	\$82,500	2015
MTA	Facility	Security	Genesee County	\$82,500	2015

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Genesee County 2040 LRTP List of Projects (Page 3 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
MTA	Operating	Enhanced Service to ADA Eligible Passengers	Genesee County	\$324,068	2015
MTA	Operating	Non-urban Area Operating Assistance	Genesee County	\$1,491,687	2015
MTA	Operating Assistance Mobility Management	Non-Emergency Medical Transportation	Genesee County	\$192,000	2015
MTA	Operations	Preventative Maintenance	Genesee County	\$3,105,000	2015
MTA	Operations	Job Access Reverse Commute	Genesee County	\$540,000	2015
MTA	Operations	Operating Assistance	Genesee County	\$100,000	2015
MTA	Transit Facilities	Static Fuel Cell Power System	Genesee County	\$3,300,000	2015
MTA	Transit Vehicle Replacement	Non-Emergency Medical Transportation	Genesee County	\$140,000	2015
MTA	Transit Vehicle Replacement	Purchase of 10 Clean Diesel/Electric Hybrid System Buses	Genesee County	\$6,250,000	2015
MTA	Transit Vehicle Replacement	Purchase of 15 paratransit vehicles- -Propane Powered Cutaways	Genesee County	\$1,067,086	2015
MTA	Vehicle	Purchase Replacement Buses	Genesee County	\$2,242,825	2015
MTA	Vehicle	Rehab/Renovate Revenue Vehicles	Genesee County	\$100,000	2015
MTA	Vehicle	Purchase Paratransit Vehicles	Genesee County	\$241,000	2015
MTA	Vehicle	Purchase Replacement Buses	Genesee County	\$1,120,000	2015
MTA	Fixed Route Study	Study	Genesee County	\$140,000	2015
MTA	LEED Storage Facility	Transit Services	Genesee County	\$10,000,000	2015

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Genesee County 2040 LRTP List of Projects (Page 4 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
MTA	Construction of Davison Service Center	Transit Services	Genesee County	\$4,250,000	2015
City of Burton	Center Road	Traffic signal upgrades and interconnection at 13 intersection	Atherton Road to Davison Road	\$1,224,103	2016
GCMPC	Rideshare Program	Free Computerized Carpool and Vanpool Program	Genesee and Lapeer Counties	\$78,500	2016
GCRC	Irish Road at Potter Road	Add Center Left Turn Lane	700 Ft South of Potter Road to 700 Ft North of Potter Road	\$852,300	2016
City of Burton	Center Road	Road Resurfacing	Atherton Road to Lippincott Blvd	\$76,970	2016
Road Agency	Local Bridges	Local Bridges	Genesee County	\$709,110	2016
City of Flint	Fenton Road - CON	Road Resurfacing	W Hemphill Road to I-69	\$2,207,653	2016
City of Flint	Fenton Road - PE	Road Resurfacing	W Hemphill Road to I-69	\$191,971	2016
City of Flint	Kearsley Street - PE	Road Resurfacing	Chevrolet Avenue to Beach Street	\$93,775	2016
City of Grand Blanc	Bellavista	Road Reconstruction	ViaCatherina to City Limits (S of Bellavista Ct)	\$262,113	2016
City of Montrose	Alfred Street - CON	Road Resurfacing	Park Street to Nanita Drive	\$81,417	2016
City of Montrose	Alfred Street - PE	Road Resurfacing	Park Street to Nanita Drive	\$7,080	2016
City of Mt. Morris	Saginaw Street - CON	Road Resurfacing	South City Limits to North City Limits	\$1,425,341	2016
GCRC	Coldwater Road	Road Rehabilitation	Clio Road to Dort Highway	\$4,678,266	2016
GCRC	Elms Road	Road Rehabilitation	Lake Road to Willard Road	\$651,338	2016
Road Agency	Safety	Safety	Genesee County	\$1,151,262	2016

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Genesee County 2040 LRTP List of Projects (Page 5 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
GCRC	Flint River Trail	Install a 10 Ft wide non-motorized pathway	Bluebell Beach to Genesee Road	\$2,265,708	2016
MDOT	I-475	Rubblize & Resurface	Saginaw Street to Clio Road	\$10,265,000	2016
MDOT	I-475	Upgrade Shoulder Lighting	Saginaw St to E of Clio Rd	\$132,000	2016
MDOT	I-475	Bm End Rprs, Substr Rprs, App work, Brgs	2 Bridges on I-475, Flint	\$1,462,060	2016
MDOT	I-69	Deck Replacement	I-69 under Lapeer Road	\$3,499,588	2016
MDOT	I-69	Reconstruct	Ballenger Highway to Fenton Road	\$100,000	2016
MDOT	I-75	Pump Station Rehabilitation	at I-69 (D02 of 25031), Genessee County	\$1,000,000	2016
MDOT	I-75	Install Roundabout	Bristol Rd at I-75 NB Ramps	\$1,267,055	2016
MDOT	M-15	Culvert Replacement	M-15 over Paddison Co Drain	\$457,774	2016
MDOT	Michivan	FY 2017 Michivan marketing and capital CMAQ Program	Genesee County	\$35,000	2016
MDOT	Trunkline Bridge CPM/CSM GPA	Trunkline Bridge CPM/CSM GPA	Regionwide	\$1,369,606	2016
MDOT	Trunkline Highway Safety GPA	Trunkline Highway Safety GPA	Regionwide	\$1,621,206	2016
Road Agency	Local Road System Maintenance (MTF)	Local Road System Maintenance (MTF)	Genesee County	\$ 30,381,683	2016
Road Agency	Operations & Maintenance	Operations & Maintenance	Genesee County	\$ 49,700,000	2016
Transportation Agency	Studies	Studies	Genesee County	\$ 136,318	2016
MTA	Equipment	Purchase Capital Parts	Genesee County	\$840,000	2016
MTA	Equipment	Purchase Shop Equipment	Genesee County	\$280,000	2016
MTA	Equipment	Purchase Service Vehicles	Genesee County	\$65,000	2016

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Genesee County 2040 LRTP List of Projects (Page 6 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
MTA	Equipment	Purchase Computer Hardware	Genesee County	\$165,000	2016
MTA	Equipment	Purchase Computer Software	Genesee County	\$677,500	2016
MTA	Facility	Rehab/Renovate Facilities	Genesee County	\$315,000	2016
MTA	Facility	Bus Shelter and Signage Enhancement	Genesee County	\$82,500	2016
MTA	Facility	Security	Genesee County	\$82,500	2016
MTA	Operating	Enhanced Service to ADA Eligible Passengers	Genesee County	\$324,068	2016
MTA	Operating	Non-urban Area Operating Assistance	Genesee County	\$1,491,687	2016
MTA	Operations	Preventative Maintenance	Genesee County	\$3,105,000	2016
MTA	Operations	Job Access Reverse Commute	Genesee County	\$540,000	2016
MTA	Operations	Operating Assistance	Genesee County	\$100,000	2016
MTA	Transit Vehicle Replacement	Purchase of 10 LPG Vehicles	Genesee County	\$723,000	2016
MTA	Vehicle	Purchase Replacement Buses	Genesee County	\$2,109,125	2016
MTA	Vehicle	Rehab/Renovate Buses	Genesee County	\$100,000	2016
MTA	Vehicle	Purchase Paratransit Vehicles	Genesee County	\$247,553	2016
MTA	Vehicle	Purchase Replacement Buses	Genesee County	\$957,629	2016
MTA	Static Fuel Cell Power System	Transit Services	Genesee County	\$3,300,000	2016
MTA	Transit	Transit	Genesee County	\$14,703,962	2016
GCMPC	Rideshare Program	Free Computerized Carpool and Vanpool Program	Genesee and Lapeer Counties	\$78,500	2017
GCRC	Dort Highway Extension - CON	Construction of a 4-lane highway	I-75 at M-54 interchange to Baldwin Road - Local funds	\$19,720,000	2017
GCRC	Hill Road	Upgrade 8 intersections	Fenton Road to Saginaw Road	\$694,209	2017
Road Agency	Local Bridges	Local Bridges	Genesee County	\$786,080	2017

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Genesee County 2040 LRTP List of Projects (Page 7 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
City of Burton	Center Road - CON	Road Resurfacing	Atherton Road to Lippincott Blvd	\$980,594	2017
City of Fenton	Poplar Street	Road Rehabilitation	Silver Lake Road to North Road	\$582,923	2017
City of Flint	Kearsley Street - CON	Road Resurfacing	Chevrolet Avenue to Beach Street	\$1,097,637	2017
City of Mt. Morris	Roosevelt Street	Road Resurfacing	Benson Street (City Limits) to Saginaw Street	\$897,685	2017
City of Swartz Creek	Fairchild, Winston, Worchester & Cappy	Road Resurfacing	Miller Road to Miller Road	\$638,321	2017
GCRC	Clio Road	Road Rehabilitation	Dodge Road to Wilson Road	\$1,549,050	2017
GCRC	Linden Road	Road Rehabilitation	Lennon Road to Calkins Road	\$4,747,493	2017
GCRC	Linden Road	Road Rehabilitation	Frances Road to Dodge Road	\$600,000	2017
GCRC	Mt. Morris Road	Road Rehabilitation	State Road to 7500 Ft East (Richfield Recycling)	\$1,315,600	2017
Road Agency	Safety	Safety	Genesee County	\$1,151,262	2017
City of Flint	Grand Traverse Greenway Trail	Install a 10 Ft wide non-motorized pathway	Riverbank Park to Hemphill Road	\$1,569,991	2017
Road Agency	Non-Motorized	Non-Motorized	Genesee County	\$597,105	2017
MDOT	I-69	Reconstruct	Ballenger Highway to Fenton Road	\$18,025,000	2017
MDOT	I-69	Replace Freeway Lighting	E of Ballenger Hwy to W of Fenton Rd	\$2,550,000	2017
MDOT	I-75	Construct Loop Ramp to NB I-75	I-75 at Holly Rd	\$3,973,410	2017
MDOT	M-13	Install solar lighting	at M-21	\$30,000	2017
MDOT	Michivan	FY 2018 Michivan marketing and capital CMAQ Program	Genesee County	\$36,000	2017
MDOT	US-23	Resurface Carpool Lot	at Silver Lake Road	\$64,000	2017

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Genesee County 2040 LRTP List of Projects (Page 8 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
MDOT	I-69	Widen--Maint. Lanes	I-69 EB over Hammerberg Rd.	\$1,716,000	2017
MDOT	I-69	Widen--Maint. Lanes	I-69 WB over Hammerberg Rd.	\$1,454,000	2017
Road Agency	Local Road System Maintenance (MTF)	Local Road System Maintenance (MTF)	Genesee County	\$ 22,548,373	2017
Road Agency	Operations & Maintenance	Operations & Maintenance	Genesee County	\$ 49,900,000	2017
Transportation Agency	Studies	Studies	Genesee County	\$ 136,318	2017
MTA	Equipment	Purchase Capital Parts	Genesee County	\$840,000	2017
MTA	Equipment	Purchase Shop Equipment	Genesee County	\$250,000	2017
MTA	Equipment	Purchase Service Vehicles	Genesee County	\$75,000	2017
MTA	Equipment	Purchase Computer Hardware	Genesee County	\$175,000	2017
MTA	Equipment	Purchase Computer Software	Genesee County	\$744,500	2017
MTA	Facility	Rehab/Renovate Facilities	Genesee County	\$93,000	2017
MTA	Facility	Bus Shelter and Signage Enhancement	Genesee County	\$82,500	2017
MTA	Facility	Security	Genesee County	\$82,500	2017
MTA	Operating	Enhanced Service to ADA Eligible Passengers	Genesee County	\$324,068	2017
MTA	Operating	Non-urban Area Operating Assistance	Genesee County	\$1,491,687	2017
MTA	Operations	Preventative Maintenance	Genesee County	\$3,195,000	2017
MTA	Operations	Job Access Reverse Commute	Genesee County	\$540,000	2017
MTA	Operations	Operating Assistance	Genesee County	\$100,000	2017
MTA	Transit Vehicle Replacement	Purchase of 13 LPG Vehicles	Genesee County	\$868,000	2017
MTA	Vehicle	Purchase Replacement Buses	Genesee County	\$2,184,125	2017
MTA	Vehicle	Rehab/Renovate Revenue Vehicles	Genesee County	\$100,000	2017
MTA	Vehicle	Purchase Paratransit Vehicles	Genesee County	\$247,553	2017

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Genesee County 2040 LRTP List of Projects (Page 9 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
MTA	Vehicle	Purchase Replacement Buses	Genesee County	\$957,629	2017
MTA	I-69 Corridor Study	Study	Genesee County	\$250,000	2017
MTA	Transit	Transit	Genesee County	\$17,777,202	2017
Road Agency	Congestion Relief	Congestion Relief	Genesee County	\$ 2,144,142	2018
Road Agency	Bridge	Bridge	Genesee County	\$ 804,867	2018
Road Agency	Preservation	Preservation	Genesee County	\$ 9,846,268	2018
Road Agency	Safety	Safety	Genesee County	\$ 1,178,777	2018
Road Agency	Non-Motorized	Non-Motorized	Genesee County	\$ 2,218,890	2018
MDOT	I-475	Restoration and Rehabilitation	Carpenter Road to Saginaw Street	\$13,100,000	2018
Road Agency	Local Road System Maintenance (MTF)	Local Road System Maintenance (MTF)	Genesee County	\$ 31,376,793	2018
Road Agency	Operations & Maintenance	Operations & Maintenance	Genesee County	\$ 50,977,840	2018
Transportation Agency	Studies	Studies	Genesee County	\$ 139,575	2018
Transit Agency	Transit	Transit	Genesee County	\$ 30,567,541	2018
GCRC	Hill Rd.	Widen to 3 and 5 lanes	Saginaw Rd. to Center Rd.	\$3,102,465	2019-2025
GCRC	Miller Rd.	Widen to 7 lanes	Lennon Rd. to Ballenger Rd.	\$4,258,285	2019-2025
Road Agency	Congestion Relief	Congestion Relief	Genesee County	\$6,964,575	2019-2025
Road Agency	Bridge	Bridge	Genesee County	\$ 6,199,219	2019-2025
Road Agency	Preservation	Preservation	Genesee County	\$ 75,837,552	2019-2025
Road Agency	Safety	Safety	Genesee County	\$ 9,079,130	2019-2025
Road Agency	Non-Motorized	Non-Motorized	Genesee County	\$ 17,090,250	2019-2025
MDOT	MDOT Preservation	MDOT Preservation	Genesee County	\$ 205,285,205	2019-2025
Road Agency	Local Road System Maintenance (MTF)	Local Road System Maintenance (MTF)	Genesee County	\$ 239,240,870	2019-2025
Road Agency	Operations & Maintenance	Operations & Maintenance	Genesee County	\$ 389,044,784	2019-2025
Transportation Agency	Studies	Studies	Genesee County	\$ 1,075,033	2019-2025
Transit Agency	Transit	Transit	Genesee County	\$ 225,033,568	2019-2025

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Genesee County 2040 LRTP List of Projects (Page 10 of 10)

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
GCRC	Irish Rd.	Widen to 5 lanes	Davison Rd. to Richfield Rd.	\$10,406,709	2026-2035
Road Agency	Congestion Relief	Congestion Relief	Genesee County	\$12,175,874	2026-2035
Road Agency	Bridge	Bridge	Genesee County	\$ 10,837,834	2026-2035
Road Agency	Preservation	Preservation	Genesee County	\$ 132,583,614	2026-2035
Road Agency	Safety	Safety	Genesee County	\$ 15,872,662	2026-2035
Road Agency	Non-Motorized	Non-Motorized	Genesee County	\$ 29,878,168	2026-2035
MDOT	MDOT Preservation	MDOT Preservation	Genesee County	\$ 366,242,284	2026-2035
Road Agency	Local Road System Maintenance (MTF)	Local Road System Maintenance (MTF)	Genesee County	\$ 409,459,172	2026-2035
Road Agency	Operations & Maintenance	Operations & Maintenance	Genesee County	\$ 667,129,724	2026-2035
Transportation Agency	Studies	Studies	Genesee County	\$ 1,879,435	2026-2035
Transit Agency	Transit	Transit	Genesee County	\$ 368,906,542	2026-2035
GCRC	Grand Blanc Rd.	Widen to 5 lanes	US-23 to Grand Blanc CL	\$17,431,169	2036-2040
Road Agency	Congestion Relief	Congestion Relief	Genesee County	\$7,255,127	2036-2040
Road Agency	Bridge	Bridge	Genesee County	\$ 6,457,842	2036-2040
Road Agency	Preservation	Preservation	Genesee County	\$ 79,001,397	2036-2040
Road Agency	Safety	Safety	Genesee County	\$ 9,457,899	2036-2040
Road Agency	Non-Motorized	Non-Motorized	Genesee County	\$ 17,803,233	2036-2040
MDOT	MDOT Preservation	MDOT Preservation	Genesee County	\$ 228,049,049	2036-2040
Road Agency	Local Road System Maintenance (MTF)	Local Road System Maintenance (MTF)	Genesee County	\$ 239,573,155	2036-2040
Road Agency	Operations & Maintenance	Operations & Maintenance	Genesee County	\$ 390,991,605	2036-2040
Transportation Agency	Studies	Studies	Genesee County	\$ 1,119,882	2036-2040
Transit Agency	Transit	Transit	Genesee County	\$ 211,344,872	2036-2040

Total: \$5,015,956,638

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Genesee County 2040 LRTP Illustrative List of Projects

Agency	Project	Project Description	Limits	Estimated Cost	Fiscal Year
GCRC	Lapeer Rd.	Widen to 5 lanes	Irish Rd. to State Rd.	\$ 7,500,000	Illustrative
GCRC	Perry Rd.	Widen to 5 lanes	Bella Vista to Belsay Rd.	\$ 4,000,000	Illustrative
GCRC	Baldwin Rd.	Widen to 5 lanes	Fenton Rd. to Braemoor Dr.	\$ 18,000,000	Illustrative
GCRC	Belsay Rd.	Widen to 5 lanes	Perry Rd. to Hill Rd.	\$ 3,500,000	Illustrative
GCRC	Thompson Rd.	Widen to 5 lanes	US-23 to Torrey Rd.	\$ 2,500,000	Illustrative
GCRC	Torrey Rd.	Widen to 3 lanes	Fenton CL to Thompson Rd.	\$ 6,000,000	Illustrative
GCRC	Mt. Morris Rd.	Widen to 3 lanes	Dort Hwy. to Bray Rd.	\$ 2,000,000	Illustrative
MTA	BRT Flint to Detroit	Transit Services	Flint to Detroit	\$ 450,000,000	Illustrative
GCRC	North Rd.	Widen to 3 lanes	US-23 ramps to Fenton CL	\$ 1,601,032	Illustrative
GCRC	Owen Rd.	Widen to 3 lanes	Linden Rd. to Jennings Rd.	\$ 2,535,368	Illustrative

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