Creating Success with Our Transportation Assets

2040 Regional Transportation Plan for Southeast Michigan

June 20, 2013
SEMCOG . . . Shaping the future of Southeast Michigan

Mission
SEMCOG, the Southeast Michigan Council of Governments, is the only organization in Southeast Michigan that brings together all of the region's governments to solve regional challenges.

SEMCOG strengthens local governments and regional decision making by:

- Providing data and unbiased analysis for informed decision making affecting Southeast Michigan and its local governments;
- Promoting the efficient use of tax dollars for both long-term infrastructure investment and shorter-term governmental efficiency;
- Delivering direct assistance to member governments in the areas of transportation, environments, and community and economic development;
- Solving regional issues that go beyond the boundaries of individual local governments; and
- Advocating on behalf of Southeast Michigan in Lansing and Washington.
Creating Success with Our Transportation Assets

June 20, 2013

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Abstract

Creating Success with Our Transportation Assets: 2040 Regional Transportation Plan for Southeast Michigan describes how over $50 billion in revenues will be invested to support our transportation system, including the approximately $36 billion directed by this plan. It is responsive to the many new realities in the region, the country, and the world. Actions needed to improve the quality and reliability of the transportation system, increase our economic prosperity, reach a higher level of fiscal sustainability, broaden our access to vital destinations, make our communities more desirable, and protect our environment are described. Implementation of this plan will help improve Southeast Michigan’s quality of life. The plan includes transportation projects anticipated during the life of the plan. Creating Success with Our Transportation Assets can be viewed online at www.semcog.org.

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SEMCOG
Southeast Michigan Council of Governments
Information Center
1001 Woodward Avenue, Suite 1400
Detroit, MI 48226-1904
313-961-4266 • fax 313-961-4869
www.semcog.org • infoservices@semcog.org
ii - Creating Success with Our Transportation Assets
# Table of Contents

List of Data Displays.......................................................................................................................... v

Executive Summary ............................................................................................................................... ix

Southeast Michigan’s Transportation Assets ....................................................................................... ix

Creating Success with Our Transportation Assets ............................................................................... x

Key Findings Impacting Actions and Recommendations in Creating Success with Our Transportation Assets .................................................................................................................. xii

Advancing Outcomes through Actions in this Regional Transportation Plan .................................. xxviii

Overview of Projects in the 2040 Regional Transportation Plan ................................................... xxxii

Chapter 1: Introduction ....................................................................................................................... 1

Southeast Michigan’s Transportation Assets ....................................................................................... 1

Creating Success with Our Transportation Assets ............................................................................... 2

Chapter 2: Guiding Plan Development ............................................................................................... 3

Creating Success in Southeast Michigan ............................................................................................. 3

Moving Ahead for Progress in the 21st Century ................................................................................... 5

Principles Guiding Development of the 2040 Regional Transportation Plan .................................. 5

Policies .................................................................................................................................................. 6

Chapter 3: Informing the Plan .............................................................................................................. 8

Changing Realities ................................................................................................................................. 8

The Economic and Demographic Outlook for Southeast Michigan Through 2040 ...................... 9

Forecasting Future Travel .................................................................................................................... 24

Public Participation ............................................................................................................................... 26

Infrastructure Survey – What the Public Thinks ................................................................................. 28

Chapter 4: Investing in Transportation ............................................................................................... 31

Funding Infrastructure .......................................................................................................................... 31

Strategic Investment of Transportation Revenues ............................................................................... 39

Differing Levels of Service .................................................................................................................. 49

Chapter 5: Enhancing Transportation Connections .......................................................................... 57

Pavement and Bridge Condition .......................................................................................................... 57

Optimizing Public Transit and Access to Support Regional Success .............................................. 62

Freight and Economic Vitality ............................................................................................................. 69

Transportation Corridors – Connecting Community, Economy, and Environment .................... 73

Creating a Safer Transportation System ............................................................................................. 74

Creating a More Secure Infrastructure System .................................................................................. 76

Aligning Environmental and Transportation Actions ......................................................................... 77
List of Data Displays

Tables

Table 1  Condition of Bridges in Southeast Michigan ................................................................. xvii
Table 2  Example Projects from the Regional Transportation Plan ............................................. xxxiii
Table 3  Transportation Funding Sources ....................................................................................... xxxv
Table 4  Summary of Investment in Southeast Michigan’s Transportation System through 2040 xxv
Table 5  Expected Changes in Performance at Current Funding Levels ....................................... xxxviii
Table 6  Changing Realities ............................................................................................................. 8
Table 7  Analysis of Private-Sector Employment Change, Seven-County SEMCOG Region, 2001- 2010 ................................................................. 11
Table 8  Population by Age, Southeast Michigan, 2010-2040 ...................................................... 15
Table 9  Employment by Industrial Class, Southeast Michigan, 2010-2040 ................................. 18
Table 10 Cost to Achieve Different Pavement Condition Targets by 2020 Depending on Portion of  Funds Allocated to Capital Preventive Maintenance (CPM), Southeast Michigan .......... 41
Table 11 Cost to Achieve Different Pavement Condition Targets by 2020, Depending on Portion of  Funds Allocated to Capital Preventive Maintenance (CPM), Southeast Michigan .......... 59
Table 12 Condition of Bridges in Southeast Michigan ..................................................................... 61
Table 13 2012 Top 5 Trade States with Canada and Mexico, By Partner Trade Value ..................... 71
Table 14 Nonpoint Source Pollutants from Roadways .................................................................... 79
Table 15 Example Projects from the Regional Transportation Plan .............................................. 90
Table 16 Transportation Funding Sources ....................................................................................... 92
Table 17 Summary of Investment in Southeast Michigan’s Transportation System through 2040 .... 93
Table 18 Expected Changes in Performance at Current Funding Levels ........................................ 95
Table 19 Results of Ozone Analysis* ............................................................................................... 102
Table 20 Results of Carbon Monoxide Analysis* .......................................................................... 102
Table 21 Results of 24-Hour PM2.5 Analysis ................................................................................ 103
Table 22 Results of Annual PM2.5 Analysis .................................................................................. 103
Table 23 Environmentally Sensitive Resources ............................................................................. 104
Table 24 Area of Influence ............................................................................................................. 105
Table 25 Possible Project Impacts .................................................................................................. 106

Figures

Figure 1  Creating Success in Southeast Michigan Outcomes and Performance Measures .......... xi
Figure 2  Past and Expected Future Change in Population and Employment ................................. xiii

v - Creating Success with Our Transportation Assets
Figure 66  Capacity Projects Compared to Congested Corridors .............................................. 108
Executive Summary

Southeast Michigan’s Transportation Assets

Southeast Michigan has a wealth of transportation assets that are vital to the economy and quality of life, and that are essential to the well-being of our residents and business community.

Southeast Michigan Transportation Assets

- 23,400 miles of major roads
- More than 2,900 bridges
- More than 2,300 miles of fixed-route bus service
- At least 600 miles of walking or biking paths
- 4,000 miles of all-season truck routes
- 800 miles of main line rail
- 35 airports
- Eight international border crossings
- Five commercial marine ports
- Seven rail/truck terminals

Southeast Michigan has a sophisticated transportation network that includes 23,400 miles of roads and supports over 100 million miles of travel each and every day. It connects people to work, school, shopping, hospitals, social events, and other businesses.

Our transportation system connects residents with their individual community, the region, and to areas beyond. A variety of travel choices gives people who have differing transportation needs access to jobs, health care, shopping, educational and recreational opportunities, and the everyday necessities of life. Our transportation assets also provide for movement of freight throughout the region, and connect us to markets around the globe. Clearly, an effective transportation system is vital to economic vitality, business attraction and expansion, trade, tourism, and quality of life.

Southeast Michigan’s transportation assets are key drivers of our economy and can be major contributors to the desirable communities that attract and retain a talented workforce.

Our transportation system supports and attracts private sector investment by linking businesses with customers, markets, supply chains/distribution networks, and employees.
Creating Success with Our Transportation Assets

Creating Success with Our Transportation Assets, Southeast Michigan’s 2040 Regional Transportation Plan, is designed to reflect SEMCOG’s adopted outcomes and performance measures. It emphasizes effectively using our finite resources to meet the needs of residents, businesses, and visitors in a manner that fits with the realities of the 21st Century and contributes to:

1. Economic Prosperity
2. Desirable Communities
3. Fiscally Sustainable Public Services
4. Reliable, Quality Infrastructure
5. Healthy, Attractive Environmental Assets
6. Access to Services, Jobs, Markets, and Amenities

The following Creating Success in Southeast Michigan framework highlights the performance measures SEMCOG will be tracking to monitor how our region’s progress in achieving our desired outcomes. As a result of undertaking this more holistic, comprehensive approach to the Regional Transportation Plan, several lessons were learned. These lessons are described in many of the findings and culminated in the creation of a new framework for setting targets and maximizing our rate of return on our transportation investments. This framework is described in Chapter 4: Investing in Transportation.
### What We Need to Achieve: Outcomes

<table>
<thead>
<tr>
<th>Economic Prosperity</th>
<th>Desirable Communities</th>
<th>Fiscally Sustainable Public Services</th>
<th>Reliable, Quality Infrastructure</th>
<th>Healthy, Attractive Environmental Assets</th>
<th>Access to Services, Jobs, Markets, &amp; Amenities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of population age 25 and over with a bachelor’s degree or above</td>
<td>Percent of 4th and 8th grade students at or above proficiency in reading, math, and science (MEAP scores)</td>
<td>Community Fiscal Indicator Score - number that are: - fiscal sound - fiscal strength - fiscal stress</td>
<td>Percent of roads in good, fair, poor, condition</td>
<td>Percent of time in compliance with air quality standards</td>
<td>Percent of households with access to jobs</td>
</tr>
<tr>
<td>Percent of population age 25 and over with an associate’s degree</td>
<td>ACT scores</td>
<td>Municipal credit rating</td>
<td>Percent of bridges in good, fair, poor condition</td>
<td>Percent of green cover</td>
<td>Percent of households with reasonable access to amenities such as: - entertainment venues - museums/cultural attractions - walking/biking facilities - parks - sports venues</td>
</tr>
<tr>
<td>Change in real regional Gross Domestic Product (GDP)</td>
<td>Violent crime rate</td>
<td>Property crime rate</td>
<td>Number of region’s local governments with multi-year budget</td>
<td>Infrastructure utilization rate</td>
<td>Volume of stormwater flowing into our waterways</td>
</tr>
<tr>
<td>Real per capita personal income growth</td>
<td>Number of percent of occupied housing units</td>
<td>Local government unfunded liabilities relative to budget</td>
<td>Peak infrastructure service demand and total consumption: - water - sewer - energy - transportation</td>
<td>Number of areas with known water quality improvements</td>
<td>Rate of export activity</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>Access to amenities such as: - entertainment venues - museums/cultural attractions - walking/biking facilities - parks - sports venues</td>
<td>Percent of water and sewer systems in good, fair, poor condition</td>
<td>Condition of macroinvertebrates (bugs) in rivers</td>
<td>Broadband accessibility</td>
<td></td>
</tr>
<tr>
<td>Labor underutilization rate (U-6%)</td>
<td>Access to services such as: - educational institutions - medical facilities/hospitals - libraries - full service grocery stores</td>
<td>Percent of drinking water meeting standards</td>
<td>Diversity of fish species</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in jobs</td>
<td>Migration rates</td>
<td>Transit ridership</td>
<td>Number of known invasive species</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industry concentration</td>
<td>Voter participation rate</td>
<td>Rate of traffic fatalities and serious injuries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer confidence</td>
<td>People’s desire to reside in community</td>
<td>Citizens satisfaction with local government services</td>
<td>Perceptions about outdoor environment making this a nice place to live</td>
<td>Residents’ ability to get to jobs, amenities, outdoor environment/recreation, and services</td>
<td></td>
</tr>
</tbody>
</table>

Several measures that reflect the outcomes will be based on a regional survey. In general, they will measure public sentiment related to all six outcomes. (See examples above.)
Creating Success with Our Transportation Assets: Key points in the plan

Specifically, *Creating Success with Our Transportation Assets*, Southeast Michigan’s 2040 Regional Transportation Plan:

- promotes an infrastructure management approach, and the strategic investment of limited financial resources, in ways that prioritize needs and leverage our resources;
- provides information to the public to aid in decision-making;
- sets forth policies, actions, and recommendations to maintain and maximize the integrity of our transportation system;
- guides efforts to enhance transportation connections across various types of travel, with residents, within communities, and across the globe;
- provides for the flexibility needed to be responsive and adaptable in an increasingly dynamic environment;
- provides a framework for, and relies upon, collaboration and alignment among numerous organizations to implement its recommended actions;
- summarizes how over $50 billion in total revenue will be invested through 2040, including the approximately $36 billion directed by this plan;
- specifically identifies $3.8 billion in near-term projects programmed between 2014 and 2017; and
- is interwoven with other mutually reinforcing SEMCOG plans and programs such as the comprehensive economic development strategy, sustainability framework, housing strategy, environmental programs, green infrastructure, and complete streets, to name a few.

Key Findings Impacting Actions and Recommendations in Creating Success with Our Transportation Assets

The complete version of *Creating Success with Our Transportation Assets* contains an extensive set of findings and data developed to inform the plan. The collection of data and analysis was driven by the adopted measures in SEMCOG’s Creating Success program (Figure 1).

Following is a consolidated list of findings developed to communicate the breadth of issues addressed in this plan. Notably, during SEMCOG’s ongoing outreach efforts as this plan was being developed, a few comments referenced the approach as a “360 degree” look at a complicated topic.

Forecasts and their Implications for this Transportation Plan

- From 2000 to 2009, the Southeast Michigan region lost an astounding 351,000 jobs. Ironically, the region gained a similar number, almost 357,000 jobs, in the robust growth era between 1990 and 2000. Almost 198,000 of the job losses – over half of them – occurred in a single year, during the devastating crash of 2009. Some of those losses are likely permanent.
- After a deep recession, all three domestic auto companies are now making a profit, but with a smaller work force.
- Cautious optimism is reflected in SEMCOG’s forecast for the region. We are recovering from a very deep recession induced by a financial crisis where recovery is slow. Therefore, SEMCOG predicts lower levels of growth for the region.
• This demographic forecast contributes to a similarly modest forecast for growth in daily levels of travel.

Figure 3
Forecasted Growth in Regional Travel Is Modest
Including Impact of Projects in 2040 RTP
Feedback and Insight from Southeast Michigan Residents
An extensive regional survey on resident’s knowledge and opinions on Southeast Michigan’s infrastructure system\(^1\) found the following:

- Overall, the vast majority of residents feel that the region’s infrastructure condition is deteriorating. Roads are only rated good/excellent by one-quarter of residents. Most people predict road condition will stay the same or get even worse in the future.

- Most residents rate the current transit system as fair/poor and nearly half expect the transit system condition to stay the same.

- Nearly half believe the current ways of funding infrastructure won’t work in the future (49 percent).

- While 70 percent indicate more funding is needed, 73 percent also say the amount of funding is not the problem; it’s how efficiently we’re using it.

- There is a great deal of confusion about how our infrastructure is funded. For example, over 50 percent of the region’s residents incorrectly believe that most funding for roads is derived from property taxes.

- In general, the majority of residents prefer to personally engage in actions to reduce costs rather than pay more for services.

- The vast majority of residents (80 percent) believe “we must reinvest in the region’s infrastructure so we can prosper economically.”

Pavement Condition
SEMCOG and the Michigan Department of Transportation have some of the more comprehensive data on pavement condition anywhere.

\(^1\) SEMCOG: Infrastructure Public Opinion Survey, November 2012.
These asset management data, collected to guide decision-making, are consistently sending the same message: current levels of investment are not strategic, they are inadequate. This is most evident in the continued deterioration in pavement condition.
• Investment levels for other parts of the transportation system are heavily impacted by road-condition decisions. To illustrate, improving the regional average road condition from its current 70 percent good/fair condition to 90 percent good/fair condition would require that over three-fourths of all funds be dedicated to pavement management. Therefore, performance measure targets must be viewed holistically.

Figure 6
Impact of Different Pavement Performance Targets on Funding for Other Needs

Bridge Condition
• Overall, the condition of bridges has improved each year since 2008.
Table 1
Condition of Bridges in Southeast Michigan

<table>
<thead>
<tr>
<th>Year</th>
<th>Trunkline</th>
<th>Non-Trunkline</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>2008</td>
<td>508</td>
<td>812</td>
<td>179</td>
</tr>
<tr>
<td>2009</td>
<td>552</td>
<td>789</td>
<td>162</td>
</tr>
<tr>
<td>2010</td>
<td>536</td>
<td>825</td>
<td>143</td>
</tr>
<tr>
<td>2011</td>
<td>577</td>
<td>824</td>
<td>103</td>
</tr>
</tbody>
</table>

Source: Michigan Department of Transportation

Levels of Congestion in the Region

- A SEMCOG analysis using traffic counts and travel model data shows that sustained periods of congestion in the region are fairly limited.
  - Using the 0.9 percent V/C threshold, only six percent of roadways in the region are congested throughout either the 3-hour morning peak period or the 3-hour evening peak.
  - Two percent of all roadways are congested throughout both the morning and evening peak periods.
  - And only 0.4 percent is persistently congested from 7am to 6pm.

- On the other hand, over 600 miles of roadway in the region may have more traffic lanes than are needed to accommodate current and expected future travel. One or more lanes on these roadways could potentially be removed or repurposed (e.g., allow for green infrastructure to reduce stormwater runoff, provide bike lanes, etc.). Policy is needed to address this excess capacity in order to reduce long-term costs and advance other Creating Success outcomes.

Trends in Safety

- Over 300 people are killed and approximately 2,000 are severely injured in traffic crashes every year on the roads in our region.
- In addition to the tragic loss of life, traffic fatalities cost our economy billions of dollars annually.
Transit and Access

- One of the guiding principles of SEMCOG 2040 Regional Transportation Plan is that transit service in the region must be significantly improved in order to attract the same levels of ridership that exists in thriving metropolitan areas across the country. There are several reasons for this principle including: the need to attract and retain young professionals, the need to connect people to jobs, and the need to address the challenges presented by a rapidly increasing elderly population. To provide some context as to how Southeast Michigan’s transit service competes at present, our region currently ranks below Pittsburgh, St. Louis and Cleveland in both the amount of service and funding it provides, as well as the amount of ridership it attracts.
Southeast Michigan also rates poorly when compared with many other major metropolitan areas. Data from the National Transit Administration\(^2\) shows that, of the 25 largest metropolitan areas in the country, Southeast Michigan ranks:

- 22\(^{nd}\) in transit ridership,
- 23\(^{rd}\) in hours and miles of transit service per capita, and
- 22\(^{nd}\) in total transit operating funds per capita.

**A Regional Look at Freight Movement and Economic Vitality**

- The present-day regional freight system is an extensive network of interstate highways, arterial roads, international border crossings, railroads, commercial marine ports, airports, and pipelines.
- Southeast Michigan is home to the United States’ most valuable collection of international land border crossings, hosting over one-third (34.5 percent in 2012) of trade with Canada, our largest trading partner.
- The freight system is important to the growth and health of Southeast Michigan’s regional economy. It delivers materials for core utility and manufacturing activity, carries goods produced here to North American and world markets, and supplies consumers with finished products for purchase at stores or delivery.

\(^2\) Federal Transit Administration; National Transit Database Profiles, 2010.
• Plans to address critical link deficiencies have led to project proposals for a new international bridge and rail tunnel connecting Detroit and Windsor, Ontario; improvements to the urban rail and intermodal terminal network in Detroit; and a new customs plaza for the Blue Water Bridge in Port Huron.
Figure 10

Southeast Michigan's Freight System is Extensive and Complex

Source: SEMCOG
Economic Vitality and its Connections with Housing, Land Use, Safety, and Nonmotorized Travel

- There is currently an over-supply of commercial and industrial properties in the region.

- Redevelopment can take many forms, ranging from repurposing buildings and parcels of property to utilizing green infrastructure, creating public spaces and greenway connections, and mixed use development.

- Connecting transportation corridors with surrounding neighborhoods can contribute to economic development along the corridor, help create a sense of community, make a community more livable, and further individual access to employment and needed services.

- Whether single family, multi-family, or vacant, housing is the single largest land use in the region, comprising 45 percent of the land in Southeast Michigan.

- There is a serious misalignment of housing supply and demand in the region resulting from the loss of 125,000 residents since 2000 and the aging of the region’s population.

- Maintaining and promoting housing and neighborhoods that are diverse and equitable is vital for a sustainable and thriving region.

- Land use diversity, site design, and density play an integral component in creating walkable and bikeable communities, whether within a small or a large community.

- Bike lanes have become one of the most popular facilities for increasing mobility and access of bicycle travel. Communities are asking for more facilities that promote complete streets in an effort to increase community attractiveness, value, and economic vitality.

- Walking and biking are more than recreation; they are legitimate modes of transportation, especially in urban areas. Residents are relying on an interconnected nonmotorized system to help them reach employment, transit service, retail, educational, medical, entertainment, cultural or recreational activity centers.

- Coupled with education and traffic enforcement programs, walking and biking facilities can decrease crash rates between automobiles, pedestrians, and cyclists. Such facilities provide added safety benefits to all roadway users by creating a predictable travel path for nonmotorized users.

Transportation and Environmental Sustainability

- Southeast Michigan has 680 square miles of impervious surfaces. Approximately 245 square miles of impervious surfaces are designated as roadways.

- These roadways contribute approximately 100 billion gallons annually of stormwater runoff that is mostly unmanaged.

- Typically, stormwater management is an eligible cost under the federal system, but is often viewed as an “add on” by road agencies. When having to choose spending limited road funding on resurfacing additional roads or adding stormwater management to their projects, runoff management is often not included.

- The shortage of revenue to even maintain the existing transportation system is causing the perpetuation of actions that increase long-term costs associated with the entire system. One example is that incorporating stormwater management in design is far cheaper than retrofitting.

- Federal air quality standards continue to be more stringent, making compliance increasingly complicated and expensive. This plan conforms to the State Implementation Plan for air quality as required under the federal Clean Air Act.
• Air pollutant emissions from vehicles have been steadily declining due to tightened vehicle emissions standards for both cars and trucks. Even accounting for future growth in regional travel, these emission reductions will continue to decline through 2035 as the fleet turns over and older, more polluting vehicles are replaced by newer, cleaner ones.

What We Know About Transportation Funding and Transportation Costs

• Current methods of funding transportation infrastructure are largely outdated and mostly out of alignment with current realities.

• While important, improving efficiency and reducing costs will be completely insufficient to compensate for revenue losses resulting from this structural obsolescence.

• Until both formulas for funding and levels of funding change, costs to the public will continue to escalate.

• It is essential that we shift to infrastructure funding mechanisms that are more sustainable and equitable. A possible option for transportation is to shift from a tax on the gallons of fuel used to a charge per vehicle mile traveled (VMT).

Figure 11
New Fuel Economy Standards Will Significantly Reduce Transportation Revenue

Projected Impact of New Fuel Economy Standards on State Gas Tax Revenue Generated in Southeast Michigan

![Graph showing projected impact of new fuel economy standards on state gas tax revenue.](image-url)
- Low-cost tools are available that could significantly reduce congestion. For example, small adjustments in travel decisions can have a significant impact on reducing congestion at virtually no out of pocket cost and often with benefits of increased convenience. A combination of ridesharing, increased use of transit, expanded use of flexible work hours to allow employees to travel during non-peak hours, and providing real-time data to advise travelers of less-congested alternative routes will help increase use of our existing infrastructure and reduce costs.

- Additionally, technological innovations are making real-time management of traffic less costly and more readily available to drivers. Some of these innovations in communications can be used to make some travel unnecessary.

Positioning Southeast Michigan for Greater Success

- A business-as-usual approach will continue to be a limiting factor in reaching the region’s potential economic vitality, even if the most strategic distribution of current revenues is achieved. This is because available revenues are drastically insufficient in comparison to needs. A primary basis of current funding (a flat tax on fuel consumption) has little to do with the real cost of creating and maintaining a quality transportation system.

- Maximizing the benefits of our transportation system and positioning the region for success requires a much higher degree of investment in public transit.

- We all have a stake in improving transit in the region. A quality transit system plays a key role in providing access to jobs, services, and amenities; improving income; and creating desirable communities. A recent survey by SEMCOG shows that a significant portion of the public understands this; 62 percent of respondents agreed that transit affects each one of us.

- A quality transit system that is competitive with other major metropolitan areas must include core bus service as well as rapid transit corridors that are supported by integrated feeder bus service. The system must also include demand responsive service to accommodate those with special needs.
• The responsibilities and authorities provided to the newly formed Regional Transit Authority address the oversight and governance issue consistent with SEMCOG’s Regional Transportation Plan. The new law also gives the RTA the much needed ability to seek voter-approved local funding for additional transit service. These changes represent a major step forward in positioning the region for success.

• Several other positive developments in the area of public transit are positioning the region to move forward in improving and expanding service:

  – Commuter rail service between Downtown Detroit and Ann Arbor will begin with event service, scheduled to start in 2013.

  – Results of SEMCOG’s recently completed public opinion survey showed significant support for transit and a strong conviction by residents that the quality of the region’s transit service impacts each one of us.

  – The advancement of the M-1 Streetcar project, which will begin construction in 2013 and provide service on a three-mile segment of Woodward Avenue, between Downtown Detroit and the New Center area.

  – A transit alternatives analysis is currently underway to review higher-level transit options for the 27-mile Woodward Avenue corridor from the Detroit River to the City of Pontiac. The analysis will be completed in early 2014.

  – A federal government commitment to the RTA for an additional $6.5 million to study transit development in other high-priority transit corridors including express bus, rail, and bus rapid transit (e.g., Gratiot Ave. (M-3) from Detroit to Mt. Clemens; M-59 corridor between Pontiac and Mt. Clemens; and Michigan Ave. (M-12) from Downtown Detroit to Ann Arbor, including service to Detroit Metropolitan Airport). The RTA will be responsible for prioritizing these corridors and securing local matching funds for these studies.

  – Funding has been received to continue developing stations for commuter rail service between Ann Arbor and Howell, which will begin in 2013.

• Significant and competing infrastructure needs in the region, coupled with limited resources to meet these needs, necessitates a reduction in service costs. Adopting different levels of service offer an opportunity to realize some of this cost reduction and improve fiscal sustainability.

• Lowering infrastructure costs will require both a change in policies related to managing these services and willingness on the part of the public to accept and embrace this new approach. To make this happen, more detailed information on the costs associated with differing levels of service must be developed and shared with policy makers and the public.

• A comprehensive approach is required to integrate corridor transportation planning and implementation activities in a manner that supports economic development, considers community desires, creates quality of place, and promotes environmental and fiscal sustainability. A comprehensive approach recognizes that different corridors and various locations along a single transportation corridor have different and unique characteristics.

• Some limited investment in capacity expansion may be needed to support commerce and the economy. In particular, strategic investments that may facilitate movement of freight and on-time delivery of products and parts may be needed.

• More strategic investment is likely when there is consistency of purpose in the actions taken by one or more of the three levels of government: federal, state, and local. Some refer to this as vertical alignment in government decision-making.
• Strategic investment is also more likely when there is consistency of purpose in actions taken by any particular level of government across infrastructure services (transportation, water, sewer, energy, etc.). Some refer to this as horizontal alignment within and between service providers.

• Focusing on a common set of outcomes and measures provides a means for achieving the needed consistency of purpose. It results in more aligned actions at all levels of government (vertical) and across all sectors (horizontal).

Figure 13
Leveraging Actions in Differing Decision Structures

• Positioning Southeast Michigan for greater success requires a continued transitioning to a more holistic, strategic approach where transportation performance targets are agreed upon based on a combination of three factors:
  – How much achieving the target contributes to performance relative to a specific issue area within the transportation system (e.g., road condition);
  – How much achieving the target contributes to performance of the overall transportation system (e.g., mobility, access, condition, etc.); and
  – How much achieving the target contributes to achieving other outcomes and performance targets also valued by the region (e.g., fiscal sustainability, healthy environmental assets, etc.).
Figure 14
Strategic Investment That Encompasses All Outcomes

- What is the cost effectiveness of different targets?
  - Pavement
  - Bridges
  - Safety
  - Etc.

- What is the total cost of different targets?

Assesing Targets
- What are the implications for the transportation system?
- How do differing targets impact other outcomes?

- Select targets
- Assure actions reflect targets
- Assure revenue allocation reflects targets
Advancing Outcomes through Actions in this Regional Transportation Plan

The findings in Creating Success with Our Transportation Assets were driven by the high-level performance measures chosen for Creating Success. Recognizing that we manage what we measure, the actions in this Plan are driven by lessons learned contained in these findings. The actions are focused on the six outcomes for a thriving Southeast Michigan (Figure 1). Several are highlighted below in this Executive Summary.

Note that most of the actions below could have been listed under any number of other outcomes. Consistent with SEMCOG’s desire to make a transformation from siloed, single-topic approaches to decision making, the plan deemphasizes categorical thinking in favor of holistic thinking. Nonetheless, for illustrative purposes, key actions are summarized by outcome with complete understanding that different stakeholders have varying perspectives and would probably organize them differently. The degree to which different stakeholders interested in this plan associate an action with others of the six outcomes is a measure of our success toward more comprehensiveness.

Economic Prosperity

• The international border crossing that Southeast Michigan shares with Ontario, Canada, is essential to the operations of existing industry and to the value proposition for expanding supply chain and logistics activity. SEMCOG will continue to support and advocate for border infrastructure improvements, such as the New International Trade Crossing and the Blue Water Bridge customs plaza, which will enable increases in the efficiency, reliability, safety, and security of cross border travel. In addition, SEMCOG will continue to work collaboratively with bi-national stakeholders to improve the operational reliability and security of the existing border crossings.

• The regional freight system is an important economic asset. SEMCOG will continue to partner with initiatives to promote growth in supply chain and logistics activity and gather information on freight industry needs. Examples of these initiatives include, but are not exclusive to:
  – Michigan Economic Development Corporation’s Logistics and Supply Chain Strategic Plan implementation,
  – Detroit Regional Chamber’s TransLinked initiative, and
  – VenturePort and I-69 Corridor Next Michigan Development Corporation activities.

• SEMCOG will also continue facilitating collaboration between various infrastructure service providers focusing on reducing costs and providing more efficient service. Examples include:
  – programming and scheduling of projects
  – reducing project delivery time
  – ensuring consistency in local utility permitting requirements
  – coordinating long-term plans
  – setting service level targets
  – more specifically quantifying the costs of differing levels of service
• SEMCOG will work with appropriate stakeholders to develop and implement a more refined and comprehensive Strategic Investment Process as generically illustrated in Figure 14. Details will be added to ensure the process design accomplishes the following:
  – generation of information on the incremental and total costs of differing targets;
  – setting of targets for measures based partly on the cost effectiveness of different levels of investment as they relate to the transportation system;
  – setting of targets for measures based partly on the cost effectiveness of different levels of investment as they relate to all six of the region’s outcomes;
  – accountability to continue to assure the public that investments made are aligned with adopted targets;
  – use of asset management in evaluation and implementation of projects;
  – transparency in all parts of the process; and
  – collaboration and opportunity for input by other infrastructure service providers including water, sewer, and energy.

Reliable, Quality Infrastructure
• SEMCOG will advocate for and pursue determining infrastructure revenue needs based on the long-term, real costs of service including:
  – maintenance,
  – capital,
  – financing,
  – replacement, and
  – costs associated with achieving environmental protection.
• SEMCOG will promote and support a framework for paying transportation infrastructure costs using a two-part formula:
  – Part 1: A variable cost based on extent of use.
  – Part 2: Some costs for all based on principle that everyone benefits regardless of use (e.g., fixed fee).
  – Each of these parts would include some portion of investing in replacement of infrastructure.
• SEMCOG will identify options for more fully incorporating asset management for roads and bridges into project selection.
• SEMCOG will allocate resources to assisting operating agencies in using its tools for maximizing the benefit of varying distributions of available revenues.
• SEMCOG will allocate resources to refining these tools based on updated data or improved knowledge.
• SEMCOG will work with implementing agencies to set targets based on:
  – incremental costs of achieving differing targets,
  – total costs of achieving differing targets, and
  – other transportation needs.
Desirable Communities

- SEMCOG will work with local governments to prioritize repurposing of areas with excess capacity using some combination of:
  - nonmotorized travel and
  - green infrastructure.
- SEMCOG will create a comprehensive toolkit that will allow communities, and others, with a vested interest in corridor redevelopment, to easily find information on appropriate tools that address the unique characteristics of a location and meet community needs.
- SEMCOG will engage in technical support activities in the priority corridors for higher levels of transit to help identify systematic opportunities. This includes applying some of the tools included in the corridor toolkit.
- SEMCOG will support financially incentivizing housing development in mature areas – especially infill development near or along transit corridors and locations near employment centers and services.
- SEMCOG will use its Sustainable Community Recognition Program to assist in, and to encourage; higher density, Transit Oriented Development (TOD), and the LEED-ND Smart Location and Linkage rating system to increase housing development in areas that already have existing infrastructure.
- SEMCOG will assist communities interested in maximizing walkability and bikeability through its Sustainable Communities program and auditing activities.
- SEMCOG will seek opportunities to further connect and integrate nonmotorized facilities in the broader transportation network, especially when repaving, restoring, and reconstructing existing roadways.
- SEMCOG will continue to pursue opportunities to include or expand nonmotorized facilities and bicycle parking on all fixed-route bus lines, at activity centers, and in future rapid transit corridors in the Nonmotorized Plan.
- SEMCOG will continue to advocate for investment in safety and collaborate with partners to leverage resources.

Access to Services, Jobs, Markets, and Amenities

To help position the region for the needed expansion of transit service, SEMCOG recommends that the RTA’s initial steps include the following:

- Quickly begin working with transit operators to identify and implement additional service coordination and consolidation, and to adopt a common set of service standards and performance measures. These actions must be clearly communicated to the public so they understand the progress being made.
- Work with transit operators to identify actions that resolve the likely confusion that would result from several votes on “funding transit” at different times and in different parts of the region.
- When estimating the amount of revenue needed to fund a proposed transit system, SEMCOG recommends this be based on the real cost of that system. The real cost includes capital needs, operations, maintenance, and long-term replacement of both regional and local service.
- Begin its planning using the Regional Transit Coordinating Committee (RTCC) and Ann Arbor Transit Authority (AATA) transit plans, but subsequently conduct a high-level review of these
plans to identify and, if necessary, adopt updates at the level of specificity needed to align local bus service with rapid transit service in the four priority corridors: Woodward, Gratiot, M-59, and Michigan Avenue. SEMCOG offers to assist with this update with the understanding that the purpose is narrowly focused on proposing modifications as described above, not revisiting the basic direction already established in these plans.

- SEMCOG will promote actions that the RTA can take to improve public transit with an emphasis on linking housing to jobs and services.

Fiscally Sustainable Public Services

- In order to improve the quality and fiscal sustainability of our infrastructure services, we must seize the opportunity presented by the public’s willingness to take personal actions that help more cost-effectively deliver services. Examples include carpooling, use alternative routes, using public transit, and traveling at non-peak times.

- Advocate that construction and maintenance techniques be reviewed by Michigan’s Asset Management Council and implemented based on consideration of both short- and long-term costs.

- SEMCOG will continue collaborating with the large service providers to advocate for a transition from higher-cost infrastructure designs aimed at addressing short-duration peak demand, to less expensive infrastructure designs aimed at providing quality service a majority of the day.

- SEMCOG’s analytical tools for maximizing pavement and bridge condition benefits from available revenue should be used by operating agencies as part of project programming.

Healthy, Attractive Environmental Assets

- SEMCOG will advocate that a revised structure for transportation funding include the design, construction, maintenance, and replacement of necessary stormwater management infrastructure.

- SEMCOG will continue to work with the state and local stakeholders to monitor local air quality and use its holistic approach to ensure that the region attains and maintains all national ambient air quality standards in a manner most consistent with supporting the region’s six adopted outcomes.

- SEMCOG will promote using various funding sources, including the new Transportation Alternatives Program, to implement projects that address both transportation and environmental outcomes.

- SEMCOG will complete and promote implementation of the Regional Green Infrastructure Vision.
Overview of Projects in the 2040 Regional Transportation Plan

Federal law requires that SEMCOG maintain two project lists. The first list represents projects programmed to date for the 2040 Regional Transportation Plan. Projects in the plan will be implemented via the region’s short-range 2014-2017 Transportation Improvement Program (TIP), which represents the list of projects programmed for funding over the next four years. Both of these lists must be financially constrained; meaning that the cost of planned projects cannot exceed the amount of funding reasonably expected to be available over respective periods.

SEMCOG maintains detailed data sources used to track the condition of the region’s transportation system. SEMCOG has received national recognition for its work in safety, asset management using pavement data and for facilitating collaboration on managing operations.

In preparation for the Regional Transportation Plan and the Transportation Improvement Program, SEMCOG and road and transit implementing agencies all used the data in various ways to support decision-making. Examples include:

- Condition of roads;
- Condition of bridges;
- Vehicle counts;
- Current and future demographic data by traffic analysis zone on population, age of population, households, and jobs;
- Forecasted travel by road segment;
- Safety data by road segment;
- Transit user survey data;
- Representative public perspective on infrastructure;
- Location of sensitive environmental resources; and
- Intermodal connectivity.

Several other sections of this plan include various analyses undertaken using these data. These analyses were designed and used to guide decision-making for policies, actions and project selection.

Based on these analyses, a series of policies and principles to guide plan development were proposed and adopted by the elected officials representing the region. These policies and principles were used to structure a formal call for submittal of projects in fall 2012.

Specifically, the call for projects was based on all of the following, each of which is described in considerable detail in other parts of this plan:

- Consistency with the national goals set forth in the new federal transportation program Moving Ahead for Progress in the 21st Century (MAP-21),
- SEMCOG’s Creating Success Outcomes and Performance Measures,
- Guiding Principles and Policies adopted by SEMCOG,
- Recognition of key societal changes impacting the provision of transportation services and,
**Investment Prioritization**

SEMCOG’s various needs analyses demonstrated that much of the existing system continued to decline despite the heavy emphasis already placed on maintaining it. SEMCOG recommended retaining priorities in the 2035 Plan, stressing continued emphasis on care of the current system by focusing on the following:

- Road and bridge condition;
- Household access to jobs, services, and amenities;
- Safety;
- Transit ridership; and
- The infrastructure utilization rate.

**Performance Measures**

SEMCOG noted its expectation that in the future, increasing emphasis would be placed on setting targets for performance measures to guide investment and distribution of transportation funding. SEMCOG noted the need for a process where decisions on distribution of funds would be increasingly weighted by their rate of return on investment and value in moving the region toward achieving the adopted targets. In fact, that structure has now been framed and is described in Figure 16.

**Summary of Projects and Investment in the Region's Transportation System**

There are over 1,000 projects in the Regional Transportation Plan. The following table is a sample of projects found in the Regional Transportation Plan.

**Table 2**

**Example Projects from the Regional Transportation Plan**

<table>
<thead>
<tr>
<th>Transit</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ann Arbor - Detroit</td>
<td>From Ann Arbor to</td>
<td>Construct and operate</td>
<td>Wayne County</td>
</tr>
<tr>
<td>commuter rail service:</td>
<td>Detroit</td>
<td>commuter rail service</td>
<td>Washtenaw County</td>
</tr>
<tr>
<td>Illustrative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Huron and Jackson Real</td>
<td>Along Huron/Jackson</td>
<td>Ridership enhancement</td>
<td>Washtenaw County</td>
</tr>
<tr>
<td>Time Transit Traveler</td>
<td>Corridor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preventive maintenance</td>
<td>Regionwide</td>
<td>Maintain vehicles or</td>
<td>Regionwide</td>
</tr>
<tr>
<td></td>
<td></td>
<td>equipment</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bridge</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand River</td>
<td>At West Branch of</td>
<td>Replace Bridge</td>
<td>Livingston County</td>
</tr>
<tr>
<td></td>
<td>Cedar River</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New International Trade</td>
<td>From Southwest Detroit</td>
<td>New Bridge</td>
<td>Wayne County</td>
</tr>
<tr>
<td>Crossing</td>
<td>to Windsor Ontario</td>
<td></td>
<td>Essex County, Ontario</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pavement**
<table>
<thead>
<tr>
<th>Route</th>
<th>From-To</th>
<th>Action</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-96</td>
<td>From Newburgh to Telegraph (US-24)</td>
<td>Reconstruct</td>
<td>Wayne County</td>
</tr>
<tr>
<td>Lewis Avenue</td>
<td>From Todd to Lulu</td>
<td>Mill and fill, edge, repair</td>
<td>Monroe County</td>
</tr>
<tr>
<td>11 Mile Road</td>
<td>From Inkster to 2200’ East</td>
<td>Rehabilitate</td>
<td>Oakland County</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jefferson Avenue</td>
<td>From Crocker to Metropolitan Parkway</td>
<td>Widen from 2 to 5 lanes</td>
<td>Macomb County</td>
</tr>
<tr>
<td>I-94</td>
<td>From I-96 to Connor</td>
<td>Widen from 6 to 8 lanes, reconstruct interchanges</td>
<td>Wayne County</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Safety</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I-94 EB</td>
<td>Near Kalmbach Road</td>
<td>Install de-icing system</td>
<td>Washtenaw County</td>
</tr>
<tr>
<td>Krafft Road</td>
<td>From Campbell to State</td>
<td>Add center turn lane</td>
<td>St. Clair County</td>
</tr>
<tr>
<td>M-24 (Lapeer Rd)</td>
<td>At Harmon</td>
<td>Upgrade traffic signal and indirect left.</td>
<td>Oakland County</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traffic Operations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M-10 (Lodge Freeway)</td>
<td>At M-39 (Southfield Freeway)</td>
<td>Road Weather Information system</td>
<td>Oakland County</td>
</tr>
<tr>
<td>SEMCOG MI Rideshare</td>
<td>Regionwide</td>
<td>Continue operating SEMCOG's regional MiRideshare program</td>
<td>Regional</td>
</tr>
<tr>
<td>MITS Center operations</td>
<td>Regionwide</td>
<td>Continue control room operations activities</td>
<td>Regional</td>
</tr>
<tr>
<td>Optimize signals</td>
<td>Along M-1 (Woodward Ave)</td>
<td>Optimize signals</td>
<td>Oakland County</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Nonmotorized</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Detroit Riverfront Walk</td>
<td>Along the Detroit River from Meldrum and Belle Isle</td>
<td>Construct nonmotorized path</td>
<td>Wayne County</td>
</tr>
<tr>
<td>Border to Border Trail</td>
<td>Trail linking communities and destinations along the Huron River</td>
<td>Construct nonmotorized path</td>
<td>Washtenaw County</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Studies</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ann Arbor Connector Study</td>
<td>From Plymouth at US-23 to State at I-94</td>
<td>NEPA and PE for outcomes of feasibility study</td>
<td>Washtenaw County</td>
</tr>
</tbody>
</table>
Various Roads
Throughout Walled Lake Study Oakland County

Collectively, projects in the transportation plan will yield numerous benefits such as:

- Better bridges and fewer detours reducing travel costs;
- Decreased air pollution;
- Increased safety and economic productivity;
- More pedestrian and bicycle travel;
- Improved personal health and community vitality
- Better connections for different modes such as transit;
- Better transit, which will attract development, business, and tourism, and connect people to the places they want to go;
- Better pavement for less wear and tear on vehicles;
- Improved traffic flow;
- Safer roads saving lives, and
- Decreased congestion.

There are numerous federal and state laws, rules, and policies that impact both the level of funding available and how that funding can be used. The table below is a high level summary of the various sources of funding to support the Region’s Transportation System. Each source is guided by a separate and very specific set of requirements.

Table 3
Transportation Funding Sources

<table>
<thead>
<tr>
<th>Federal</th>
<th>State</th>
<th>Local</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway Trust Fund</td>
<td>Michigan Transportation Fund (MTF)</td>
<td>Local distribution of MTF funds</td>
<td>Transfers from Canada for New International Bridge Crossing</td>
</tr>
<tr>
<td>- Federal gas tax revenue</td>
<td>- State gas taxes</td>
<td>- General funds/millages</td>
<td></td>
</tr>
<tr>
<td>- General fund transfers</td>
<td>- Vehicle registration fees</td>
<td>- Downtown Development Authorities (DDA)</td>
<td></td>
</tr>
<tr>
<td>Periodic special funding from other federal agencies</td>
<td>- Auto-related sales taxes and driver’s license fees</td>
<td>- Local Development Finance Authorities (LDFA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Fund transfers</td>
<td>- Local transit farebox revenue</td>
<td>- Private funds</td>
</tr>
</tbody>
</table>

The table below represents SEMCOG’s current best estimate of total investment from all these funding sources by category through 2040. It also shows the near term investment programmed in the 2014-2017 Transportation Improvement Program.
### Summary of Investment in Southeast Michigan’s Transportation System through 2040

<table>
<thead>
<tr>
<th>Funding Category</th>
<th>Projected Investment Included in 2040 RTP (in millions)</th>
<th>Programmed in the 2014-2017 TIP (in millions)</th>
<th>Uses</th>
<th>Included in TIP</th>
<th>Source of Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation &amp; Maintenance of Federal-Aid Roads</td>
<td>$8,844</td>
<td>NA</td>
<td>Operations and minor capital</td>
<td>No</td>
<td>State</td>
</tr>
<tr>
<td>Operation &amp; Maintenance of Other Roads</td>
<td>$8,731</td>
<td>NA</td>
<td>Operations and minor capital</td>
<td>No</td>
<td>State</td>
</tr>
<tr>
<td>Federal Transit Funds</td>
<td>$3,521</td>
<td>$287</td>
<td>Capital(^2)</td>
<td>Yes</td>
<td>Federal</td>
</tr>
<tr>
<td>State Transit Funds</td>
<td>$3,713</td>
<td>$466</td>
<td>Capital and Operating</td>
<td>Yes(^4)</td>
<td>State</td>
</tr>
<tr>
<td>Local Transit Funds</td>
<td>$4,940</td>
<td>$493</td>
<td>Capital and Operating</td>
<td>Yes(^4)</td>
<td>Local</td>
</tr>
<tr>
<td>MDOT Capital – repair and improvement(^3)</td>
<td>$12,752</td>
<td>$990</td>
<td>Capital</td>
<td>Yes(^3)</td>
<td>Federal and State</td>
</tr>
<tr>
<td>Local Road Agencies – repair and improvement(^3)</td>
<td>$4,446</td>
<td>$866</td>
<td>Capital</td>
<td>Yes(^3)</td>
<td>Federal and State</td>
</tr>
<tr>
<td>MDOT Capacity Improvements</td>
<td>$5,905(^5)</td>
<td>$594(^6)</td>
<td>Capital</td>
<td>Yes(^3)</td>
<td>Federal, State, Canada and Private(^7)</td>
</tr>
<tr>
<td>Local Road Capacity Improvements</td>
<td>$925</td>
<td>$106</td>
<td>Capital</td>
<td>Yes(^3)</td>
<td>Federal and State</td>
</tr>
<tr>
<td>Total</td>
<td>$53,777</td>
<td>$3,802</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\)Federal-aid roads are those that are part of the National Highway System (NHS) or have a functional classification of Urban Collector/Rural Major Collector or higher.

\(^2\)Some preventative maintenance costs are also allowed.

\(^3\)Includes reconstruction, rehabilitation, safety, bridge, and Congestion Mitigation and Air Quality (CMAQ) projects

\(^4\)Exceptions apply if project is not federally funded and not considered regionally significant

\(^5\)Includes major freeway projects on I-75 and I-94 that involve both widening and reconstruction; the Blue Water Bridge Plaza; the New International Bridge Crossing (NITC); construction of a new loop ramp at I-75/Sashabaw Rd.; and, the reconfiguration of the I-96/U.S. 23 interchange.

\(^6\)Includes work associated with the Blue Water Bridge Plaza and access road improvements for the NITC

\(^7\)Canadian and private funds are associated with the New International Bridge Crossing

Below is a map depicting the projects thus far in the Regional Transportation Plan. There are numerous projects of various types in each of the region’s seven counties.
Figure 15
Projects Included in the 2040 Regional Transportation Plan

Source: SEMCOG

Note: Not all projects are represented on this map. Projects listed as 'Various Roads or Bridges', a nonmotorized path that does not follow a street, or bus purchases are examples of projects that may not be mapped. Where possible, sub-projects were mapped.
The projects reflect the recommended priority of maintaining the existing system.

The plan’s emphasis on use of the existing system and a different approach to congestion is reflected in the funding allocation. The vast majority of the minimal funding targeted for congestion management projects that include some capacity expansion results from the need to rehabilitate, repair, and replace portions of two aging Interstates. Only a small portion of the funding for each of these large-scale projects will be used for capacity expansion. Project costs are dominated by the need for repair and replacement of existing roadway, bridges and safety improvements.

Based on federal requirements, the New International Trade Crossing (NITC) is included. However, Canada is financing the New International Trade Crossing.

For the most part, road funds cannot be used to pay for either transit capital or operations.

With few exceptions, federal transit funds cannot be used to pay for transit operations.

Over $250 million in the plan and $45 million in the TIP is programmed for projects that help expand transportation choices and enhance the transportation experience. These include pedestrian and bicycle infrastructure and safety programs, historic preservation and rehabilitation of transportation facilities, environmental mitigation activities, and safe routes to school programs.

**Expected Changes in Performance**

- Table 5 summarizes key needs identified in this plan by category and the expected change in performance that will result.

- Consistent with forecasts in SEMCOG’s recent transportation plans, performance improvements continue to be hampered by inadequate funding.

Table 5

**Expected Changes in Performance at Current Funding Levels**

<table>
<thead>
<tr>
<th>Component</th>
<th>Key Needs</th>
<th>Expected Change in Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit Capital</td>
<td>- Dedicated/Adequate Source of Revenue</td>
<td></td>
</tr>
<tr>
<td>Transit Operating</td>
<td>- Dedicated/Adequate Source of Revenue</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Service Expansion: frequency and coverage</td>
<td></td>
</tr>
<tr>
<td>Pavement</td>
<td>- Reverse trend of deteriorating condition and increased taxpayer costs</td>
<td></td>
</tr>
<tr>
<td>Bridges</td>
<td>- Sustain level of investment that prevents cost escalation</td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>- Continue steady improvement</td>
<td></td>
</tr>
<tr>
<td>Congestion/Capacity</td>
<td>- Minimize need for expansion/maximize use of existing system</td>
<td></td>
</tr>
<tr>
<td>Major Improvement Projects</td>
<td>- Move forward with the projects persistently identified as high priority</td>
<td></td>
</tr>
<tr>
<td>Road Operations</td>
<td>- Increase emphasis as a cost effective means of addressing multiple system needs</td>
<td></td>
</tr>
<tr>
<td>Nonmotorized</td>
<td>- Increase emphasis on expanding as a viable transportation choice</td>
<td></td>
</tr>
</tbody>
</table>
In summary, available funding for both the 2040 Regional Transportation Plan and the 2014-2017 Transportation Improvement Program is properly focused on caring for the existing system. But, the insufficient amount of funding is impeding our ability to develop and improve the transportation system needed to advance our economic prosperity.
Chapter 1: Introduction

Southeast Michigan’s Transportation Assets

Southeast Michigan has a wealth of transportation assets that are vital to the economy and quality of life, and that are essential to the well-being of our residents and business community.

<table>
<thead>
<tr>
<th>Southeast Michigan Transportation Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southeast Michigan has a sophisticated transportation network that includes 23,400 miles of roads and supports over 100 million miles of travel each and every day. It connects people to work, school, shopping, hospitals, social events, and other businesses.</td>
</tr>
<tr>
<td>23,400 miles of major roads</td>
</tr>
<tr>
<td>More than 2,900 bridges</td>
</tr>
<tr>
<td>More than 2,300 miles of fixed-route bus service</td>
</tr>
<tr>
<td>at least 600 miles of walking or biking paths</td>
</tr>
<tr>
<td>4,000 miles of all-season truck routes</td>
</tr>
<tr>
<td>800 miles of main line rail</td>
</tr>
<tr>
<td>35 airports</td>
</tr>
<tr>
<td>Eight international border crossings</td>
</tr>
<tr>
<td>Five commercial marine ports</td>
</tr>
<tr>
<td>Seven rail/truck terminals</td>
</tr>
</tbody>
</table>

Our transportation system connects residents with their individual community, the region, and to areas beyond. A variety of travel choices gives people who have differing transportation needs access to jobs, health care, shopping, educational and recreational opportunities, and the everyday necessities of life. Our transportation assets also provide for movement of freight throughout the region, and connect us to markets around the globe. Clearly, an effective transportation system is vital to economic vitality, business attraction and expansion, trade, tourism, and quality of life.

Southeast Michigan’s transportation assets are key drivers of our economy and can be major contributors to the desirable communities that attract and retain a talented workforce.

Our transportation system supports and attracts private sector investment by linking businesses with customers, markets, supply chains/distribution networks, and employees.
Creating Success with Our Transportation Assets

Creating Success with Our Transportation Assets, Southeast Michigan’s 2040 Regional Transportation Plan (RTP), is designed to help us realize SEMCOG’s adopted outcomes and performance measures. This plan is also compliant with the national goals set forth in the federal transportation program, Moving Ahead for Progress in the 21st Century (MAP-21). These federal goals reinforce our desired outcomes.

Specifically, Creating Success with Our Transportation Assets, Southeast Michigan’s 2040 Regional Transportation Plan:

- promotes an infrastructure management approach, and the strategic investment of limited financial resources, in ways that prioritize needs and leverage our resources;
- provides information to the public to aid in decision-making;
- sets forth policies, actions, and recommendations to maintain and maximize the integrity of our transportation system;
- guides efforts to enhance transportation connections across various types of travel, with residents, within communities, and across the globe;
- provides for the flexibility needed to be responsive and adaptable in an increasingly dynamic environment;
- provides a framework for, and relies upon, collaboration and alignment among numerous organizations to implement its recommended actions;
- summarizes how over $50 billion in total revenue will be invested through 2040, including the approximately $36 billion directed by this plan;
- specifically identifies $3.8 billion in near-term projects programmed between 2014 and 2017; and
- is interwoven with other mutually reinforcing SEMCOG plans and programs such as the comprehensive economic development strategy, sustainability framework, housing strategy, environmental programs, green infrastructure, and complete streets, to name a few.
Chapter 2: Guiding Plan Development

Creating Success in Southeast Michigan

Our region’s transportation network – roads, bridges, transit systems, rail, airports, water ports, and recreational trails and pathways – is critical to Creating Success in Southeast Michigan. Therefore, one of the overarching considerations in developing the region’s 2040 Regional Transportation Plan is how it addresses our six Creating Success outcomes and performance measures. The plan emphasizes effectively using our finite resources to meet the needs of residents, businesses, and visitors in a manner that fits with the realities of the 21st Century and contributes to:

1. Economic Prosperity
2. Desirable Communities
3. Fiscally Sustainable Public Services
4. Reliable, Quality Infrastructure
5. Healthy, Attractive Environmental Assets
6. Access to Services, Jobs, Markets, and Amenities

The following Creating Success in Southeast Michigan framework highlights the performance measures SEMCOG will be tracking to monitor how our region’s progress in achieving our desired outcomes. As a result of undertaking this more holistic, comprehensive approach to the Regional Transportation Plan, several lessons were learned. These lessons are described in many of the findings and culminated in the creation of a new framework for setting targets and maximizing our rate of return on our transportation investments. This framework is described in Chapter 4: Investing in Transportation.
### What We Need to Achieve: Outcomes

<table>
<thead>
<tr>
<th>What We Manage</th>
<th>What We Measure: Performance Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Prosperity</td>
<td>Desired Communities</td>
</tr>
<tr>
<td>Parent of population age 25 and over with a bachelor’s degree or above</td>
<td>Percent of 4th and 8th grade students at or above proficient in reading, math, and science (MEAP scores)</td>
</tr>
<tr>
<td>Parent of population age 25 and over with an associate’s degree</td>
<td>ACT scores</td>
</tr>
<tr>
<td>Change in real regional Gross Domestic Product (GDP)</td>
<td>Real per capita personal income growth</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>Access to amenities such as: - entertainment venues - museums/art/cultural attractions - walking/biking facilities - parks - sports venues</td>
</tr>
<tr>
<td>Labor underutilization rate (U-6)</td>
<td>Access to services such as: - educational institutions - medical facilities/hospitals - libraries - full service grocery stores</td>
</tr>
<tr>
<td>Change in jobs</td>
<td>Migration rates</td>
</tr>
<tr>
<td>Industry concentration</td>
<td>Voter participation rate</td>
</tr>
<tr>
<td>Consumer confidence</td>
<td>People’s desire to reside in community</td>
</tr>
</tbody>
</table>

Several measures that reflect the outcomes will be based on a regional survey. In general, they will measure public sentiment related to all six outcomes. (See examples above.)
Moving Ahead for Progress in the 21st Century

Another important consideration for the plan is compliance with the national goals set forth in the new federal transportation program, Moving Ahead for Progress in the 21st Century (MAP-21). Broadly speaking, the goals include Safety, Infrastructure Condition, Congestion Reduction, System Reliability, Freight Movement and Economic Vitality, Environmental Sustainability, and Reduced Project Delivery Delays.

Principles Guiding Development of the 2040 Regional Transportation Plan

The third important consideration is the set of Principles for Guiding Development of Southeast Michigan’s 2040 Regional Transportation Plan that were adopted by the Executive Committee in May 2012. These principles were adopted to help guide staff analysis, advisory committee discussion, and public outreach activities, all of which contribute to plan development.

- Emphasize building on the region’s numerous assets.
- Disclose and acknowledge actions necessary for positioning Southeast Michigan to compete in the 21st Century.
- Emphasize increasing the use of the existing transportation system and managing peak demand to reduce costs.
- Be developed with the understanding that transportation is a single component of a vital system of interrelated infrastructure that includes water, sewer, and other utility systems.
- Provide for strategic investment of the region’s limited transportation dollars for both local and regional scale projects.
- Explore the cost and service delivery implications of alternative levels of service.
- Explore the impact of potential technological advances and their role in efficiently managing future transportation system supply and demand.
- Acknowledge the significant amount of excess roadway capacity that exists in certain locations and explore options for transportation infrastructure that is significantly underutilized.
- Increase emphasis on funding projects that are identified through asset management programs.
- Focus on demand management strategies.
- Transition to a process that prioritizes transportation projects based on their impact on Creating Success performance measures and outcomes as adopted in SEMCOG’s Creating Success initiative (October 2011).
- Recognize that, to compete for people and jobs and provide for quality transit services, the region’s transit system must be vastly improved so that ridership levels are comparable to those experienced in thriving metropolitan areas across the country.
- Promote a more sustainable transportation system, and reduce project deliveries and delays, through earlier integration of environmental protection measures with project design and selection.
- Help the public understand the current transportation funding process, as well as the need for revenue sources beyond fuel taxes, to provide for a system that enables mobility, economic prosperity, and the long-term sustainability of the transportation system.
• Seek to improve citizen satisfaction with transportation services.
• Collaborate with the public, particularly populations traditionally underrepresented in the transportation decision-making process.
• Make the case for greater investment and the wisest use of transportation dollars in the region.
• Make the system safe for pedestrians, bicycles, and all motor vehicles.

Policies

The policies provide broad-based direction for plan development. Along with SEMCOG’s Creating Success performance measures, the policies set the stage for specific actions that should be taken to achieve our outcomes and the MAP-21 goals. We will use our performance measures to monitor progress.

The policies are organized according to the six interrelated Creating Success outcomes (Please note: While policies are listed one time, it is recognized that a number of them support multiple outcomes). The policies, presented in no particular order of importance, are:

Economic Prosperity

• Employ a comprehensive approach for redeveloping assets along commercial and industrial transportation corridors.
• Improve public transit to enhance the region’s ability to attract and retain educated, knowledge-based workers.
• Use the freight system (road, rail, air, and water) to support economic development throughout the region, including improving access to local, national, and global markets.
• Stimulate investment and economic growth by connecting business travelers with the local, national, and global marketplace.
• Identify and engage in activities to prepare and connect workers with employment opportunities created by transportation projects.

Desirable Communities

• Improve and/or maintain a safe environment for all travelers.
• Address issues of transportation security in the regional planning process.
• Promote Complete Streets concepts that ensure roadways are designed for all users, and incorporate a variety of elements that contribute to economic vitality while protecting the environment and providing a higher quality of life.
• Improve access to “quality of life” enhancing amenities such as parks, entertainment venues, restaurants, sports facilities, and education centers, among others.

Fiscally Sustainable Public Services

• Develop more stable, dependable transportation funding sources that result in increases in both highway and transit revenues.
• Collaborate with other infrastructure providers (e.g., water/sewer, utilities, and telecommunication) to better coordinate projects.
• Increase use of the existing transportation system and manage peak demand to reduce costs.
• Identify areas of major excess road capacity and explore options (such as road diets, bike lanes, decommissioning roadways) for infrastructure that is significantly underused.

**Reliable, Quality Infrastructure**

• Continuously improve decision-making in transportation project selection and design in order to optimize investments based on their contribution to the region’s six *Creating Success* outcomes.

• Maintain the integrity of the region’s investment in transportation infrastructure by identifying and prioritizing needed improvements.

• Use asset management strategies to maintain or improve Southeast Michigan’s roads, bridges, and transit assets in a state of good repair; this includes increasing emphasis on funding projects that are identified through asset management programs.

• Use technology and other travel demand management techniques to improve efficiency and safety of the transportation system.

• Implement SEMCOG’s Congestion Management Process to improve traffic flow in areas of recurring and nonrecurring congestion.

**Healthy, Attractive Environmental Assets**

• Protect and enhance the natural environment in the evaluation and design of transportation projects. Include incorporating green infrastructure techniques and stormwater management in transportation infrastructure project design when feasible.

**Access to Services, Jobs, Markets, & Amenities**

• Enhance personal access to services, jobs, markets, and amenities for the region’s many different population groups; this includes persons with disabilities, older adults, low-income and transit-dependent persons, and students, as well as those that have other transportation options.

• Improve public transit quality and service levels to better serve the needs of residents, employers, and visitors.

• Improve quality of life and personal health by facilitating walking, biking, and other trails/pathways.

**Public Outreach and Engagement**

• Collaborate with the public, particularly populations traditionally underrepresented in the transportation decision-making process.

• Conduct outreach to better connect private sector business decisions with transportation investment.

• Engage in outreach and educational programs to encourage the public to undertake activities that help realize actions set forth in this plan.
Chapter 3: Informing the Plan

Changing Realities

Much has changed in the region, the state, and the country in recent years. These changes are reflected in the following table, comparing “Old” and “New Realities.” The New Realities that helped inform development of the 2040 Regional Transportation Plan.

Table 6
Changing Realities

<table>
<thead>
<tr>
<th>Old Reality</th>
<th>New Reality</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Success is defined by growth in population and jobs</td>
<td>• Success is defined by quality of life</td>
</tr>
<tr>
<td>• Region competes with rest of country</td>
<td>• Region competes with rest of world</td>
</tr>
<tr>
<td>• Parts of Southeast Michigan can succeed independently</td>
<td>• For sustained success, the whole region must prosper</td>
</tr>
<tr>
<td>• High school education is sufficient</td>
<td>• Advanced education is essential</td>
</tr>
<tr>
<td>• Choose a job and then a place to live</td>
<td>• Choose a place to live and then a job</td>
</tr>
<tr>
<td>• Build costly roads to meet peak travel demand</td>
<td>• Reduce costs by reducing peak travel and better use of existing road capacity</td>
</tr>
<tr>
<td>• Taxing gas consumption will fund transportation needs</td>
<td>• Gas tax revenues are declining due to emphasis on conservation and higher fuel economy requirements</td>
</tr>
<tr>
<td>• Most workers commute to their jobs</td>
<td>• Many work remotely – from home or other locations</td>
</tr>
<tr>
<td>• Work traditional schedule</td>
<td>• More flexible work hours</td>
</tr>
<tr>
<td>• Transit only benefits those who use it</td>
<td>• Transit benefits everyone because it attracts people and jobs</td>
</tr>
<tr>
<td>• Federal government will solve our problems</td>
<td>• We must create our own destiny</td>
</tr>
<tr>
<td>• More money will solve our problems</td>
<td>• We must reduce our costs as we also seek additional, more sustainable revenue</td>
</tr>
<tr>
<td>• Property taxes will provide adequate funding for public services</td>
<td>• Under current tax law, the 30% drop in Southeast Michigan’s taxable property value since 2008 will not be recovered, even when the housing market rebounds.</td>
</tr>
<tr>
<td>• The public’s understanding of how infrastructure is funded is not a high priority</td>
<td>• Recognition that public understanding is key to garnering support for increased investment and creating a sustainable system.</td>
</tr>
<tr>
<td>• Develop a transportation plan as stand-alone document</td>
<td>• Develop a transportation plan consistent with other infrastructure services to achieve desired regional outcomes</td>
</tr>
<tr>
<td>• Freight facilities widely dispersed across the country</td>
<td>• Greater concentration of freight facilities in fewer locations</td>
</tr>
<tr>
<td>• Biking facilities are purely recreational</td>
<td>• Biking facilities are an essential part of our transportation infrastructure.</td>
</tr>
</tbody>
</table>
The Economic and Demographic Outlook for Southeast Michigan Through 2040

The Southeast Michigan economy is now emerging from its most catastrophic period since the Great Depression. During the first decade of the 2000s, the region lost virtually all of the jobs it had garnered during the robust 1990s. The regional economy has now made a good start in returning to positive job growth from this retrenchment. However, growth will be much less than previously anticipated. We now expect that by 2040, employment in the region will still remain slightly below its peak level achieved in 2000.

One consequence of the poor performance of the local economy from 2001-2009 is a loss of population. In addition, accelerating growth in the over-65 population and low in-migration rates for young adults will limit the region’s ability to expand. These demographics will hang over the longer-term renewal of the economy. While difficult to comprehend in our current high unemployment environment, the looming long-term problem will be labor shortages, particularly of workers with skills that mesh with the emerging knowledge- and information-based economy.

A Recovering Region

From 2000 to 2009, the Southeast Michigan region lost an astounding 351,000 jobs, unfathomable at the beginning of the decade. Ironically, the region gained a similar number, almost 357,000 jobs, in the robust growth era between 1990 and 2000. Almost 198,000 of the job losses – over half of them – occurred in a single year, during the devastating crash of 2009. Some of those losses are likely permanent.

The past decade is summarized as a period of retrenchment. This was certainly the case with the activity most integral to the economic fortunes of the region, the domestic automotive industry. The Detroit Three (General Motors, Ford, and Chrysler) were engaged in restructuring activities since the mid-2000s, and accelerated those efforts later in the decade, spurred by looming bankruptcy proceedings which then materialized for Chrysler and General Motors.

However, there is reason for optimism. All three domestic auto companies are now making a profit. The challenge, particularly in manufacturing, is that productivity gains result in a smaller workforce.

Cautious optimism is reflected in SEMCOG’s forecast for the region. Exuberance is tempered by the reality that we are recovering from a very deep recession induced by a financial crisis where recovery is slow. Therefore, SEMCOG predicts lower levels of growth for the region.

Recent Trends

To better understand the recent path of the regional economy, the first set of numbers show private-sector employment trends annually for the region from 2001 to 2010 (Table 7). These data isolate the manufacturing sector and its automotive industry component. In addition to summarizing the employment path annually in the first row of each entry, the table contains a breakout of those paths into two subcomponents. The breakouts allow us to gain greater insight into the employment outcomes.

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3 Employment data are based on the measure published by the U.S. Bureau of Economic Analysis, and as such, include the self-employed, farm workers, and military personnel. The exception is the employment data reported in Table 1, which are published by the U.S. Bureau of Labor Statistics.

4 These data are from the U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages, in addition to unpublished data estimated by SEMCOG consultants. The data reported here are a summation of both the published and estimated data at the six-digit NAICS code level, and may differ slightly from the published totals.
reflected in the total changes for each year. The first of the breakouts identifies the effect of national economic change on the respective local employment outcome, and the second isolates the effect of local economic events and policy, that is, the locally influenced change.

Specifically, the national change component scenario shows what would have happened if employment in the local industries had changed year to year at exactly the same rate as the corresponding national industry. Total private-sector employment in the SEMCOG region would have declined by 32,943 jobs between 2001 and 2002 if local employment in all of the private-sector industries had changed at the same rate as they did nationally. But total private-sector employment in the region actually declined by 51,948 jobs between 2001 and 2002. The difference between this change and the national control change is the locally influenced change, in this case a decline of 19,005 jobs.

The SEMCOG region significantly underperformed the rest of the country between 2001 and 2009, even controlling for industry structure. If it had tracked the employment performance of the nation, the region would have lost 85,834 private-sector jobs, but instead it lost a much larger 407,240 jobs during that eight-year period. Much of this change reflects the declining market share then of the Detroit Three automakers, which are highly concentrated in the SEMCOG region. Further, there is a significant multiplier effect spurred by their shrinking activity.

The region’s competitive position began turning around in 2010. If the trend had tracked with the national economy in 2010, the region would have lost 9,129 private-sector jobs. Instead, it gained 9,293 jobs.
Table 7
Analysis of Private-Sector Employment Change, Seven-County SEMCOG Region, 2001-2010

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Total private</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing (private)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally influenced change</td>
<td>–5,191</td>
<td>–8,975</td>
<td>–12,034</td>
<td>–9,929</td>
<td>–13,067</td>
<td>–4,536</td>
<td>–10,017</td>
<td>–10,607</td>
<td>–74,356</td>
<td>6,582</td>
<td></td>
</tr>
<tr>
<td>Motor vehicle mfg. (3361 to 3363)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally influenced change</td>
<td>–6,456</td>
<td>–9,653</td>
<td>–7,615</td>
<td>–6,775</td>
<td>–6,540</td>
<td>837</td>
<td>–6,641</td>
<td>–1,710</td>
<td>–44,555</td>
<td>39</td>
<td></td>
</tr>
</tbody>
</table>
Recognizing that different outcomes are possible, SEMCOG prepared two alternative scenarios. A more pessimistic scenario incorporates a more negative trajectory for the auto industry and the auto manufacturing workforce. A more optimistic scenario is based on what the local economy would look like if it performed as well as another heavily industrialized Midwest area successfully recovering from major change in its core industry: Pittsburgh and its steel industry. The Pittsburgh region is often held up as the standard to reach for by regions hard hit by structural change and that are striving for a revitalized economy.5

Baseline Forecast for Southeast Michigan through 2040
Current conditions locally, as well as anticipated future trends nationally, portend only moderate growth in Southeast Michigan’s population and labor market over the next 30 years.

First, is the forecast of the region’s population, which is central to the speed limits imposed on local employment in the long run. Figure 17 shows the path of total population in the SEMCOG region from 1990 to 2040. Data from 1990 to 2010 are from the U.S. Bureau of the Census and the extension through 2040 is from SEMCOG’s forecast. Population in the region increased steadily from 4.59 million in 1990 to 4.85 million in 2001, and then began to decline, dropping to 4.71 million in 2010. Population is forecast to continue to decline at a very modest rate over the next few years, reaching a low of 4.64 million in 2022. Population then is expected to grow slowly, reaching 4.74 million in 2040.

Figure 17
Population of SEMCOG Region, 1990-2040

5The Pittsburgh region is defined in this report to be the Pittsburgh-New Castle Combined Statistical Area (CSA), made up of the seven-county Pittsburgh Metropolitan Statistical Area (Allegheny, Armstrong, Beaver, Butler, Fayette, Washington, and Westmoreland Counties), and the New Castle micropolitan area (Lawrence County).
Total regional population through 2040 is dissected by decade into its two component parts in Figure 18.

Figure 18
Components of Population Change, SEMCOG Region, 1990-2040

The SEMCOG region has a disproportionately large share of baby boomers. This group, many of whom are the children of people who migrated to Southeast Michigan to work in the auto industry in the 1950s, is about to move into senior citizen status. Along with the expected continuation of net out-migration of residents until the 2030s, and particularly the low rate of in-migration of young adults, either foreign or domestic, this means that the SEMCOG region will age much more dramatically than the nation as a whole. Currently, the region and the country have the same share of the population aged 65 and older (13 percent), but over the next few years they will diverge. By 2040, 23.9 percent of the SEMCOG region’s population will be 65 or older, almost one person in four, compared with 19.6 percent nationwide (Figure 19). Correspondingly, the share of the population in cohorts under 65 shrinks. In Southeast Michigan (Figure 20), children and college-age adults, those aged 24 and under, decline from 33.3 percent of the population today to 28.7 percent in 2040. The cohort now occupied by the baby boomer generation, those aged 45 to 64, sees a fall in share from 28 percent to 22.9 percent over the period 2010-40. This represents a dramatic transformation in the age distribution of the region’s population and has implications for the design of the transportation system as well as the mix of both public and private sector services. A summary of population forecast by age group can be found in Table 8.
Figure 19
Population Distribution by Age Categories, U.S. vs. SEMCOG Region, 2040

Figure 20
Population Distribution by Age Categories, SEMCOG Region, 2010 and 2040
<table>
<thead>
<tr>
<th>Age Range</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>Numeric Change 2010-2040</th>
<th>Percent Change 2010-2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>4,704,743</td>
<td>4,646,938</td>
<td>4,678,718</td>
<td>4,742,083</td>
<td>37,340</td>
<td>0.8%</td>
</tr>
<tr>
<td>0-4</td>
<td>282,840</td>
<td>261,570</td>
<td>263,140</td>
<td>257,662</td>
<td>-25,178</td>
<td>-8.9%</td>
</tr>
<tr>
<td>5-9</td>
<td>307,000</td>
<td>266,669</td>
<td>264,807</td>
<td>267,917</td>
<td>-39,083</td>
<td>-12.7%</td>
</tr>
<tr>
<td>10-14</td>
<td>328,001</td>
<td>282,411</td>
<td>268,859</td>
<td>277,676</td>
<td>-50,325</td>
<td>-15.3%</td>
</tr>
<tr>
<td>15-17</td>
<td>213,194</td>
<td>185,364</td>
<td>168,643</td>
<td>172,644</td>
<td>-40,550</td>
<td>-19.0%</td>
</tr>
<tr>
<td>20-24</td>
<td>298,948</td>
<td>311,657</td>
<td>280,309</td>
<td>275,029</td>
<td>-23,919</td>
<td>-8.0%</td>
</tr>
<tr>
<td>25-29</td>
<td>282,741</td>
<td>309,041</td>
<td>290,155</td>
<td>270,777</td>
<td>-11,964</td>
<td>-4.2%</td>
</tr>
<tr>
<td>30-34</td>
<td>280,912</td>
<td>266,271</td>
<td>300,347</td>
<td>282,960</td>
<td>2,048</td>
<td>0.7%</td>
</tr>
<tr>
<td>35-39</td>
<td>310,431</td>
<td>266,659</td>
<td>309,443</td>
<td>302,068</td>
<td>-8,363</td>
<td>-2.7%</td>
</tr>
<tr>
<td>40-44</td>
<td>334,638</td>
<td>267,837</td>
<td>266,860</td>
<td>309,030</td>
<td>-25,608</td>
<td>-7.7%</td>
</tr>
<tr>
<td>45-49</td>
<td>363,041</td>
<td>295,570</td>
<td>264,713</td>
<td>313,580</td>
<td>-49,461</td>
<td>-13.6%</td>
</tr>
<tr>
<td>50-54</td>
<td>369,245</td>
<td>316,135</td>
<td>261,154</td>
<td>265,751</td>
<td>-103,494</td>
<td>-28.0%</td>
</tr>
<tr>
<td>55-59</td>
<td>321,915</td>
<td>338,740</td>
<td>282,540</td>
<td>257,962</td>
<td>-63,953</td>
<td>-19.9%</td>
</tr>
<tr>
<td>60-64</td>
<td>264,778</td>
<td>336,319</td>
<td>295,438</td>
<td>248,486</td>
<td>-16,292</td>
<td>-6.2%</td>
</tr>
<tr>
<td>65-69</td>
<td>186,948</td>
<td>275,326</td>
<td>296,961</td>
<td>251,990</td>
<td>65,042</td>
<td>34.8%</td>
</tr>
<tr>
<td>70-74</td>
<td>132,320</td>
<td>208,784</td>
<td>270,137</td>
<td>242,586</td>
<td>110,266</td>
<td>83.3%</td>
</tr>
<tr>
<td>75-79</td>
<td>108,531</td>
<td>137,102</td>
<td>206,886</td>
<td>227,730</td>
<td>119,199</td>
<td>109.8%</td>
</tr>
<tr>
<td>80-84</td>
<td>93,485</td>
<td>86,979</td>
<td>142,486</td>
<td>188,790</td>
<td>95,305</td>
<td>101.9%</td>
</tr>
<tr>
<td>85-89</td>
<td>59,762</td>
<td>57,678</td>
<td>77,921</td>
<td>122,476</td>
<td>62,714</td>
<td>104.9%</td>
</tr>
<tr>
<td>90-94</td>
<td>23,281</td>
<td>35,691</td>
<td>36,998</td>
<td>64,818</td>
<td>41,537</td>
<td>178.4%</td>
</tr>
<tr>
<td>95-99</td>
<td>5,594</td>
<td>14,444</td>
<td>15,784</td>
<td>23,783</td>
<td>18,189</td>
<td>325.1%</td>
</tr>
<tr>
<td>100+</td>
<td>744</td>
<td>3,524</td>
<td>7,011</td>
<td>9,106</td>
<td>8,362</td>
<td>1123.9%</td>
</tr>
</tbody>
</table>
Our forecast of total employment for the SEMCOG region is shown in Figure 21. Employment peaked in 2000 at 2.835 million, and then fell through 2009, except for 2005 when the region added almost 19,000 jobs. The catastrophic year of 2009 stands out, when employment plunged by almost 200,000 jobs.

Figure 21
Total Employment in SEMCOG Region, 1990-2040

SEMCOG predicts the region will experience job gains through 2040 (Figure 21). The most rapid growth is projected to occur in the early years of the forecast period. Between 2010 and 2014, the region grows by about 27,000 jobs per year (1.1 percent per year). Growth then slows to about 7,600 jobs per year between 2014 and 2040 (0.3 percent per year). Positive growth is most welcome after an extended period of downturn, but the growth is not robust, so that by 2040, employment in the region still remains slightly below the levels achieved in 2000.

Over the entire period 2010 to 2040, total employment is forecast to grow by an average of 0.39 percent per year in the SEMCOG region, with a wide variation in the performance of the constituent industries (Figure 22). The strongest growth is in the private education and health services industry category, dominated by the health care segment and expected to expand at a rate of 1.14 percent per year. The professional and business services category also sees comparatively rapid employment growth of 0.85 percent per year.

The measure used in this study is the U.S. Bureau of Economic Analysis (BEA) estimate of total employment. This measure includes military, farm, and self-employed workers, as well as wage and salary workers. The estimate of self-employed workers includes all persons who had any self-employment earnings in the year. It is a much broader estimate than the BLS count of self-employed workers, which counts as self-employed only individuals who claim self-employment status as their main job.
At the other end of the spectrum is manufacturing employment which declines on average by 0.54 percent per year\(^7\), while at the same time, increasing output by 2.1 percent per year. Because productivity growth in manufacturing is relatively high – real output per employee is predicted to increase by 2.6 percent per year – employment declines along with that pace of output growth.\(^8\)

Employment is also forecast to decline in the trade, transportation, and utilities sector (TTU) over the next 30 years. The sector’s entire job loss is anticipated to occur in trade and utilities, while the transportation industry adds jobs.

A summary of the employment forecast by industry is presented in Table 7.

---

\(^7\)The manufacturing industry only includes jobs at production facilities. White-collar workers in pre-production, including research, development, design, and other engineering functions, are classified as professional services in our data from the federal government. Likewise, those at corporate headquarters are designated as headquarters employees. This is the case even if the employer is a manufacturing firm such as General Motors or Ford.

\(^8\)For comparison, the local manufacturing sector saw productivity growth of 3.6 percent per year during the past two decades.
<table>
<thead>
<tr>
<th>Employment by Industrial Class, Southeast Michigan, 2010-2040</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
<th>Numeric Change '10-'40</th>
<th>Percent Change '10-'40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Employment</td>
<td>2,484,251</td>
<td>2,635,157</td>
<td>2,713,957</td>
<td>2,786,082</td>
<td>301,831</td>
<td>12.1%</td>
</tr>
<tr>
<td>Farm</td>
<td>6,458</td>
<td>5,900</td>
<td>5,298</td>
<td>5,010</td>
<td>-1,448</td>
<td>-22.4%</td>
</tr>
<tr>
<td>Forestry, Fishing, and Other</td>
<td>2,304</td>
<td>2,391</td>
<td>2,698</td>
<td>2,954</td>
<td>650</td>
<td>28.2%</td>
</tr>
<tr>
<td>Mining</td>
<td>3,258</td>
<td>2,699</td>
<td>2,270</td>
<td>2,241</td>
<td>-1,017</td>
<td>-31.2%</td>
</tr>
<tr>
<td>Utilities</td>
<td>8,176</td>
<td>6,750</td>
<td>5,285</td>
<td>4,297</td>
<td>-3,881</td>
<td>-47.5%</td>
</tr>
<tr>
<td>Construction</td>
<td>91,112</td>
<td>106,471</td>
<td>114,147</td>
<td>111,307</td>
<td>20,195</td>
<td>22.2%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>209,698</td>
<td>205,081</td>
<td>190,325</td>
<td>178,823</td>
<td>-30,875</td>
<td>-14.7%</td>
</tr>
<tr>
<td>Motor Vehicles and Parts Manufacturing</td>
<td>69,304</td>
<td>61,796</td>
<td>52,904</td>
<td>44,263</td>
<td>-25,041</td>
<td>-36.1%</td>
</tr>
<tr>
<td>Non-Motor Vehicle Manufacturing</td>
<td>140,394</td>
<td>143,285</td>
<td>137,421</td>
<td>134,560</td>
<td>-5,834</td>
<td>-4.2%</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>91,008</td>
<td>88,228</td>
<td>87,365</td>
<td>83,107</td>
<td>-7,901</td>
<td>-8.7%</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>244,842</td>
<td>225,755</td>
<td>220,459</td>
<td>215,939</td>
<td>-28,903</td>
<td>-11.8%</td>
</tr>
<tr>
<td>Transportation &amp; Warehousing</td>
<td>72,486</td>
<td>79,347</td>
<td>85,814</td>
<td>94,433</td>
<td>21,947</td>
<td>30.3%</td>
</tr>
<tr>
<td>Information</td>
<td>36,922</td>
<td>36,880</td>
<td>32,863</td>
<td>29,155</td>
<td>-7,767</td>
<td>-21.0%</td>
</tr>
<tr>
<td>Finance &amp; Insurance</td>
<td>113,620</td>
<td>118,952</td>
<td>119,499</td>
<td>117,063</td>
<td>3,443</td>
<td>3.0%</td>
</tr>
<tr>
<td>Real Estate, Rental, &amp; Leasing</td>
<td>117,520</td>
<td>120,902</td>
<td>120,389</td>
<td>120,190</td>
<td>2,670</td>
<td>2.3%</td>
</tr>
<tr>
<td>Professional &amp; Technical Services</td>
<td>242,393</td>
<td>297,596</td>
<td>313,263</td>
<td>329,290</td>
<td>86,897</td>
<td>35.8%</td>
</tr>
<tr>
<td>Management of Companies</td>
<td>39,005</td>
<td>39,029</td>
<td>40,113</td>
<td>40,777</td>
<td>1,772</td>
<td>4.5%</td>
</tr>
<tr>
<td>Administrative, Support, &amp; Waste Services</td>
<td>187,228</td>
<td>208,053</td>
<td>221,097</td>
<td>233,613</td>
<td>46,385</td>
<td>24.8%</td>
</tr>
<tr>
<td>Private Education</td>
<td>30,802</td>
<td>39,332</td>
<td>57,795</td>
<td>57,921</td>
<td>7,119</td>
<td>14.0%</td>
</tr>
<tr>
<td>Health and Social Services</td>
<td>319,614</td>
<td>381,926</td>
<td>423,146</td>
<td>462,018</td>
<td>142,404</td>
<td>44.6%</td>
</tr>
<tr>
<td>Arts &amp; Recreation</td>
<td>59,247</td>
<td>61,515</td>
<td>64,914</td>
<td>70,550</td>
<td>11,303</td>
<td>19.1%</td>
</tr>
<tr>
<td>Accommodation &amp; Food Services</td>
<td>164,605</td>
<td>160,850</td>
<td>165,755</td>
<td>172,922</td>
<td>8,317</td>
<td>5.1%</td>
</tr>
<tr>
<td>Other Services</td>
<td>132,582</td>
<td>140,481</td>
<td>144,366</td>
<td>147,914</td>
<td>15,332</td>
<td>11.6%</td>
</tr>
<tr>
<td>Federal Government, civilian</td>
<td>33,871</td>
<td>29,291</td>
<td>27,994</td>
<td>27,220</td>
<td>-6,651</td>
<td>-19.6%</td>
</tr>
<tr>
<td>Federal Government, military</td>
<td>10,520</td>
<td>10,911</td>
<td>9,708</td>
<td>8,591</td>
<td>-1,929</td>
<td>-18.3%</td>
</tr>
<tr>
<td>State Government</td>
<td>83,212</td>
<td>84,095</td>
<td>89,760</td>
<td>95,457</td>
<td>12,245</td>
<td>14.7%</td>
</tr>
<tr>
<td>Local Government</td>
<td>163,766</td>
<td>162,722</td>
<td>169,634</td>
<td>175,290</td>
<td>11,524</td>
<td>7.0%</td>
</tr>
</tbody>
</table>
Income is another important dimension of the region’s economic profile. Inflation-adjusted (real) personal income per capita is generally regarded by economists as the best single measure of economic well-being for a region. The standard of living for a region can rise even with sluggish employment growth if the incomes of residents are rising sufficiently. Figure 23 shows the average annual growth in real personal income per capita for the SEMCOG region, with the period 1990 to 2040 broken out into five-year increments.

Figure 23
Average Annual Growth in Inflation-Adjusted Personal Income Per Capita, SEMCOG Region, 1990-2040

In the first five years of the 1990s, real income per capita increased by an average of 1.1 percent per year. The next five years, 1995 to 2000, were even stronger, with per capita income growing by 2.6 percent per year. Those high growth years were followed by the lean years of the 2000-2010 period when real income per capita actually declined. The recovery from the Great Recession revives growth in per capita income, to a range of 2.3 to 2.5 percent per year in the 2010-20 period followed by a pace of 1.5 percent per year in the 2020-40 period.

Alternative Scenario 1: Regional Auto Industry Takes Another Big Hit
This first, and more pessimistic alternative scenario was prepared to explore what the outcome would be in the SEMCOG region if the local auto industry went through another round of rapid decline in employment similar to what occurred between 2000 and 2010. We assumed this repeat event would take place between 2020 and 2030. Specifically, we calibrated the forecast so that the percentage decline in auto industry employment in Michigan as a whole during the 2020 to 2030 period would be approximately the same as the percentage decline that occurred in the state, by our estimate, during the 2000 to 2010 period. That translates to a 58 percent decline in auto manufacturing jobs statewide.
This further translated into an even larger impact in the SEMCOG region in the 2020 to 2030 period – a drop of 61 percent in auto industry jobs. Figure 24 shows the results, with the alternative forecast for vehicle manufacturing employment in the SEMCOG region shown by the dotted line, and the baseline forecast path (solid line) included for comparison.

Figure 24
Alternative Forecast of Employment in Motor Vehicle and Parts Manufacturing, SEMCOG Region, 2001-2040

The main observation from this experiment is that with the much smaller base of auto manufacturing jobs by 2020 than existed in 2000, the decline in auto jobs during the 2020s in the alternative scenario is much smaller in number compared with the job loss we saw in the first decade of the 2000s. In the baseline run, the local motor vehicle manufacturing industry is forecast to employ 52,904 workers by 2030, while under the alternative scenario, employment would be 23,998, a shortfall of 28,906. This number compares favorably with what we saw in the 2000-10 period, when the industry lost almost five times as many jobs, with employment falling by 139,507 by our estimate. By 2040, the industry employment gap between the baseline run and the alternative scenario shrinks to 23,367 workers, compared with the shortfall of 28,906 for 2030.

That even a repeat of the 2000-2010 episode for the Detroit Three would have much more modest negative employment effects on the region is illustrated for total local employment in Figure 25. In the baseline forecast, total employment in the region would reach 2.714 million by 2030. In the alternative scenario, total employment is estimated to be 2.583 million that year, a net loss of about 131,000 jobs (including the loss of about 29,000 jobs in vehicle manufacturing and about 102,000 non-vehicle manufacturing spinoff jobs). By 2040, the loss in the alternative scenario would shrink to about 111,000 jobs, or four percent.
Alternative Scenario 2: Growing Like Pittsburgh Region

For the second, and more optimistic, alternative scenario, we model what the SEMCOG region would look like if it performed after 2012 as well as Pittsburgh has done over recent history. Between 1986 and 2009, employment in the Pittsburgh Combined Statistical Area (CSA) grew at 60 percent of the U.S. growth rate (0.84 percent per year compared with 1.40 percent).\(^9\) So, in this alternative scenario, we adjust the forecast to ensure that employment in the Detroit CSA (a somewhat larger area than the SEMCOG region) grows at 60 percent of the U.S. growth rate between 2012 and 2040.\(^{10}\)

As shown in Figure 26, the result of employment in the region matching Pittsburgh’s recorded performance, its level by 2040 would be 2.941 million instead of the 2.786 million generated in our baseline forecast – a gain of about 155,000 jobs, or 5.6 percent.

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\(^9\)See footnote 3 for the definition of the Pittsburgh region used in this report.

\(^{10}\)In addition to the seven-county SEMCOG region, the Detroit CSA includes Genesee and Lapeer Counties.
Under this alternative scenario, the region’s employment in 2040 would exceed its 2000 peak level by about 106,000 jobs. While the region would certainly benefit from following a growth rate such as Pittsburgh’s, the benefits would take a very long time to accrue.

For illustrative purposes, we have consolidated the effects on total employment of the two alternative scenarios, together with the baseline forecast (solid line), in a single display (Figure 27). The outcomes for the two alternatives trace out a relatively small range of difference in impact considering the large variance in the events – total employment by 2040 of 2.675 million in the more pessimistic scenario and 2.941 million in the more optimistic alternative.
Figure 27
Alternative Forecasts of Total Employment (autos and “like Pittsburgh), SEMCOG Region, 2001-2040

Baseline

Extra gain in “Like Pittsburgh” jobs

Total job loss with auto industry retrenchment

Millions

'01 '05 '10 '15 '20 '25 '30 '35 '40
Forecasting Future Travel

To develop the Regional Transportation Plan, it is critical that we understand how travel is likely to change over the next 25-30 years, and how these changes affect the policies and actions included in the transportation plan. To help provide this understanding, SEMCOG has developed a complex Travel Demand Forecast Model (TDFM) that predicts how, where, and when people will travel in the future.

The model has three primary data inputs:

- Detailed information on the transportation system (both roadways and transit);
- Characteristics of household, transit and commercial vehicle travel in the region, obtained from extensive local survey data; and,
- Detailed socio-economic data for the region, including population, household size, income, jobs by employment sector, and more. This information is obtained from SEMCOG’s Regional Development Forecast.

Using this data, the TDFM is able to predict the impact that specific changes in the transportation system will have on travel in the region. It was used to predict the travel impacts associated with three different demographic growth scenarios. This data was then used to assist in the transportation decision-making process.

For development of the 2040 RTP, the TDFM was used for a variety of analyses that include:

- Forecasting the overall changes in travel (both vehicular and transit) between 2010 and 2040, with and without implementation of the proposed projects in the 2040 RTP;
- Identifying the amount and duration of congestion on major roadways in the region;
- Assessing how that congestion might be impacted if a portion of work-related trips during peak travel hours could be eliminated or diverted to other times of the day;
- Estimating the number of road miles in the region that have excess capacity and could potentially be repurposed or down-sized;
- Measuring the accessibility of different population groups to jobs and various services (medical, shopping, education), to ensure that transportation investment decisions in the RTP did not disproportionately impact certain populations; and,
- Providing inputs to other RTP analyses including:
  – estimation of the economic benefits resulting from implementation of the plan,
  – transportation conformity analysis, which ensures that vehicle pollutant emissions associated with proposed projects in the RTP will not worsen air quality or delay timely attainment of national standards, and
  – environmental justice analysis that ensures an equitable benefit, and no disproportionately high adverse impacts on any population resulting from transportation investments.
Figure 28
Forecasted Growth in Regional Travel Is Modest
Including Impact of Projects in 2040 RTP

Figure 29
Projects in the 2040 RTP Have an Insignificant Impact on Region-wide Travel
2040 VMT With and Without Implementation of RTP projects

Results related to the other model applications listed above appear throughout this plan document. Detailed documentation on the development of the travel model is in the Appendix.
Public Participation

Engaging and seeking input from SEMCOG’s members, stakeholders, and the general public is an important element in creating the 2040 Regional Transportation Plan. This valuable input helps inform plan development, allows us to better meet regional needs and build on our assets, and presents opportunities for coordination and collaboration among those with a vested interest in the transportation system. As this suggests, public outreach helps ensure that our planning efforts are not done in isolation and that broader livability principles are embraced. Although our various transportation planning and programming activities are designed to have long-term beneficial effects on the community, these activities may also have an adverse impact on some individuals. Therefore, it is important that citizens know what is being planned and be given every opportunity to provide input and present their views.

Outreach Activities

SEMCOG has been conducting public engagement activities and will continue sharing information and garnering input until the transportation plan is adopted in June 2013. Following the activities outlined in SEMCOG’s Public Participation Plan (2011), these efforts include, but are not limited to:

Regional Surveys

two regional surveys were conducted to obtain public input on various transportation related issues.

- **Pulse of the Region:** The first survey was jointly sponsored by SEMCOG and the Metropolitan Affairs Coalition (MAC). These online “Pulse of the Region” surveys were available to all Southeast Michigan residents via SEMCOG’s and MAC’s Web sites.

  - Citizens were asked to voice their opinions on various aspects of the region’s transportation system. The survey was promoted in many places, including SEMCOG’s Facebook, Twitter, and LinkedIn social media pages. Although the responses do not represent a statistically derived sample, they provide an important perspective on the region’s transportation system, and enabled any interested individual to voice an opinion. “Pulse of the Region” survey results can be found at [http://smcg.informz.net/SMCG/archives/archive_2787687.html](http://smcg.informz.net/SMCG/archives/archive_2787687.html)

- **Infrastructure Public Opinion Survey:** The second, more extensive survey was conducted by SEMCOG in late 2012. The purpose of the survey was to understand what the public thinks about Southeast Michigan’s roads, transit, and water and sewer systems. The survey sample was designed to provide statistically significant results for each of SEMCOG seven counties and the City of Detroit.

  - The findings from this survey are discussed in the *Infrastructure Survey – What the Public Thinks* section of this plan. These findings were heavily considered by SEMCOG and local elected officials as we explored transportation investment choices and established a regional investment direction. [http://www.semcog.org/Sustainability_Infrastructure.aspx](http://www.semcog.org/Sustainability_Infrastructure.aspx)

Videos: The “inside story”

SEMCOG created a series of seven short videos throughout development of the 2040 RTP. Each video describes the “inside story” of a different component of the region’s transportation system. Videos were developed to discuss the region’s safety, freight, roads and bridges, public transit, walking and biking, congestion, and funding issues. After viewing each video, the public was asked to respond to several questions. The results were summarized instantaneously and shown to the responder. View the [Inside Story videos and responses](http://www.semcog.org/Sustainability_InsideStory.aspx); please note that responses can only be seen after taking the survey.
Speakers Bureau
SEMCOG actively promoted a speakers bureau to go out and discuss various transportation issues with the public. These meetings provided valuable opportunities for the public to provide SEMCOG with input to the 2040 RTP. SEMCOG appeared on various radio and television shows to discuss and ask for public input on various aspects of the 2040 Regional Transportation Plan.

Public Meetings
At all SEMCOG meetings, events, and public outreach booths, informational tip cards, videos, and PowerPoint presentations were used, as appropriate. All SEMCOG meetings and events are open to the public and publicized via news releases, SEMCOG’s bi-weekly e-newsletter (Regional Update), on SEMCOG’s Web site, social media pages, and blogs. The schedule of meetings included:

- Three focus groups on Sustainability (September-October 2012)
- Transportation Advisory Council meetings (September 2012-May 2013)
- SEMCOG Executive Committee meetings (September 2012-May 2013)
- SEMCOG General Assembly meetings (November 2012, March 2013, June 2013)
- SEMCOG Task Force meetings (October 2012- May 2013)
- Presentations to organizations; this includes organizations whose membership may be traditionally underrepresented in the transportation decision-making process (October 2012-May 2013)
- Four public meetings (May 2013)

Other Public Meetings
The various county Federal-Aid Committees and Transportation Studies also encouraged public participation through their individual county processes. SEMCOG worked with state and local road and transit agencies to conduct local-level public outreach efforts prior to proposing projects for inclusion in the 2040 RTP. SEMCOG posted agency contact information and meeting dates online. Throughout the development of the 2040 RTP, various presentations and opportunity for public input and feedback was available during the SEMCOG Transportation Advisory Council, Executive Committee, and General Assembly Meetings. Most presentations were posted on SEMCOG’s Web site.

SEMCOG Web site and Social media
The public was encouraged to stay up-to-date on various 2040 evaluation activities by checking SEMCOG’s Web site; materials were posted regularly. SEMCOG also used Facebook, Twitter, LinkedIn, and SEMCOG Blogs to post information and ask for input from the public on the 2040 Regional Transportation Plan.

Agency Consultation
SEMCOG engagement in plan development includes consultation with agencies affecting or affected by the transportation system; and coordination with federal, state, and local transportation partners responsible for other planning activities. In Washtenaw and St. Clair Counties, the Washtenaw Area Transportation Study and St. Clair County Transportation Study (agencies responsible for comprehensive transportation planning at the county level) adopted individual county-wide transportation plans that will be included in 2040 Transportation Plan by reference.

Public Comment Period
The formal public comment period for the 2040 RTP began on May 9, 2013 and ended with General Assembly adoption on June 20, 2013. The public comment period and committee meeting dates were announced online, and via a public notice and media release.
A summary of all public comments is included in the Appendix.

Additional Materials

Semscope (Spring 2013) devoted to transportation funding.
A Citizen’s Guide to Transportation Planning in Southeast Michigan (Video)

Infrastructure Survey – What the Public Thinks

Below is a summary of the results from an extensive regional survey, conducted by SEMCOG, providing insight into what the public thinks about the region’s infrastructure. Statistically significant data were collected for each of the seven counties in the SEMCOG region and the City of Detroit. The specific purposes of the survey are summarized below:

- Understand the public’s awareness and knowledge of current infrastructure condition, funding mechanisms, and system issues and challenges;
- Measure the importance to the public of cost and reliability for different types of infrastructure (roads, transit, water service, and sewer service.) to the public;
- Evaluate the public’s willingness to engage in actions that would lead to a more fiscally sustainable infrastructure system;
- Assess the extent to which, and the circumstances under which, the public would support increasing revenue for specific infrastructure services; and,
- Inform SEMCOG’s policies and actions.

Survey Findings

Following is a list of the key findings by topic area. A copy of the full survey report, including detailed breakdowns for each county and the City of Detroit, can be found on SEMCOG’s Web site.

What the Public Thinks about the Condition of the System

- Overall, the vast majority of residents feel that the region’s infrastructure condition is deteriorating.
- In general, residents of the City of Detroit rate infrastructure condition lower than do residents of other areas.
- Perceptions of water and sewer systems are favorable across Southeast Michigan, with the majority of residents rating their condition as Good/Excellent. One exception is the City of Detroit, where fewer than half of residents rate these systems as Good/Excellent.
- Residents expect water and sewer conditions to stay the same or get better.
- The outlook for the transportation system is much more pessimistic.
- Roads are only rated Good/Excellent by one-quarter of residents. Most people predict road condition will stay the same or get even worse in the future.
- By a ratio of 2:1, residents rate the current transit system as Fair/Poor vs. Excellent/Good.
- Nearly half expect the transit system condition to stay the same.
- The largest numbers of proponents for expanding the public transportation system reside in Detroit and Washtenaw County, which is where utilization is highest.
What the Public Thinks about How Much They Pay and How They Pay for it

- While most residents believe they understand how infrastructure is funded, about one-quarter answered “Not sure” or “Don’t know”.
- Furthermore, one third to one half of respondents gave incorrect answers to specific funding questions. Of particular note, 51 percent mistakenly believe that most road funding comes from local property taxes.
- Only a small percentage of residents believe that current methods of funding infrastructure will work in the future. (11 percent).
- 70 percent indicate more funding is needed to ensure Southeast Michigan’s infrastructure is properly maintained.
- But, 73 percent also say the amount of funding is not the problem; it’s how efficiently we’re using it.
- Most people think “not enough” is being spent on either roads or public transit.
- If they must pay more for transportation, residents prefer spending it on roads (61 percent) as compared to public transit (39 percent).
- The majority of residents think “about the right amount” is being spent on water and sewer infrastructure.
- Slightly more people would rather pay for roads based on the number of miles they drive (53 percent) rather than the current method based on the amount of fuel they use (47 percent).
- The majority of residents in Southeast Michigan prefer paying the same rate for each gallon of water used (59 percent) instead of paying a higher rate during peak hours of the day and a lower rate during the off-peak hours (41 percent).

The Public’s Willingness to Take Personal Actions

- In general, the majority of residents prefer to personally engage in actions (demand management) to reduce costs rather than pay more for services. The most popular options are:
  - Occasionally working from home (81 percent),
  - Using a less congested route (80 percent),
  - Traveling earlier/later to avoid the rush hour (76 percent),
  - Refrain from using dishwasher and washing machine during peak hours (81 percent), and
  - Reduce the amount of water used each day (78 percent)
- The public’s willingness to engage in actions was reaffirmed when presented with a series of either/or choices. Specific examples include:
  - Most would rather live with current levels of traffic congestion (63 percent) than pay more to reduce traffic congestion (37 percent).
  - Most would rather carpool to work to reduce the need for road improvements (55 percent) than pay more to fund road improvements that reduce traffic congestion (45 percent).
- Overwhelmingly, people would rather refrain from watering the lawn during peak use times of the day (93 percent) rather than have no restrictions on watering and pay a higher price for water use in general (7 percent).
The Public’s Opinions on Infrastructure

- The vast majority of residents (80 percent) believe “we must reinvest in the region’s infrastructure so we can prosper economically.”
- The vast majority (80 percent) also agreed that that we must reinvest in our infrastructure to prosper economically and understand that this will save money in the long run.
- Residents have strong opinions about the Road system, with most “Strongly” agreeing that:
  - “Better roads will extend the life of a vehicle.” (66 percent)
  - “The condition of our road system directly impacts each one of us.” (58 percent)
- Some perceptions vary by county, but many are consistent across the region.
- The majority of residents (65 percent) are willing to pay a few dollars more each month to reduce water pollution.
- The vast majority of residents (81 percent) understand that a major factor in the cost of infrastructure systems is building to meet peak hours of demand.
- Most people in Southeast Michigan would prefer to carpool to work (55 percent) rather than pay more to fund road improvements that reduce traffic congestion (45 percent).
- And, residents prefer to live with current levels of traffic congestion (63 percent) rather than pay more to reduce it (37 percent).

Actions and Recommendations

- In order to improve the quality and fiscal sustainability of our infrastructure services, we must seize the opportunity presented by the public’s willingness to take personal actions that help more cost-effectively deliver services. Examples include:
  - Carpooling,
  - Use alternative routes,
  - Using public transit,
  - Traveling at a different time,
  - Working from home.
- In order to improve the public’s understanding of how infrastructure is funded, SEMCOG will seek opportunities to disclose, in understandable fashion, the ways in which infrastructure is funded and the different costs per unit of service. This will be made a part of SEMCOG’s ongoing collaboration with service providers.
- As soon as possible, SEMCOG will share relevant survey information with the Regional Transit Authority and suggest actions for their consideration based on this public feedback.
- SEMCOG will continue sharing information from its public opinion survey revealing that most residents do not feel we are spending enough on public transportation and most residents feel transit affects them personally.
- SEMCOG will continue using these public survey results to inform actions for improving our infrastructure system. Survey results will also be used to improve communications with the public.
- In its collaboration with infrastructure service providers, SEMCOG will advocate for implementation of practices that improve efficiency and for communicating successes to the public.
Chapter 4: Investing in Transportation

Funding Infrastructure

Many of the changing realities described in Chapter 3 are directly impacting current and future funding of transportation services, and the way in which investment decisions must be made. It is important to note that many funding issues transcend transportation and affect other key services provided by government such as water and sewer.

Preparing Southeast Michigan for success requires careful consideration of these funding dynamics to facilitate designing appropriate actions needed to evolve the current system. Specific purposes of this section are to:

- Identify key changes in the region impacting revenues.
- Quantify the impact of those changes.
- Identify key factors related to the true, real cost of delivering infrastructure services.
- Examine the merits of differing options for funding infrastructure.
- Identify common denominators issues and solutions affecting various infrastructure services.

Findings

- Funding often comes in silos or blocks limited to specific uses. This can and does interfere with using available funds in the most strategic way for a particular region or part of a region.
- There are many new realities contributing to inadequate levels of revenue to support infrastructure services. These include:
  - Modest growth in people and jobs in Southeast Michigan through the year 2040.

Figure 30
Past and Expected Future Change in Population and Employment

Source: SEMCOG 2040 Regional Development Forecast
– Revenue formulas heavily dependent on consumption.

– Revenue formulas that do not include costs of service added since their adoption (e.g., reducing stormwater volume and improving the quality of stormwater runoff).

– Numerous policies, laws, and regulations requiring reduced consumption and conservation. Prime examples are current and proposed fuel economy standards for automobiles, the penetration of hybrid vehicles, and gas tax relief for certain fuels. A SEMCOG analysis indicates that the impact of new fuel economy standards alone will result in a loss of $204 million per year in state gas tax revenue generated in Southeast Michigan. The number is likely twice as high on a statewide basis.

Figure 31
Projected Impact of New Fuel Economy Standards on State Gas Tax Revenue Generated in Southeast Michigan

– While actions to improve efficiency and reduce costs must be undertaken, these alone will be completely insufficient to compensate for revenue losses resulting from the structural obsolescence of current funding mechanisms.

– It is essential that we shift to infrastructure funding sources that are more sustainable and equitable. A possible option for transportation is to shift from a tax on the gallons of fuel used to a charge per vehicle mile traveled (VMT). As the chart below indicates, a one cent VMT charge would generate more revenue today than Michigan’s current 19 cent/gallon gas tax. Furthermore, this revenue would hold steady in the future while gas tax revenue will decline due to federally mandated improvements in vehicle fuel economy.
A regional loss in taxable value approaching 33 percent, most of which will be permanent.

Differing, declining, and uncertain levels of federal and state revenues to support infrastructure.
Figure 34
Federal Funding for Water, Sewer, and Transportation

- State and local revenue structures designed decades ago when the federal structure was counted on to provide a much larger share of costs
- Significant declines in consumption of certain infrastructure services

Figure 35
Change in Average Daily Water Use – Detroit Water & Sewerage System

Source: The Foster Group
– A 24 percent drop in household income in the region between 2000 and 2011\textsuperscript{11}

Figure 36
Michigan Transportation Fund Revenues

![Michigan Transportation Fund Revenues](image)

Source: Michigan Department of Transportation

– High fixed costs resulting from designs to meet peak demand.
– Unnecessary increases in transportation infrastructure costs resulting from deferred maintenance

Figure 37
Changing Pavement Condition and Resulting Escalation in Maintenance Costs

![Changing Pavement Condition and Resulting Escalation in Maintenance Costs](image)

- In summary, there is misalignment between government policies emphasizing conservation and formulas for revenue that are heavily dependent on increased consumption.

\textsuperscript{11} U.S. Census Bureau; American Community Survey, 2011.
This fact, combined with the increasing public interest of actions to protect the environment and reduce consumption of natural resources, is taking a heavy toll on our infrastructure every day.

Ironically, while what we are collectively paying today is less, it is resulting in higher costs.

In the proverbial Catch-22 dilemma, pursuing some of our regional outcomes and measures will lead to even greater losses in revenue unless formulas are revised. Examples include reducing vehicle trips and increasing transit ridership.

Absent changes to existing funding formulas, this dilemma is likely to make efforts to reduce long term costs through reductions or shifts in demand more difficult to implement.

There are a number of factors effecting the real total cost of delivering infrastructure services:

– Changing regulations often increase the cost of service. Examples include more restrictive environmental standards for air or water quality;

– Managing of large infrastructure systems that are immobile and have relatively long useful life’s presents a dilemma for revenue structure policy on who benefits and who pays. To manage a system most cost-effectively using asset management techniques requires a certain level of investment from current users even though some part of the benefit accrues to future users. Some argue that even though current investments reduce long-term costs, this is inequitable. (In another irony, current users are benefiting from the investment made by previous users.);

– The degree of “recognition” in revenue structures that non-users benefit is highly variable. For example, residents who do not even use the road system benefit from it because of the commerce it supports. Yet the vast majority of revenue is user based: gas taxes and registration fees. Similarly, those not in school benefit from the education system;

– The degree to which sophisticated techniques are used to manage infrastructure assets so that the cost-effectiveness of operations, capital budgeting, maintenance and replacement activities are optimized;

– The extent to which systems continue to be engineered to serve infrequent periods of peak demand. This design approach results in very high fixed costs for building, maintaining, operating, and replacing facilities that are used on an infrequent basis to serve short periods of peak demand;

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Figure 38
Misalignment Between Infrastructure Funding Formulas and Government Policies

<table>
<thead>
<tr>
<th></th>
<th>Formula Characteristics</th>
<th>Current &amp; Emerging Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation</td>
<td>Gasoline used</td>
<td>Fuel Efficiency</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reliance on oil</td>
</tr>
<tr>
<td>Water</td>
<td>Gallons consumed</td>
<td>Encourage conservation</td>
</tr>
<tr>
<td>Electricity</td>
<td>Kilowatts used</td>
<td>Improve efficiency,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reduce GHGs,</td>
</tr>
</tbody>
</table>
Rapidly changing technologies, some of which increase consumption of certain products (networked smart phones and computers) and decrease consumption of others (office space); and,

Unknown levels of inflation and other factors changing the purchasing power of the dollar.

There is a great deal of confusion about how our infrastructure is funded. For example, over 50 percent of the region’s residents incorrectly believe that most funding for roads is derived from property taxes. Needed changes to funding formulas, to make them more equitable and ensure they raise sufficient funds, require improved public understanding of current inequities and deficiencies.

**Actions and Recommendations**

In order to achieve reliable, quality infrastructure, SEMCOG will:

- Work in partnership with others to communicate:
  - The structural problems with the current methods of funding transportation,
  - The consequences of retaining existing funding formulas for transportation
  - The pros and cons of alternative formulas
- Work in partnership with others to communicate cost per unit of product in understandable terms for consumers (e.g., travel/mile, water/gallon, and sewer/gallon). For example, encourage the use of utility bills and fuel receipts that communicate the cost per unit, and do so in a manner that is easily understood by the consumer (e.g., cost per gallon as opposed to cost per cubic meter).
- Increase local government understanding of both the capital and operational costs of the region’s infrastructure systems and how they relate to overall local government services.
- Advocate that the tax per gallon of gasoline be disclosed at the pump, on receipts, or other ways to better inform the public on how much they are paying for transportation.
- Continue to advocate for state enabling legislation that allows for local option funding for local roads (aside from the property tax) to augment state and federal funds.
- Advocate for the use of tax credits, rate discounts or other means to reward actions that lower peak demand and thus reduce infrastructure costs. Examples actions include:
  - Carpooling
  - Transit use
  - Providing flexible work hours so commuters can avoid rush hour travel
  - Other actions identified through continuing analysis
- Advocate that costs associated with new federal or state mandates/regulations be determined prior to adoption, and that adoption be tie-barred to revenue generation
- Analyze and promote techniques for determining infrastructure revenue needs based on the long-term, real costs of service including:
  - Maintenance,
  - Capital,

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12 SEMCOG; Infrastructure Public Opinion Survey, November 2012.
- Financing,
- Replacement, and
- Costs associated with achieving environmental protection.

- Pursue a framework for paying transportation infrastructure costs using a two part formula (Each of these parts would include some portion of investing in replacement of infrastructure):
  - Part 1: A variable cost based on extent of use, and
  - Part 2: Some costs for all based on principle that everyone benefits regardless of use (e.g., a fixed fee).

- Advocate that Congress provide Metropolitan Planning Organizations greater flexibility in the use of federal and state transportation funds to more effectively address the specific priorities identified in their adopted Regional Transportation Plans.

- Promote, and assist in, the review of construction and maintenance techniques by Michigan’s Asset Management Council based on consideration of both short- and long-term costs.
Strategic Investment of Transportation Revenues

There are many compelling reasons for assuring that the expenditure of transportation revenues yields the greatest possible rate of return. Scarcity of fiscal resources, compelling public interests other than transportation, public perceptions and expectations, changed values and needs, increasing emphasis on quality of life, and the need for southeast Michigan to compete for jobs in a global market are all part of the dynamics driving strategic investment.

Responding to an increasingly changing environment requires having a Regional Transportation Plan that is flexible and adaptable. In particular, the annual distribution of available revenues needs to emerge from a fluid process designed to optimize the value added to the region. And to do so considering both short term and long term implications.

This section describes how we can improve upon earlier efforts to assure we are getting the most value out of each dollar spent. Specific purposes are to:

- Help determine the benefits associated with differing priorities for distributing revenues within the transportation system;
- Help understand the extent to which these benefits and revenue allocations fit with actions being pursued to achieve other outcomes;
- Assess the extent to which public action could result in more efficiency in services and costs, and how this could be accomplished; and,
- Help inform the actions of others and optimize the alignment of these actions with those taken by SEMCOG.

Findings - Technical

- Asset management is an essential tool for enabling efficient use of available dollars in a particular part of the transportation system. Yet policies on the use of asset management to guide decisions are fairly limited. For example, many focus on fixing the worst first even though experience shows that allocating more funds to ensure other roads do not deteriorate to this poor condition is far more cost effective.
- To help address this issue, the State of Michigan mandated creation of an asset management council charged with uniformly collecting and reporting data on the condition of our road system. Measured information was to be used to inform policy decisions.
- Asset management data to-date are heavily focused on the condition of our roads and are consistently sending the same signal: current levels of investment are not strategic because they are inadequate. This is evidenced by the continued deterioration in pavement condition.
• While some view lower levels of spending as a cost savings, the data reveal that this underinvestment is rapidly increasing the cost of transportation to the public. For instance, the cost of fixing our roads has more than doubled in just eight years.

• Available asset management tools reveal that the benefits of a given level of funding in an issue area (e.g., road pavement) depend heavily on how that given amount of revenue is invested. A prime example is the distribution of money for managing pavement where the same amount of money can yield almost twice the benefit if it is properly distributed.
Table 10
Cost to Achieve Different Pavement Condition Targets by 2020 Depending on Portion of Funds Allocated to Capital Preventive Maintenance (CPM), Southeast Michigan

<table>
<thead>
<tr>
<th>Target for % of Roads in Good &amp; Fair Condition</th>
<th>Percentage of Pavement Funds Allocated to CPM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>95%</td>
<td>$993.0</td>
</tr>
<tr>
<td>90%</td>
<td>$900.9</td>
</tr>
<tr>
<td>80%</td>
<td>$796.4</td>
</tr>
<tr>
<td>70%</td>
<td>$691.8</td>
</tr>
<tr>
<td>60%</td>
<td>$586.7</td>
</tr>
<tr>
<td>50%</td>
<td>$482.1</td>
</tr>
</tbody>
</table>

- Historically, transportation planning and design focused heavily on minimizing travel times and congestion during peak travel times. This has resulted in high fixed costs.
- Other analytical tools reveal additional opportunities for improving cost-effectiveness by reducing these high fixed costs. More strategic policy choices for addressing congestion will have a major impact on whether high fixed costs stay the same, grow, or are reduced.
- For example: Most travel occurs during just six hours of the day. However, over 50 percent of all daily travel occurs during these six hours.

Figure 41
Peak Travel

- Only about 20 percent of travel during these peak hours is congested. But for those who experience this congestion, it is frustrating.
– A rough estimate by SEMCOG indicates that choosing to address this limited congestion by widening all the road segments where it occurs would cost over $1 billion. This is just the short-term cost and does not include the long-term funds that would be required to maintain this additional pavement.

– Alternatively, additional SEMCOG analysis shows that a significant portion of this congestion (17 percent) could be eliminated if we were able to reduce just a small fraction (6.5 percent) of the work-related trips that occur during peak travel hours.

– Low-cost tools are available that could significantly reduce this congestion. These include ridesharing, increased use of transit, increased use of flexible work hours to allow employees to travel during non-peak hours, and the provision of real-time data to advise travelers of less-congested alternative routes.

– Furthermore, residents of Southeast Michigan are prepared to engage in these kinds of actions.

Figure 42
Most Travel During Peak Hours is Uncongested

Source: SEMCOG Infrastructure Public Opinion Survey, November 2012

– Stress in transportation funding is compounded by stresses in other seemingly unrelated revenue streams. Examples include:

  – A 29 percent reduction in the taxable value of property in the region since 2007 which, under current state law, will remain even when property values recover;
– A 24 percent drop in household income in the region between 2000 and 2011\textsuperscript{13};
– A 41 percent increase in household utility costs; and
– Annual increases in water and sewer rates;
– Tightening of federal and state budgets.

• These other stresses impact the views of both decision makers and the public on acceptable levels of funding. Failure to understand these complex interrelationships will hamper our ability to obtain support for increased investment in any one of them.

Findings - Institutional
• A business-as-usual approach will continue to be a limiting factor in reaching the region’s potential economic vitality, even if the most strategic distribution of current revenues is achieved. This is because available revenues are drastically insufficient in comparison to needs. A primary basis of current funding (a flat tax on fuel consumption) has little to do with the real cost of creating and maintaining a quality transportation system.

• Compounding the problem of a revenue stream largely unrelated to the real cost of transportation service is that continued reliance on a flat gas tax creates several additional problems:
  – Revenues will decline each year as federal standards for more fuel efficient vehicles are phased in.

Figure 44
Impact of Proposed Fuel Economy Standards on Gas Tax Revenue, Southeast Michigan

– As a result, the condition of the system will continue to decline.
– As system condition declines, costs to taxpayers rapidly escalate.
– Therefore, an increase to the gas tax must be viewed as a short-term solution because the additional revenues will only be sustained for a few years.

\textsuperscript{13} U.S. Census Bureau; American Community Survey, 2011.
To date, emphasis has been on distributing transportation funding based on categories as they are defined in federal legislation.

Asset management is a critical part of strategic investment. When it is employed, we save money in both the short and long term. Conversely, when it is not implemented, we spend more than we should.

Implementers of asset management also help address public concerns about the efficiency with which existing funds are used.

Strategic investment in transportation is not a unilateral exercise. It is inextricably tied to the provision of other infrastructure services. And, it is inextricably impacted by actions of government at all three levels: federal, state, and local (see cost effectiveness illustration on the following page).

More strategic investment is possible when there is more consistency of purpose between multitudes of actions taken by any of the three levels of government: federal, state, and local. Some refer to this as vertical alignment in government decision-making.

More strategic investment is also possible when there is more consistency of purpose in actions across issue areas for any particular level of government: transportation, water, sewer, energy, etc. Some refer to this as horizontal alignment within and between service providers.

Focusing on a common set of outcomes and measures provides a means for achieving this needed alignment. It results in more actions of similar purpose at all levels of government (vertical) and across all sectors (horizontal).
SEMCOG’s Creating Success program and federal legislation governing transportation planning both emphasize the need for setting targets to inform strategic decisions.

Target setting requires the following knowledge:

- The incremental and total costs of differing targets (e.g., the cost of assuring 70 percent of our pavement is in good or fair condition versus 80 percent, 90 percent, etc.), and
- The total costs of differing targets for all investment categories (e.g., pavement, bridges, congestion, safety, etc.).

Positioning Southeast Michigan for greater success requires a continued transitioning to a more holistic, strategic approach where transportation performance targets are agreed upon based on a combination of three factors:

- How much achieving the target contributes to performance relative to a specific issue area within the transportation system (e.g., road condition);
- How much achieving the target contributes to performance of the overall transportation system (e.g., mobility, access, condition, etc.); and
– How much achieving the target contributes to achieving other outcomes and performance targets also valued by the region (e.g., fiscal sustainability, healthy environmental assets, etc.).

• A few examples of other outcomes and measures meriting consideration in a strategic transportation investment process are:
  – Improving the fiscal sustainability of all infrastructure;
  – Improving per capita income by providing choices that attract and retain knowledge based workers;
  – Increasing the percentage of households with access to jobs, services and recreational opportunities; and
  – Improving labor utilization by providing comprehensive access for those with limited choices

• Quantitative tools to understand the interrelationships of these three factors are, for the most part, non-existent. The absence of tools does not change our recognition that a business as usual approach would result in a lack of needed dialogue and qualitative assessment of the relative merits of differing transportation investment strategies.

• Collaboration between service providers presents yet another opportunity to deliver more efficient service at lower costs. Areas ripe for collaboration to reduce costs include:
  – Asset management;
  – Shared information on project planning to assure that schedules are not in conflict;
  – Joint planning to assure some level of consistency in the degree of service available by place; and,
  – Collaboration on ensuring consistency in local utility permitting requirements.

• SEMCOG’s policy that transit ridership in Southeast Michigan must be competitive with that in other regions is rooted in the dividends it will produce. Investment in transit is strategic because it improves economic vitality, increases labor utilization, helps reduce poverty, and improves access. Therefore, part of a comprehensive approach to maximizing the benefits of our transportation system entails a much higher degree of investment in public transit.

• Plausible future scenarios different than SEMCOG’s adopted forecast do not change the fundamental premises of these findings.

**Actions and Recommendations**

• The Regional Transportation Plan recognizes that strategic investment is a dynamic process that needs to continuously evolve.

• The Strategic Investment Process must be supported with certain, specific technical analyses and information that must be updated on a regular basis. That analysis needs to focus on the region’s adopted performance measures.

• The Strategic Investment Process must also be more robust and include a policy-making component where technical analyses and information are discussed with a broader emphasis on contributing to Southeast Michigan’s adopted Outcomes.
Figure 46
Strategic Investment That Encompasses All Outcomes

Technical

- What is the cost effectiveness of different targets?
  - Pavement
  - Bridges
  - Safety
  - Etc.

- What is the total cost of different targets?

Policy

Assessing Targets
- What are the implications for the transportation system?
- How do differing targets impact other outcomes?

- Select targets
- Assure actions reflect targets
- Assure revenue allocation reflects targets
• The Strategic Investment Process is generically illustrated in the above diagram (Figure 46). Details need to be added to ensure the process design accomplishes the following:
  – Generation of information on the incremental and total costs of differing targets.
  – The setting of targets for measures based partly on the cost effectiveness of different levels of investment as they relate to the transportation system.
  – The setting of targets for measures based partly on the cost effectiveness of different levels of investment as they relate to all six of the region’s outcomes.
  – Accountability to continue to assure the public that investments actually made are aligned with adopted targets.
  – Use of asset management in evaluation and implementation of projects.
  – Transparency in all parts of the process.
  – Collaboration and opportunity for input by other infrastructure service providers including water, sewer, and energy.

• This Strategic Investment Process should be developed by SEMCOG, in partnership with local governments, Federal Aid Committees, committees of SEMCOG, the Michigan Department of Transportation, and the RTA.

• The proposed process should describe options for assuring that projects proposed for the Transportation Improvement program emerge from asset management plans.

• This Strategic Investment Process should be developed and incorporated in the Regional Transportation Plan.

• Once adopted, the process should be immediately implemented. Specific targets for relevant measures, consistent with federal requirements, should be incorporated to the Regional Transportation Plan.

• As needed, interim targets should also be developed to track incremental progress toward the overall target needed for achieving success.

• From that point forward, the assessment of transportation needs and cost of service will be based on the holistic assessments that are a part of the Strategic Investment Process.
Differing Levels of Service

Service providers are in the business of providing quality service. As such, actions are motivated by the demands of customers. For the most part, the collective demands of society can be described as having service available at all times, no matter the circumstances. This service model is becoming increasingly inconsistent with other society expectations, including fiscal sustainability, environmental protection, and wise stewardship of resources.

Preparing for a sustainable future necessitates that this transportation plan sort out and reconcile these different infrastructure demands to bring more consistency to our actions. Accordingly, this section examines the impacts associated with differing levels of service, and identifies needed actions to define and implement more sustainable levels of service. The specific objectives are to:

- Determine how differing levels of service would impact our use of limited revenues,
- Illustrate the costs associated with differing levels of service,
- Identify opportunities for providing reliable quality service in ways that improve fiscal sustainability,
- Help decision-makers and the general public understand the consequences of differing choices, and
- Inform SEMCOG’s policies and actions.

Findings - Common Denominators on Infrastructure Level of Service

- The basic formula for the design of infrastructure facilities is, not surprisingly, customer demand driven. Service providers continually assess total demand of their current and future customers, and build and operate their system to meet that demand under almost any set of circumstances.

- Layered on this formula is a regulatory environment in seemingly perpetual motion resulting in incremental changes with increasing costs and decreasing cost-effectiveness, (e.g., road design requirements, environmental impact analysis, combined sewer overflow (CSO) requirements, regulatory process for attaining air quality standards, renewable fuels requirement).

- However, a number of new, interrelated factors are now in play, all contributing to an urgency to reassess this basic formula of high-cost design, the complex regulatory requirements that accompany it, and the appropriate level of infrastructure services that are really for the region to succeed. These factors include:
  - Declining motor fuels tax revenue.
The fixed costs associated with infrastructure engineered to meet peak demands are extraordinarily high.

Periods of peak demand are often short-lived.

The region’s growth in jobs and population over the next 30 years is expected to be very modest.

Source: MDOT

Source: SEMCOG 2040 Regional Development Forecast
• Alternative scenarios for higher or lower growth do not change the fundamental findings in this paper (see Chapter 3).

Figure 49  
**Forecasted Change in Weekday Travel, Under Higher and Lower Growth Scenarios**  
Average weekday VMT, in millions

![Bar chart](chart1.png)

- The nature of business is changing with less of the region being employed in manufacturing and more in less infrastructure intensive categories.

Figure 50  
**Forecasted Job Growth by Employment Sector, Southeast Michigan**

![Line graph](chart2.png)

- Rapid and continuous evolutions in technologies are changing the ways services can be delivered (e.g., smart phones, smart cars, real time data availability, social media, etc.)

- Measured public sentiment reveals a public willingness to reconsider service levels and to take personal actions that contribute to reducing the cost of service. For example, a 2012 SEMCOG survey found that a majority of the public (63 percent) would rather live with existing levels of congestion than pay more to reduce it. Over 75 percent said they’d be willing to take the
following actions to help reduce congestion occasionally work from home or use an alternative route to get to work; commute earlier or later to avoid peak travel times. An additional 56 percent said they would be willing to carpool or use public transit.

– The region’s fiscal capacity is limited and residents have a variety of increasing costs to reconcile.

– Increasing evidence that most service, and most of the objectives of regulatory requirements related to that service, can be achieved at far lower cost with some reasonable adjustment in the public’s expectations of that service.

- Significant and competing infrastructure needs in the region, coupled with limited resources to meet these needs, necessitates a reduction in service costs. Adopting different levels of service offers an opportunity to realize some of this cost reduction and improve fiscal sustainability.

- Right-sizing the amount of infrastructure in areas where demand has already declined presents an opportunity to reduce long-term costs and create a more fiscal sustainable system.

- Some of the real, long term costs associated with providing reliable, quality infrastructure are often left out of revenue collection formulas. This has resulted in underinvestment in our entire infrastructure system, as evidenced by the continuing deterioration of pavement condition.

- Structures for funding infrastructure impact behaviors and actions in ways that may have positive short-term benefits but might impede other actions that reduce long-term costs. For example, a major factor in delivering water service is the peak demand of one community in comparison to all other communities in the system. This factor is included in the rate structure to reflect equity in distributing the high cost of peak demand and is calculated each year based on actual usage. In response, many communities have chosen to take actions aimed at reducing their peak water demand and thus reduce their rate. Actions include ordinances related to lawn watering as well as construction of local storage facilities for pumping and distribution during off peak periods. However, because most of the cost of peak demand is fixed, the total cost of running the system remains largely unaffected by these actions.

- On the other hand, long-term costs of water service could actually be reduced if demand could be managed in ways that make construction of new facilities, or maintenance of existing facilities, unnecessary. This is analogous to the potential long-term cost savings that could be realized by reducing the number of roadway lane miles that are needed through reductions in peak period travel demand.

- Lowering infrastructure costs will require both a change in policies related to managing these services and a willingness on the part of the public to accept and embrace this new approach. To make this happen, more detailed information on the costs associated with differing levels of service must be developed and shared with policy makers and the public.

Findings - Traffic Congestion

- Most traffic occurs in just six hours of the day.
Less than 20 percent of the travel during these six peak hours occurs under congested conditions.

Small adjustments in travel decisions would have a significant impact on reducing congestion at virtually no out of pocket cost and often with benefits of increased convenience. For example, a recent analysis using SEMCOG’s travel forecasting model found that, if just 6.5 percent of work-related trips during the peak hours of travel (two percent of all trips during these hours) could be eliminated or shifted to other times of the day, the amount of congestion during these peak hours could be reduced by 17 percent.

Low cost strategies to eliminate or shift these trips already exist. They include employer flextime and work-from-home programs, car and van pooling programs, and increased use of transit. While all of these programs are already being implemented to some degree in the region, more resources need to be devoted to them and better aligned to tap their full potential.

The need to place more emphasis on these low-cost programs is reinforced by SEMCOG’s recent public opinion survey. The results show that a majority of residents in the region are willing to take specific actions in order to reduce congestion.

While levels of traffic congestion in Southeast Michigan are considered modest, this is of little consolation to those dealing with it on a daily basis. Reducing congestion remains an important consideration when deciding where to spend limited resources.

A more circumspect view of traffic congestion, one that balances the need to address it with the myriad of other transportation needs, would have a significant impact on the long-term cost of maintaining the transportation system.

One example of this more circumspect view can be seen in the choice of how congestion is defined. Many view this as a technical decision. However, in Southeast Michigan we recognize that it is largely a policy decision, based on the amount of congestion we are willing to accept and the importance we place on this issue in relation to all other issues we are trying to address with our limited resources.

The level of service and degree of congestion on a given road is often measured as the ratio of the traffic volume on the roadway to its capacity. This is referred to as the volume to capacity (V/C) ratio. The higher the V/C ratio, the lower the level of service on that facility.

- The V/C threshold for determining which roadways are congested varies but generally ranges between 0.8 and 0.9. Roadways exceeding these thresholds are typically candidates for congestion mitigation strategies, including widening to provide more traffic lanes.
- The choice of threshold has significant cost implications. A SEMCOG analysis shows that choosing a lower V/C threshold of 0.8 versus 0.9 results in twice as many road miles being labeled as congested.

- The difference in revenue needed to address congestion under these two different thresholds would be significant, greatly impacting the total amount of funding available to address other transportation needs (pavement, safety, transit, nonmotorized, etc.)

  - In addition to the threshold used to define congestion, the duration of that congestion is an important consideration. SEMCOG analysis, using both traffic counts and travel model data, shows that sustained periods of congestion in the region are fairly limited.
    - Using the 0.9 percent V/C threshold, only six percent of roadways in the region are congested throughout either the 3-hour morning peak period or the 3-hour evening peak.
    - Two percent of all roadways are congested throughout both the morning and evening peak periods.
    - And only 0.4 percent is persistently congested from 7am to 6pm.

- How we choose to mitigate the congestion that is identified has a huge impact on cost. Focusing our efforts on operational and demand management techniques, and widening roadways only when convinced that no other less costly solution is possible, will improve the long-term sustainability of the system. The region has been moving in this direction in recent years but more can be done in the future, particularly as emerging technologies make these alternative strategies increasingly effective and affordable.

- Technological innovations are making real-time management of traffic less costly and more readily available to drivers. Some of these innovations in communications can be used to make some travel unnecessary. A portion of the projected needs for the road system can be reduced or eliminated if we take advantage of innovations already available and acknowledge that others will continue to emerge.

- Some investment in capacity expansion may be needed to support commerce and the economy. In particular, strategic investments that may facilitate movement of freight and on-time delivery of products and parts may be needed.

**Findings - Excess Roadway Capacity**

- On the opposite end of the spectrum from congestion, many roads in the region are operating well below their maximum capacity. This is particularly true in some of the older urban areas that have experienced significant declines in population and employment over the last 50 years.

- A recent SEMCOG analysis found that over 600 miles of roadway in the region may have more traffic lanes than are needed to accommodate current and expected future travel. These roadways currently have four or more lanes but each lane carries less than 3,750 vehicles per day.

- One or more lanes on these roadways could potentially be repurposed to:
  - Provide bike lanes and improve the connectivity of the region’s bike route system.
  - Provide on-street parking to help revitalize community downtowns.
  - Allow for the inclusion of green infrastructure to better manage stormwater runoff from the roadway and increase the attractiveness of the street.
  - Provide alternative travel routes to relieve congestion on parallel facilities. This would provide another opportunity to address a portion of traffic congestion through a low-cost operational fix.
- In some cases, allow for the downsizing of the paved surface area of the road (i.e., road diets), thus reducing future costs to maintain the roadway pavement.

**Actions and Recommendations**

- SEMCOG will continue collaborating with the large service providers to advocate for a transition from higher-cost infrastructure designs aimed at addressing short-duration peak demand, to less expensive infrastructure designs aimed at providing quality service a majority of the day.

- SEMCOG will also continue facilitating collaboration between various infrastructure service providers focusing on reducing costs and providing more efficient service. Examples include:
  - Programming and scheduling of projects.
  - Ensuring consistency in local permitting requirements,
  - Coordinating long-term plans,
  - Setting service level targets, and
  - More specifically quantifying the costs of differing levels of service.

- In order to improve the fiscal sustainability of infrastructure services in the region: Lawmakers and regulators at both the federal and state level need to align their actions in support of the region’s outcomes. Specifically, any changes in level of service requirements resulting from proposed laws or rules must be tie-barred to increases in revenue sufficient to pay for that new level of service.

- SEMCOG will continue to work closely with the Federal-Aid Committees regarding updates made to the region’s Congestion Management Process, including:
  - Use of a higher threshold for defining congestion. Roadways are considered congested if the ratio of roadway’s volume to its maximum capacity is greater than 90 percent. The previous threshold was 80 percent;
  - Submission of supporting documentation for projects that would increase the number of through lanes on a roadway segment, explaining the need for the capacity increase;
  - Emphasis being given to areas where congestion is most persistent (i.e., duration);
  - Emphasis on applying all available transportation systems management and operations techniques to mitigate or eliminate congestion where it is practical;
  - Providing technical assistance to local governments and road agencies to conduct audits and develop action plans to relieve congestion;
  - Establishing criteria for capacity expansion;
  - Advocate for continued funding of incident management programs, such as the courtesy patrol, to help limit time of congestion resulting from crashes or vehicle breakdowns;
  - Continue coordinating with the business community to understand and respond to congestion issues impacting commerce;
  - Promote public actions that address congestion. Emphasize:
    - prioritizing targets of opportunity to reduce trips, shift them to off-peak times, or shift them to another route. To be most cost effective, initial focus will be on working with major employers in the region and targeting high trip attraction areas (downtown Detroit and Ann Arbor, major universities, hospitals etc.).
• working with automobile manufacturers and vehicle information technology developers to provide real-time traffic information with alternative routes, particularly where excess capacity exists on parallel routes;

• promoting transit routes, in part, based on opportunity for relieving congestion in heavily traveled corridors and in cooperation with the Regional Transit Authority; and

• adding appropriate actions to the SEMCOG’s Corridor Toolkit (see Chapter 5, Transportation Corridors)

• SEMCOG will promote the application of alternative techniques for managing everyday travel to mitigate significant disruptions resulting from construction and maintenance projects.

• SEMCOG will work with local governments to prioritize repurposing of road segments with excess capacity using some combination of:
  – nonmotorized travel, and
  – green infrastructure.

• SEMCOG will work with interested members to implement techniques in its *Redeveloping Commercial and Industrial Corridors Toolkit*. This will include choosing only those tools reflective of the need in a specific place such as reuse of commercial and industrial properties, repurposing of land, and/or applying green infrastructure tailored to reuse or repurposing
Chapter 5: Enhancing Transportation Connections

Pavement and Bridge Condition

Much of the public experience with and perception of the transportation system is based on the condition of our roads and bridges. One of the great assets in Southeast Michigan is a network of 23,400 miles of roads. This sophisticated network supports over 100 million miles of travel each and every day. It connects people to work, school, shopping, hospitals, social events, other businesses…the list goes on.

The Southeast Michigan region is also served by about 2,900 bridges. Two of those bridges are especially critical because they cross the Detroit and the St. Clair Rivers, connecting the United States and Canada. These bridges are vital to the country, the state, and the region. Because of the limited number of crossings, these bridges carry significant traffic.

The region’s gross domestic product is highly dependent on a quality road and bridge system. Successfully developing and implementing plans to manage the condition of our roads and bridges serves everyone’s interest. This section describes the importance of road and bridges to the region, the condition of roads and bridges, and needed actions to ensure that they support the region’s economic vitality and mobility.

This section will:

- Summarize the current condition of roads and bridges in the region,
- Identify trends in their condition,
- Show the cost implications of current trends,
- Propose techniques for reducing costs and optimizing the benefits of expenditures on pavement and bridge management, and
- Help decision-makers and the general public understand the consequences of differing choices.

Findings

- Road condition has deteriorated significantly since 2004 when the systematic collection of data began. While 70 percent of roads are in good or fair condition, 30 percent are in poor condition.
As a result, the cost of getting roads into good or fair condition has more than doubled.

Condition over the past couple of years has stabilized. This could be the result of an influx of funding as part of the federal stimulus package. It is not clear whether this represents a temporary condition or the beginning of a new trend.

Decisions about how to distribute funding to manage road condition have enormous consequences. Up to twice the benefit can be achieved when available funding is properly distributed between three categories of management: capital preventive maintenance (CPM), rehabilitation, and reconstruction.
Table 11
Cost to Achieve Different Pavement Condition Targets by 2020, Depending on Portion of Funds Allocated to Capital Preventive Maintenance (CPM), Southeast Michigan

<table>
<thead>
<tr>
<th>Target for % of Roads in Good &amp; Fair Condition</th>
<th>Percentage of Pavement Funds Allocated to CPM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>95%</td>
<td>$993.0</td>
</tr>
<tr>
<td>90%</td>
<td>$900.9</td>
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<tr>
<td>80%</td>
<td>$796.4</td>
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<tr>
<td>70%</td>
<td>$691.8</td>
</tr>
<tr>
<td>60%</td>
<td>$586.7</td>
</tr>
<tr>
<td>50%</td>
<td>$482.1</td>
</tr>
</tbody>
</table>

- The most efficient allocation of funding in these categories depends on starting conditions. The current condition of each county varies so there is no single optimal distribution for each of the seven counties in the entire region.

Figure 54
Pavement Condition by County, 2012

Liveston | Macomb | Monroe | Oakland | St Clair | Washtenaw | Wayne | Region wide

Poor | Fair | Good

0 | 20 | 40 | 60 | 80 | 100
- Optimizing investment in road condition provides more benefit per dollar but still falls far short of needs.

Figure 55
Difference in Required Annual Pavement Investment Depending on Performance Target

- Investment levels for other parts of the transportation system are heavily impacted by road condition decisions. To illustrate, improving from the regional average of 70 percent good or fair to 90 percent good or fair would require that over three-fourths of all funds be dedicated to pavement management.

Figure 56
Impact of Different Pavement Performance Targets on Funding for Other Needs
Transit users also benefit from improved road condition because it facilitates more efficient movement of transit vehicles, reduces maintenance costs, and extends their useful life.

Transit users and advocates also benefit from improved road condition because it increases the likelihood of voter support for the needed ballot proposal on funding from the Regional Transit Authority.

Over 75 percent of the public feels our roads are in fair or poor condition.

The public is not optimistic about the future. Most feel the condition will stay the same (36 percent) or get worse (39 percent).

Over 600 miles of road in the region may have more capacity than needed even after considering growth. This presents a major dilemma for decision makers. Spending money on properly maintaining underutilized roads will be unpopular with those in areas where roads are more heavily used. Yet, spending money to repurpose those roads to reflect lower travel levels would leave less revenue available for trying to properly maintain the rest of the system.

The Federal Highway Administration (FHWA) requires states to maintain a database of bridges that are over 20 feet in length and to assess their condition at least every two years.

Bridges rated as structurally deficient qualify for reconstruction or replacement using federal funds.

Unsafe bridges are either posted with a weight limit or closed. In the last three years for which data is available, there has been little change in the number of these bridges.

Table 12
Condition of Bridges in Southeast Michigan

<table>
<thead>
<tr>
<th>Year</th>
<th>Trunkline</th>
<th>Non-Trunkline</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>2008</td>
<td>508</td>
<td>812</td>
<td>179</td>
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<tr>
<td>2009</td>
<td>552</td>
<td>789</td>
<td>162</td>
</tr>
<tr>
<td>2010</td>
<td>536</td>
<td>825</td>
<td>143</td>
</tr>
<tr>
<td>2011</td>
<td>577</td>
<td>824</td>
<td>103</td>
</tr>
</tbody>
</table>

Source: Michigan Department of Transportation
Actions and Recommendations

- SEMCOG’s analytical tools that assist in making investment choices in a manner that maximizes pavement and bridge condition, should be used by operating agencies as part of project programming.
  - SEMCOG will allocate resources to assisting operating agencies in using these tools.
  - SEMCOG will allocate resources to refining these tools based on updated data or improved knowledge.
- SEMCOG will work with implementing agencies to set road and bridge condition targets based on:
  - Incremental costs of achieving differing targets,
  - Total costs of achieving differing targets, and
  - Other transportation needs.
- SEMCOG will adjust targets as needed with a focus on cost effectiveness and priorities of the region.
- SEMCOG will document how these analytical tools are used in support of achieving targets once they are developed.
- As part of its effort to facilitate collaboration with other service providers, SEMCOG will promote overlaying of project schedules emerging from their asset management plans for roads and bridges to minimize costs and avoid public confusion created when different service providers successively work at the same site.
- SEMCOG will identify options for more fully incorporating asset management for roads and bridges into project selection. As necessary to support implementation, the plan will be amended.
- SEMCOG will advocate for inclusion of road repurposing as a part of transportation cost of service and for a revenue formula that recognizes these costs.

Optimizing Public Transit and Access to Support Regional Success

Economic vitality is enhanced in many ways by a quality public transit system. The attractiveness of the region to a skilled workforce and access to jobs both contribute to improved income and economic prosperity of the region. In turn, the ability of the region to invest in a quality transportation system is improved. After decades of effort, a Regional Transit Authority is now in place, allowing the emphasis in this plan to focus on near-term actions.

This section builds on numerous existing transit plans for the region, with a broader emphasis on how transit can contribute to the six outcomes for regional success. Specific purposes are to:

- Help the public and local elected officials understand how transit service in Southeast Michigan compares to other areas of the country with which we compete,
- Identify specific actions that will help Southeast Michigan attain ridership levels comparable to those others, and
- Help Southeast Michigan’s newly formed Regional Transit Authority (RTA) successfully improve transit in the region.
Findings

- Southeast Michigan rates poorly when compared with other major metropolitan areas. Data from the National Transit Administration\(^{14}\) shows that, of the 25 largest metropolitan areas in the country, Southeast Michigan ranks:
  - 22\textsuperscript{nd} in transit ridership,
  - 23\textsuperscript{rd} in hours and miles of transit service per capita, and
  - 22\textsuperscript{nd} in total operating funds per capita.

- One of the guiding principles of SEMCOG 2040 Regional Transportation Plan is that transit service in the region must be significantly improved in order to attract the same levels of ridership that exists in thriving metropolitan areas across the country. There are several reasons for this principle including: the need to attract and retain young professionals, the need to connect people to jobs, and the need to address the challenges presented by a rapidly increasing elderly population. To provide some context as to how Southeast Michigan’s transit service competes at present, our region currently ranks below Pittsburgh, St. Louis and Cleveland in both the amount of service and funding it provides, as well as the amount of ridership it attracts.

Figure 57
No Matter How \textbf{It’s Measured}, Southeast Michigan Transit Ranks Poorly

- The public agrees. Most (69 percent) rate service as fair or poor and 73 percent say it will stay the same or get worse in the future.\(^{15}\)

\(^{14}\) Federal Transit Administration; National Transit Database Profiles, 2010.
• A quality transit system plays a key role in providing access to jobs, services and amenities; improving income; and, creating desirable communities. Thus, we all have a stake in improving transit in the region. A recent survey by SEMCOG shows that a significant portion of the public understand this; 62 percent of respondents agreed that transit affects each one of us.

• For some, transit represents the only real opportunity for reasonable access to a job, education, and other necessities such as health care. For example, over 50 percent of current transit riders in the region\(^\text{16}\), and 25 percent of all households in the City of Detroit\(^\text{17}\), do not have access to an automobile.

• For those who do have access to an automobile, a quality transit system provides an attractive transportation choice that enhances their quality of life and makes this region a more desirable place to live and work, especially for the younger, high-tech workers needed to fuel the success of our changing economy.

• Transit service design for these two populations is not an either-or proposition. Designs that meet the needs of choice riders can be totally compatible with designs to address the needs of the transit dependant.

• In certain locations, improved transit service would assist in commercial corridor and neighborhood redevelopment.

• A quality transit system that is competitive with other major metropolitan areas must include core bus service as well as rapid transit corridors that are supported by integrated feeder bus service. The system must also include demand responsive service to accommodate those with special needs including the elderly.

• In recent years, the ability of all local transit agencies in Southeast Michigan to provide even core bus service has been challenged by declining revenues.

Figure 58
Transit Operating Funds, Southeast Michigan

![Graph showing Transit Operating Funds](image)

Source: Federal Transit Administration; National Transit Database Profiles

\(^{15}\) SEMCOG; Infrastructure Public Opinion Survey, November 2012.

\(^{16}\) SEMCOG Regional On-Board Transit Survey, 2012

\(^{17}\) U.S. Census Bureau; 2011 American Community Survey, 2011.
- These funding limitations have led to cutbacks in the frequency and duration of service on many routes.
- Service coverage is one measure of accessibility. SEMCOG analysis shows:
  - 37 percent of the region’s population is within ¼ mile of an existing bus route, and 51 percent are within a ½ mile.
  - 36 percent of the region’s elderly population is within ¼ mile of an existing bus route, and 51 percent are within a ½ mile.
  - 52 percent of low-income households in the region are within ¼ mile of an existing bus route, and 67 percent are within a ½ mile.
  - 49 percent of jobs in the region are within ¼ mile of an existing bus route, and 64 percent are within a ½ mile.
- Service coverage is only one way of gauging accessibility. It does not take into account whether the frequency, quality and duration of service on these routes accommodates people’s specific travel needs. The region’s low ranking in service hours per capita, ridership per capita, and the poor rating given by the public in the 2012 survey are all indicative of the needed service improvements.
- SEMCOG’s 2010-2011 survey of transit users in the region found that increased frequency of service and longer hours of operation were the improvements most needed by current riders.
- To be successful and create a transit system that will increase ridership and help position Southeast Michigan to succeed, the following service elements must all be addressed:
  - **Service Frequency** – The transit system must provide a service that users can count on to get them where they need to go, when they need to be there. A particular route is of little use to potential riders if it doesn’t operate during the hours (or days) they need to travel or comes so infrequently that they are forced to arrive at their destination much earlier or later than necessary.
  - **Reliability** – Riders must have confidence that transit vehicles will consistently arrive on time. They must also have access to reliable real-time information, letting them know when the next vehicle will arrive at a given stop. The time it takes to travel by transit must also be reasonably competitive with auto trips. Most people understand that traveling by transit will take a bit longer, due to the nature of the service. However, the time difference cannot be so great that it negates the benefits of using the service (no parking cost, avoiding the hassle of driving, and the wear and tear on their personal vehicle, etc.).
  - **Quality** – Transit vehicles must be clean and comfortable, and service must be convenient. It should also be designed in a way that minimizes the need for passengers to transfer between vehicles to complete their trip. The service must also be easy to use for both residents and visitors. Route, schedule, and fare information must be easily accessible and easy to understand in order to attract and retain riders.
  - **Efficiency** – In order to make the most of the limited funding available, we must look for ways to improve the efficiency of our current transit service. As SEMCOG’s recent public opinion survey shows, improving system efficiency and communicating these efficiencies to the public, is also essential to gaining support for additional resources needed to further improve and expand transit service in the region. Eliminating duplicative service on SMART and DDOT routes and making transitions between different transit modes and service providers as seamless as possible are just two examples of efficiencies that should be implemented and publicized.
– **Safety** – To better service existing riders and also attract additional passengers, we must address real and perceived issues of safety, both on vehicles and at transit stops. Actions taken in this regard must be publicized so the public is aware of the progress that is made.

– **Funding** – No transit system can be successful, and adequately address the other elements above, without a dedicated source of funding that covers the true cost of providing the service. This includes capital, operating, and long-term maintenance expenses. Revenue from transit fares alone cannot provide sufficient funding to operate a quality transit system. Additional revenue is always required.

This is why areas that recognize the overall benefits of transit have established dedicated sources of funding sufficient to operate a comprehensive, multi-tiered system. These funds are most often generated through some form of local tax. The particular type of tax is very dependent on state enabling legislation.

Adequately addressing all of the above service elements will result in a transit system that is competitive with those in other regions with which we compete economically. It will also contribute toward Southeast Michigan’s other desired outcomes: access to jobs, services, and amenities; desirable communities; reliable, quality infrastructure; fiscally sustainable public services, and, a healthy environment.

- Recommended actions to address many, if not all, of the above service elements have already been outlined in recent plans developed by SEMCOG, the Regional Transit Coordinating Council and the Ann Arbor Transportation Authority. Taking these plans to the next level, and securing the necessary funding for their implementation, is a high priority.

- For decades, SEMCOG has advocated for resolution of two critical issues, both of which must be addressed before meaningful improvements can be made to public transit in Southeast Michigan. These issues are:
  - The creation of a structure to oversee and govern regional transit, and
  - Establishment of a dedicated funding mechanism that will provide sufficient revenue to construct, operate and maintain a quality transit system, comparable to those in areas with which we compete.

- The first of these issues was addressed through legislation passed in December of 2012 that created a Regional Transit Authority (RTA) for Southeast Michigan. This legislation was the result of much hard work by a number of organizations and individuals, including SEMCOG through advocacy and policies in previous Regional Transportation Plans.

- The responsibilities and authorities provided to the RTA address the oversight and governance issue consistent with SEMCOG’s Regional Transportation Plan.

- The RTA also has authority to address the second critical issue – that of establishing a dedicated funding source that provides adequate revenue. Appropriately, the RTA has the authority to develop a regional ballot proposal to fund transit service in Wayne, Oakland, Macomb, and Washtenaw counties.

- Other recent positive developments include:
  - Results of SEMCOG’s recently completed public opinion survey showed significant support for transit and a strong conviction by residents that the quality of the region’s transit service impacts each of us.
  - The advancement of the M-1 Streetcar project, which will begin construction in 2013 and provide service on a three-mile segment of Woodward Avenue, between Downtown Detroit and the New
Center area (due to project funding being obligated in 2013, the M-1 Streetcar project is not included on the Transportation Improvement Program project list);

– A transit alternatives analysis is currently underway to review higher-level transit options for the 27-mile Woodward Avenue corridor from the Detroit River to the City of Pontiac. The analysis will be completed in early 2014.

– A federal government commitment to the RTA for an additional $6.5 million to study rapid transit development in other high priority transit corridors (e.g., Gratiot, Michigan Ave., and M-59). The RTA will be responsible for prioritizing these corridors and securing local matching funds for these studies.

– Commuter rail service between Downtown Detroit and Ann Arbor will begin with event service, scheduled to start in 2013.

– Funding has been received to continue developing stations for commuter rail service between Ann Arbor and Howell, which will begin in 2013.

• Some of the challenges the RTA must confront as it takes actions to improve transit and secure adequate funding include:

  – First, building organizational capacity (administrative, staff, etc.) is needed in order for the newly formed regional authority to accomplish its stated mission

  – Currently, millage renewals to continue providing local funding for SMART are on different schedules, with the current millage expiring in FY 2014 in Oakland County.

  – The timing of these millage renewals and any ballot proposal RTA may put forward must be carefully coordinated to avoid confusion on the part of the public. Such confusion could make passage of any of these proposals more difficult.

  – Over the past 10 years, DDOT’s annual subsidy from the City of Detroit’s General Fund has been cut from $88 to $55 million. The fiscal challenges of the City under the Emergency Manager make the future of this subsidy uncertain.

  – DDOT, SMART, and AATA are run as separate transit agencies. They have separate staffs, grants, funding, facilities, maintenance, etc.

  – There is no public transit service between Ann Arbor and Detroit.

  – There are other high priority infrastructure needs in the region including reinvestment in roads, bridges, water, and sewer. While the public views transit as important, it tends to view these other issues as even more important.

Actions and Recommendations

• SEMCOG will focus its technical support activities in the priority corridors for transit to help identify systematic opportunities. Examples include use of Green Infrastructure, Transit Oriented Development, SEMCOG’s Redeveloping Corridors Toolkit, neighborhood stabilization, repurposed excess roadway capacity, congestion relief, safety and walkability audits, and use of nonmotorized facilities.

• In cooperation with others, SEMCOG will complete the alternative analysis on Woodward Avenue.

• Based on the results of numerous studies, current and future demographics, and emphasis in Detroit Future City, first focus the $6.5 million in available federal grant funding (which must be encumbered by October 1, 2013) on the necessary alternative service analysis on Gratiot and Michigan Avenues.
To help position the region for the needed expansion of transit service, SEMCOG recommends that the RTA’s initial steps include the following:

- Quickly begin working with transit operators to identify and implement additional service coordination and consolidation, and to adopt a common set of service standards and performance measures. These actions must be clearly communicated to the public so they understand the progress being made.

- Work with transit operators to identify actions that resolve the likely confusion that would result from several votes “on funding transit” at different times, and in different parts of the region.

- When estimating the amount of revenue needed to fund a proposed transit system, SEMCOG recommends this be based on the real cost of that system. The real cost includes capital needs, operations, maintenance, and long-term replacement of both regional and local service.

- Begin its planning using the RTCC and AATA transit plans, but subsequently conduct a high-level review of these plans to identify and, if necessary, adopt updates at the level of specificity needed to align local bus service with rapid transit service in the four priority corridors: Woodward, Gratiot, M-59, and Michigan Avenue. SEMCOG offers to assist in undertaking this update with the understanding that the purpose is narrowly focused on proposing modifications as described above, not revisiting the basic direction already established in these plans.
Freight and Economic Vitality

One of the defining features of Southeast Michigan’s transportation system is its ability to carry products to connections throughout world in the support of core industries, as well as distribute goods within the region itself. Freight infrastructure in Southeast Michigan is equipped to handle a wide variety of freight from port facilities that receive shiploads of steel to freeways that trucks use to carry goods across North America, to railroads that supply power plants with fuel and distribute finished automobiles, to airports that handle high-value, time-sensitive cargo.

The freight system developed alongside the growth of the Michigan automobile manufacturing industry and allowed this industry to pioneer just-in-time supply chain strategies. As the Southeast Michigan economy changes, the freight transportation system must also change to serve the new economic make-up, retain efficient access to national and world markets, and minimize the cost of goods.

Findings

- Southeast Michigan has a long tradition of building off of its location in the Great Lakes region of the U.S. and its close proximity to Canada to develop a freight transportation infrastructure and support its core automotive manufacturing base.
- The present day regional freight system is an extensive network of Interstate highways, arterial roads, international border crossings, railroads, commercial marine ports, airports, and pipelines.
- SEMCOG completed a Southeast Michigan Freight and Economic Analysis Study (July 2011) that strengthens the link between freight transportation planning and economic development by describing regional freight flow patterns, documenting the perspectives of businesses that use the freight system, compiling profiles of freight transportation needs across industry types, developing analysis tools, and providing guidance for regional transportation planning. The study:
  - confirmed the need for continued pursuit of projects and policies that promote travel across the Michigan/Ontario border and intermodal rail terminal access; and
  - pointed to the need for continued engagement with freight system users to improve highway operational reliability and improving connections between freight terminals and freeways, which can make the difference between on-time and late delivery in the last mile of a truck trip.
Figure 59

*Southeast Michigan's Freight System* is Extensive and Complex

Source: SEMCOG
• The freight system is important to the growth and health of Southeast Michigan’s regional economy. It delivers materials for core utility and manufacturing activity, carries goods produced here to North American and world markets, and supplies consumers with finished products for purchase at stores or delivery.

• Southeast Michigan is home to the United States’ most valuable collection of international land border crossings, hosting over one-third (34.5 percent in 2012) of trade with Canada, our largest trading partner.

• This close connection with Canada has helped develop an integrated bi-national industrial supply base and ultimately made Southeast Michigan a key entry point for North American trade, leading all states in trade with Canada and ranking third in trade with Mexico.

Table 13
2012 Top 5 Trade States with Canada and Mexico, By Partner Trade Value

<table>
<thead>
<tr>
<th>Rank</th>
<th>Canada</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Michigan</td>
<td>Texas</td>
</tr>
<tr>
<td>2</td>
<td>Illinois</td>
<td>California</td>
</tr>
<tr>
<td>3</td>
<td>California</td>
<td>Michigan</td>
</tr>
<tr>
<td>4</td>
<td>Texas</td>
<td>Illinois</td>
</tr>
<tr>
<td>5</td>
<td>Ohio</td>
<td>Arizona</td>
</tr>
</tbody>
</table>

Source: U.S. Department of Transportation, RITA, TransBorder Freight Data.

• The international border crossing Southeast Michigan shares with Ontario, Canada, is essential to the operations of existing industry and to the value proposition for expanding supply chain and logistics activity within Michigan.

• Much of the regional freight transportation system is also used for personal and business travel. Investments in Interstate highways, bridges, railroads, and airports contribute to the quality of our own travel experiences as well as the reliability of freight.

• Trucking is the primary mode for moving goods, so the quality of the freight system is closely tied to the quality of interstates and highways that are also used for passenger travel.
  – Declining pavement condition causes untimely wear on trucking equipment and is a contributing factor to congestion and traffic crashes which create delays that are costly to society.
  – Investments that keep roadways in good condition, improve safety, and mitigate congestion extend the life and increase the value of the freight system.

• Disruptions caused by weather, crashes, congestion, and road construction reduce the ability of trucks to make timely and reliable deliveries.

• The regional freight system faces challenges. There are critical links in the system where regional trade and commerce are dependent on infrastructure that is outdated, inefficient, or where there is no redundancy in the system.

• If freight movement becomes unreliable or inefficient, the cost of doing business increases and the ability for Southeast Michigan businesses to reach global markets is reduced. Conversely, if freight movement is more efficient and reliable, businesses and consumers have greater, less expensive access to markets.
• Plans to address these critical link deficiencies have led to project proposals for a new international bridge and rail tunnel connecting Detroit and Windsor, Ontario, improvements to the urban rail and intermodal terminal network in Detroit, and a new customs plaza for the Blue Water Bridge in Port Huron.

• Other critical needs include reconstruction of I-94 in the City of Detroit and I-75 in Oakland County. These projects contribute heavily to our access to markets and our overall economic prosperity.

• Many local communities are host to freight facilities or are impacted by freight volumes and raise concerns about safety, air quality, travel delays, and noise. Sustaining a careful balance between community needs and freight needs is essential.

• The current lack of a uniform ballast water standard forecloses the opportunity for Michigan commercial marine ports to expand their business by exporting goods from Michigan.

Actions and Recommendations

• SEMCOG will continue to inventory and track the condition, utilization, and performance of the regional freight system. SEMCOG will emphasize extending the life of pavement on truck routes, analyzing the reliability of freeway operations, and improving “last-mile” connections between areas of high freight activity and freeways/intermodal terminals.

• SEMCOG will further its freight modeling capabilities through development of a commercial vehicle model as laid out in the SEMCOG Transportation Model Improvement Plan. In this process, SEMCOG will consult with peer agencies, such as MDOT and the Chicago Metropolitan Agency for Planning, who also maintain freight and commercial vehicle models.

• The regional freight system is an important economic asset. SEMCOG will continue to partner with initiatives to promote growth in supply chain and logistics activity and gather information on freight industry needs. Examples of these initiatives include, but are not exclusive to:
  – Michigan Economic Development Corporation's Logistics and Supply Chain Strategic Plan implementation,
  – Detroit Regional Chamber’s Translinked initiative, and
  – VenturePort and I-69 Corridor Next Michigan Development Corporation activities.

• SEMCOG will continue to support and advocate for border infrastructure improvements, such as the New International Trade Crossing and the Blue Water Bridge customs plaza, which will enable increases in the efficiency, reliability, safety, and security of cross border travel. In addition, SEMCOG will continue to work collaboratively with bi-national stakeholders to improve the operational reliability and security of the existing border crossings.

• SEMCOG will continue to support the collaboration between MDOT and participating railroads to implement the Detroit Intermodal Freight Terminal.

• SEMCOG will continue supporting the establishment of a bi-national ballast water standard that will allow for a level playing field for all states and provinces and effectively mitigates the risk of further introduction of aquatic invasive species into the Great Lakes.

• Several large infrastructure projects related to freight are included in this plan, including the New International Trade Crossing, the Blue Water Bridge plaza, the Detroit Intermodal Freight Terminal, and the reconstruction of I-94 in Detroit and I-75 in Oakland County. Some of the larger projects will require additional construction workers and skilled trades than are mobilized for a typical road construction year. This creates an opportunity for the regional workforce to gain employment and experience in construction and industries that support transportation. SEMCOG
will continue to work on opportunities to equip and connect residents to these employment opportunities.

- SEMCOG will participate in freight transportation planning on any level where Southeast Michigan has a stake in the planning process, including plans developed by the state of Michigan, U.S. Department of Transportation, or for multi-state/province transportation corridors.

**Transportation Corridors – Connecting Community, Economy, and Environment**

Surface street transportation corridors are key contributors to the economic vitality and livability of Southeast Michigan and the communities they serve. Beyond providing a means for connecting people with places and transporting goods, they generate commerce, help create community identity, and contribute to the desirability of a place to live or conduct business.

**Findings**

- There is currently an over-supply of commercial and industrial properties in the region.
- Redevelopment of assets along transportation corridors can advance economic opportunity, social well-being, and strengthen the local tax base.
- Redevelopment can take many forms, ranging from repurposing buildings and parcels of property to utilizing green infrastructure, creating public spaces and greenway connections, and mixed use development.
- Connecting transportation corridors with surrounding neighborhoods can contribute to economic development along the corridor, help create a sense of community, make a community more livable, and further individual access to employment and needed services.
- A comprehensive approach is required to integrate corridor transportation planning and implementation activities in a manner that supports economic development, considers community desires, creates quality of place, and promotes environmental and fiscal sustainability.
- Employing a comprehensive approach does not mean using a one size fits all strategy for every corridor. It recognizes that different corridors, and various locations along a single transportation corridor, have different and unique characteristics. For example:
  - Some areas may be heavily travelled, have relatively high transit ridership and be home to establishments ranging from large retail centers and entertainment districts to medical and educational institutions.
  - Other locations may serve as freight routes and be home to industrial uses or research and development parks.
  - Some locations may have low traffic volumes, vacant lots and buildings, or be home to traditional downtowns, community centers, and other indoor or outdoor gathering spaces.
- Stable neighborhoods adjacent to transportation corridors enhance use of the transportation system and support for local businesses; conversely, the quality of the transportation system contributes to neighborhood stability and commercial development.
- In many places, improved transit service contributes to commercial and neighborhood development along, and adjacent to, corridors. Some recent positive transit developments include (see Optimizing Public Transit and Access for more information):
  - Formation of a Regional Transit Authority (RTA).
Advancement of the M-1 Streetcar project on Woodward Avenue in Detroit.

A transit alternatives analysis currently underway to review higher-level transit options for the 27-mile Woodward Avenue corridor from the Detroit River to the City of Pontiac.

A federal government commitment to the RTA for an additional $6.5 million to study rapid transit development in other high priority transit corridors (e.g., Gratiot Ave., Michigan Ave., and M-59). The RTA will be responsible for prioritizing these corridors and securing local matching funds for these studies.

**Actions and Recommendations**

- **SEMCOG will:**
  - create a comprehensive Redeveloping Corridors Toolkit that will allow communities, and others, with a vested interest in corridor redevelopment, to easily find information on appropriate tools that address the unique characteristics of a location and meet community needs;
  - support efforts of communities wishing to redevelop assets – such as commercial and industrial properties, vacant lots, trails, housing and other facilities – that are proximate to transportation corridors;
  - work with members to implement the Corridor Toolkit (upon its completion). This will include choosing only those tools reflective of the need in a specific place such as reuse of commercial and industrial properties, repurposing of land, applying green infrastructure tailored to reuse or repurposing, and neighborhood stabilization, to name a few;
  - maintain the toolkit to ensure it is a dynamic resource that evolves to reflect changing needs and opportunities in the region;
  - engage in technical support activities in the priority corridors for transit to help identify systematic opportunities. This includes applying some of the tools included in the corridor toolkit;
  - engage in communication and educational activities for the toolkit and corridor redevelopment; and
  - advocate for additional tools that are needed to support a comprehensive approach to redeveloping corridors, thereby supporting economic vitality, quality of life, and environmental and fiscal sustainability.

**Creating a Safer Transportation System**

Maximizing the safety of our transportation system is important for the welfare of people and has broader positive impacts for our region. Traffic crashes produce not only personal tragedy, but increased burdens on the region due to medical and insurance costs, lost production potential, and delay of passengers and freight.
Findings

- Over 300 people are killed and approximately 2,000 are severely injured in traffic crashes every year on the roads in our region.

Figure 60
Fatalities, 2007-2012

Figure 61
Severe Injuries, 2007-2012

- In addition to the tragic loss of life, traffic fatalities cost our economy billions of dollars annually.

- In 1991, TEA-21 added safety as a required decision factor in the transportation planning process. Under SAFETEA-LU and MAP-21, state departments of transportation (DOTs) are required to prepare a Strategic Highway Safety Plan (SHSP). The SHSP is a planning guide that provides techniques, tactics and strategies for agencies to use to aid in their decisions and for coordinating with other transportation plans.

- The region’s Strategic Highway Safety Plan (SHSP) focuses on reducing crashes and fatalities on the regional roadway system by providing a roadmap for effective collaboration and coordination among safety professionals and stakeholders.
• Strategies for advancing this goal are detailed in agreed-upon priority emphasis areas, which focus on various safety issues including: lane departure, alcohol, intersection, pedestrian/bicyclist, older/younger driver. The regional SHSP is a data-driven living document that is coordinated with Michigan’s SHSP.

Actions and Recommendations

• Improve the safety of all users of all modes.
• Maintain a crash database for use in regional and local safety analysis.
• Focus on key emphasis areas derived from analysis and coordination with other agencies as an efficient way to improve safety.
• Identify and seek funding for improvements to transportation infrastructure to increase safety.
• Facilitate coordinated emergency responses through incident management planning.
• Incorporate future recommendations from the Regional Strategic Highway Safety Plan (SHSP) into the Regional Transportation Plan.
• Promote and coordinate programs that educate people about and market safety.
• Address safety needs of environmental justice population segments, including elderly or disabled people.
• Promote the use of and assist members with auditing services (e.g., road safety, walkable, bikeable) for reducing crashes using low-cost improvements.
• Support appropriate education and enforcement activities to improve safety. This includes building knowledge for necessary legislative initiatives, supporting relevant professional development for law enforcement staff, and educating members of the judicial branch of the consequences of frequently reducing charges.

Creating a More Secure Infrastructure System

Typically, no single agency is responsible for transportation security. SEMCOG realized this much more so when it began meeting on traffic incident management in the early 1990s to address the issues of “Who’s in charge?” With such a complex region when it comes to first responders, it was essential to develop a Regional Concept for Transportation Operations (2007) that defined a single vision for operating the region’s transportation system and objectives for achieving that vision. Again, this work may not be seen as the work thought of under security but there are many clear ties.

Some examples of these security-type efforts SEMCOG has/continues to play a role in include:

• Expanding, maintaining, and evaluating MDOT’s Freeway Courtesy Patrol.
• Developing Advanced Transit Accident and Crime System (ATACS).
• Developing Greater Detroit Transit GIS (passenger security).
• Developing of alternative/emergency route planning (integrated corridor management).
• Coordinating communication issues with Detroit’s Urban Area Security Initiative.
• Assisting communities in developing/maintaining their emergency management/response/preparedness plans.
• Traffic Incident Management (TIM):
Performing annual emergency response table-top exercises.
Conducting annual First Responder Partnering Workshops.
Developing dynamic message sign messaging.
Implementing a TIM incident severity and response chart.

Findings

- Federal transportation legislation increased the national focus on security and established a larger role for organizations like SEMCOG.
- One goal of this effort is to explore ways that MPOs can play a part in security planning by researching and documenting all ongoing security efforts among our traditional partners.
- SEMCOG will facilitate the exchange of ideas and resource sharing to build upon existing programs to further security efforts in the region.

Actions and Recommendations

- Support the development of efficient, coordinated responses—for example, through incident management task forces (e.g., Regional Transportation Operations Coordinating Committee).
- Aid the region in learning from major events—for example, by facilitating or participating in after-action review meetings and table-top exercises.
- Participate in regional recovery efforts, such as through capital programming changes in the event of a major incident.
- Support the development and communication of regional preparedness and evacuation planning (e.g., emergency management plans).
- Provide studies, analysis, and mapping as helpful to improve transportation security planning.
- Coordinate and cooperate with other bodies involved in transportation security planning with full respect for the extensive work already underway.
- Facilitate discussion among entities doing transportation security planning throughout the region and with related professions.
- Consider regional transportation security in programs and projects, and in preparing capital programs.

Aligning Environmental and Transportation Actions

Healthy, attractive environmental assets are essential to a successful region. Southeast Michigan’s transportation system is impacted by a number of factors and, conversely, the transportation system itself impacts other aspects of the community. One such area of interaction is between transportation and the environment. By its very nature, transportation infrastructure (roads, bridges, nonmotorized pathways, transit routes, and facilities) and the people and vehicles that use it impact the physical landscape.

Various elements of the physical landscape are increasingly referred to as Green Infrastructure. Natural areas and features are an important consideration when planning, designing, constructing, and maintaining the transportation system. The end goal is a safe, accessible, and reliable transportation system that enhances quality of life which is dependent on how environmental resources are valued and maintained.
### Potential Impacts of Transportation Projects on the Environment

- Road projects can bisect or impact important habitat, including wetlands and woodlands.
- Stormwater runoff from impervious roadway surfaces can negatively impact local rivers, lakes, and wetlands.
- Transportation-related construction site stormwater runoff can affect the quality of water resources.
- Pollutant emissions from vehicles utilizing the road system impact local air quality.

### Findings on Transportation and the Environment

- While transportation projects have the potential to impact numerous environmental factors, stormwater runoff is one of the largest contributors affecting our water resources.

- Stormwater runoff from roads can negatively impact our rivers and lakes by:
  
  - contributing nonpoint source pollution (sediment, oil and grease, metals, salt, etc.) that degrades water quality;
  
  - increasing the quantity of water which erodes streambanks and causes sediment deposition within the streambed reducing habitat for aquatic life; and
  
  - decreasing the levels of oxygen and increasing the temperature within the receiving water body, thereby reducing the types of species that can survive in that water body.

- Urban areas of Southeast Michigan can be largely impacted by stormwater runoff.

- Southeast Michigan has 680 square miles of impervious surfaces. Approximately 245 square miles of impervious surfaces are designated as roadways.

- These roadways contribute approximately 100 billion gallons annually of stormwater runoff that is mostly unmanaged, making them one of the largest contributors of pollutants in our waterways.

- In addition, construction activities, and the storage and use of associated materials, are often sources of water pollution.
### Table 14
Nonpoint Source Pollutants from Roadways

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Particulates</td>
<td>Pavement wear, vehicles, atmospheric deposition, maintenance activities</td>
</tr>
<tr>
<td>Nitrogen, Phosphorus</td>
<td>Atmospheric deposition and fertilizer application</td>
</tr>
<tr>
<td>Lead</td>
<td>Leaded gasoline from auto exhausts and tire wear</td>
</tr>
<tr>
<td>Zinc</td>
<td>Tire wear, motor oil, and grease</td>
</tr>
<tr>
<td>Iron</td>
<td>Auto body rust, steel highway structures such as bridges and guardrails, and moving engine parts</td>
</tr>
<tr>
<td>Copper</td>
<td>Metal plating, bearing and bushing wear, moving engine parts, brake lining wear, fungicides, and insecticides</td>
</tr>
<tr>
<td>Cadmium</td>
<td>Tire wear and insecticide application</td>
</tr>
<tr>
<td>Chromium</td>
<td>Metal plating, moving engine parts, and brake lining wear</td>
</tr>
<tr>
<td>Nickel</td>
<td>Diesel fuel and gasoline, lubricating oil, metal plating, bushing wear, brake lining wear, and asphalt paving</td>
</tr>
<tr>
<td>Manganese</td>
<td>Moving engine parts</td>
</tr>
<tr>
<td>Cyanide</td>
<td>Anti-caking compounds used to keep deicing salts granular</td>
</tr>
<tr>
<td>Sodium, Calcium Chloride</td>
<td>Deicing salts</td>
</tr>
<tr>
<td>Sulfates</td>
<td>Roadway beds, fuel, and deicing salts</td>
</tr>
</tbody>
</table>


- Agencies responsible for road projects need to integrate stormwater management when adding capacity, paving gravel roads, road reconstruction, and implementing road diets.
- Typically, stormwater management is an eligible cost under the federal system, but is often viewed as an “add on” by road agencies. When having to choose spending limited road funding on resurfacing additional roads or adding stormwater management to their projects in revenue starved circumstances, runoff management is often a lower priority.
- While federal stormwater requirements have started to mandate stormwater management when additional impervious surfaces are added to the road network, the existing system remains largely unmanaged.
- Green Streets is a newer concept in road design that incorporates techniques that manage runoff close to the source through the use of bioswales, bioretention, porous pavements, and tree trenches.
Many of these techniques work well with techniques discussed in designing complete streets, including integrating green techniques as part of a bump out/curb extension or bike lane.

- The shortage of revenue to even maintain the existing transportation system is causing the perpetuation of actions that increase long term costs. Incorporating stormwater management in design is far cheaper than retrofitting.

- Increasingly, mandates from the water quality protection section of government are moving closer and closer to regulating runoff from existing roads. Either the structure of funding will change, or the water quality purpose of these mandates will be largely unattainable.

- The newly created Transportation Alternatives Program is a separate funding source that allows stormwater management as a qualified expense. Another example is Clean Water Act Section 319 Program that is managed by the Michigan Department of Environmental Quality, which focuses on managing stormwater runoff and protecting water quality.

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What is Green Infrastructure?

From a stormwater management perspective, a component of green infrastructure includes techniques that emulate the natural water cycle described in the previous section. It uses a basic principle modeled after nature: manage rainfall by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. Within the road system, examples include bioswales, tree trenches, and porous pavement.

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- The transportation system provides access to parks, recreational facilities, water amenities, natural areas, to name a few.

- Integrating actions that improve air quality, contribute to a better transportation system, and improving economic vitality is important to Southeast Michigan.

- Federal air quality standards continue to be more stringent making compliance increasingly complicated and expensive.

- Air pollutant emissions from vehicles have been steadily declining due to tightened vehicle emissions standards for both cars and trucks. Even accounting for future growth in regional travel, these emission reductions will continue through 2035 as the fleet turns over and older, more polluting vehicles are replaced by newer, cleaner ones.

- Voluntary programs that seek to retrofit or replace older diesel vehicles can help speed this fleet turnover and improve local air quality. These programs are most beneficial when targeted on areas with high levels of truck traffic, particularly where extended periods of vehicle idling occur.

- Southeast Michigan has a long and impressive history of using a strategic, weight-of-evidence approach to attain and maintain national air quality standards in the most cost effective manner.

- This approach includes extensive analysis of available air quality data to determine the significant source(s) of air quality exceedances and the most cost effective strategies for reducing these exceedances and achieving compliance with all national standards.

- When appropriate, this has included measures to reduce vehicle emissions. For example, in 2006 SEMCOG played a key role in the passage of state legislation that now mandates the use of lower-vapor pressure gasoline in Southeast Michigan, during the summer months, to reduce ozone-causing pollutant emissions.

- Voluntary initiatives, such as SEMCOG’s Ozone Action Program, are an equally important component of the air quality control strategy for Southeast Michigan. Encouraging the public to
take individual actions to reduce their pollutant emissions on days when meteorological conditions are conducive to the formation of ozone reinforces the fact that everyone has a role to play in addressing the region’s air quality.

**Actions and Recommendations**

- SEMCOG will advocate that a revised structure for transportation funding include the design, construction, maintenance, and replacement of necessary stormwater management infrastructure.

- SEMCOG will assist road agencies and local governments with reviewing opportunities to retrofit their impervious surfaces through individual green infrastructure assessments, as well as community and regional green infrastructure planning.

- SEMCOG will complete and promote implementation of the Regional Green Infrastructure Vision.

- Until then, road agencies are encouraged to work with SEMCOG and local governments to incorporate stormwater management into their project as early as possible.

- SEMCOG will recognize and reinforce actions by local governments that address the relationship of transportation and the environment.

- SEMCOG’s Sustainable Community Recognition Program should be periodically updated to reflect current practice.

- Local road agencies should think creatively to fund Green Streets as part of their project.

- Agencies should considering developing integrated Complete Streets and Green Streets programs.

- SEMCOG should encourage applicants to the Transportation Alternative Program to partner so that road projects and stormwater management are integrated.

- Promote, assist, and encourage road agencies to use SEMCOG’s environmental sensitivity analysis tool to gauge the potential environmental impact of projects and seek opportunities to implement guidelines suggested to mitigate negative impacts.

- SEMCOG should encourage the linkage of environmental and transportation planning that includes integration of environmentally sensitive areas with proposed transportation projects.

- SEMCOG will continue to work with the State and local stakeholders to monitor local air quality and use it’s weigh of evidence approach to ensure that the region attains and maintains all national ambient air quality standards in a manner most consistent with supporting the region’s six adopted outcomes.

- SEMCOG will continue to support local initiatives to retrofit or replace older diesel vehicles, particularly in areas with high volumes of truck traffic.

- Educate the public on the environmental impacts of transportation actions.

- SEMCOG will provide education for local road agencies on pollution prevention activities and regulatory requirements.
Interrelationship of Transportation, Neighborhoods, and Housing

The interaction between the region’s transportation system and housing stock and neighborhoods is important to consider when developing a long-range transportation plan since the accessibility and location of both impact the region’s economic prosperity and quality of life. Additionally, a region’s housing market is one of the main indicators of economic stability and, therefore, the condition, quality, and availability of diverse housing types create stronger markets and desirable communities. Housing is particularly important to communities since it is by far the largest source of revenue for our communities and as a region, 73 percent of our property tax base is derived from housing.

SEMCOG adopted a Regional Housing Needs and Neighborhood Resiliency Strategy for Southeast Michigan in November 2012. This strategy focuses on policy and local action recommendations that address the unique challenges facing the region as it rebounds from the economic and housing crisis. Recognizing the inter-relationship of Housing, Transportation, and Desirable Communities, critical parts of the strategy are incorporated into this Transportation Plan.

Findings

- Unlike many regions across the country that are developing sustainability strategies to manage growth, sustainability in Southeast Michigan will depend on how well our communities manage infrastructure, neighborhoods, and housing that were built to serve a much larger population. This systemic challenge must be addressed in a strategic and regional manner.

- Whether single family, multi-family, or vacant, housing is the single largest land use in the region, comprising 45 percent of the land in Southeast Michigan.

- Housing is immobile (fixed in a specific geographic location), durable (most of our housing stock, when maintained at a decent level, can last 100 years or more), and expensive (by and large the greatest expense for a family).

- A successful community and region must prioritize and ensure that its housing stock is well maintained, as well as located and constructed to meet the needs of its residents.

- Population, economic, and building trends of the last decade, along with the lasting impacts of the national foreclosure crisis, have dramatically altered Southeast Michigan’s housing condition and the quality and desirability of many neighborhoods.

- There is a serious misalignment of housing supply and demand in the region resulting from the loss of 125,000 residents since 2000 and the aging of the region’s population.

- There are five broad categories of challenges in need of meaningful and implementable solutions:
  - Systemic regional issues are key to creating resilient neighborhoods and must be addressed at the regional level;
  - Neighborhoods are the backbone of our communities and their health is a main indicator of economic stability in the region;
  - The condition, quality, and availability of our housing stock have been impacted by the region’s changing demographics – primarily declines in population and household wealth;
  - Maintaining and promoting fair housing and neighborhoods that are diverse and equitable is vital for a sustainable and thriving region; and
  - Affordability and accessibility of the region’s housing must be preserved and encouraged.
Figure 62
Percent Household Change, 2010-2040, Southeast Michigan

Source: SEMCOG 2040 Regional Development Forecast, U.S. Census 2010
Figure 63
Forecasted Senior Population Change, 2010-2040, Southeast Michigan

Percent change in population aged 65 or older by Traffic Analysis Zones

Loss in senior population
1% to 25% gain
25.1% to 50% gain
50.1% to 100% gain
More than 100% gain
Regional Average: 85% gain

Source: SEMCOG 2040 Regional Development Forecast, U.S. Census 2010
**Actions and Recommendations**

- Financially incentivize housing development in mature areas – especially infill development near or along transit corridors and locations near employment centers and services.
- Improve public transit throughout Southeast Michigan to link housing to jobs and services.
- Strategic construction, residential rehabilitation, and infill development in market demand and infrastructure supported areas.
- Prioritize incentives for rental preservation and affordable housing in areas that are transit accessible, and near employment opportunities and services.
- Encourage higher density, Transit Oriented Development (TOD), and LEED-ND Smart Location and Linkage rating system to increase housing development in areas that already have existing infrastructure.
- Provide citizens, homeowners, landlords, and others with information on housing choices, housing values, housing costs – including housing, transportation, and energy costs.

**Expanding Nonmotorized Travel Opportunities**

Walking and biking facilities are increasingly popular transportation improvements. Since 2002, over 300 miles of facilities, such as shared-use trails, sidewalks, and on-road bike facilities, have been added to our region’s nonmotorized network. It is estimated that there are currently at least 600 miles of existing nonmotorized facilities. Additionally, SEMCOG’s Bicycle Travel Information maps identify nearly 2,000 miles of bicycle-suitable roads that cyclists may prefer for on-street riding, based on a combination of low traffic speed, low vehicle volumes, and/or dedicated space (bike lane, wide-paved shoulder, or a wide outside lane). While road conditions can change the exact number of bicycle suitable roads in any given year, it is anticipated that new walking and biking improvement projects will continue into the future.

**Figure 64**

*Miles of New Nonmotorized Facilities*

![Bar chart showing new nonmotorized facilities](chart.png)

Source: SEMCOG Transportation Improvement Survey (2013)
Findings

- In an average year, the region adds at least 27 miles of nonmotorized facilities to the existing system.

- Bike lanes have become one of the most popular facilities for increasing mobility and access of bicycle travel. The region has seen at least 46 miles of new bike lanes since 2007. Cities like Detroit and Ann Arbor have plans for many more.

- Communities are asking for more facilities that promote complete streets in an effort to increase community attractiveness, value, and economic vitality.

- No specific nonmotorized facility is the ideal solution in every situation. Depending on the local roadway context, bike lanes, shared-use lanes (sharrows), cycle tracks, bicycle boulevards (neighborhood greenways), wide paved shoulders, shared use paths, sidewalks, trails, or a combination of these nonmotorized facilities may be the preferred alternative.

- Walking and biking are more than recreation; they are legitimate modes of transportation, especially in urban areas. Residents are relying on an interconnected nonmotorized system to help them reach employment, retail, educational, medical, entertainment, cultural, or recreational activity centers.

- Bicycling and pedestrian facilities are an integral part of transit service. Walking and biking are critical means of accessing transit service.
  - According to SEMCOG’s 2010 Regional Onboard Survey, 88 percent of the region’s current transit users access the system by walking or biking to the bus stop.
  - Pedestrians and cyclists are utilizing transit to extend the length of their trips.
  - Cyclists can take their bikes on most of our region’s buses and new bicycle parking facilities can be found at bus stops and many popular destinations.
  - Several SEMCOG communities are pursuing bike sharing systems that complement fixed route transit service in urban centers.
  - Transit Oriented Development (TOD) needs an effective bicycle and pedestrian oriented environment to reach its desired outcome.

- Land use diversity, site design, and density play an integral component in creating walkable and bikeable communities, whether within a small or a large community.

- Coupled with education and traffic enforcement programs, walking and biking facilities can decrease crash rates between automobiles, pedestrians and cyclists. Such facilities provide added safety benefits to all roadway users, by creating a predictable travel path for nonmotorized users.

- Depending on the ownership of the roadway and local context, responsibility for the walking and/or biking facility may fall on the Michigan Department of Transportation, the County Road Agency, or the local municipality. In cases where nonmotorized facilities go through parks or are within former rail corridors, the facility is likely the responsibility of a park or trail organization.

- The federal and state governments, as well as other private organizations are pursuing long distance bike routes and trails such as the U.S. Bicycle Route System, Belle Isle-Wisconsin Trail, Lake to Lake Trail, and Underground Railroad Bicycle Route. Many local governments are interested in having these facilities come through their community for economic development and tourism opportunities.
• Although, there are no official local counts for bicycle or pedestrian trips, national studies have shown exponential growth. Anecdotally, walking and bicycle trips have been growing within the region as well.

• While there are some sources of funding dedicated primarily for nonmotorized facilities, communities and agencies are encouraged to utilize economies of scale by combining nonmotorized projects with other infrastructure improvements, such as repaving, signal timing, and public utility projects.

• SEMCOG and MDOT, with participation from regional stakeholders, are creating a Regional Nonmotorized Plan that identifies all existing and planned bicycle facilities, addresses gaps within the existing/planned bicycle system and documents bicycle and pedestrian issues that will need to be addressed by stakeholders in the coming years.

Actions and Recommendations

• SEMCOG will:
  – Incorporate the forthcoming (late 2013) SEMCOG/MDOT Regional Nonmotorized Plan in future RTP updates and assist in implementing its recommendations.
  – Continue coordinating nonmotorized planning and implementation activities with MDOT, local road agencies and local governments.
  – Assist communities interested in maximizing walkability and bikeability through the synergy of transportation and land use design.
  – Seek opportunities to further connect and integrate nonmotorized facilities in the broader transportation network, especially when repaving, restoring, and reconstructing existing roadways.
  – Continue to pursue opportunities to include or expand nonmotorized facilities and bicycle parking on all fixed route bus lines, at activity centers, and in future rapid transit corridors.
  – Work with partners on safety education and enforcement programs that better influence cyclists and drivers on the rules of the road, especially when sharing the road.
  – Promote, assist, and engage in the Safe Routes to Schools Program.
  – Promote and assist with the Complete Streets Program.
Chapter 6: Regional Evaluation of Projects

Call for Projects

In October 2012, SEMCOG issued the call for projects for the 2040 Regional Transportation Plan (RTP) and the FY 2014-2017 Transportation Improvement Program. The call for projects was based on all of the following:

- SEMCOG’s Creating Success Outcomes and Performance Measures
- Consistency with the national goals set forth in the new federal transportation program Moving Ahead for Progress in the 21st Century (MAP-21)
- Principles and Policies adopted by SEMCOG to guide transportation plan development
- Key societal changes impacting the provision of transportation services

In the call for projects, SEMCOG recommended continued emphasis on care of the current system. This included:

- road and bridge condition;
- household access to jobs, services, and amenities;
- safety;
- transit ridership; and
- maximizing use of transportation infrastructure already in place (utilization rate).

Federal-Aid Committees were asked to base their selection of projects on how well they aligned with these above measures. They were also asked to place heavier emphasis on details of specific projects (time, type, cost, etc.) for the years 2014-2017 (i.e., 2040 Transportation Improvement Program).

Finally, SEMCOG noted that after this current call for projects, increasing emphasis would be placed on SEMCOG’s Creating Success and MAP-21. Specifically, setting targets for adopted measures and using them to guide investment and distribution of transportation revenues (see Chapter 2).

Recognizing priorities vary in different parts of the region, SEMCOG developed and made available a county-specific tool for agencies to use in prioritizing projects and stay within their assigned fiscal constraints as is required by Federal law. SEMCOG offered assistance in applying the tool.

SEMCOG also provided a tool for helping agencies establish pavement management strategies with a similar offer of technical assistance.

The New Transportation Alternatives Program

MAP-21 both eliminated and consolidated a number of existing programs. Several of these programs were included in a new funding category entitled the Transportation Alternatives Program.
This program and the overall goals of MAP-21 very closely resemble SEMCOG’s Creating Success initiative. Part of the funding in this program is allocated to the state and part to regions.

A process for soliciting, assessing, and selecting projects for this program was developed, adopted, and implemented. SEMCOG’s Regional Clearinghouse Review Committee (RC2) has selected projects for this program and those projects are included in the project list.

Overview of Projects in the 2040 Regional Transportation Plan

SEMCOG maintains detailed data sources used to track the condition of the region’s transportation system. SEMCOG has received national recognition for its work in safety, using pavement data for asset management, and for facilitating collaboration on managing operations.

In preparation for the long-range plan and the Transportation Improvement Program, SEMCOG, road, and transit implementing agencies all used the data in various ways to support decision-making. Examples include:

- Condition of roads;
- Condition of bridges;
- Vehicle counts;
- Current and future demographic data by traffic analysis zone on population, age of population, households, and jobs;
- Forecasted travel by road segment;
- Safety data by road segment;
- Transit user survey data;
- Representative public perspective on infrastructure;
- Location of sensitive environmental resources; and
- Intermodal connectivity.

Several other sections of this plan include various analyses undertaken using these data. These analyses were designed and used to guide decision-making for policies, actions and project selection.

Based on these analyses, a series of policies and principles to guide plan development were proposed and adopted by the elected officials representing the region. These policies and principles were used to structure a formal call for submittal of projects in fall 2012.

Specifically, the call for projects was based on all of the following, each of which is described in considerable detail in other parts of this plan:

- Consistency with the national goals set forth in the federal transportation program – Moving Ahead for Progress in the 21st Century (MAP-21),
- SEMCOG’s Creating Success Outcomes and Performance Measures,
- Guiding Principles and Policies adopted by SEMCOG, and
- Recognition of key societal changes impacting the provision of transportation services.
Investment Prioritization
SEMCOG’s various needs analyses demonstrated that much of the existing system continued to decline despite the heavy emphasis already placed on maintaining it. SEMCOG recommended retaining priorities in the 2035 Plan, stressing continued emphasis on care of the current system by focusing on the following:

- Road and bridge condition;
- Household access to jobs, services, and amenities;
- Safety;
- Transit ridership; and
- Infrastructure utilization rate.

Performance Measures
SEMCOG noted its expectation that in the future, increasing emphasis would be placed on setting targets for performance measures to guide investment and distribution of transportation funding. SEMCOG noted the need for a process where decisions on distribution of funds would be increasingly weighted by their rate of return on investment and value in moving the region toward achieving the adopted targets. In fact, that structure has now been framed and is described in Figure 46.

Summary of Projects and Investment in the Region’s Transportation System
There are over 1,000 projects in the Regional Transportation Plan. The following table is a sample of projects found in the Regional Transportation Plan.

Table 15
Example Projects from the Regional Transportation Plan

<table>
<thead>
<tr>
<th>Transit</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ann Arbor - Detroit commuter rail service: Illustrative</strong></td>
<td>From Ann Arbor to Detroit</td>
<td>Construct and operate commuter rail service</td>
<td>Wayne County&lt;br&gt;Washtenaw County</td>
</tr>
<tr>
<td><strong>Huron and Jackson Real Time Transit Traveler Information</strong></td>
<td>Along Huron/Jackson Corridor</td>
<td>Ridership enhancement</td>
<td>Washtenaw County</td>
</tr>
<tr>
<td><strong>Preventive maintenance</strong></td>
<td>Regionwide</td>
<td>Maintain vehicles or equipment</td>
<td>Regionwide</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bridge</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grand River</strong></td>
<td>At West Branch of Cedar River</td>
<td>Replace Bridge</td>
<td>Livingston County</td>
</tr>
<tr>
<td><strong>New International Trade Crossing</strong></td>
<td>From Southwest Detroit to Windsor Ontario</td>
<td>New Bridge</td>
<td>Wayne County&lt;br&gt;Essex County, Ontario</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pavement</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I-96</strong></td>
<td>From Newburgh to Telegraph</td>
<td>Reconstruct</td>
<td>Wayne County</td>
</tr>
<tr>
<td>Route</td>
<td>From</td>
<td>To</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>--------------------------</td>
<td>---------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>(US-24)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lewis Avenue</td>
<td>From Todd to Lulu</td>
<td></td>
<td>Mill and fill, edge, repair</td>
</tr>
<tr>
<td>11 Mile Road</td>
<td>From Inkster to 2200’ East</td>
<td></td>
<td>Rehabilitate</td>
</tr>
</tbody>
</table>

**Capacity**

<table>
<thead>
<tr>
<th>Route</th>
<th>From</th>
<th>To</th>
<th>Description</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jefferson Avenue</td>
<td>From Crocker to Metropolitan Parkway</td>
<td></td>
<td>Widen from 2 to 5 lanes</td>
<td>Macomb County</td>
</tr>
<tr>
<td>I-94</td>
<td>From I-96 to Connor</td>
<td></td>
<td>Widen from 6 to 8 lanes, reconstruct interchanges</td>
<td>Wayne County</td>
</tr>
</tbody>
</table>

**Safety**

<table>
<thead>
<tr>
<th>Route</th>
<th>From</th>
<th>To</th>
<th>Description</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-94 EB</td>
<td>Near Kalmbach Road</td>
<td></td>
<td>Install de-icing system</td>
<td>Washtenaw County</td>
</tr>
<tr>
<td>Krafft Road</td>
<td>From Campbell to State</td>
<td></td>
<td>Add center turn lane</td>
<td>St. Clair County</td>
</tr>
<tr>
<td>M-24 (Lapeer Rd)</td>
<td>At Harmon</td>
<td></td>
<td>Upgrade traffic signal and indirect left.</td>
<td>Oakland County</td>
</tr>
</tbody>
</table>

**Traffic Operations**

<table>
<thead>
<tr>
<th>Route</th>
<th>From</th>
<th>To</th>
<th>Description</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>M-10 (Lodge Freeway)</td>
<td>At M-39 (Southfield Freeway)</td>
<td></td>
<td>Road Weather Information system</td>
<td>Oakland County</td>
</tr>
<tr>
<td>SEMCOG MI Rideshare</td>
<td>Regionwide</td>
<td></td>
<td>Continue operating SEMCOG’s regional MiRideshare program</td>
<td>Regional</td>
</tr>
<tr>
<td>MITS Center operations</td>
<td>Regionwide</td>
<td></td>
<td>Continue control room operations activities</td>
<td>Regional</td>
</tr>
<tr>
<td>Optimize signals</td>
<td>Along M-1 (Woodward Ave)</td>
<td></td>
<td>Optimize signals</td>
<td>Oakland County</td>
</tr>
</tbody>
</table>

**Nonmotorized**

<table>
<thead>
<tr>
<th>Route</th>
<th>From</th>
<th>To</th>
<th>Description</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detroit Riverfront Walk</td>
<td>Along the Detroit River from Meldrum and Belle Isle</td>
<td></td>
<td>Construct nonmotorized path</td>
<td>Wayne County</td>
</tr>
<tr>
<td>Border to Border Trail</td>
<td>Trail linking communities and destinations along the Huron River</td>
<td></td>
<td>Construct nonmotorized path</td>
<td>Washtenaw County</td>
</tr>
</tbody>
</table>

**Studies**

<table>
<thead>
<tr>
<th>Route</th>
<th>From</th>
<th>To</th>
<th>Description</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ann Arbor Connector Study</td>
<td>From Plymouth at US-23 to State at I-94</td>
<td></td>
<td>NEPA and PE for outcomes of feasibility study</td>
<td>Washtenaw County</td>
</tr>
</tbody>
</table>
Collectively, projects in the transportation plan will yield numerous benefits such as:

- Better bridges and fewer detours reducing travel costs;
- Decreased air pollution;
- Increased safety and economic productivity;
- More pedestrian and bicycle travel;
- Improved personal health and community vitality
- Better connections for different modes such as transit;
- Better transit, which will attract development, business, and tourism, and connect people to the places they want to go;
- Better pavement for less wear and tear on vehicles;
- Improved traffic flow;
- Safer roads saving lives, and
- Decreased congestion.

There are numerous federal and state laws, rules, and policies that impact both the level of funding available and how that funding can be used. Table 16 is a high-level summary of the various sources of funding to support the region’s transportation system. Each source is guided by a separate and very specific set of requirements.

Table 16
Transportation Funding Sources

<table>
<thead>
<tr>
<th>Federal</th>
<th>State</th>
<th>Local</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway Trust Fund</td>
<td>Michigan Transportation Fund (MTF)</td>
<td>Local distribution of MTF funds</td>
<td>Transfers from Canada for New International Bridge Crossing</td>
</tr>
<tr>
<td>- Federal gas tax revenue</td>
<td>- State gas taxes</td>
<td>General funds/millages</td>
<td>Private funds</td>
</tr>
<tr>
<td>- General fund transfers</td>
<td>- Vehicle registration fees</td>
<td>Downtown Development Authorities (DDA)</td>
<td></td>
</tr>
<tr>
<td>Periodic special funding from other federal agencies</td>
<td>- Auto-related sales taxes and driver’s license fees</td>
<td>Local Development Finance Authorities (LDFA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Fund transfers</td>
<td>Local transit farebox revenue</td>
<td></td>
</tr>
</tbody>
</table>

Table 17 represents SEMCOG’s current best estimate of total investment from all these funding sources by category through 2040. It also shows the near term investment programmed in the 2014-2017 Transportation Improvement Program.
Table 17

**Summary of Investment in Southeast Michigan’s Transportation System through 2040**

<table>
<thead>
<tr>
<th>Funding Category</th>
<th>Projected Investment Included in 2040 RTP (in millions)</th>
<th>Programmed in the 2014-2017 TIP (in millions)</th>
<th>Uses</th>
<th>Included in TIP</th>
<th>Source of Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation &amp; Maintenance of Federal-Aid Roads</td>
<td>$8,844</td>
<td>NA</td>
<td>Operations and minor capital</td>
<td>No</td>
<td>State</td>
</tr>
<tr>
<td>Operation &amp; Maintenance of Other Roads</td>
<td>$8,731</td>
<td>NA</td>
<td>Operations and minor capital</td>
<td>No</td>
<td>State</td>
</tr>
<tr>
<td>Federal Transit Funds</td>
<td>$3,521</td>
<td>$287</td>
<td>Capital²</td>
<td>Yes</td>
<td>Federal</td>
</tr>
<tr>
<td>State Transit Funds</td>
<td>$3,713</td>
<td>$466</td>
<td>Capital and Operating</td>
<td>Yes⁴</td>
<td>State</td>
</tr>
<tr>
<td>Local Transit Funds</td>
<td>$4,940</td>
<td>$493</td>
<td>Capital and Operating</td>
<td>Yes⁴</td>
<td>Local</td>
</tr>
<tr>
<td>MDOT Capital – repair and improvement³</td>
<td>$12,752</td>
<td>$990</td>
<td>Capital</td>
<td>Yes³</td>
<td>Federal and State</td>
</tr>
<tr>
<td>Local Road Agencies – repair and improvement³</td>
<td>$4,446</td>
<td>$866</td>
<td>Capital</td>
<td>Yes³</td>
<td>Federal and State</td>
</tr>
<tr>
<td>MDOT Capacity Improvements</td>
<td>$5,905⁵</td>
<td>$594⁶</td>
<td>Capital</td>
<td>Yes²</td>
<td>Federal, State, Canada and Private⁷</td>
</tr>
<tr>
<td>Local Road Capacity Improvements</td>
<td>$925</td>
<td>$106</td>
<td>Capital</td>
<td>Yes³</td>
<td>Federal and State</td>
</tr>
<tr>
<td>Total</td>
<td>$53,777</td>
<td>$3,802</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹Federal-aid roads are those that are part of the National Highway System (NHS) or have a functional classification of Urban Collector/Rural Major Collector or higher.
²Some preventative maintenance costs are also allowed.
³Includes reconstruction, rehabilitation, safety, bridge, and Congestion Mitigation and Air Quality (CMAQ) projects
⁴Exceptions apply if project is not federally funded and not considered regionally significant
⁵Includes major freeway projects on I-75 and I-94 that involve both widening and reconstruction: the Blue Water Bridge Plaza; the New International Bridge Crossing (NITC); construction of a new loop ramp at I-75/Sashabaw Rd.; and, the reconfiguration of the I-96/U.S. 23 interchange.
⁶Includes work associated with the Blue Water Bridge Plaza and access road improvements for the NITC
⁷Canadian and private funds are associated with the New International Bridge Crossing

Below is a map depicting the projects in the Regional Transportation Plan. There are numerous projects of various types in each of the region’s seven counties. View the 2040 RTP list of projects via this link.
Figure 65
Projects Included in the 2040 Regional Transportation Plan

Note: Not all projects are represented on this map. Projects listed as 'Various Roads or Bridges', a nonmotorized path that does not follow a street, or bus purchases are examples of projects that may not be mapped. Where possible, sub-projects were mapped.

Source: SEMCOG
• The projects reflect the recommended priority of maintaining the existing system.

• The plan’s emphasis on use of the existing system and a different approach to congestion is reflected in the funding allocation. The vast majority of the minimal funding targeted for congestion management projects that include some capacity expansion results from the need to rehabilitate, repair, and replace portions of two aging Interstates. Only a small portion of the funding for each of these large-scale projects will be used for capacity expansion. Project costs are dominated by the need for repair and replacement of existing roadway, bridges and safety improvements.

• Based on federal requirements, the New International Trade Crossing (NITC) is included. However, Canada is financing the New International Trade Crossing, with costs to be financed by bridge tolls.

• For the most part, road funds cannot be used to pay for either transit capital or operations.

• With few exceptions, federal transit funds cannot be used to pay for transit operations.

• Over $250 million in the plan and $45 million in the TIP is programmed for projects that help expand transportation choices and enhance the transportation experience. These include pedestrian and bicycle infrastructure and safety programs, historic preservation and rehabilitation of transportation facilities, environmental mitigation activities, and safe routes to school programs.

The 2040 RTP also includes a list of illustrative projects. These projects are not part of the approved project list because of a lack of funding. The illustrative list includes only the location, description, phase of project, and total estimated cost. The funding for these projects is not part of the demonstration of financial constraint, and they are not included in the air quality conformity analysis.

Table 18 summarizes key needs identified in this plan by category and the expected change in performance that will result. Consistent with forecasts in SEMCOG’s recent transportation plans, performance improvements continue to be hampered by inadequate funding.

### Table 18

**Expected Changes in Performance at Current Funding Levels**

<table>
<thead>
<tr>
<th>Component</th>
<th>Key Needs</th>
<th>Expected Change in Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit Capital</td>
<td>• Dedicated/ Adequate Source of Revenue</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transit Operating</td>
<td>• Dedicated/ Adequate Source of Revenue</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Service Expansion: frequency and coverage</td>
<td></td>
</tr>
<tr>
<td>Pavement</td>
<td>• Reverse trend of deteriorating condition and increased taxpayer costs</td>
<td></td>
</tr>
<tr>
<td>Bridges</td>
<td>• Sustain level of investment that prevents cost escalation</td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>• Continue steady improvement</td>
<td></td>
</tr>
<tr>
<td>Congestion/Capacity</td>
<td>• Minimize need for expansion/maximize use of existing system</td>
<td></td>
</tr>
<tr>
<td>Major Improvement Projects</td>
<td>• Move forward with the projects persistently identified as high priority</td>
<td></td>
</tr>
<tr>
<td>Road Operations</td>
<td>• Increase emphasis as a cost effective means of addressing multiple system needs</td>
<td></td>
</tr>
</tbody>
</table>
Nonmotorized

- Increase emphasis on expanding as a viable transportation choice

In summary, available funding for both the 2014-2017 Transportation Improvement Program and the 2040 Regional Transportation Plan is properly focused on caring for the existing system. But, the insufficient amount of funding is impeding our ability to develop and improve the transportation system needed to advance our economic prosperity.

**Financial Plan**

The 2040 Regional Transportation Plan contains two project lists. One is a list of projects anticipated through the entire 26-year plan horizon. The other is a subset of the plan list, detailing those projects programmed for the first four years (the 2014-2017 Transportation Improvement Program). Both must be financially constrained. This means the cost of planned projects cannot exceed the amount of funding reasonably expected to be available over the plan period.

As shown in Table 16, funding for highway and transit projects comes from a variety of sources, each with specific requirements and restrictions regulating their use.

Determining the amount of funding available over the 26-year plan is a complex process, relying on both data and past experience. The Michigan Transportation Planning Association (MTPA), made up of local, state, and federal transportation specialists, developed funding factors that are being used statewide. Those factors are used in this plan, as well.

Table 17 summarizes the distribution of funding in various categories.

- Funds available to local road agencies for capital projects over the 26-year plan period total $4.4 billion in federal, state, and local funds. These funds will be used to repair, rebuild, and rehabilitate locally-owned roads and bridges on the federal-aid system, which is comprised of public streets and highways designated for federal funding. These tend to be the more important routes in terms of traffic volume and connectivity.

- The Michigan Department of Transportation (MDOT) is the agency responsible for maintaining the State Trunkline system. These are roads with “I,” “M,” or “US” designations. MDOT is projected to have about $12.8 billion available between 2014 and 2040 to preserve the roads and bridges on the State Trunkline System in Southeast Michigan. All State Trunkline roads are on the federal aid system.

- Operations and maintenance (O & M) activities are critical to the smooth functioning of the highway system. O & M includes activities such as snow and ice removal, mowing rights-of-way, clearing debris, lighting, drainage, and similar activities. MDOT and local road agencies are projected to have approximately $8.8 billion available for O & M activities on their respective portions of the federal aid system between 2014 and 2040. In addition, local agencies are projected to have about $8.7 billion for O & M activities on local roads, i.e., those public roads not on the federal-aid system.

- Transit agencies in Southeast Michigan are projected to have approximately $3.5 billion in federal funds, $3.7 billion in state funds, and $4.9 billion in local funds. In the past, the vast majority of state and local funds have been spent on operations.
Approximately $5.9 billion is allocated for MDOT capacity improvements that include major freeways on I-75 and I-94; the Blue Water Bridge Plaza; the New International Bridge Crossing (NITC); and, two smaller capacity projects. For clarification:

- Federal requirements stipulate that the $1.75 billion cost for the New International Trade Crossing (NITC) be included even though the Canadian government is responsible for funding the project.

- The vast majority of the costs associated with the I-75 and I-94 projects are related to the reconstruction of these facilities. Only a small portion is related to capacity expansion.

An additional, $0.9 billion is allocated for various local road capacity improvements.

The complete financial plan is located in the Appendix.
Funding Large-Scale Projects

The continued decline of state transportation revenue from the state gas tax continues to have a major impact on MDOT’s ability to deliver major projects like I-94, I-75, and the Detroit Intermodal Freight Terminal improvements, as proposed in the previous Direction2035 long-range plan. MDOT continues to hope that the effort to raise between $1.2 and $1.4 billion per year in additional state revenue for transportation needs will lead to a fruitful outcome. The additional revenue will provide much-needed funds to reverse the recent economic downturn in the state, improve transportation infrastructure, and induce economic development. MDOT’s major projects in Southeast Michigan will remain in the outer years of the SEMCOG 2040 Regional Transportation Plan until sufficient funding can be identified to move the projects forward in an earlier timeframe.

I-75, Oakland County
As currently planned, the interchange improvements and an additional lane in both directions on I-75 from Eight Mile to M-59 will be funded by using traditional federal funding sources. The total estimated cost is $1.3 billion. MDOT is developing a detailed financial plan that provides further information on the proposed financing, which could also include innovative financing techniques. As a result of proposed amendments to the MDOT Capacity Project Program for the June 2011 amendment cycle, this project will be advanced. The project is expected to be completed in the following segments:

- North Segment 5 (I-75 from N. of Adams Road to S. of M-59) - this segment is currently scheduled to be completed and open to traffic by 2018.
- North Segment 4 (I-75 from N. of Waddles to N. of Adams) – this segment is currently scheduled to be completed and open to traffic by 2023.
- North Segment 3 (I-75 from N. of Rochester to N of Waddles) – this segment is currently scheduled to be completed and open to traffic by 2026.
- Middle Segments 1 & 2 (I-75 from N. of Gardenia to N of 13 Mile and N of 13 Mile to N of Rochester) – these segments will be done together and are currently scheduled to be completed and open to traffic by 2028.
- South Segment 1 (I-75 from N of I-696 to Gardenia) – this segment is currently scheduled to be completed and open to traffic by 2032.
- South Segment 2 (I-75 from N of 8 Mile to I-696) – this segment is currently scheduled to be completed and open to traffic by 2033.

I-94, Wayne County
As currently planned, the reconstruction and widening of this corridor in Wayne County will be funded with traditional federal funding sources and state bond funds. The total cost estimate is $2.7 billion in future dollars. (Note: This amount is inflated from 2013 cost of $1.8 billion.) MDOT is developing a detailed financial plan providing further information on the proposed financing. As a result of proposed amendments to the MDOT Capacity Project Program for the June 2011 amendment cycle, this project will be advanced beginning in 2012 with the reconstruction of two critical bridges as listed below:

- Bridge 1 (Van Dyke Bridge [M-53] over I-94) – this project is currently under construction and will be open to traffic in 2013
- Bridge 2 (Gratiot Bridge [M-3] over I-94) – this project is currently scheduled to be constructed and open to traffic in 2014
MDOT is currently studying and validating the best ways to construct the remaining portions of the project and is considering the feasibility of the following construction sequence:

- **Phase 1** – Master building demolition contract to clear property needed for construction throughout the corridor
- **Phase 2** – Complete bridges over I-94 that are most in need of reconstruction and build local access improvements to facilitate access and maintenance of traffic during construction of I-94.
- **Phase 3** – Construct the portion of I-94 from Chene Avenue to Conner Ave.
- **Phase 4** – Construct I-94 from I-96 to Chene Avenue including the reconstruction of the M-10 and I-75 interchanges

MDOT is also reviewing innovative procurement, design, and construction methods that could reduce cost and complete the construction in five years or less.

**Blue Water Bridge**
As currently planned, the $217 million Blue Water Bridge Plaza Expansion Project (and corresponding widening of the I-94 bridge over the Black River) will be funded with a mix of federal formula and discretionary dollars, state dollars, and financed debt. MDOT has prepared a detailed initial financial plan providing further information on the proposed financing.

Several mitigation projects are underway which are funded by MDOT and FHWA, including assisting the city of Port Huron with their master planning update and construction of local way finding signs to increase tourism, both scheduled for summer 2013. Also, as part of the proposed improvements, a new welcome center/rest area on westbound I-94/I-69 is expected to be constructed in 2014 and open in 2015.

**Chicago-Detroit/Pontiac Passenger Rail Corridor**
The Michigan Department of Transportation (MDOT) has initiated a program to evaluate route alternatives on 300 miles of passenger rail improvements for the Chicago-Detroit/Pontiac passenger rail corridor. The study is being prepared in partnership with the Indiana Department of Transportation (INDOT) and the Illinois Department of Transportation (IDOT), in consultation with the Federal Railroad Administration (FRA). The goal of this corridor improvement includes an improved passenger rail system; introduction of modern, high-speed trains operating at speeds up to 110 mph; and multimodal connections to improve system access. It is anticipated that overall development of this passenger rail system will offer businesses and leisure travelers shorter travel times, additional train frequencies, improved reliability and connections between urban centers and smaller communities along the corridor and adjacent areas. The ongoing preliminary alternative analysis phase is expected to cost about $4 million, 80 percent of which will be Federal Rail Administration funds, with the 20 percent match coming from participating state agencies. The study is expected to be completed by 2015.

**Detroit Intermodal Freight Terminal (DIFT)**
The goal of the Detroit Intermodal Freight Terminal is to consolidate rail and truck traffic at the existing Livernois - Junction Yard and facilitate more effective transfer of freight from one mode to another. The plan will be funded by a mix of federal formula and discretionary dollars, state dollars, and private rail company contributions. The total cost estimate for all phases is approximately $795 million. (Note: The cost is $539 million in today’s dollars.) Presently, Congressional earmark funds, Federal Rail Administration funds, and state Comprehensive Transportation Fund dollars are funding the preliminary engineering phase, right-of-way phase, and a portion of the construction phase of the project. MDOT will develop a detailed financial plan as required by FHWA, providing further information on the proposed financing for the DIFT. The “DIFT” project is comprised of a series of individual independent projects.
that are planned for construction over a 10 to 15 year time frame. Though not all of these projects are funded in the SEMCOG 2040 plan, there are strong indications that MDOT will be moving forward with a $24 million portion of the project involving the Delray railroad interlocking and associated work. This work will be moved by amendment from the illustrative list (see page 5) into the FY 14-17 TIP plan.

**New International Trade Crossing (NITC)**

The New International Trade Crossing (NITC), is formerly known as the Detroit River International Crossing. The proposed New International Trade Crossing (NITC) project is a new end-to-end border crossing system between Detroit, Michigan, and Windsor, Ontario, intended to improve the flow of international trade between the U.S. and Canada at the busiest border crossing on the northern border. The proposed project consists of five primary elements: a new Detroit River crossing (bridge); new state-of-the-art border inspection areas on each side of the river for the respective border services agencies of the U.S. and Canada (plazas); and direct connections to the highway system in each country (I-75 in the U.S. and Highway 401 in Canada).

On the U.S. side in southwest Detroit, the project involves a toll and customs plaza and ramps to I-75. The Canadian plaza, on the western edge of Windsor, connects to Highway 401 via the new Rt. Hon. Herb Gray Parkway (formerly known as the Windsor-Essex Parkway). The parkway is a seven-mile long corridor. Highway 401, an interstate-style freeway, connects Windsor to Toronto.

The total cost estimate for all project components is $3.54 billion, which will be funded by a concessionaire through a public-private partnership (P3) agreement, Canadian investments, project revenues, a project contribution received from the federal government for inspection plaza needs, and revenue bonds secured by project revenues, if necessary. Michigan will not be obligated to pay any of the costs of NITC and no state appropriation will be required.

**Economic Impact of Transportation Projects**

An efficient and well-maintained transportation system provides essential support for economic activity, providing people with access to goods, services and employment and businesses access to materials, markets and talent. Because of this, investment in the preservation, maintenance, and enhancement of the regional transportation system plays an integral role in supporting economic growth and development.

To help illustrate the benefits of investing in the highway and bridge projects included in the 2040 Regional Transportation Plan, SEMCOG conducted an economic assessment of these projects using a tool that estimates the long-term user benefits (e.g., travel time savings) and economic impact (e.g., jobs and personal income)\(^\text{18}\). This assessment does not include the short-term impacts of the expenditures on the materials and labor involved in the construction of the projects themselves, but rather on the long-term economic effects brought about by these projects contributing to a safer, more efficient transportation system.

Compared with today’s highway system, the projects in this plan will contribute (using constant 2010 dollars) over the course of the 2040 RTP:

\(^{18}\) This tool was developed with the coordination of the Michigan Department of Transportation (MDOT) Statewide and Urban Travel Analysis Section to derive an estimation of travel benefits and economic impact similar to the economic analysis procedures practiced by MDOT. More detail about the economic analysis conducted for the 2040 Regional Transportation Plan can be found in the appendix.
- Over $1.3 billion ($54 million annually on average) to the Gross Regional Product;
- Over $1.4 billion ($57 million annually on average) in real personal income;
- Over 10,800 (430 annually on average) job-years;
- Over $800 million in travel time savings for highway users; and
- Over $800 million in savings from safety improvements.

In addition, these projects will support over 7,000 construction jobs each year over the course of the plan. This assessment does not include other important non-highway elements of this plan such as transit, air, rail, and water transportation that would further underscore the benefits of investment in the regional transportation system.

**Air Quality Conformity**

The federal Clean Air Act requires that federally-funded highway and transit projects contained in regional long-range transportation plans be consistent with the air quality goals established in state air quality implementation plans (SIP). The process for demonstrating this consistency is called Air Quality Conformity. The purpose of Conformity is to ensure that projects in the plan will not cause new air quality violations, worsen any existing violations, or delay timely attainment of the National Ambient Air Quality Standards (NAAQS).

The U.S. Environmental Protection Agency (EPA) has established NAAQS for six criteria pollutants: ozone, nitrogen dioxide, carbon monoxide (CO), lead, sulfur dioxide, and particulate matter (PM2.5 and PM10). EPA designates an area as either “attainment” or “nonattainment” for each of these pollutants, depending on whether local air monitoring data shows it is meeting or not meeting these standards. Areas that were initially designated as “nonattainment” for a particular standard but later attain that standard are termed “maintenance” areas.

**Pollutants Analyzed for Conformity in Southeast Michigan**

Air Quality Conformity analyses are required for all areas currently designated as “nonattainment” or “maintenance” for ozone, CO, PM10 or PM2.5. Southeast Michigan is currently designated a maintenance area for CO and a nonattainment area for the annual and 24-hour PM2.5 standards. The region was formerly designated as a maintenance area for the 80 ppb ozone standard. However, due to significant reductions in levels of this pollutant in recent years, the region was recently designated as an “attainment” area for the new stricter 75 ppb standard. It should also be noted that, while still officially designated “nonattainment” for both of the PM2.5 standards, levels of the pollutant have also declined substantially. As a result, the region is now meeting both of these standards and is also in compliance with the tougher annual standard recently set by the EPA. Thus, it is expected that Southeast Michigan will soon be officially designated as an “attainment” area for this pollutant as well.

The current air quality designations for Southeast Michigan, as noted above, require that SEMCOG perform a conformity analysis for CO and PM2.5. While analysis of ozone is not currently required, for the time being SEMCOG is continuing to include this pollutant in its analysis for information purposes.

**Conformity Analysis Process**

To analyze conformity, emissions generated by all vehicles on Southeast Michigan’s roadway system are estimated using a complex set of computer models. The models estimate the expected change in these emissions due to the combination of:

- Anticipated growth in the region, and
• The implementation of regionally-significant transportation projects that either increase or decrease roadway capacity (e.g., building new roads, adding or reducing the number of traffic lanes on existing roads). The impact of major transit projects is also included.

Detailed documentation on this modeling process, including a list of all the projects included in the analysis, is contained in a separate SEMCOG document entitled *Ozone, Carbon Monoxide (CO), and Fine Particulate Matter (PM2.5) Conformity Analysis for SEMCOG’s 2040 Regional Transportation Plan and 2014-2017 Transportation Improvement Program*.

**Results of Conformity Analysis**
For ozone and CO, conformity is demonstrated when forecasted emissions for specific future years are less than or equal to the established emissions limits (budgets) set forth for those pollutants in Michigan’s (SIP). Results of the conformity analyses for ozone and CO are provided below. As ozone is not a directly-emitted pollutant, conformity is measured by analyzing its precursors: volatile organic compounds (VOC) and nitrogen oxides (NOx).

The data show forecasted emissions of VOCs, NOx, and CO are well below established mobile source emissions budgets in each analysis year. Thus, conformity is demonstrated.

**Table 19**
Results of Ozone Analysis*

<table>
<thead>
<tr>
<th>Analysis Year</th>
<th>Emissions (tons per day)</th>
<th>Associated Daily VMT (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>VOC</td>
<td>NOx</td>
</tr>
<tr>
<td>Budget</td>
<td>106.0</td>
<td>274.0</td>
</tr>
<tr>
<td>2015</td>
<td>67.0</td>
<td>141.9</td>
</tr>
<tr>
<td>2020</td>
<td>47.3</td>
<td>85.1</td>
</tr>
<tr>
<td>2025</td>
<td>42.5</td>
<td>66.8</td>
</tr>
<tr>
<td>2035</td>
<td>37.7</td>
<td>58.0</td>
</tr>
<tr>
<td>2040</td>
<td>37.8</td>
<td>57.6</td>
</tr>
</tbody>
</table>

*Covers Southeast Michigan’s former ozone “maintenance” area, which includes the entire seven-county SEMCOG region.

**Table 20**
Results of Carbon Monoxide Analysis*

<table>
<thead>
<tr>
<th>Analysis Year</th>
<th>CO (tons per day)</th>
<th>Associated Daily VMT (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget</td>
<td>3,843</td>
<td>-------</td>
</tr>
<tr>
<td>2015</td>
<td>1,056</td>
<td>93.7</td>
</tr>
<tr>
<td>2025</td>
<td>873</td>
<td>94.2</td>
</tr>
<tr>
<td>2035</td>
<td>864</td>
<td>95.6</td>
</tr>
<tr>
<td>2040</td>
<td>866</td>
<td>96.0</td>
</tr>
</tbody>
</table>

*Encompasses Southeast Michigan’s CO “nonattainment” area, which includes Macomb, Oakland and Wayne counties.
For PM2.5, two separate analyses are performed: one for the annual standard and one for the 24-hour standard. As SIP budgets for Southeast Michigan have not yet been established, conformity is demonstrated using EPA’s interim emissions method. This involves comparing emissions from an EPA-specified base year to forecasted emissions in specific future years. To demonstrate conformity, PM2.5 and NOx emissions in each of the future years must not exceed those in the base year. NOx is included in the analysis because it is a precursor for PM2.5.

For the 24-hour PM2.5 analysis, conformity is demonstrated when forecasted emissions are less than or equal to emissions levels in 2008. The analysis uses emissions for a typical winter day, as the highest PM2.5 concentrations typically occur during this season. Data in the following table show forecasted emissions in all future years are well below 2008 levels. Thus, conformity for the 24-hour standard is demonstrated.

Table 21
Results of 24-Hour PM2.5 Analysis

<table>
<thead>
<tr>
<th>Analysis Year</th>
<th>Emissions (tons per day)</th>
<th>Associated Daily VMT (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PM2.5</td>
<td>NOx</td>
</tr>
<tr>
<td>2008</td>
<td>16.8</td>
<td>389</td>
</tr>
<tr>
<td>2015</td>
<td>8.1</td>
<td>153</td>
</tr>
<tr>
<td>2025</td>
<td>5.0</td>
<td>75</td>
</tr>
<tr>
<td>2035</td>
<td>4.7</td>
<td>66</td>
</tr>
<tr>
<td>2040</td>
<td>4.7</td>
<td>66</td>
</tr>
</tbody>
</table>

*Encompasses Southeast Michigan’s PM2.5 “nonattainment” area, which includes the entire SEMCOG region

For the annual PM2.5 analysis, total annual emissions are calculated and conformity is demonstrated if those in all future years are less than or equal to levels in 2002. The following table shows the results of the annual PM2.5 conformity analysis. Forecasted emissions of both PM2.5 and NOx, in all analysis years, are significantly below levels experienced in 2002. Thus, conformity is demonstrated.

Table 22
Results of Annual PM2.5 Analysis

<table>
<thead>
<tr>
<th>Analysis Year</th>
<th>Emissions (tons per year)</th>
<th>Associated Annual VMT (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PM2.5</td>
<td>NOx</td>
</tr>
<tr>
<td>2002</td>
<td>6,379</td>
<td>189,786</td>
</tr>
<tr>
<td>2015</td>
<td>2,172</td>
<td>51,327</td>
</tr>
<tr>
<td>2025</td>
<td>1,188</td>
<td>24,677</td>
</tr>
<tr>
<td>2035</td>
<td>1,107</td>
<td>21,580</td>
</tr>
<tr>
<td>2040</td>
<td>1,106</td>
<td>21,500</td>
</tr>
</tbody>
</table>

*Encompasses Southeast Michigan’s PM2.5 “nonattainment” area, which includes the entire SEMCOG region
Environmental Justice

Transportation investments have both positive and negative impacts that may be localized in a particular community or portion of a community. Environmental justice requires that these impacts be distributed fairly among population groups especially focusing on population groups that have been traditionally disadvantaged. SEMCOG, in its response to this important challenge, enhanced a process to assess the impacts of the transportation planning process, the 2040 RTP and the 2014-2017 TIP on the target populations.

The target populations consist of minorities (African-American, Asian-American, Native American, and Hispanics), low-income households, senior citizens, and households without cars. Information about these populations can be found in the appendix. SEMCOG identified three principles to ensure environmental justice considerations were properly integrated into the transportation planning process:

- Adequate public involvement of target populations in regional transportation decision making,
- Assess (i.e., travel time) whether there were disproportionately high and adverse impacts on the target populations resulting from federal programs, and
- Ensure that the target populations receive an equitable share of benefits of federal transportation investments.

Several quantitative measures were developed in order to assess the impacts of the plan. Although these measures cannot take into account every possible facet of environmental justice, SEMCOG believes they are good indicators as to whether significant environmental justice issues are present. When applied at the regional level, the measures indicated the 2040 RTP creates no environmental justice problems. It is important to keep in mind that this analysis was done at a regional, transportation system wide level. Additional refinement will be made as individual projects go through project development. The complete environmental justice analysis of the 2040 RTP is available in the separate Environmental Justice Technical Analysis in the Appendix.

Environmental Sensitivity

By its very nature, the transportation infrastructure, and the people and vehicles that use it, impact the environment – both natural and built. It is important to consider this interaction when planning, designing, constructing, and maintaining the transportation system. With that in mind, SEMCOG developed a regional analysis of the impact of planned transportation projects on environmentally sensitive resources and a series of guidelines (PDF, 736 KB) for mitigating those impacts.

The regional analysis of project impacts involves three steps that were developed based on consultation with federal, state, local, and tribal transportation and environmental resource agencies.

- SEMCOG defines the environmentally sensitive resources to be included in the analysis (Table 23).

Table 23
Environmentally Sensitive Resources

<table>
<thead>
<tr>
<th>Resources</th>
<th>Agency Responsible for Data Development/Upkeep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lakes and Streams</td>
<td>Michigan Center for Geographic Information</td>
</tr>
<tr>
<td>Designated Trout Lakes/Streams</td>
<td>Michigan Center for Geographic Information,</td>
</tr>
</tbody>
</table>
Using Geographic Information Systems, planned transportation projects are mapped and buffered, representing a likely area of influence (Table 24)

<table>
<thead>
<tr>
<th>Environmental Resource</th>
<th>Bridges</th>
<th>Congestion Capacity</th>
<th>Congestion Non-Capacity</th>
<th>Nonmotorized</th>
<th>Pavement</th>
<th>Rail</th>
<th>Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lakes and Streams</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>¼ mile</td>
</tr>
<tr>
<td>Designated Trout Lakes/Streams &amp; Natural Rivers</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>¼ mile</td>
</tr>
<tr>
<td>Wetland Indicators</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>¼ mile</td>
</tr>
<tr>
<td>Flood Prone Areas</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>¼ mile</td>
</tr>
<tr>
<td>Wellhead Protection Areas</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>¼ mile</td>
</tr>
<tr>
<td>Sinkholes</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>¼ mile</td>
</tr>
<tr>
<td>Trees</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>250’</td>
<td>¼ mile</td>
<td>¼ mile</td>
<td>¼ mile</td>
</tr>
<tr>
<td>Parks and Recreation Areas</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
</tr>
<tr>
<td>Historic Sites</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
<td>250’</td>
</tr>
</tbody>
</table>
The buffers are intersected with environmentally sensitive resources. Where a buffer and an environmentally sensitive resource intersect, an impact is considered possible.

It should be noted that no additional analysis of possible impacts is conducted. Simply because a project buffer intersects with for example, a tree, it does not mean the tree would be impacted. Nor does the absence of intersection mean the tree is definitely not impacted. This screening analysis is only designed to focus attention on possible areas of concern that should be evaluated in more detail at the project level.

(Note: This analysis reflects all projects in the Regional Transportation Plan, both approved and currently proposed for amendment, if applicable.)

Table 25
Possible Project Impacts
Congestion Management Process

SEMCOG has primary responsibility for maintaining a regional congestion management process (CMP) and using the results to recommend congestion mitigation strategies for inclusion in the 2040 RTP. The CMP is developed in coordination with the Federal Highway Administration, Michigan Department of Transportation, and local implementing agencies. It identifies current and future congestion in the region and determines which mitigation strategies might apply to those locations. Comparing the congestion mitigation recommendations from the CMP to the 2040 RTP, consistency is confirmed. The 2040 RTP includes a range of multimodal projects/strategies to minimize congestion and enhance the mobility of people and goods including, but not limited to, operational improvements (e.g., signal retiming and coordination, ITS, access management, bottleneck reduction), travel demand management (e.g., telecommuting, flextime, transit, car/vanpooling), policy approaches and additions to capacity.

The Congestion Management Process Analysis, included in the appendix, highlights results of the congestion analysis conducted for the 2040 RTP. A more detailed description of the congestion analysis is provided in the appendix. These results were used to develop a new approach to congestion, which will be incorporated into an update of the CMP.

Study (14 projects) | 13 | 12 | 5 | 4 | 14 | 4 | 0 | 1 | 1 | 0 | 5

1 Water resources consist of lakes and streams, designated trout lakes/streams, and Natural Rivers.
2 Groundwater resources consist of wellhead protection areas and sinkholes.
Source: SEMCOG.
Figure 66
Capacity Projects Compared to Congested Corridors
Intelligent Transportation Systems (ITS)

Most travelers are unconcerned about who owns and operates the various components of the transportation system. They expect it to work seamlessly and efficiently. The strength of an MPO is its ability to reach out to a vast array of stakeholders to enable communication and cooperation among them. In this regard, SEMCOG works with many different agencies interested in finding solutions for various transportation issues throughout the region. SEMCOG fosters system integration and agency cooperation concerning ITS technologies.

ITS refers to technologies that help operators to better monitor and manage the system, to respond to incidents more quickly and to disseminate traffic-related information back to the public. Examples of ITS technologies include dynamic message signs, cameras that monitor traffic flow and incidents, and road sensors, which count and classify the vehicles on the highway system.

ITS enables collaboration, communication and cross-jurisdiction/agency system integration. ITS is a proven alternative solution to reduce congestion, increase traffic flow, enhance safety and improve air quality.

FHWA developed the national ITS architecture to provide a unifying framework for ITS infrastructure deployment. SEMCOG houses and maintains the regional ITS architecture, as a framework for implementing ITS projects across multiple jurisdictions and agencies, and a regional ITS Deployment Plan, which provide an order/sequence for implementing the projects in the architecture. This Southeast Michigan Regional ITS Architecture identifies the organizations that provide ITS or those that have an interest in them. It defines the different operating systems, the functions they perform, what information they exchange and how that information is exchanged. Identifying the different types of technologies and interconnections helps one understand the existing systems. It helps detect any gaps related to the information exchange, or any agencies that could collaborate. The architecture ensures that institutional agreements and technical integration for the implementation of ITS projects are in place. Its primary goal is to facilitate the efficient deployment and use of ITS equipment, networks and management structures to create a safer and more efficient transportation system across jurisdictions. All ITS projects using federal funding must conform to the Regional ITS Architecture.

Creating Success with Our Transportation Assets is consistent with both the ITS Architecture and Deployment Plan. It includes a variety of ITS initiatives, including:

- advanced transit fare collection systems, communications, and surveillance;
- traffic signal retiming programs;
- freeway and arterial management systems;
- Freeway Courtesy Patrol; and
- continued operations and maintenance of existing ITS technologies.
Appendix

Links to Plans and Other Information

Following are links to plans and other information discussed in Creating Success with Our Transportation Assets: 2040 Regional Transportation Plan for Southeast Michigan (organized by the RTP chapter and section in which they appear):

Chapter 3: Informing the Plan

Public Participation
- SEMCOG’s Public Participation Plan (2011)
- Pulse of the Region” survey results http://smcg.informz.net/SMCG/archives/archive_2787687.html
- Infrastructure Survey – What the Public Thinks http://www.semcog.org/Sustainability_Infrastructure.aspx
- Inside Story videos and responses
- Summary of Public Comments
- Semscope (Spring 2013) devoted to transportation funding.
- A Citizen’s Guide to Transportation Planning in Southeast Michigan (Video)

Agency Consultation
Responsible for individual long-range transportation plans:

- Washtenaw Area Transportation Study Long Range Transportation Plan
- St. Clair County Transportation Study Long Range Transportation Plan

Chapter 5: Enhancing Transportation Connections

Optimizing Public Transit and Access:
- SEMCOG’s 2010-2011 survey of transit users in the region
- Improving Transit in Southeast Michigan: A Framework for Action (SEMCOG)
- Comprehensive Regional Transit Service Plan (Regional Transit Coordinating Council)
- Transit Vision for Washtenaw County (Ann Arbor Transportation Authority)

Freight and Economic Vitality:
- Southeast Michigan Freight and Economic Analysis Study (SEMCOG, July 2011)

Interrelationship of Transportation, Neighborhoods, and Housing
Chapter 6: Regional Evaluation of Projects

Overview of Projects in the 2040 Regional Transportation Plan:

- 2040 RTP list of projects.
- 2040 RTP of illustrative projects

Environmental Sensitivity:


Intelligent Transportation Systems (ITS):

- Regional ITS Architecture
- ITS Deployment Plan

Attachments

Following are attachments referenced in Creating Success with Our Transportation Assets: 2040 Regional Transportation Plan for Southeast Michigan (organized by the RTP chapter and section in which they appear):

Chapter 3: Informing the Plan

Forecasting Future Travel

- Travel Demand Forecasting Process

Chapter 6: Regional Evaluation of Projects

Financial Plan

- SEMCOG 2040 RTP Financial Plan

Economic Impact of Transportation Projects

- Economic Assessment of the 2040 Regional Transportation Plan

Air Quality Conformity

- Ozone, Carbon Monoxide (CO), and Fine Particulate Matter (PM2.5) Conformity Analysis for SEMCOG’s 2040 Regional Transportation Plan and 2014-2017 Transportation Improvement Program

Environmental Justice

- Environmental Justice Technical Analysis – 2040 Regional Transportation Plan and 2014-2017 Transportation Improvement Program

Congestion Mitigation Process

- Congestion Process Management Analysis