Transportation
Demand
Management

Working Paper #3
Implementation of TDM during Major Capital Construction

August 2013

Transportation Reform Demonstration Project:
Creating jobs and economic development in Michigan by removing barriers to coordinated federal, state and local public transportation investment and management.

*This report was produced with the generous support of the Rockefeller Foundation.*

The Rockefeller Foundation fosters innovative solutions to many of the world’s most pressing challenges, affirming its mission, since 1913, to “promote the well-being” of humanity. Today, the Foundation works to ensure that more people can tap into the benefits of globalization while strengthening resilience to its risks. Foundation initiatives include efforts to mobilize an agricultural revolution in Sub-Saharan Africa, bolster economic security for American workers, inform equitable, sustainable transportation policies in the United States, ensure access to affordable and high-quality health systems in developing countries, accelerate the impact investing industry’s evolution, and develop strategies and services that help vulnerable communities cope with the impacts of climate change. For more information, please visit www.rockefellerfoundation.org.
Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purpose and Process</td>
<td>1</td>
</tr>
<tr>
<td>Context Overview</td>
<td>1</td>
</tr>
<tr>
<td>Implementation Plan Overview</td>
<td>4</td>
</tr>
<tr>
<td>Regional Programs &amp; Policies</td>
<td>6</td>
</tr>
<tr>
<td>Project Strategies</td>
<td>20</td>
</tr>
<tr>
<td>CORRIDOR: Woodward Avenue Streetcar</td>
<td>20</td>
</tr>
<tr>
<td>CORRIDOR: I-96</td>
<td>29</td>
</tr>
<tr>
<td>CORRIDOR: I-94</td>
<td>33</td>
</tr>
<tr>
<td>CORRIDOR: I-75</td>
<td>38</td>
</tr>
<tr>
<td>Trip Reduction Summary</td>
<td>41</td>
</tr>
</tbody>
</table>

Table of Figures

<table>
<thead>
<tr>
<th>Figure</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Planned Major Capital Construction Projects</td>
<td>2</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Planned Major Capital Projects</td>
<td>3</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Summary of Strategies</td>
<td>5</td>
</tr>
<tr>
<td>Figure 4</td>
<td>MiDrive Mobile Display</td>
<td>7</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Sample Marketing Campaign used in Arlington, VA</td>
<td>8</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Seattle Metro TDM Advertisement</td>
<td>9</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Summary of Marketing and Information Solutions</td>
<td>9</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Summary of Employer Solutions</td>
<td>11</td>
</tr>
<tr>
<td>Figure 9</td>
<td>U/EcoPass Program – Broad Estimate of Potential Revenues</td>
<td>12</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Mode Shifts with Free Transit Passes</td>
<td>13</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Promotional Material in Duluth</td>
<td>14</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Magnetic Stripe and Smart Cards</td>
<td>16</td>
</tr>
<tr>
<td>Figure 13</td>
<td>Summary of Transit Solutions</td>
<td>17</td>
</tr>
<tr>
<td>Figure 14</td>
<td>Implementation of Project Development Practices</td>
<td>19</td>
</tr>
<tr>
<td>Figure 15</td>
<td>General Overview of Transit and Shuttle Routes</td>
<td>21</td>
</tr>
<tr>
<td>Figure 16</td>
<td>Current Bus Service Transfer</td>
<td>22</td>
</tr>
<tr>
<td>Figure 17</td>
<td>Current Service Levels</td>
<td>23</td>
</tr>
<tr>
<td>Figure 18</td>
<td>Implementation of Project Development Solutions</td>
<td>25</td>
</tr>
<tr>
<td>Figure 19</td>
<td>Woodward Avenue vicinity bicycle facilities</td>
<td>26</td>
</tr>
<tr>
<td>Figure 20</td>
<td>Potential park and pedal locations</td>
<td>27</td>
</tr>
<tr>
<td>Figure 21</td>
<td>Implementation of Bicycle Solutions</td>
<td>28</td>
</tr>
<tr>
<td>Figure 22</td>
<td>Summary of Parking Solutions</td>
<td>29</td>
</tr>
<tr>
<td>Figure 23</td>
<td>I-96 reconstruction project location and alternate routes</td>
<td>29</td>
</tr>
<tr>
<td>Figure 24</td>
<td>Implementation of Transit Solutions</td>
<td>30</td>
</tr>
</tbody>
</table>
Figure 25  Empty parking lots located on Grand River Avenue west of Telegraph Road 32
Figure 26  Summary of Driving Solutions ................................................................. 32
Figure 27  Summary of Transit Solutions ................................................................. 34
Figure 28  Implementation of Driving Solutions ..................................................... 34
Figure 29  Detroit downtown parking locations ..................................................... 35
Figure 30  Spaces managed by private company Olympia Entertainment ................. 36
Figure 31  Potential park and ride locations near Conner Street dotted in red .......... 37
Figure 32  Summary of Parking Solutions ................................................................. 37
Figure 33  Summary of Transit Solutions ................................................................. 38
Figure 34  Summary of Employer Solutions ............................................................ 39
Figure 35  Summary of driving solutions ................................................................. 40
Figure 36  Estimated trip reductions ...................................................................... 1
PURPOSE AND PROCESS

The Michigan Sense of Place Council, representing numerous state agencies under the direction of Governor Snyder, has partnered with Smart Growth America to provide technical advisory services to six communities of Michigan pursuing livable communities initiatives. Assistance was offered in two primary areas – community mobility management and strategic transportation demand management (TDM). The effort in the SEMCOG region focuses particularly upon TDM as a mitigation strategy during major capital construction.

TDM is a suite of strategies that reduces congestion by spreading out peak travel to different times of day and different modes other than driving alone. TDM programs can be administered at many levels – from a regional agency, municipality or individual employers – and works by providing a variety of competitive travel choices and incentives to change behavior.

The SEMCOG project has progressed in three stages: 1) assessment of existing TDM programs, local resources, and components of four major construction projects, 2) discussion of alternative approaches and strategies, and, the current phase, to 3) development of a plan for implementation of the strategies that will work best in the Detroit region. Concluding this phase, the team will complete baseline measurement of existing conditions and a methodology for data collection and evaluation during the construction period to measure effect. During phase II of the project, the team talked extensively with stakeholders about viable programs for the region; the suite of TDM strategies is vast, but this paper hones in on those that have the most chance of success for Detroit.

CONTEXT OVERVIEW

Southeast Michigan regional transportation plans include several major interstate and transit projects. The region and state are seeking to implement several of these mega projects over the next two to six years. Projects are in various stages of the design process from conceptual plans to full construction documents (Figure 1 and Figure 2).

These major projects are along highways, interstates, or major arterials. Most projects require either half or full closure of roads during construction – roads that are used by tens of thousands of residents, visitors, and freight vehicles per day.

Applying TDM specifically to highway and major arterial construction projects affords a chance to both shift travel habits to other modes and travel periods while at the same time reducing project capital costs. Travelers who shift during construction may find enough benefit and appeal to continue even after construction is complete. This increases the sustainability of the project by reducing traffic impact and maintaining capacity for an even longer period. Linking TDM efforts across capital construction projects may not only achieve an economy of scale, but also facilitate outreach and understanding of alternative mobility options for the region at large and support and strengthen a foundation for continued broad and effective TDM in the region.
**Figure 1  Planned Major Capital Construction Projects**

<table>
<thead>
<tr>
<th>Project</th>
<th>Location</th>
<th>Length</th>
<th>ADT</th>
<th>Estimated Cost (2013 dollars)</th>
<th>Initiation</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodward Avenue Streetcar – Economic development and revitalization project providing local circulation and connectivity. At completion, nine-lane corridor will be reduced to seven-lanes. Construction will likely require full street closure for limited periods of time; otherwise corridor will be maintained with one lane in each direction plus turn lane.</td>
<td>Downtown Detroit</td>
<td>3.3 miles</td>
<td>20,400(^1)</td>
<td>$165 million</td>
<td>2013</td>
<td>2 years</td>
</tr>
<tr>
<td>I-96 (from Telegraph to Newburgh Roads)(^2) – Interstate maintenance project for eight-lane, trenched highway. The project includes the repair of 37 bridges, including interchanges.</td>
<td>Livonia</td>
<td>7 miles</td>
<td>138,900(^3)</td>
<td>$150 million</td>
<td>2014</td>
<td>1 year</td>
</tr>
<tr>
<td>I-94 (from I-96 to Conner Avenue) – Interstate maintenance, safety and congestion mitigation project to widen interstate facility from six to eight lanes, renovating 65 bridges (10 priority bridges), and converting current service roads to a continuous multimodal local network.</td>
<td>Downtown Detroit</td>
<td>6.7 miles</td>
<td>144,082(^4)</td>
<td>$1.5 billion</td>
<td>2014(^5)</td>
<td>4-5 years</td>
</tr>
<tr>
<td>I-75 from 8 Mile Road to M-59 – Interstate maintenance and safety project includes capacity improvement reconstruction and widening, one additional lane per direction designated as HOV in the peak hours. Highway exhibits bi-directional peaks.</td>
<td>Bloomfield, Troy, Madison Heights, Hazel Park</td>
<td>17.7 miles</td>
<td>138,500(^6)</td>
<td>$830 million</td>
<td>2017/2018</td>
<td></td>
</tr>
</tbody>
</table>

---


\(^2\) Additional project information at 96fix.com.

\(^3\) MDOT 2011 Average Daily Traffic Maps. Counts taken along the I-96 project area were averaged to calculate an overall ADT. [http://mdotcf.state.mi.us/public/maps_adtmaparchive/pdf/2011adt/Detroit_Metro_Area.pdf](http://mdotcf.state.mi.us/public/maps_adtmaparchive/pdf/2011adt/Detroit_Metro_Area.pdf)


\(^5\) Only if funding is identified and project advances as design-build.

\(^6\) Due to its length and varying land uses, ADT along this corridor varies greatly from 103,000 to 174,000 according to the MDOT project manager. These numbers were averaged to come up with a general overall ADT to use for the purposes of this analysis.
Figure 2  Planned Major Capital Projects
IMPLEMENTATION PLAN OVERVIEW

In the second phase of the project the team created a list of strategies and met with project managers, steering committee members, and other stakeholders to discuss the viability of the options in the context of each of the major projects. Based upon feedback received, the team developed an implementation plan for each project. Implementation plans are organized by:

- Strategy Sector (e.g. Transit, Parking)
  - Strategy Name/Action Item
    - Brief description
    - Steps to implementation for the more complex actions
    - Summary table including:
      - Lead stakeholder
      - Cost Estimate
      - Funding Source
      - Timeline

Certain strategies are universal across all or most of the four projects, and are programs that can provide an overall regional mobility benefit. This paper first starts out by describing how these regional programs work and providing examples from other communities. This is followed by an implementation sub-plan for each of the four projects. A summary of all the strategies is shown in Figure 3.

For these demonstration projects to have long term value, information on the impact and performance of the package of strategies is necessary. This not only provides valuable information in making adjustments to management strategies, but also provides the business case for continued application in future projects.

Because the TDM strategies work in tandem, it is difficult to disaggregate effect of individual strategies. Travel purposes on the corridors vary as do the user populations. Performance metrics nonetheless provide valuable information on the effect of the TDM package, change over time, and allow some comparison between projects.

This paper proposes a series of performance metrics for collection across all mega projects. The final phase of this project will refine the proposed list, develop a data collection plan, and establish the existing conditions baseline.
Figure 3  Summary of Strategies

Marketing & User Information
- Localized Travel App
- Marketing Campaign
- Establish Transit Pass Program
- Fare Integration
- Distribute Free Passes

Transit
- Downtown-Midtown Shuttle
- Free Service Window
- Local Shuttle
- Rerouted Transit

Promote New Services (rapid transit network)
- Express Transit

Driving
- Park & Ride / Park & Pool
- Vanpool / Rideshare
- HOV/Truck Lane

Employer
- Telework / Flexible Scheduling
- Commuter Trip Reduction
- Hoteling

Bicycle
- Bike Parking
- Park & Pedal
- Social Rides

Parking
- Temporary Lane
- Satellite Parking
- Event Rate
- Parking Cash-Out

Project Development
- Designate HOV/Truck during construction
- Package transit / highway projects
- Traveler Surveys

Nelson\Nygaard Consulting Associates Inc. | 5
REGIONAL PROGRAMS & POLICIES

Several strategies are foundational to all projects and provide the highest benefit when instituted as part of a regional program.

Marketing & Information Solutions

Recommended Actions

1. Create a localized travel app
2. Develop a marketing campaign

Action 1: Create a localized travel app

Given the disruptions to the highway network that these projects will cause, providing people with the most up to date information on traffic patterns, closures, and also alternate mode travel information is essential. Several state DOTs, including Virginia, Iowa, Utah, Tennessee, Washington, and Minnesota, to name a few, have created mobile apps to provide travelers with information regarding:

- Construction, detours and road closures
- Collisions and incidents
- Traffic congestion
- Service disruptions (transit)
- Weather
- Transit and ferry schedules
- Planned events/outages
- Trip planning

Most of these apps were developed in conjunction with the state's 511 system. Some, such as Virginia’s, even feature live traffic cameras to help travelers visualize traffic levels.

However, most 511 apps do not include alternative transportation options. San Francisco’s MTA app is one that does. On the state level New York State DOT (NYSDOT) released a 511 app in 2011 that aims to cover all modes of transportation. NYSDOT launched a new 511 website and mobile app in late 2011. DOT funded the entire overhaul, but worked closely with the MTA in New York City and transit agencies in other metro regions. New York’s 511 system is the largest in the country.

The information feeds come from an array of transportation and law enforcement agencies across the state, including traffic management centers, public transit agencies, and the National Weather Service. Travelers can create and save trips within the app and tailor incident information to those trips, instead of having to search each time the app is opened. Local apps can decrease car travel by 0.2%.

While again modest, such apps have sizable ancillary benefits including increased awareness of alternate travel options, improved customer satisfaction, better ability to manage incidences and communicate critical information regarding construction projects.

---

7 TCRP Report 95, chapter 11.
Similar to other states, MDOT has established the MiDrive and [http://mdotnetpublic.state.mi.us/drive/Default.aspx](http://mdotnetpublic.state.mi.us/drive/Default.aspx) and MiCommute ([http://www.michigan.gov/micommute/](http://www.michigan.gov/micommute/)) websites which provide a number of the data feeds that would be required for such a mobile app. The map must be more robust, however, in providing alternative commute information clearly linking construction corridors to the TDM benefit programs available to mitigate them such as transit alternatives (and passes), ride sharing, alternative routes, non-peak travel periods, and other information.

To increase ease of use and more clearly communicate the unique commute alternatives for each corridor project, the app should be designed to offer customized views for each construction project.

**Implementation Steps**

1. Create a committee of agency representatives, led by MDOT. The committee can be just advisory, or can lead the effort to select and hire an app contractor and developer. Some agencies have held competitions for “open government apps” that have generated useable products at very low (or no) cost to the agencies.

2. Explore the option of utilizing opportunities such as IBM Smart Cities Challenge, Open Gov competitions, or technologies conferences to challenge app developers to submit ideas or prototypes.

3. In conjunction with the app contractor, decide on which devices the app will be available to (i.e., iPhones, iPads, Android phones and tablets). Note that government agencies have additional privacy concerns to address about app development platforms that most private app developers do not encounter.

4. App developers and consultants are typically very fast, and the turnaround time can be only weeks or one month for a draft version to be available. However, NYSDOT encountered a few challenges in guiding app developers through a government design approval process. Most app developers are unaccustomed to the lengthier review processes typical in public agencies; this must be accounted for when negotiating a contract and creating a timeline.

5. Once app is approved by MDOT and/or the committee, each app store has a different price and process for approval, including supporting documentation requirements aimed more at private businesses.

6. Many agencies choose to make the assembled agency data stream available publicly for other developers to create apps. If MDOT is interested in this element, a good example from NYSDOT is found here: [http://www.511ny.org/developer.aspx](http://www.511ny.org/developer.aspx)
Action 2: Develop a marketing campaign

Information about commuting in the SEMCOG region comes from a variety of sources – MDOT's carpool locations map, MDOT's vanpool information, and SEMCOG's web site. Thus far there is not an established slogan or brand surrounding TDM in Michigan or the SEMCOG region. Agencies working collaboratively to create a message around TDM (a term not easy to convey to the public) puts a brand around alternative transportation. For example, Arlington, VA's campaign is called the “car-free diet.” The county publishes a comprehensive guide containing resources on walking, cycling (including bikeshare), transit, and employer programs. The accompanying web site, www.carfreediet.com, is linked to the county’s site but has its own unique URL related to the campaign brand.

Campaigns specifically surrounding a construction project can also create awareness about road closures and alternate routes. In the Princeton, NJ region, the Greater Mercer TMA created a commuter survival guide around the slogan “Route 1 is under construction, but that doesn’t have to put you in a jam.” Federal highway funds may be used for creating campaigns or formation of a TMA. During construction of the Big Dig in Boston, $50,000 of highway money was set aside to create a TMA.8

Social marketing and incentive programs are proving increasingly popular and effective at promoting non-SOV travel. Social marketing seeks to influence individuals’ behavior to achieve a broad social good (in the case of TDM, reducing drive alone trips). Awareness and educational programs, workshops, and community outreach efforts may take the form of promotional campaigns similar to product advertising.

Some TMAs sponsor trip challenges or regular campaigns to jump-start alternative mode transportation, some offering prizes or cash rewards to residents who use non-SOV modes. In Seattle, Metro’s bi-annual Wheel Options campaign gives commuters a chance to register and win a sweeping variety of prizes for getting to work any way other than driving alone. The county’s In Motion programs extend this opportunity to residents in general.

---

8 National Center for Transit Research Listserv. http://usf-cutr.custhelp.com/app/answers/detail/a_id/2092/related/1/session/L2F2LzEvdGltZS8xMzc1Mzk1NjM2L3NpZC95eDFld0I3bA%3D%3D
Marketing has been proven to spike demand for alternative transportation modes. Some transit marketing campaigns have increased ridership between 33% and 50% during a short timeframe (such as one or two weeks). In the longer term, not all systems have proven sustained ridership increases, but some report between 3% and up to 11% increases one year later. To be conservative, another estimate of marketing diversion power is used – 1% in the short term and 0.2% over the long term.\(^9\)

### Figure 7  Summary of Marketing and Information Solutions

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Localized Travel App</td>
<td>MDOT $20,000-$75,000</td>
<td>FHWA Highway Funds</td>
<td>6 months</td>
</tr>
<tr>
<td>2. Create a marketing campaign</td>
<td>SEMCOG, MDOT $50,000-$80,000</td>
<td>FHWA Highway Funds</td>
<td>Immediate</td>
</tr>
</tbody>
</table>

### Employer Solutions

Several stakeholders called out the need for employers to lead the drive in implementing TDM in the region, citing the previous success of employers able to shift employees to transit.

**Recommended Actions**

1. Promote telework and flexible scheduling
2. Promote Commuter Benefits Program.
3. Establish a commute trip reduction program for each of the four projects

**Action 1: Promote telework and flexible scheduling**

Employers recognize that offering flexible schedules and the right to telecommute increase employee retention and well-being. In addition, flexibility has the power to drastically reduce peak

---

\(^9\)TCRP Report 95, chapter 11.
period travel. Some estimates cite traffic reductions of 20-50% being possible by implementing flextime and telework. This is a wide range, and of course depends on how many employers adopt policies allowing flexible schedules. In Austin, TX, the Social Good Summit Austin Committee heavily promoted a Work from Home Day on Feb. 8, 2013. More than 14,000 employees worked from home, for a reduced Vehicle Miles Traveled (VMT) of 382,287. Movability Austin estimates that 125,000 individuals commute downtown each weekday, of which 72% drive alone – thus of the 90,000 drivers, the Work From Home Day achieved 15.5% person-trip reductions. As a pilot, clearly there was a large marketing campaign around that one single day; however, the numbers show how much impact such a program could have. To be conservative, a trip reduction of 10% might be expected through aggressive promotion of telework and flexible schedules during construction.

• Create an information packet on how to implement telework. Several agencies have produced guidelines for employers on how to think through and create flexible work hour policies.
• Ensure that facilities such as the Commuter Store in Compuware headquarters has information on telework and flex schedules.
• Promote area employers who already practice this policy through organizations like Best Workplace for Commuters.
• As part of the annual Commuter Challenge, the Modal choices working group can have people nominate employers based on offering of policies such as flexible schedules and provide employer awards similar to how the agency provides awards to individuals.

Action 2: Promote commuter benefit program.

Tax benefits are in place to reward commuters who use transit, however many employers and employees are unaware of these programs. The state and region have produced materials for distribution to employers. These materials need to be disseminated to employers in the project areas and major employers whose employees are likely users of the affected routes. Encouraging the use of transit, not only reduces the vehicle volumes that must be accommodated during the construction period, but with the benefit program it actually rewards the employees for this alternative travel behavior.

Action 2: Establish a commute trip reduction program for each of the four projects

Many communities have Commute Trip Reduction (CTR) programs requiring by law that employers over a certain size develop policies that reduce SOV trips. Michigan and the SEMCOG region can still establish such a program through employers without a specific law in place. In Washington State, which does have an actual CTR law, the program is targeted at employers with more than 100 employees. Today more than 1,050 employers and 530,000 commuters participate in CTR

13 http://www.bestworkplaces.org/
programs, which reduce weekday trips by 30,000. The total market of commuters with CTR available is 574,000, for a 5.2% trip reduction. In the SEMCOG region, with a fledgling TDM program, a reduction of 3% could be expected.

- Identify major employers with more than 100 employees along each corridor.
- Establish a list of viable alternatives for employees, such as ridesharing or transit.
- Tie performance goal for each employer to annual Commuter Challenge.

**Figure 8 Summary of Employer Solutions**

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Promote telework and flexible scheduling</td>
<td>Major employers, MDOT/SEMCOG</td>
<td>$10,000-$15,000 for outreach and marketing; can pair with marketing campaign or TMA rollout</td>
<td>FHWA construction funds</td>
</tr>
<tr>
<td>2. Establish commute trip reduction program for each of the four projects</td>
<td>Major employers, MDOT/SEMCOG</td>
<td>$10,000-$15,000 for outreach and marketing; can pair with marketing campaign or TMA rollout</td>
<td>FHWA Construction Funds</td>
</tr>
</tbody>
</table>

**Transit Solutions**

*Recommended Actions*

1. Establish a transit pass program
2. Distribute free transit passes during construction
3. Integrate fares across SMART and DDOT

**Action 1: Establish a transit pass program**

Many of Detroit’s major institutions such as Wayne State University and the Detroit Medical Center operate free shuttle systems for their employees. Shuttle services typically provide employees with unlimited transit service, however only in the routes and times in which the shuttle program operates, limiting broad utility of the program to employees, while at the same time incurring substantial cost to the institution or employer.

Eco-passes, sometimes called U-passes or Universal passes, provide unlimited transit service, often across a number of transit providers. Because they make transit more affordable, available, and competitive, these passes increase transit ridership. Not only does the increased ridership relieve the roadway demand volumes, but it also helps the transit operator. Eco-passes can be paid for through modest student or employee fees, supplemented by employers, or in this case, project owners.

As an example, the Rhode Island Public Transit Authority (RIPTA) instituted the EcoPass program for downtown employers in which employers sign up for annual passes and pay only for the rides their employees use. Very small and very large employers can access this pass program so that RIPTA saves on costs of developing an individualized program for small employers. Because they

---

14 [http://www.wsdot.wa.gov/Transit/CTR/overview.htm](http://www.wsdot.wa.gov/Transit/CTR/overview.htm)
only pay for what they use, actual costs to employers are typically substantially less than the cost to provide even paid parking.

U/EcoPass programs are designed so that every member of the institution or employer (i.e. all employees, students, faculty or staff) receives a transit pass. Passes are typically provided free of charge or at a cost shared between the institution and its members. Some university UPass programs bill students for the pass as part of student fees; national experience suggests most UPass passes cost between $25 and $100 per student per semester.

U/EcoPass programs have been very successful at universities and with large employers, and to a lesser extent in designated areas, such as shopping malls or downtown districts. Transit passes encourage transit ridership, reduce traffic and associated parking demand, and are frequently viewed by employees as a valuable benefit.

We recommend a fully branded, region-wide, EcoPass program accessible by large and small employers and universities alike. This eliminates legwork for both the employers and transit providers; moreover, a program with a distinct brand such as “EcoPass” can encourage more participation from employers looking to market themselves to the younger, mobile workforce. We also recommend an involved and targeted marketing campaign for the passes. A system similar to the RIPTA example allows employers to opt-in based on employee interest and potential for ridership.

In most cases institutions or employers negotiate a discounted trip rate in exchange for purchasing a large volume of service. This strategy is most useful for Woodward Avenue and I-94 given the number of major institutions in the area, as illustrated below.

American Community Survey (ACS) 3-year estimates from 2011 list a transit mode share of 1.7% for the Detroit-Warren-Livonia metropolitan area. Assuming, very conservatively, that faculty and staff provided with a free pass use transit at that rate (1.7%) and students use transit at double that rate (3.4%) to/from school and work and that the combined transit providers offer the EcoPass program at a discounted rate of $1.25 per trip, the annual EcoPass costs are roughly estimated at about $650,000 (see below).

Figure 9  U/EcoPass Program – Broad Estimate of Potential Revenues

<table>
<thead>
<tr>
<th>Institution</th>
<th>Population</th>
<th>Type</th>
<th>Assumed Mode Share</th>
<th>Daily Riders</th>
<th>Rides per Year*</th>
<th>Total Trips per Year</th>
<th>Discounted Trip Rate</th>
<th>Total Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wayne State</td>
<td>29,000</td>
<td>Students</td>
<td>3.4%</td>
<td>986</td>
<td>320</td>
<td>315,520</td>
<td>$1.25</td>
<td>$394,400</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Faculty/Staff</td>
<td>1.7%</td>
<td>100</td>
<td>440</td>
<td>44,312</td>
<td>$1.25</td>
<td>$55,389</td>
</tr>
<tr>
<td>Detroit Medical Center</td>
<td>12,400</td>
<td>Employees</td>
<td>1.7%</td>
<td>210</td>
<td>440</td>
<td>92,752</td>
<td>$1.25</td>
<td>$115,940</td>
</tr>
<tr>
<td>Henry Ford Health Center</td>
<td>9,000</td>
<td>Employees</td>
<td>1.7%</td>
<td>153</td>
<td>440</td>
<td>67,320</td>
<td>$1.25</td>
<td>$84,150</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,449</td>
<td>1,640</td>
<td>519,904</td>
<td></td>
<td>$649,879</td>
</tr>
</tbody>
</table>

* Two rides per day, 160 school days/year, 220 work days/year.

Moreover, it is critical to note that the operation of additional service does cost the transit agency; potential revenues listed are gross revenues. Cost for additional service would have to be subtracted from this $2.6 million estimate.

Implementation Steps

1. The multiple transit providers in the SEMCOG region including DDOT, The People Mover, SMART, and AATA must first establish a unified channel through which to approach major...
employers and institutions. With the establishment of the Regional Transit Authority, that body may be the best positioned to serve as conduit.

2. The appointed transit provider representative(s) or a mobility coordinator of SEMCOG must **meet with major institutions** to ascertain each organization's level of interest and conditions for the program. Since pass programs are typically tailored somewhat to each participating institution, there is no minimum number of institutions required to make the program work.

3. While building support for a UPass program may take several months at an employer or university the most delicate element of discussions is typically **calculating the formula/discount** given to the institutions.

4. Following these meetings to decide on the main nuts and bolts of the program, the EcoPass coordinating lead should work closely with the institutions to **develop marketing materials and a marketing strategy** to promote the passes.

For instance, providing information in orientation packets for new hires or new students is useful; however, even more effective is sending a transit agency representative to meet with new students or new hires and describe the system, the basics of how to ride, and to answer questions. Taking this method even further, having a "learn to ride the bus" workshop with transit agency staff or student volunteers removes all the mystery from learning to use the transit system and can increase the usage of transit passes.

5. A final and often overlooked step is to **evaluate the U/Eco Pass program**. At the outset, we recommend that SMART/DDOT keep data, at a minimum, on usage by institution (necessary for billing) and institutional ridership by route.

---

**Figure 10** Mode Shifts with Free Transit Passes

![Mode Shifts with Free Transit Passes](image-url)

Santa Clara Valley Transportation Authority, 1997.
1990 to 2000; [http://www.commuterchallenge.org/cc/newsmar01_flexpass.html](http://www.commuterchallenge.org/cc/newsmar01_flexpass.html)


2002 to 2003, the effect one year after U-Pass implementation; From Wu et. al. “Transportation Demand Management: UBC’s U-Pass – a Case Study”, April 2004.


Six years after program implementation; Francois Poinsette et. al. “Finding a New Way: Campus Transportation for the 21st Century”, April, 1999.
**Action 2: Distribute free transit passes during construction**

As part of a construction project in Lansing, MDOT distributed free transit passes to the affected communities. This practice can be standardized into documents such as the *Michigan Design Manual: Road Design* under chapter 8: Maintaining Traffic. For example, New Jersey’s *Traffic Mitigation Guidelines* section 3.6.3 “Transit Incentives and Support Services” states that “free or discounted transit ...can encourage motorists to use transit.”

During a construction project on I-25 in Denver, CO, $3 million in highway project funds were set aside for TDM programs, including transit subsidies, Eco-Pass discounts, and a $35/month vanpool subsidy per seat. In Duluth, MN, the transit agency provided five new park and rides and free express bus service during construction on I-35 from these five locations. Service was provided on bus-only lanes. The Duluth Transit Authority found that average daily ridership increased from 110 to 522 from April to May 2010 (service started in April) on 7 round trips per day. A marketing campaign including ads such as the one shown in Error! Reference source not found. were used to promote service. Follow-up study found that 85% of those who rode transit during construction remained transit users after, even when a fare was instated.

The I-35 corridor carried 40,000 ADT, thus in general, transit diverted 1% of daily trips. Although the volume of diverted auto trips was modest, the sustained mode conversion is notable.

MDOT already completes an extensive public outreach process for major capital projects; promotion of free passes can be publicized in this way. A direct mailing of transit passes provided by DDOT and SMART can target those living within a mile of the corridor. Steps to implementation include:

*Implementation Steps*

1. Add a section on provision of transit passes to MDOT’s maintenance of traffic manual or road design manual.

---


2. As part of the project development process, collect information on what transit services are provided along the length of the construction corridor or on routes marked as detour corridors.

3. As part of the mitigation of community concerns process and public outreach, MDOT project managers can provide regional monthly passes by mail to affected community members. The cost to the transit agencies is minimal as no service would be changed; the only cost is the marginal cost to produce the passes.

---

**Case Study: T-REX, Denver**

The $1.67 billion investment in both highway and rail in the Denver region exhibits numerous policies and programs recommended to the Detroit region. The project widened I-25 and I-225 and at the same time, while concurrently building 19 miles of light rail double track. Most transit activities added during T-REX remained in operation after construction was completed. The project included a strong team between the highway and transit departments, an extensive marketing campaign, and $3 million in highway fund set aside for mitigations. In tracking result, the project reported:

- 14 employers bought transit passes for 1,200 employees
- 318 commuters purchased subsidized passes
- 179 vanpools received subsidies
- 9 new vanpools were formed
- 80 commuters bought vanpools through Commuter Checks

Denver also utilized a design-build contractor who completed the project under budget and almost 2 years ahead of schedule.

**Action 3: Integrate Fares across SMART and DDOT**

Currently both DDOT and SMART offer pass programs. There is one regional pass that works for both systems, but it is only available as a monthly pass, and many riders cannot afford the one-time purchase price. SMART increased its fares requiring riders to either possess two passes (a regional pass and a regional plus pass) or regional pass holders must pay an extra 50 cents upon boarding SMART to meet the higher fares. This is confusing to passengers. An integrated fare system, with a value-add farecard, allows people to add value as they can and ensures that both agencies are paid for and receive credit for transfers.

Integrated fare programs have been implemented in at least a dozen regions across the country, with as many as 16 transit agencies grouped under one system (such as Washington, DC’s SmarTrip card). In many cases, a regional agency that is not necessarily a transit provider itself brokers the integrated fare arrangements. For Detroit, the new RTA is an ideal lead agency to manage the integrated fare process. By using farebox software, integrated fares improve equity by charging customers the maximum payment per month – in Detroit’s case, the $69.50 for the regional plus pass. Customers add value throughout the month, but if they hit $69.50 by the 25th of the month,
the rest of the month’s rides are “free” since they have effectively paid for an unlimited pass. This is a feature of London’s Oyster card.

Aligning fare policies and creating a fair cost sharing model are two of the biggest challenges in creating an integrated fare program; in Detroit, SMART and DDOT buses have already cleared one hurdle: they operate with the same fareboxes, so neither agency would be forced into a major capital outlay in order to implement the program. Fareboxes are the most expensive upfront cost of integrated fare systems.

Other costs include staff dedicated to overseeing the program and managing the data processing relating to cost allocation. Several case studies, as detailed by the National Center for Transit Research at the University of South Florida, however, reveal that most agencies underestimated the amount of staff training and oversight necessary to implement the systems.

Smart cards are the most popular type of fare media for integrated fare systems; their benefits over magnetic stripe cards include higher reliability (fewer failures per swipe/scan) and higher potential for more varied types of data collection. However, not all integrated systems use smart cards. In San Luis Obispo County in central California, five transit systems integrated fares without new fareboxes that could read magnetic stripe or smart cards. An emerging technology in fare integration is the use of smart phones and electronic scanners. MBT in the Boston region is currently piloting this technology, which will no doubt continue to evolve in the future. Smart phone apps for transit ridership allow users to load additional fare onto the “card” without the need for kiosks or cashiers.

**Figure 12  Magnetic Stripe and Smart Cards**

The Seattle ORCA card is a smart card good for rides on seven transit systems in the Puget Sound region. Integrating the fares among all of these agencies took dedicated work for multiple years to hammer out the details of the arrangement.

Several key elements of the agreement were necessary for agencies to buy into the system:

- The interagency agreement provided that Sound Transit would compensate some of the agencies for potential financial losses if incurred, only during the early years of the program. This transferred the risk from smaller agencies to the regional transit agency.
- Revenue is shared based on the total number of boardings in each region, the average fare per customer, and the service category, which used on-board survey
Effects of fare integration on transit ridership are not well-documented as the change occurs over time and in the short-term is primarily a boon for existing riders. One source states that integrated fares can increase ridership 25% in the short-term and 7.7% in the long-term. Given the region’s current 1.7% transit mode share, a 25% increase would equate to a ridership boost (and a driving decrease) of 0.425%. Again, while modest with regard to addressing the need to relocate or reassign traffic demand from the corridors during construction, the cost is modest and the impact lasting.

**Implementation Steps**

1. Set goals for the integrated fares program to ensure that both agencies and RTA are all working for the same end. Examples could include:
   - Provide seamless transit trips for riders
   - Make boarding process easier for drivers
   - Strive for fare equity among different types of riders
   - Provide clear and fair allocation of revenue
   - Find solution using existing farebox technology
   - Attract more riders
   - Ease administration

2. Document fare policies, transfer policies, and products of each agency

3. Create a Memorandum of Agreement outlining the key provisions of the partnership, including:
   - Expectations of RTA, SMART and DDOT
   - Establish bank accounts for funds receipt
   - Fare collection system training requirements and responsibilities
   - Establish Regional Fare Collection Finance plan, including revenues, expenses, and cost allocation

4. Review potential technologies and costs, including review of other integrated fare systems

**Figure 13  Summary of Transit Solutions**

<table>
<thead>
<tr>
<th></th>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Establish transit pass program</td>
<td>Major institutions DDOT/SMART</td>
<td>Agency staff time to coordinate; Cost to print passes</td>
<td>UPass contracts FTA</td>
</tr>
<tr>
<td>2</td>
<td>Distribute free passes during construction</td>
<td>MDOT DDOT/SMART</td>
<td>Cost to print passes and mail/distribute</td>
<td>FHIWA</td>
</tr>
<tr>
<td>3</td>
<td>Fare integration</td>
<td>RTA DDOT/SMART</td>
<td>Cost to print new cards, train staff, develop policy</td>
<td>FTA</td>
</tr>
</tbody>
</table>

---

21 Regional Fare Policy and Fare Allocation, Innovations in Fare Equipment and Data Collection. [http://www.nctr.usf.edu/pdf/77705.pdf](http://www.nctr.usf.edu/pdf/77705.pdf)
Project Development Practices

The State of Michigan is projecting a budget surplus for 2014, with potentially $300 million shifted to MDOT for various projects. The agency does not yet know what projects that money will fund, but for new projects or those in the early planning stages, several practices, initiated now, can help reduce construction impacts and encourage alternate travel. MDOT is already practicing several best practices in project development, such as implementing complete streets with new construction, including community supportive policies in contractor requirements, providing incentives for maintaining traffic level of service, and issuing design-build Request for Proposals (RFPs). The three policies below further support TDM in the project development process.

Recommended Actions

1. Promote designating a lane as HOV/Freight during construction
2. Strategic programming of transit and highway projects
3. Conduct travel surveys to best target traffic mitigation alternatives

Action 1: Promote designating a lane as HOV/freight during construction

During partial road closures, designating one of the open lanes for HOV and freight encourages the use of ridesharing, vanpooling, and transit while capacity is constrained. An HOV lane can carry 2-5 times as many people as a general purpose lane, and in effect doubles a lane’s capacity by requiring 2 or more occupants per vehicle.\(^{22}\)

Action 2: Package together transit and highway projects

The SEMCOG region has a long list of transportation needs. The region’s long range plan strives to distribute available transportation resources in a fair and logical manner across the region in both central core and suburban needs. While this largely achieves geographic balance, it does not always address modal balance. In fact, there may be instances when advancing transit or non-motorized projects in advance of major roadway project could facilitate the roadway project by creating alternative travel options to mitigate the effect of the roadway construction. Often times, identifying these strategic synergies is illusive in the ordinary programming process where projects are largely submitted and evaluated as stand-alone and independent projects.

The dialogue created through the modal choice working group or other similar sub-committees, a dialogue that includes multiple different project sponsors, can help inform the programming process by identifying these timely synergies and opportunities for “advance mitigation.” For example, Woodward Avenue is a designated detour route during I-75 construction. Woodward Avenue is also a recommended corridor in the region’s enhanced transit network. Not only should programming ensure that this detour route is free of obstructions during the highway construction period, better yet by programming the Woodward transit improvement to occur prior to the highway improvement, the highway has a completed and reliable travel alternative to use during its construction period. Lacking full construction of the enhanced transit facility, portions of this transit improvement could be packaged into the highway project such as prepping utilities, designing right-of-way, or building stations. As mentioned, the T-REX project is an example of a municipality promising to build light rail in the same package of funding as a highway expansion.

---

A handful of strategic programming software tools are available today such as Decision Lens.\(^{23}\)

**Implementation Steps**

1. Maintain, expand, and potentially repurpose the Modal choice working group, or create a similarly representative body.
2. Develop process to allow timely review, discussion and preparation of comments and advice to SEMCOG to be helpful and relevant in the TIP development process.

**Action 3: Conduct travel surveys to best target traffic mitigation alternatives**

Understanding how a corridor set for reconstruction is used tells planners in turn how to mitigate traffic volumes. The corridor might purely be a through corridor, for example, which lends itself toward TDM strategies such as park & ride and express transit. If the corridor is used locally for many internal trips, meaning the closure of the service lanes and local bridges, which are the typical design on many highways in the SEMCOG region, will affect the community most. In that case, localized TDM strategies such as shuttles may be most effective.

![Figure 14](image-url)

**Table: Implementation of Project Development Practices**

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Promote designating a lane as HOV/Freight</td>
<td>MDOT</td>
<td>None</td>
<td>MDOT</td>
</tr>
<tr>
<td>2. Package together transit and highway projects</td>
<td>MDOT/Local jurisdictions</td>
<td>None</td>
<td>MDOT</td>
</tr>
<tr>
<td>3. Conduct travel surveys</td>
<td>MDOT/Local jurisdictions</td>
<td>Staff time - $5,000</td>
<td>MDOT</td>
</tr>
</tbody>
</table>

\(^{23}\) For example purposes only, not an endorsement of any particular programs or products.
PROJECT STRATEGIES

CORRIDOR: WOODWARD AVENUE STREETCAR

Woodward Avenue at present consists of four lanes per direction with a center turn lane, but carries just 20,400 total vehicles per day. The construction project for phase I from the downtown to Grand Boulevard is fully funded.

The following section details a program of TDM for Woodward Avenue. Some solutions are part of the regional topics outlined in the regional section, while others pertain just to this corridor.

Transit Solutions

Multiple options exist for enhancing transit service as an interim mitigation for the construction impacts associated with the streetcar project. This, of course, also enhances the success of the completed project as well by encouraging transit use post-build.

Recommended Actions

1. Establish universal transit pass program
2. Integrate fares across DDOT and SMART
3. Reroute transit service
4. Leverage the People Mover
5. Operate Downtown-Midtown shuttle
6. Offer Free service window
7. Further promote bike share options

Action 1: Establish universal transit pass program

Several major institutions line Woodward Avenue, including:

- Wayne State University, enrollment 20,000 students plus faculty and staff
- Detroit Medical Center has 12,900 employees
- Henry Ford Health Systems has 9,000 employees
- Other major employers in the central business district including Blue Cross/Blue Shield, Compuware, Quicken Loans, and Wayne County.

Several of these institutions run their own shuttle systems in the Midtown Detroit area. The Detroit Medical Center, for example, contracts with Metro Cars for peak shuttle service primarily aimed at transporting employees from remote parking facilities to the main campus. In addition, DMC runs an all-day campus circulator. The shuttle system uses approximately 15 vehicles during peak times. Metro Cars charges DMC $45/hour for service.

Although many employees will continue to drive for the primary commute trip, they may utilize the universal pass for errands or other midday trips. Some shuttle routes overlap with DDOT routes or can be easily accessed through the employer shuttles.
An EcoPass, or Universal Pass is most effective when deployed in a larger region beyond the project area corridor. See Regional Programs & Policies page 11 for more details.

**Figure 15** General Overview of Transit and Shuttle Routes

---

**Action 2: Integrate fares across DDOT and SMART**

As described in the regional program section, an integrated fare program makes transit use easier and more attractive for a range of different potential riders. While this action is beyond the means of the Woodward Avenue project, project owners can promote and support fare integration and
potentially contribute modestly to any capital costs required to deploy an integrated system. See Regional Programs page 15 for more details.

**Action 3: Reroute transit service**

Since Woodward Avenue will be fully closed during part of construction, transit services must be rerouted. Due to service cuts in 2011, SMART no longer travels past 8 Mile from 9 AM-3 PM. Currently passengers must transfer at the state fairgrounds between SMART and DDOT’s overcrowded Route 53 Woodward buses. The lack of off-peak service has hurt the viability of using SMART to access major institutions as well, as class schedules often do not follow typical commuter times. In addition, the Woodward Avenue construction will end at Grand Boulevard, meaning DDOT and SMART riders will need to be rerouted on a parallel route. Route 16 Dexter, running on Cass Avenue, is the second highest ridership route in the system and also experiences overcrowding. DDOT runs Route 53 every 8-10 minutes all day, for 208 total inbound and outbound trips. Route 16 is run on 150 total trips per day.

The Woodward Avenue project is funded through multiple sources. Primary project funders do not require a set-aside for maintenance of traffic. MDOT is participating in a small portion of the project utilizing FHWA funds for roadway maintenance and reconstruction. Since Woodward Avenue will be completely closed during phases of construction, some federal highway funding may be leveraged to increase transit services as a component of the overall project, however given the project programming has already occurred, it may now be too late in the process to pursue this element in this instance. Figure 17 shows routes that travel on Woodward or Cass and route characteristics.

---

24 [http://www.wsws.org/en/articles/2012/02/ddot-f27.html](http://www.wsws.org/en/articles/2012/02/ddot-f27.html), [http://www.wsws.org/en/articles/2012/05/ddot-m01.html](http://www.wsws.org/en/articles/2012/05/ddot-m01.html)
Figure 17  Current Service Levels

<table>
<thead>
<tr>
<th>Provider</th>
<th>Route</th>
<th>Corridor</th>
<th>One-way Travel time (Min)</th>
<th>Service Hours</th>
<th>Peak Headway (Min)</th>
<th>Daily Ridership</th>
<th>Daily round trips</th>
<th>Round trips serving downtown</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDOT</td>
<td>53</td>
<td>Woodward</td>
<td>50</td>
<td>4 AM - 12 AM</td>
<td>8</td>
<td>13,803</td>
<td>104</td>
<td>104</td>
</tr>
<tr>
<td>DDOT</td>
<td>16</td>
<td>Cass</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10,387</td>
</tr>
<tr>
<td>SMART</td>
<td>450/460</td>
<td>Woodward</td>
<td>75 / 45*</td>
<td>4:45 AM - 2:30 AM</td>
<td>25</td>
<td>NA</td>
<td>66</td>
<td>12</td>
</tr>
<tr>
<td>SMART</td>
<td>445/475</td>
<td>Woodward</td>
<td>65</td>
<td>6-9 AM</td>
<td>4:30 PM</td>
<td>NA</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>SMART</td>
<td>455</td>
<td>Woodward</td>
<td>90</td>
<td>4:30 AM - 6:30 PM</td>
<td>65</td>
<td>NA</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>SMART</td>
<td>610</td>
<td>Woodward</td>
<td>80 / 45*</td>
<td>3:30 AM - 11:30 PM</td>
<td>30</td>
<td>NA</td>
<td>27</td>
<td>19</td>
</tr>
<tr>
<td>SMART</td>
<td>560</td>
<td>Cass/Gratiot</td>
<td>80 / 60*</td>
<td>4:45 AM - 2:45 AM</td>
<td>7</td>
<td>NA</td>
<td>73</td>
<td>29</td>
</tr>
<tr>
<td>SMART</td>
<td>510/515</td>
<td>Cass</td>
<td>80 / 50</td>
<td>4:30 AM - 12:30 AM</td>
<td>20</td>
<td>NA</td>
<td>42</td>
<td>21</td>
</tr>
<tr>
<td>SMART</td>
<td>831</td>
<td>Cass</td>
<td>60</td>
<td>6-9 AM</td>
<td>4:30 PM</td>
<td>NA</td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

* Full one-way to downtown travel time / from city limits to route end travel time

Extending some SMART service primarily on Route 450/460 back to all-day downtown access would provide a one-seat ride for suburban users and eliminate the need to transfer at State Fairgrounds. DDOT has very high ridership, thus a focus on SMART patronage, in this instance, may have a more sizable impact on corridor traffic levels during construction.

An extension of service from 8 Mile to downtown takes 30 minutes, thus adding a round trip to downtown adds 1 hour of service. SMART’s fully loaded cost per revenue hour is $147 for FY 2014. To fill in current gaps in service on the 450/460 at hourly headways, SMART needs to add 13 round trips per day, or roughly 13 revenue hours of service for a daily cost of $1,911 and an annual cost for weekday only service of approximately $506,415. The effect of additional service on transit ridership is an art more than a science, dependent upon land use patterns, convenience, and many other factors. TCRP’s compendium on how behavior changes with decreases in headways gives an example of 60 minute to 30 minute headways in Santa Clarita, CA achieving +1.14 ridership elasticity. In this case, headways are reduced from 6 hour gaps to hourly headways, therefore a general guidance of 1% increase in transit use (and associated 1% decrease in driving alone) can be assumed.

Implementation Steps:

1. MDOT, DDOT, and SMART meet to discuss rerouting options.
2. SMART to publicize Woodward Avenue all-day service.
3. SMART tracks ridership change to see if all-day service can be justified and paid for post-project.

Action 4: Leverage the People Mover

Detroit’s People Mover encircles the central business district and intersects with the Woodward Avenue Streetcar project area twice – once at Grand Circus Park and once at Congress. It takes just 15 minutes to cover the entire circuit of the People Mover. Monthly passes are $10 providing a cost effective alternative for people who routinely need to make trips along the lowermost segment of the streetcar construction route. While the People Mover will not service the needs of the whole 3.3

25 Beth Gibbons, SMART Marketing & Communications, E-mail message 7/31/13.
mile construction segment, it provides a travel option in the core of the downtown and should be cross marketed as a mitigation alternative. Project office should explore the option of direct sales of People Mover monthly passes to facilitate its use.

**Action 5: Operate Downtown-Midtown Shuttle**

As the Midtown area revitalizes, there is a lack of transit service directly to Midtown; a passenger would have to go downtown then transfer to the DDOT 53 Woodward bus to get to Midtown. Perceptions in Detroit, especially of choice riders, lean toward utilizing shuttle-type vehicles. The DMC currently contracts its shuttle service to Metrocars at a cost of $45 per hour. An all-day, 20-minute headway shuttle running parallel to Woodward Avenue is possible. The distance from Grand Boulevard, the north edge of the city, and downtown is 3.3 miles, which takes approximately 12-15 minutes by car. Adding on time for stops and recovery, a 20-minute one-way route can be achieved. By using two vehicles with a relief driver, the vehicles can achieve 20-minute headways.

If service were run from 8 am-8 pm on 2 vehicles per weekday, the total cost for a contracted operation with someone like Metro Cars at $45/hour would be $286,200 annually. Assuming the demand equates to 10 passengers per revenue hour and there are 24 hours total of service per day, this comes to 240 transit ridership or 240 fewer drivers daily.

*Implementation Steps*

1. Assess willingness of Metrocars (or other providers) to operate contract shuttle service.
2. M-1 Rail to create a slogan or brand around the shuttle, geared toward helping people get around while Woodward Avenue is closed.

**Action 6: Offer free service window**

This is a post-construction activity that is recommended to pique public interest and generate ridership from the outset. Since M-1 Rail has a sinking fund for operating the streetcar for 10 years until the RTA can assume control, providing the first three months fare free does not eliminate necessary transit revenues but can build critical long term rider patronage.

**Action 7: Further promote bike share**

With the launch of privately supported bike share among several major employers in downtown, another travel option has become available to mitigate the construction disruptions associated with the streetcar project. In marketing and messaging, project managers should raise awareness about the bicycle alternative, encourage additional employers and building owners to participate, and instruct travelers on how to sign up and use the system. Distribution of “bicycle friendly street” routing recommendations should also be included in this outreach effort to keep cyclists away from the construction area and on safer and more attractive streets.
Figure 18  Implementation of Project Development Solutions

<table>
<thead>
<tr>
<th></th>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Establish universal transit pass program</td>
<td>Major institutions DDOT/SMART</td>
<td>Agency staff time to coordinate Cost to print passes UPass contracts FTA</td>
<td>1 year</td>
</tr>
<tr>
<td>2</td>
<td>Integrate fares across SMART and DDOT</td>
<td>RTA DDOT/SMART</td>
<td>Cost to print new cards, train staff, develop policy FTA</td>
<td>1-3 years</td>
</tr>
<tr>
<td>3</td>
<td>Reroute transit service</td>
<td>SMART</td>
<td>$506,415 FTA</td>
<td>1 year</td>
</tr>
<tr>
<td>4</td>
<td>Leverage the People Mover</td>
<td>The People Mover</td>
<td>N/A N/A</td>
<td>1 year</td>
</tr>
<tr>
<td>5</td>
<td>Operate Downtown-Midtown shuttle</td>
<td>DDOT</td>
<td>$286,200 FTA</td>
<td>1-2 years</td>
</tr>
<tr>
<td>6</td>
<td>Offer free service window</td>
<td>DDOT</td>
<td>Minimal</td>
<td>M1 1 year</td>
</tr>
<tr>
<td>7</td>
<td>Promote bike share option</td>
<td>Private owners</td>
<td>Minimal</td>
<td>Private 1 year</td>
</tr>
</tbody>
</table>

**Marketing and Information Solutions**

Communication and marketing is the lynchpin of a successful TDM program, and a critical element of the streetcar project. People need to know about the programs going on that provide alternate transportation options. As described in the *Regional Programs* section, two actions are recommended for continued promotion with the M-1 construction project.

**Recommended Actions**

1. Marketing campaign for TDM programs
2. Localized travel app

**Action 1: Create a marketing campaign**

Marketing campaigns can relate to individual projects in addition to the regional program. M-1 Rail has increased staff size, and given its role in the streetcar project, makes a logical candidate for publicizing alternative transportation options while Woodward Avenue is closed. Since Woodward Avenue is a short corridor, target the marketing heavily at the institutions that line it and track changes to travel behavior.

See *Regional Programs & Policies, page 8*

**Action 2: Create localized travel alternative app**

As discussed, a regional app with information about local traffic disruptions and alternatives can reduce driver confusion during construction and increase awareness of alternate routes and travel modes.

See *Regional Programs & Policies, page 6*
Bicycle Solutions

The short distance of the first phase of streetcar, 3.3 miles, is perfect biking distance. Detroit, like many U.S. cities, has rising interest in cycling. The city is expanding its cycling options, including pursuing bicycle improvements on parallel streets in the vicinity of the Woodward Avenue corridor.

Research has not documented profound effect on ADT from bicycle facilities nor direct correlations to reduced driving. However, it is also true that bicycle demand is difficult to judge in cities where the bicycle network is still in its infancy. Bicycle projects across the United States have resulted in user counts that dwarf projections. Bicycle options’ primary contribution may be in capturing and converting a portion of the localized drive trips – short drives taken in the immediate vicinity.

Figure 19  Woodward Avenue vicinity bicycle facilities

![Google Maps](accessed June 1, 2013)

Recommended Actions

1. Install temporary protected facilities
2. Create park and pedal lots
3. Host social rides and events
4. Secure bike parking in downtown locations

Action 1: Install temporary protected facilities

Cass Avenue is deemed a bicycle friendly road. It has little traffic and provides a direct route. A temporary facility marked with striping and potentially cones at intersections would provide a new route that can be dubbed an alternate to Woodward Avenue. Places to promote the facility, and
Detroit’s network in general, include the T at the proposed Downtown-Midtown and crosstown shuttles, at the State Fairgrounds transit transfer center, and at park & pedal lots (see next action). The cost to install such a lane ranges from $3,100 to $31,000. Given that the Cass Avenue facility need not include bicycle signalization or lane shifting, a conservative estimate would be $4,000 per kilometer, or $21,200.

**Action 2: Create park and pedal lots**

Commuting distances in the SEMCOG region are not conducive to bike use due to distance and/or lack of facilities. However, most SMART and DDOT buses have bicycle racks on the vehicles that can help reduce this challenge. The Woodward Avenue rail project is both relatively short and in the most urban part of the region. This project would benefit from park and pedal lots so commuters can travel part of the way by car and the last few miles by bike. This may prove an attractive option during the milder months, which also happen to correspond to construction season. MBTA in Boston has set up the opposite system, pedal to a secure parking facility, but the idea is similar and the agency received federal funding to open the system. A park and pedal location can be brokered with an area business near the streetcar terminus at Grand Boulevard. A location near Cass Avenue, and if possible on the west side of Woodward Avenue so cyclists do not have to cross at an unsignalized location, would be ideal. The figure below identifies some locations that appear to have extra parking.

**Figure 20  Potential park and pedal locations**

---


Action 3: Host social rides and events

For novice cyclists, taking on city streets can feel intimidating. Group rides instill confidence and allow members of the biking community to learn their way around and meet other cyclists. Portland’s Bureau of Transportation (PBOT), for example, hosts weekly free group rides all summer. PBOT has an arm of its active transportation program specifically geared at encouraging women to bike, and also offers free bike repair classes.\textsuperscript{30} Such events associated with the Woodward project not only increase the awareness of bicycle as a viable travel option, but also demonstrate active intent to mitigate impacts and build customer satisfaction. With the significant presence of Blue Cross/Blue Shield there is opportunity for partnerships for health related rides and events. Existing organizations such as Mode Shift and Wheelhouse could assist in advertising events.

Action 4: Secure bike parking in downtown locations

Like cars, bicycles need places to be parked. Drivers seek secure location for their cars, and cyclists require safe places for bicycles. The park and pedal idea, in addition to the other bike initiatives, requires secure bike parking facilities inside buildings or ideally in enclosed shelters. Without secure locations to store bicycles, especially for long periods like the work day, cycling will be a limited option for mitigation.

Figure 21 Implementation of Bicycle Solutions

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install temporary protected facility</td>
<td>Detroit DPW</td>
<td>$21,200</td>
<td>FHWA funds</td>
<td>Immediate</td>
</tr>
<tr>
<td>Create park and pedal lots</td>
<td>DDOT/Midtown Inc</td>
<td>Minimal</td>
<td>NA</td>
<td>1 Year</td>
</tr>
<tr>
<td>Host social rides and events</td>
<td>DDOT/Midtown Inc</td>
<td>Staff time</td>
<td>NA</td>
<td>Immediate</td>
</tr>
<tr>
<td>Secure bike parking</td>
<td>Detroit DPW/Detroit Downtown Development Authority</td>
<td>$1,000-$4,000 for a locker holding 2 bikes</td>
<td>Grants, ARRA</td>
<td>Immediate</td>
</tr>
</tbody>
</table>

Parking Solutions

Recommended Actions

1. Promote parking cash out

Action 1: Promote parking cash out

Parking cash out programs pay employees NOT to utilize parking. The parking cash out benefit provided, while substantial to the employee, is typically substantially less than the cost to the builder or employer of providing off street parking.

Quicken Loans is a major local employer with over 1,000 employees who offers a parking cash out benefit of $150/month. Research in California has shown that at $150/month, parking cash-out has the power to reduce parking (and therefore vehicle) demand to 70% of parking supply.\textsuperscript{31} In the

\textsuperscript{30} https://www.portlandoregon.gov/transportation/44099
\textsuperscript{31} http://ww2.cityofpasadena.net/councilagendas/2007%20agendas/Feb_26_07/Pasadena%20Traffic%20Reduction%20Strategies%2011-20-06%20DRAFT.pdf, See page xii.
SEMCOG region, 92% of auto commuters drive alone. If parking cash-out were provided to 3,000 employees in the Midtown or Downtown area, assuming regional averages, it would result in a potential reduction of 2,760 vehicles. While cash-out programs do involve a cost to employers, overall the cost is about the same as the reduction in costs of maintaining parking facilities resulting in minimal actual cost burden.32

**Figure 22 Summary of Parking Solutions**

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking cash out</td>
<td>Employers $150 per employee per month</td>
<td>Employers</td>
<td>1 Year</td>
</tr>
</tbody>
</table>

**CORRIDOR: I-96**

I-96 is funded and currently at 90% design completion. The corridor is 7 miles long and is undergoing resurfacing and maintenance that will close the entire roadway for at least one year. Proposed bypass routes are I-94, I-696, I-275, M-39, and US-24 (Figure 23).

**Figure 23 I-96 reconstruction project location and alternate routes**

**Source:** 96fix.com

**Transit Solutions**

Transit service on this corridor is limited to the eastern end, where a well-used SMART park and ride sits. An MDOT carpool lot is also at this location; total capacity is 142 vehicles. A large portion of the project segment lies within Livonia, which has opted out of SMART service. Travel patterns indicate that I-96 is often used for intra-corridor circulation, making it a potential candidate for a local shuttle during construction. Finding an operator, however, may be difficult. Because there is no transit service along the corridor, universal passes and integrated fares are not specifically called out, although these policies could still be incorporated over time.

**Recommended Actions**

1. Distribute free transit passes during construction

---

2. Relocate and enhance transit service

**Action 1: Distribute free transit passes during construction**

Users of the Fenton park & ride arrive not via I-96, but come from communities to the south and west of the park and ride location. In addition, another SMART park & ride is located at Graham Fields on Beach Daly Road, just north of I-96. A direct mailing of transit passes, billed as a way of alleviating construction impacts, and tied to a household ZIP code would be a great way of better understanding the travel market to these park & rides and willingness to try transit. The cost to provide such passes is minimal to the transit agency but requires some time on the part of the MDOT project manager.

**Action 2: Relocate and enhance transit services**

The SEMCOG travel demand model reveals that many trips along I-96 are intra-corridor travel. The area has no SMART service as Livonia has opted out, but given that I-96 will be completely closed, opportunity exists to test the waters for interest in a local circulator. Major destinations in the corridor include F and M Shopping Center and the Henry Ford Medical Center. Potentially the local destinations could contract, either with a private operator or with SMART, to run a cutaway-style shuttle along 5 Mile and Plymouth Road where destinations are clustered. Assuming one vehicle in operation to start and a contracted cost of $100 per hour, the cost of such a service is $318,000 per year if operating on weekdays only for 12 hours per day. Assuming the shuttle can yield 10 passengers per hour, the service could carry 120 trips per day.

SMART is considering adding a new park and ride on Grand River Avenue during construction. This corridor is designated as BRT in the future transit network. Currently there is no service on the avenue east of Telegraph Road. The I-96 construction provides opportunity to test the corridor with commuter-oriented service to start. To keep costs under $1 million and given SMART’s operating cost of $147/hour, on weekdays a total of 23 hour of service could be provided up and down Grand River Avenue. Since it is not known whether Grand River riders were formerly driving on I-96, this new service has little effect on I-96 congestion but has major implications for the region’s future transit network.

**Figure 24 Implementation of Transit Solutions**

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Distribute free passes</td>
<td>MDOT, SMART</td>
<td>Minimal; some staff time</td>
<td>FHWA funds</td>
</tr>
<tr>
<td>2 Relocate and enhance transit services</td>
<td>SMART, Local employers/institutions</td>
<td>Shuttle $318,000; Grand River service $900,000</td>
<td>FHWA funds</td>
</tr>
</tbody>
</table>

**Marketing and Information Solutions**

**Recommended Actions**

1. Localized travel app

---

33 For the Gateway Project, MDOT set aside $2 million for SMART and DDOT to run an express service around the construction.

Nelson\Nygaard Consulting Associates Inc. | 30
Action 1: Localized Travel Alternative App  
See Regional Programs & Policies, page 6

Driving Solutions
Carpool and vanpool are cost-effective ways of influencing mode change in lower-density communities.

Recommended Actions
1. Promote vanpool and ridesharing  
2. Expand park & ride opportunities

Action 1: Promote vanpool and ridesharing
The current subsidized vanpool program in the region is maxed out with 400 vanpools, a number agreed upon with MDOT. However, interest exceeds the current cap. Eighty vanpools are running paid for by commuters rather than subsidized by MDOT. As part of several of the major construction examples around the country, like T-REX, vanpools were subsidized to decrease congestion. Each vanpool can carry up to 15 people and has on average 8 participants. If five new vanpools are subsidized as part of the construction, it would potentially result in 40 reduced SOV trips per day.

Implementation Steps
1. Explore raising the cap on vanpools during the construction period(s)  
2. Get better information on vanpool operators/owners and riders. (e.g. who operates the van, origins and destinations, rider characteristics, etc.). While vRide currently collects some of this data, smaller owner/operators may not.
3. Identify any duplication in vanpool services between vRide and others to optimize the available vanpool operations.
4. Look at opportunities to coordinate with Quicken vans.

Action 2: Expand park & ride opportunities
Coordination between MDOT and SMART is needed to ensure the Fenton park and ride remains operational and easy to access during construction. In addition, SMART is considering either moving or adding a park and ride on Grand River Avenue, less than 1 mile north of I-96. Grand River Avenue is a strategic location – it is south of the recommended I-96 detour route of I-696, meaning for residents living just north of I-96 it could make an attractive alternative. Grand River Avenue is an angled street that runs straight into downtown Detroit as well. SMART has a park and ride on Grand River Avenue at the Bonaventure Skating Rink in Farmington Hills, a few miles upstream from the Fenton park and ride (Route 805 to downtown runs through both park and rides). Adding another park and ride along Grand River near Telegraph Road will allow SMART to test the market for park and ride in this community. As part of the Gateway project, new park and ride facilities were created, one of which is still open. Park and ride is a very viable option for the SEMCOG region; thus taking advantage of construction to partner with property owners and build facilities increases the chance of mode switch and maintaining the lot after construction. In terms of traffic reductions, SMART runs 9 round trips on route 805, which serves the current Grand River
and Fenton park and rides. Assuming approximately 10 people per day try the free pass and new park and ride, the service adds 90 new daily riders or 180 trips.

**Implementation Steps**

1. Identify and map formal and informal existing park and ride lots.
2. Initiate dialogue with property owners regarding synergies of use.

---

**Figure 25**  Several empty parking lots are located on Grand River Avenue west of Telegraph Road

---

**Figure 26**  Summary of Driving Solutions

<table>
<thead>
<tr>
<th></th>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Vanpool and rideshare promotion</td>
<td>vRide, MDOT, SEMCOG</td>
<td>TBD</td>
<td>FHWA funds</td>
</tr>
<tr>
<td>2</td>
<td>Park and ride expansion</td>
<td>SMART, MDOT</td>
<td>Minimal – use existing empty lots</td>
<td>FHWA funds</td>
</tr>
</tbody>
</table>

---

**Employer Solutions**

**Recommended Actions**

1. Promote telework programs

**Action 1:** Promote telework programs

*See Regional Programs & Policies, page 9*
CORRIDOR: I-94

I-94 covers seven miles of one of the region’s most heavily used highways, carrying 140,000 vehicles per day and a large amount of truck traffic vital to the region’s economy. The estimated price tag in today’s dollars is $1.5 billion. This project includes a multimodal component in the form of new bicycle lanes added to service roads and bicycle lanes across bridges, helping reconnect the neighborhoods that the freeway originally divided.

Transit Solutions

Recommended Actions

1. Establish transit pass program
2. Integrate fares across SMART and DDOT
3. Operate East-West shuttle
4. Introduce and promote new services

Action 1: Establish a transit pass program

See Regional Programs & Policies, page 11

Action 2: Integrate fares across SMART and DDOT

See Regional Programs & Policies, page 15

Action 3: Operate East-West shuttle

In tandem with the north-south Midtown-Downtown shuttle that could be pursued together with the Woodward Avenue construction, an east-west shuttle can be packaged into I-94’s construction funds as the project is still evolving through the funding process. MDOT plans to complete work on the service roads first to maintain some through capacity. An east west shuttle, either on the service roads or on Warren Avenue, creates a T-shape shuttle system. Note that DDOT’s Route 14 currently runs on Warren Avenue; this shuttle will supplement the service. The shuttle can run from Grand River Avenue to Gratiot Avenue, a distance of 4.5 miles, or 20 minutes. The headways on the east-west and north-south shuttle can be coordinated to provide a transfer point at Woodward and Warren Avenues. As noted earlier, the private provider Metro Cars could be utilized for this service. For this analysis the same cost was used as the Midtown-Downtown shuttle; similarly, the same ridership assumption of 10 passengers per revenue hour or 240 trips per day, was used.

Action 4: Introduce and promote new services

Warren Avenue is slated for rapid transit service as part of the regional transit network plan. As part of the east-west shuttle and future rapid transit system, conduct surveys, reach out to stakeholders, and if possible begin design and acquisitions for the future service as part of planning and developing the shuttle.
Figure 27  Summary of Transit Solutions

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 East-West Shuttle</td>
<td>City of Detroit/DDOT, M-1 Rail</td>
<td>$286,200 per year</td>
<td>FHWA funds</td>
</tr>
<tr>
<td>4 Introduce and promote new services</td>
<td>MDOT</td>
<td>Varies</td>
<td>FHWA funds</td>
</tr>
</tbody>
</table>

Driving Solutions

*Recommended Actions*

1. Designate one lane per direction as HOV

**Action 1: Designate one lane per direction as HOV**

MDOT plans to keep two lanes per direction open on I-94; designating one lane per direction as HOV effectively doubles the capacity. I-94 is also a major freight corridor important to the economy. Allowing freight to use the HOV lane will help minimize the impact of construction on freight delivery schedules. Today I-94 carries 144,082 vehicles per day, or 24,000 vehicles per lane on average, or 16% of the ADT. By adding HOV, that reduces ADT by 16%. HOV is an excellent program but will require enabling legislation first. During construction on Michigan Avenue, MDOT designated the right lane as HOV; however, the agency found that Michigan’s vehicle code does not define carpool or HOV lanes, thus citations do not stand up in court and the designation is unenforceable. In order to implement HOV, Michigan will need to amend its code.

Figure 28  Implementation of Driving Solutions

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Designate one lane per direction as HOV</td>
<td>MDOT</td>
<td>Minimal</td>
<td>FHWA funds</td>
</tr>
</tbody>
</table>

Employer Solutions

*Recommended Actions*

1. Promote telework programs
2. Promote Commuter Benefit program

**Action 1: Promote telework programs**

See Regional Programs & Policies, page 9

**Action 2: Promote Commuter Benefit programs**

See Regional Programs & Policies, page 9
Parking Solutions

Parking management is a sensitive topic that should be introduced in stages, and only as a city’s economy and changing travel patterns can absorb increasingly stringent policies. Programs that discourage driving alone are one thing but it is important to offer a viable option at the same time. Yet there are numerous strategies the region can undertake that can be used positively to fund transit and other TDM services while I-94 is reduced in capacity. I-94 is the major artery providing east-west circulation along the city core edge and, via routes like M10 and I-375, bring people downtown. During construction, policies that discourage driving on I-94 into downtown and encourage alternatives ease congestion. This is especially important during special events, when thousands of people, in a constrained time period, take I-94 as a route into downtown.

Recommended Actions

1. Allow higher parking rates during special events
2. Create satellite parking lots during special events
3. Promote parking cash out

Action 1: Allow higher parking rates during special events

To foster equity, Detroit caps its parking rates; however, during special events such as baseball games, rates should be heightened both to encourage transit or carpooling as well as to recover from non-residents the externalities caused by driving. As shown in Figure 29, the city parking locations are highlighted. The web site lists max daily rates as no more than $15. Olympia Entertainment manages 4,500 parking spaces related to Comerica Park. As shown in Figure 30, these facilities charge as high as $25.

Figure 29   Detroit downtown parking locations
Two hours before game time at Comerica Park (or at other major sports or cultural venues) allow city lots to raise their rates and match Olympia Entertainment’s rate at $25. Detroit DOT has been dubbed an enterprise agency; however, it is funded from the General Fund and has no dedicated source of revenue (the city has a separate parking department). We recommend dedication of the additional event parking increment to DDOT to provide special event shuttles.

**Action 2: Create satellite parking lots during special events**

In the past, DDOT has run successful shuttle services from the zoo and Stair Fairgrounds for special events, but the agency typically runs out of operating funds. According to MLB.com, on average Detroit Tigers home games yield an attendance of 37,635 people. If even a quarter of those people drive, that equals 9,408 cars heading to Detroit. A shuttle run on a 45-passenger bus every 10 minutes for 2 hours before and 3 hours after the game can pull around 480 drivers off the roads (assume 40 passengers per bus, 12 total buses over 2 hours at 10 minute headways). If the satellite lots are at the State Fairgrounds or at Conner Avenue on the east end of the east-west shuttle described earlier, DDOT needs four vehicles to achieve the desired headways. This service would be supported by the parking charge, with the goal of increasing the profile of transit and changing the mindset and opinions people have of non-driving options.

According to the National Transit Database, DDOT’s operating cost per revenue hour is $152.36. Most national operators experience an incremental cost per hour that is 75% of their total, or $114.27 per hour in DDOT’s case. Thus the shuttle service providing 20 hours of total service would cost $2,285.40 per game.
Figure 31  Potential park and ride locations near Conner Street dotted in red

Action 3: Promote parking cash out and Commuter Benefits

As described in Woodward Avenue Programs, this policy has a strong incentive to change travel patterns. If parking cash-out and commuter benefits could be made available to 5,000 additional employees as part of the I-94 construction, of which 92% drive alone (using the regional mode share) that comes to 4,600 people driving alone.

Figure 32  Summary of Parking Solutions

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Higher parking rates during special events</td>
<td>DDOT, city of Detroit</td>
<td>Minimal</td>
<td>NA</td>
</tr>
<tr>
<td>2. Satellite parking during special events</td>
<td>DDOT, Parking lot owners</td>
<td>$2,285.40 per game</td>
<td>FHWA funds</td>
</tr>
<tr>
<td>3. Parking cash out</td>
<td>Employers</td>
<td>$150 per employee per month</td>
<td>FHWA funds</td>
</tr>
</tbody>
</table>

Bicycle Solutions

Recommended Actions

1. Create park and pedal program

Action 1: Create park and pedal program

See Woodward Streetcar section, page 27
CORRIDOR: I-75

I-75 is the longest corridor at 17 miles and travels through several communities. I-75 is unique in that it will contain an HOV lane in each direction upon completion. As mentioned in the I-94 section, however, implementing HOV will require defining it in Michigan’s vehicle code to allow for enforcement.

Transit Solutions

Today a couple SMART routes connect communities along this corridor but there is no one-seat express ride to Detroit. The programs of transit passes and fare integration have less sway in this corridor, which has no one-seat ride to Detroit, but those programs can be incorporated over time following success in the Metro Detroit region.

Recommended Actions

1. Enable and promote new services
2. Run express service on I-75

Action 1: Enable and promote new services

Woodward Avenue is an alternate route to I-75. It is also identified as a future bus rapid transit corridor. With a small amount of funds relative to the maintenance of traffic otherwise required, the Woodward Avenue BRT could be established and capitalized in its early years by the I-75 project as a mitigation strategy. Combined with designation of a significant number of temporary park and ride lots, a Universal Pass, and the incentive of substantial congestion associated with construction this pilot corridor implementation could provide a viable alternative for a large number of current I-75 drivers. This investment would, of course, have the happy consequence of springboarding establishment of the regional rapid transit network Woodward Avenue is DDOT’s highest ridership route and has demonstrated demand for rapid service.

Action 2: Run express service on I-75

SMART has expressed interest in a highway-running express service during construction. SMART would require 6 months of lead time, but could then make available 20 vehicles for service. Express service from I-75 and Route 59 to downtown takes 28 minutes driving, and more during peak congested periods. Travel on I-75 is reasonably well-balanced direction-wise, meaning the corridor does not exhibit a strong peak direction of travel. Given that, the corridor needs bi-directional service that can be peak-oriented at the outset. Assuming 10 hours per day per direction, for a total of 20 daily revenue hours, the service would cost $763,200 at SMART’s current rate. In the Duluth, MN example, new express service reduced traffic by 1%. If express bus services on I-75 itself proved too problematic, express service on Woodward Avenue would be a reasonable alternative.

Figure 33 Summary of Transit Solutions

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduce and promote new services</td>
<td>MDOT</td>
<td>Varies</td>
</tr>
<tr>
<td>2</td>
<td>Run express service on I-75</td>
<td>SMART</td>
<td>763,200 per year</td>
</tr>
</tbody>
</table>
Marketing and User Information Solutions

As with many of the other projects, impact mitigation and the promotion of alternatives to travel impacts on the corridor under construction begins with an aggressive outreach and information campaign. There is significant cross-country travel from Genesee to Oakland Counties, thus marketing must infiltrate into a large market.

Action 1: Localized Travel App

See Regional Programs & Policies, page 6

Employer Solutions

*Recommended Actions*

1. Promote telework and flexible schedules
2. Enter hoteling agreements
3. Promote Commuter Benefit programs

Action 1: Telework and flexible schedules

Given the level of inter-county commuting, promotion of telework can truncate the amount of travelers trying to drive the length of I-75.

*See Regional Strategies section.*

Action 2: Enter hoteling agreements

The new work force is mobile, and can work remotely with a high-speed internet connection. Creating temporary work sites may be feasible in Troy, where vacancy rates are high, as well as in Hazel Park. These work sites could enable employees to forego the long trip down I-75 and work some days from an office-like location before the construction zone. Similar to telecommuting, co-work or hoteling spaces are becoming increasingly popular alternatives. Such mitigations could be eligible for mitigation funds to strategically reduce rent, support fit outs, and promote opportunities to entrepreneurs willing to establish co-work or remote-work environments.

Action 3: Promote Commuter Benefit Programs

*See Regional Strategies section.*

Figure 34  Summary of Employer Solutions

<table>
<thead>
<tr>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Telework and Flex Schedules</td>
<td>Private employers</td>
<td>Minimal</td>
<td>Private</td>
</tr>
<tr>
<td>2. Hoteling sites</td>
<td>Economic development Council, Municipalities</td>
<td>IT costs Rent</td>
<td>Potential CMAQ or small business funds</td>
</tr>
<tr>
<td>3. Promote Commuter Benefits</td>
<td>SEMCOG</td>
<td>Marketing and outreach</td>
<td>CMAQ</td>
</tr>
</tbody>
</table>
Driving Solutions

Recommended Actions

1. Expand vanpool program
2. Obtain new park & ride locations
3. Designate one lane as HOV during construction

Action 1: Expand vanpool program

Vanpool and rideshare options could be subsidized through FHWA to reduce travel on I-75. If 10 vanpools could be formed along the 17 mile corridor, that equates to 80 less drivers per day assuming average ridership of 8 persons per vanpool.

Action 2: Obtain new park & ride locations

Overall, the region needs more park and ride and carpool locations. Along I-75, Oakland Mall has indicated willingness to become a park and ride or carpool location. MDOT has also planned some new carpool lots to be paired with the I-75 project; it makes sense to open these immediately rather than wait until construction.

Action 3: Designate one lane as HOV during construction

MDOT will be implementing HOV through the project, but in order to further encourage transit or carpool/vanpool use, one of the two open lanes per direction can be designated HOV. Michigan will need to define carpool/HOV lanes in its vehicle code for this to be enforceable. Similar to I-94, this designation can decrease cars by 16% by basically doubling capacity.

Figure 35 Summary of driving solutions

<table>
<thead>
<tr>
<th>Action Number</th>
<th>Responsible Stakeholder</th>
<th>Estimated Cost</th>
<th>Potential Funding Source(s)</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Expand vanpool program</td>
<td>vRide, MDOT</td>
<td>TBD</td>
<td>FHWA funds</td>
</tr>
<tr>
<td>2</td>
<td>Obtain new park and ride</td>
<td>MDOT</td>
<td>Minimal – use existing lots</td>
<td>FHWA funds</td>
</tr>
<tr>
<td>3</td>
<td>Designate HOV during construction</td>
<td>MDOT</td>
<td>Minimal</td>
<td>FHWA funds</td>
</tr>
</tbody>
</table>
TRIP REDUCTION SUMMARY

The purpose of TDM is to shift travel away from constrained corridors. The goal is to showcase how current auto trips can be shifted to non-drive-alone trips during construction, and hopefully continue to affect behavior after and work toward larger regional mode shift goals. The project team’s research, cited throughout this paper, was used to calculate trip reductions on a program-by-program basis, as shown in the chart below. Note that the overall, cumulative effect may be more or less than the effect of each program implemented in solitary space (depending on which programs are instated), but the point is to illustrate the impacts these strategies can have on VMT and their value to the construction mitigation process.