SACOG TDM
STRATEGIC PLAN
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CHAPTER 1. STRATEGIC PLAN BACKGROUND

What is TDM?
Transportation Demand Management (TDM) refers to a set of programs, policies, services and strategies that are aimed at reducing the demand for roadway travel and optimizing all transportation modes in the system, which usually involves reducing the number of single occupant vehicles on the roadway. The Center for Urban Transportation Research states that TDM “focuses on helping people change their travel behavior—to meet their travel needs by using different modes, traveling at different times, making fewer trips or shorter trips, or taking different routes,” noting that managing demand is often the most cost-effective solution to solving a transportation problem. TDM programs provide information about alternative travel modes during roadway construction projects, road closures, accidents, and other transportation system emergencies or failures. TDM programs have the added benefits of reducing greenhouse gas emissions and air quality pollutants.

Mission of the TDM Program
Reduce vehicle trips and miles traveled by implementing cost-effective and innovative programs, services, projects, strategies and policies that encourage people to change their travel behavior.

2016 MTP/SCS and TDM
The Sacramento Area Council of Governments (SACOG) is the metropolitan planning organization responsible for developing the long-range Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) for the six-county area including El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba counties and the following cities:

- Auburn
- Citrus Heights
- Colfax
- Davis
- Elk Grove
- Folsom
- Galt
- Isleton
- Lincoln
- Live Oak
- Loomis
- Marysville
- Placerville
- Rancho Cordova
- Rocklin
- Roseville
- Sacramento
- West Sacramento
The 2016 MTP/SCS projects an additional 811,000 people in the Sacramento region, an increase of about 36 percent, between 2012 and 2036. Growth projections include approximately 439,000 new employees from 2012 to 2036. Today in 2016, the region is showing significant signs of economic recovery and job growth is leading housing growth. In fact, much of the employment lost from 2008 to 2012 has been recouped in the region.

Through development of the MTP/SCS, SACOG works with its 28 member jurisdictions to plan for a regional transportation system that addresses this projected growth and realizes the benefits of coordinated land use and transportation planning. Encouraging a land use pattern that provides for shorter trips between work, home, retail and other services combined with a robust transit system and effective TDM programs will help preserve and improve the region’s quality of life.

Although TDM programs are a relatively small and low-cost part of transportation investments, they can contribute to a noticeable difference in the operation of the transportation system. For example, for each one percent increase in transit mode share for commuting, there will be a five percent decrease in per capita heavy congestion (SACOG, 2016 MTP/SCS).

The Sacramento region is a non-attainment area for ozone pollution. TDM strategies address a wide range of externalities associated with driving, including traffic congestion, air pollution, less livable communities, reduced public and environmental health, dependence on oil, climate change and GHG emissions. As a region, reducing vehicle miles traveled (VMT) by as little as 10 percent will result in benefits to air quality, mobility, reduced congestion, and greater transportation system efficiencies.

**Background and Purpose of Strategic Plan**

For many years, the Sacramento Area Council of Government (SACOG’s) has had a Regional TDM program that supports and promotes alternative, non-drive alone transportation modes, including carpooling, vanpooling, public transit, bicycling, walking, and telecommuting. TDM is contained as a Transportation Control Measure (TCM) in the 1997 Ozone State Implementation Plan (SIP), which expires in 2018, and is in the Metropolitan Transportation Plan/Sustainable Communities Strategy as Strategy 8.1: Continue the region’s previous commitment to TDM programs as a strategy for education and promotion of alternative travel modes for all types of trips toward reducing Vehicle Miles Traveled (VMT) by 10 percent.

SACOG’s analysis for the 2016 Metropolitan Transportation Plan/Sustainable Communities Strategies (MTP/SCS) accounts for benefits from the Regional TDM program that help the region achieve greenhouse gas emission targets and air quality conformity. The TDM program’s goal is to help contribute to the reduction in trips anticipated in the MTP/SCS by 2036. (MTP/SCS, 2016, Pg. 254) While the majority of this trip reduction will be due to the land use changes identified in the MTP/SCS, TDM also plays an important role in supporting and encouraging alternative mode use in the region where land use patterns and transportation options currently enable more modal choices, or will in the future. To support TDM programs, SACOG uses federal funds from Congestion

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Wheatland
Winters
Woodland
Yuba City

Final TDM Strategic Plan 10/20/16
Mitigation and Air Quality (CMAQ), a program that was first established in the early 1990s and continues to this day. Since TCMs are mandated for the region by federal air quality requirements, the TDM program is an appropriate use of CMAQ funds.

However, the TDM landscape is changing with rapidly changing technologies, demographics, travel patterns, and shared mobility options. Within the region’s projected growth, shifts in demographics are apparent. By 2036, the Sacramento region is expected to see a 44 percent population increase in those aged under 20 to 34 (1,093,744 to 1,338,756 people) and a 39 percent population increase in those ages 50+ (747,879 to 1,198,968 people).

Table 1.1 MTP/SCS Population and Age Comparison

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>POP</td>
<td>POP%</td>
</tr>
<tr>
<td>&lt; 20</td>
<td>633,190</td>
<td>28%</td>
</tr>
<tr>
<td>20-24</td>
<td>174,746</td>
<td>8%</td>
</tr>
<tr>
<td>25-34</td>
<td>285,808</td>
<td>13%</td>
</tr>
<tr>
<td>35-49</td>
<td>426,515</td>
<td>19%</td>
</tr>
<tr>
<td>50-64</td>
<td>464,748</td>
<td>20%</td>
</tr>
<tr>
<td>65+</td>
<td>283,131</td>
<td>12%</td>
</tr>
<tr>
<td>Total</td>
<td>2,268,138</td>
<td>100%</td>
</tr>
</tbody>
</table>
The MTP/SCS assessment indicates that the evolution of these changing demographics will be apparent through 2036. By that time, Baby Boomers will be 72 to 90 years of age, Generation X will be 52 to 71 years of age and Millennials 32 to 54 years of age. TDM strategies will need to account for this population growth both presently and looking into the future.

Table 1.2 MTP/SCS Changing Demographics

![Diagram showing population growth of different age groups from 1990 to 2036.]

<table>
<thead>
<tr>
<th>Generation Grouping</th>
<th>2012 (BY of MTP/SCS)</th>
<th>2036 (Horizon Year of MTP/SCS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby Boomers</td>
<td>48 to 66 Years</td>
<td>72 to 90 Years</td>
</tr>
<tr>
<td>Generation X</td>
<td>28 to 47 Years</td>
<td>52 to 71 Years</td>
</tr>
<tr>
<td>Millennial Generation</td>
<td>8 to 30 Years</td>
<td>32 to 54 Years</td>
</tr>
</tbody>
</table>

Changes in federal and state legislation and a growing interest from policy makers and the public in performance-based planning and programs also call for a need to evaluate our current TDM program and investigate opportunities for more cost-effective, innovative strategies for reducing vehicle miles traveled (VMT) to reduce greenhouse gas emissions, peak roadway demand and traffic congestion and improve air quality.

Given these realities and that the current TCM will sunset in 2018, SACOG staff, board members and stakeholders embarked on a strategic planning process to assess the current TDM program and identify means by which SACOG and partners can stay on the cutting edge of TDM programs and activities.

The goal of this Strategic Plan effort is to provide an initial framework for refining and implementing a TDM program that is performance-based, cost-effective, and clear in outcomes. This effort is intended to bring the program into parity with other funding programs in terms of performance-based decision-making, as well as to demonstrate accountability towards regional air quality goals for federal, state and local partners.
Plan Development and Stakeholder Engagement

To create a strategic plan that draws on local knowledge, SACOG sought input and information from Transportation Management Associations and Organizations (TMAs/TMOs), air districts, transit agencies, universities, non-profit groups, interested SACOG Board Members, and members of the public. SACOG worked with the Community Transportation Association for America (CTAA) to use a “Design Thinking” process to draw on this local knowledge about the current TDM program and identify opportunities, challenges, trends and strategies that could shape the program into the future.

CTAA, with assistance from SACOG staff, conducted over 40 interviews with a combination of key TDM partners and stakeholders, and employers, as well as interested but non-participatory alternative mode users and frequent alternative mode users (e.g., vanpoolers, bicyclists, and carpoolers). This qualitative research helped SACOG more fully understand the goals and motivations of current and potential alternative mode users in the region.

This qualitative information was combined with other research to provide a deeper understanding of the region’s context and people, with the goal of better framing opportunities for the regional TDM program. CTAA led two working group sessions with partners, staff, and stakeholders to share the data gathered from stakeholder interviews to determine insights and opportunities for the TDM Program. CTAA also facilitated a follow-up session with SACOG staff members with the purpose of honing the analysis and strategies to consider as part of the TDM Strategic Plan.

Literature, Innovations & Best Practice Research, Technical Analysis & Peer Review

In addition to stakeholder input, SACOG staff and consultants looked at other TDM strategic plans and programs to understand the current and best practices in TDM programs, new and innovative ideas in the field, and information on cost-effectiveness of TDM programs and performance measurement tools. Sierra Research helped support the Strategic Plan assessment of SACOG’s current TDM program by examining the types of activities SACOG and TMAs/TMOs currently invest in, and compared those investments to the research literature on cost-effective TDM programs. Sierra Research also conducted research on best practices in performance measurement, and offered suggestions for the type of data needed to do a more thorough assessment of TDM programs. This work was shared with other MPOs and consulting firm Kittelson & Associates, Inc. for further input. While Sierra Research analyzes SACOG and TMO/TMA investments and provides some estimated benefits of their supported activities, the limited data available on the program impeded the consultant from fully quantifying the cost-effectiveness of these investments.

In addition to this technical work, SACOG facilitated an assessment of the program with outreach partners and SACOG staff. SACOG also reached out to other MPOs to obtain their thoughts on the activities and services being provided by SACOG and outreach partners, to collect feedback from peers about the effectiveness of the current TDM program.
CHAPTER 2. TDM IN THE U.S. & SACOG REGION

Traditional TDM Programs in the U.S.

TDM programs have been underway nationwide for many years. Below are some of the typical TDM programs and services offered by public agencies and non-profit organizations.

511 Traveler Information
In 2000, the Federal Communications Commission designated "511" as the single traffic information telephone number to be made available to states and local jurisdictions across the country. In many locations, 511 is offered both online and by phone for transportation and traffic-related information.

Employer-Based Programs
Employer-sponsored programs are designed to reduce SOV travel to and from the work site. Commonly, incentives and support are available to assist employees in reducing trips, including information, subsidies, pre-tax benefits, bike parking, showers, and preferential parking. Some programs are required via ordinance or development agreement, or supported through membership in a TMA/TMO, although enforcement is an issue in many areas. Many employers that are members of TMAs/TMOs have an Employee Transportation Coordinator (ETC) on-site to assist employees. The employer-based model can be found in most cities with TDM programming, including Washington, D.C., Atlanta, San Diego, San Francisco, Denver, and Boston.

Ridematching
Ridematching services and databases are common among many TDM programs across the U.S. Typically, individuals provide basic personal and work information in order to be matched with commuters who have similar origins, destinations, and work hours to help start, find or fill a carpool or vanpool.

Personalized Trip Planning
TMA/TMO staff and Employee Transportation Coordinators (ETC) commonly plan trips for individuals who request assistance. Trip planning may be conducted in person or via online or mobile app technology. Private sector applications such as Google and Ridescout, also increasingly aggregate data to provide real-time trip planning assistance for multiple modes, including driving, transit, biking, walking, bikeshare and carshare, with TDM programs in some cases providing data.

Subsidies
Subsidies have long been an integral part of TDM programming to offer enticements to shift from single occupancy vehicles (SOV). Many agencies subsidize vanpool or transit pass costs or offer monetary incentives to commuters to carpool. The structure of financial incentives plays a large role in mode choice. The Center for Urban Transportation Research (CUTR) discovered that "people change their preferences based on the framing of the incentives (CUTR, 2013, Pg. VI)."

Prizes and Incentive Items
San Francisco, Birmingham, Las Vegas, the Twin Cities and many other metropolitan areas offer ongoing or specific campaign-related prizes or incentives for using alternative modes, such as
raffles, points programs to bid on selected items, discounts at local restaurants/retailers, give-aways like branded T-shirts, mugs or water bottles, etc.

**Emergency/Guaranteed Ride Home Program**
The Emergency or Guaranteed Ride Home program is a TDM benefit offered to assure commuters who use alternative modes that they can get home in case of an emergency or unexpected overtime. Eligible commuters are usually provided a free ride home through a taxi or rental car, with a maximum number of uses allowed per year.

**Outreach and Marketing**
Most TDM programs include outreach and marketing activities to build awareness of TDM programs and services and available transportation alternatives. Washington, D.C., Atlanta, Denver and many other TDM programs employ mass marketing campaigns to increase brand awareness and encourage mode shift. Other campaigns are more specifically targeted, whether to a mode, transportation option (e.g., to encourage use of a new transit service or bike lane/connection), or particular geography (i.e., focused on a neighborhood with stronger transit or multimodal options). The Bay Area, St. Paul, Austin, Chicago, New York, and Portland have all undertaken targeted “individualized marketing” strategies in selected neighborhoods to encourage greater personal use of transportation alternatives.

**Direct Transportation Services**
Some TDM programs offer direct transportation/shuttle services for employees or residents. These services generally use small buses or vans to provide transportation to/from major employment centers or transit hubs, and may be publicly or privately operated.

**Parking Cash-Out**
Per California Law, the Parking Cash-Out Program, administered by the California Air Resources Board, requires employers that have over 50 employees in an air basin designated nonattainment for any state air quality standard and that offer subsidized parking for their employees, to offer a parking cash-out allowance in lieu of a parking space (Assembly Bill 2109, Katz: Chapter, 554, Statutes of 1992).

**Supporting Infrastructure Improvements**
The quality, safety, and connectivity of bicycle and pedestrian infrastructure generally affects the use of these modes for transportation. Staff and stakeholders of TDM programs are often integral to the identification and planning of key infrastructure improvements to address safety concerns and gaps in the bike and pedestrian network and facilitate walking, biking and transit connectivity.

**Current SACOG TDM Services & Programs**
SACOG serves as an umbrella organization that manages, administers, and coordinates many of the types of TDM programs described above, in collaboration with outreach partners, especially Transportation Management Associations and Organizations (TMAs/TMOs).

Below is a summary of the services and programs that are managed directly by SACOG, followed by a description of the Outreach Partner TMA/TMO Programs in the region.
**Sac Region 511 Website and Call Center**

Sacramento Region 511 serves El Dorado, Placer, Sacramento, Sutter, Yolo and Yuba counties. The 511 website and call center offer access to information about all modes of travel, providing traffic conditions and updates for commuters; information on public transit services, including paratransit services for the elderly and disabled; ridesharing information; and information on commuting by bike. The California Department of Transportation (Caltrans) and local city/county traffic operations centers provide traffic and emergency travel information for the region. The Capitol Valley Regional Service Authority for Freeways and Expressways (CVR-SAFE) Program, managed by SACOG, aggregates and contributes roadway and transit GTFS data to support the 511 website.

The 511 telephone service is available in English and Spanish. SACOG Staff recently began taking the calls for rideshare assistance in house because it was more affordable than the call center service. The 511 service also responds to calls from call boxes and cell phones for roadside assistance. Roadside assistance and emergency travel calls are forwarded to the CHP if call center staff is unable to assist the caller. The number also links callers to 511 services in the Bay Area, Nevada and Oregon, as well as Butte and Glenn counties.

**Sac Region Commuter Club Website**

The 511 website links to the Commuter Club website (www.sacregioncommuterclub.com). The Commuter Club website is managed and funded by SACOG with administrative support provided by the 50 Corridor TMA. Residents and employers are encouraged to use the site to find information about vanpools, carpools, transit and bicycling. The Commuter Club website offers ride and vanpool matching tools using the origin and destination information provided by users. The vanpool tool is separate from the ride match tool as it allows users to find or advertise open seats on vanpools. SACOG and TMAs/TMOs use the Commuter Club website to promote alternative modes of transportation and deliver commuter benefits such as Emergency Ride Home and incentives and prizes for logging trips in the Commuter Club Trip Diary.

**Vanpool Incentive Program**

SACOG offers a Vanpool Incentive Program to subsidize newly-formed vanpools operating in El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties. The program offers $300/month for six consecutive months to each qualifying vanpool, with the savings passed on to the vanpool members. This $1,800 incentive is offered on a first-come, first-served basis to any vanpool meeting 10 specified requirements and that has signed agreements with SACOG and an authorized vanpool vendor.

**Regional Marketing**

SACOG coordinates regional marketing campaigns and materials that promote Sac Region 511 and Commuter Club and encourage use of alternative modes of transportation. As part of these efforts, SACOG works with outreach partners on two major annual marketing/encouragement campaigns, May is Bike Month and October is Smart Commute Month. In recent years, SACOG has also helped coordinate special marketing efforts to encourage transit use and reduced driving during Fix 50 and Rebuilding the Boat: Fix I-5, two major reconstruction projects on the state highway system, including construction and traffic impact updates on the 511 website.
**May is Bike Month**

May is Bike Month is a campaign to encourage people to bicycle for all types of trips including to work, school, errands, meetings, and for recreation. Residents in the region log their bicycle miles on mayisbikemonth.com for a chance to win prizes and earn electronic badges. SACOG manages and coordinates broad aspects of the campaign in conjunction with outreach partners. SACOG activities include:

- Directly planning and executing Bike Month stations and events;
- Designing, procuring, and distributing registrant materials (e.g., shirts, buttons, bike socks);
- Managing and designing the Bike Month website, writing and distributing press releases; coordinating with media outlets, and managing social media sites;
- Conducting surveys;
- Providing customer support; and
- Promoting a Bicycle-Friendly Business/District Program.

The May is Bike Month website is a sister website to the Commuter Club in that if someone signs up as a participant in one, s/he is automatically signed up in the other. The Bike Month website allows people to log bicycle trips throughout the month, and encourages bicycling for all trip types through competition, gamification and prize drawings. TDM outreach partners and many other organizations also host bike-related events that are promoted through the website and social media pages.

The Commuter Club and Bike Month websites also serve as a customer relations management database and allow SACOG, TMAs/TMOs and employers to send emails, manage member benefits and services, and track mode shifts.

**October is Smart Commute Month**

October is Smart Commute Month is a much smaller but complementary campaign to May is Bike Month. This fall campaign was formerly known as the October Low-Car Challenge, but was rebranded in 2015 in an attempt to bring more attention to it. The focus of the campaign is to promote all alternative modes of transportation throughout the month of October, with a general message encouraging residents to drive less. Residents are encouraged to log their trips in the online Commuter Club Trip Diary for a chance to win prizes and earn electronic badges. In partnership with TDM outreach partners, SACOG manages and coordinates broad aspects of the campaign, including:

- Providing financial support for partner events;
- Designing, procuring, and distributing materials (print materials, coffee mugs, bags, etc.);
- Managing and updating the Commuter Club website; and
- Providing participant support.

**TDM Task Force**

To coordinate TDM programs with TMAs/TMOs, local city and county agencies, the area’s air quality management districts, California Air Resources Board, local transit agencies, and bicycle and pedestrian advocacy groups, SACOG facilitates a TDM Task Force within the six-county region. The TDM Task Force meets monthly, and is charged with advising and assisting SACOG on its TDM programs, including plans, budgeting, guidelines for the TDM regional funding program, marketing activities, materials, incentive programs and websites. SACOG also works with the TDM Task Force
members to monitor the region’s progress toward TDM service results including reductions in single occupant vehicle trips, number of employers participating in TDM programs, number of Emergency Ride Home participants through self-reported information from users in the Commuter Club database.

**Current SACOG Outreach Partner Services & Programs**

The SACOG region is largely divided among the following 13 Transportation Management Agencies/Organizations (TMAs/TMOs). Figure 2.1 provides a map of TMA/TMO geographic areas.

- 50 Corridor TMA
- City of Elk Grove
- City of Roseville
- El Dorado County Transportation Commission (EDCTC)
- McClellan Park TMA
- North Natomas TMA
- Placer County Transportation Planning Agency (PCTPA)
- Point West Area TMA
- Power Inn Alliance
- Sacramento TMA
- South Natomas TMA
- Yolo TMA
- Yuba-Sutter TMA
Figure 2.1 TMA/TMO Geographic Areas

TMA Service Areas

- Yuba-Sutter TMA
- Placer County Transportation Planning Agency
- Yolo TMA
- North Natomas TMA
- South Natomas TMA
- Point West Area TMA
- McClellan Park TMA
- Power Inn Alliance TMA
- 50 Corridor TMA
- Elk Grove
- Roseville

Note:
The Yolo TMA serves all of Yolo County. The city of Roseville offers TMO services to that city. The Placer County Transportation Planning Agency serves the rest of Placer County. The El Dorado County Transportation Commission provides service in El Dorado County. The city of Elk Grove offers TMO services to that city and certain areas of southern Sacramento County.
The TMAs/TMOs carry out TDM programs with employers and employees, providing valuable public outreach and assistance to hundreds of employers with tens of thousands of employees. In some cases, they also provide residually-based TDM services. Many Sacramento region employers who are members of TMAs have an Employee Transportation Coordinator (ETC) on-site to assist employees. Each TMA/TMO coordinates with SACOG and other partners on regional campaigns and messaging, but operates independently, promoting TDM to serve the needs of its particular employer and/or residential base, including in several cases direct transportation services. The McClellan Park TMA supports a shuttle between the Roseville Road light rail station and McClellan Park corporate community. North Natomas TMA funds and markets shuttles within and between North Natomas and Downtown.

SACOG provides funding to 10 of the 13 TMAs/TMOs to deliver core TDM services to their outreach areas through a Memorandum of Understanding (MOU). The minimum services and activities that TMAs/TMOs are contractually required to provide include:

- Providing annual TDM services plans;
- Promoting rideshare and other alternative mode information;
- Participating in and supporting the SACOG TDM Task Force, its subcommittees and working groups;
- Performing outreach to potential new members;
- Promoting regional TDM campaigns;
- Administering Emergency Ride Home services;
- Identifying the need to implement corridor strategies when there are construction projects or congestion issues that warrant a unique strategy;
- Promoting completion of TDM program surveys or other evaluation tools;
- Providing quarterly and annual reports to SACOG; and
- Providing periodic reports to their governing boards consisting largely of private business partners.

Table 2.1 identifies more specifically the activities of each TMA/TMO, including details about which TMA/TMOs have grants/MOUs with SACOG. More detailed descriptions of each TMA/TMO is included in Appendix A. Generally, most of the TDM resources and effort in the region have been focused on reducing commute trips through promotion of transit, ridesharing, and bicycling at employer sites. Some TMOs/TMAs focus their efforts on promoting alternative modes at the residential level by hosting local events and working with schools. Teleworking and walking are a smaller focus of TDM programs, with transit, carpooling, vanpooling and bicycling being the modes that are promoted most widely across the region. Budget information on these activities can be found in Appendix K.
<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Program/Activity</th>
<th>SACOG</th>
<th>50 Corridor TMA</th>
<th>McClellan Park TMA</th>
<th>North Natomas TMA</th>
<th>Point West TMA</th>
<th>Power Inn Alliance</th>
<th>Sac TMA</th>
<th>South Natomas TMA</th>
<th>Yolo TMA</th>
<th>Yuba Sutter TMA</th>
<th>City of Elk Grove</th>
<th>City of Roseville</th>
<th>PCTPA</th>
<th>EDCTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer-Based Outreach</td>
<td>Employer-Based Marketing (staff time and materials spent on promoting alternative modes, promoting regional programs/services/campaigns, encouraging employers to offer incentives, promoting local programs/services/campaigns)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>City of Elk Grove</td>
<td>City of Roseville</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Education/Training for Employee Transportation Coordinators (AKA Commute Coordinators)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<tr>
<td>Regional Rideshare Programs</td>
<td>Commuter Club Database/website (vendor contracts that include enhancing and maintaining Ridematching Tool, database with admin features, and database management)</td>
<td>x</td>
<td>x</td>
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<tr>
<td></td>
<td>S11 Call Center (website is funded separately)</td>
<td>x</td>
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<td>x</td>
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<td></td>
<td>General regional marketing materials (items branded with S11 and Commuter Club)</td>
<td>x</td>
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<tr>
<td></td>
<td>Emergency Ride Home Program (not admin time, just costs of paying for rides)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
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<td>Vanpools</td>
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<td>Marketing</td>
<td>Prize Drawings</td>
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<td>Regional TDM program implementation (staff time and materials on convening meetings, managing contracts, procuring materials, coordinating events/campaigns/marketing at regional level)</td>
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<td>Residential Based Marketing (promotion of alternative modes, promoting regional programs/services/campaigns, encouraging alternative modes, promoting local programs/services/campaigns)</td>
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<td>October is Smart Commute Month: Website, Events &amp; Materials (not staff time)</td>
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<td>Transit Pricing/Fare Incentive</td>
<td>Transit Subsidies</td>
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<td>Bike/Pedestrian Programs &amp; Projects</td>
<td>May is Bike Month: Website, Events and Materials (not staff time)</td>
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<td>Walk Subsidies</td>
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<td>Bike/Pedestrian Projects (bike parking, lanes and trails) - Funding that goes beyond jurisdiction/regional funding</td>
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<td>Walk/Bike to School Education (in schools)</td>
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<td>Bike Education Courses &amp; Programs</td>
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<td>Direct Transportation</td>
<td>Shuttle Services</td>
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<td>Electric Vehicle</td>
<td>High Efficiency Auto Subsidies (EV and Hybrids)</td>
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<td>Planning</td>
<td>Planning and Studies (Transportation Control Measures parking study, TDM research, Multimodal planning)</td>
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<td>Surveys</td>
<td>Survey and compile data to better understand areas of opportunity and needs for local area</td>
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Air Quality Management District TDM-Related Programs

A long-standing program to reduce emissions in the Sacramento region has been the Sacramento Emergency Clean Air & Transportation Grant Program (SECAT). SECAT has been funded since 1997 as a Transportation Control Measure and partnership between the Sacramento Metropolitan Air Quality Management District (SMAQMD) and SACOG. The SECAT program provides grant funds to replace on-road heavy-duty diesel vehicles that have 2006 and older model year engines with diesel particulate filter (DPF) retrofits, or other limited exempt vehicles with cleaner emission vehicles. The goal of the SECAT Program is to reduce the harmful surplus emissions from on-road heavy-duty vehicles operating in the Sacramento Federal Nonattainment Area (SFNA), classified as "severe" for the federal 8-hour ozone standard with an attainment date of 2018. The SFNA is comprised of five Air Districts — the Sacramento Metropolitan Air Quality Management District, Yolo-Solano Air Quality Management District, Placer County Air Pollution Control District, El Dorado County Air Quality Management District, and Feather River Air Quality Management District — and it covers all or parts of these six counties.

More broadly, however, a number of Air Quality Management District (AQMD) programs include TDM strategies, either on a regional basis or specific to different AQMDs in the region. These are described below.

Regional Spare the Air Program

One well-known alternative mode campaign is Spare the Air, which is promoted throughout the region mostly by the air districts. CMAQ funding is provided to air districts for this campaign separate from the TDM program. On hot summer days when air quality tends to be at its worst, the Spare the Air program notifies residents in the Sacramento region when air quality is forecast to be unhealthy, and encourages residents to drive less and reduce activities that contribute to smog or respiratory problems. Many TDM outreach partners co-promote this campaign, which allows residents to sign up for alerts.

El Dorado AQMD:

AB 2766 Motor Vehicle Emissions Reduction Grant Program

El Dorado AQMD’s Motor Vehicle Emissions Reduction Grant Program, is supported by fees paid to the California Department of Motor Vehicles (DMV) for vehicle registrations. The program funds projects that provide significant motor vehicle emission reductions at the lowest cost per ton of emissions reduced. Funded projects have included bicycle and pedestrian infrastructure improvements, local shuttles, electric vehicle infrastructure, electric vehicle purchase/lease incentive, videoconferencing equipment, and Safe Routes to School projects.

Feather River AQMD:

Mini Grant Program

The Feather River AQMD (FRAQMD) Mini Grant Program, supported by fees paid to the DMV for vehicle registration, funds projects that reduce vehicle miles travelled directly or through public education programs, and provide an air quality benefit in Yuba and Sutter counties, with a relatively low cost and quick turnaround. Eligible projects include funding for campaigns, publicly accessible bicycle racks, and “Kickstarter” grants for larger bicycle and pedestrian projects.
Transit Pass Subsidies
For a number of years, FRAQMD has provided Yuba-Sutter Transit with grant funding to support a discount monthly pass program. The program now offers discount passes to eligible youth (ages 5-18), seniors (age 63+) and eligible persons with disabilities for unlimited use on Yuba-Sutter Transit’s local fixed route system and all three of Yuba-Sutter Transit’s rural routes.

Placer County AQMD:
Clean Air Grant Program
In addition to replacement of older heavy duty diesel equipment, alternative fuel infrastructure, and alternatives to open burning, Placer County AQMD’s grant eligibility includes new or expanding transit service, and public education and outreach related to air quality.

Sacramento Metropolitan AQMD (SMAQMD):
Infill Streamlining Program
The SMAQMD reserves funding from the sale of older truck engines to other states to support and provide technical assistance to local jurisdictions and project developers to facilitate community planning projects in infill locations. This supports improved air quality through land use measures that help reduce vehicle miles traveled.

EV Car Share Pilot Program
The SMAQMD was awarded Cap-and-Trade funds for a pilot program to site car share locations offering electric vehicles at the Sacramento Valley Intermodal Station, and several affordable apartment complexes in Sacramento.

Yolo Solano AQMD:
Clean Air Funds Program
Out of funds collected through vehicle registration fees and Solano County property tax, the Yolo Solano AQMD’s Clean Air Funds program provides grants to non-profit organizations, public agencies, and private businesses for construction of pedestrian and bicycle facilities, transit projects, public information and education programs, new electric vehicles, and replacing or retrofitting diesel trucks and off-road equipment that do not qualify for other regional programs.

Other TDM-Supportive Programs
The region also benefits from alternative mode promotion and services provided by transit agencies, business associations, universities and other private and non-profit entities.

Transit agencies are a key partner in promoting mode shifts by marketing, refining, and improving their services over time. While marketing is a limited portion of most transit agency budgets, these marketing efforts supplement and complement the efforts of TDM outreach partners in promoting transit.

Cities also play a key role in TDM, through employee alternative transportation programs and their land use planning, infrastructure investments, and transportation services. The Cities of Elk Grove and Roseville are official TMO partners with SACOG. The Cities of Davis, Roseville, and Sacramento have
formal bicycle and pedestrian coordinator positions. The City of Rancho Cordova contracts with RT to provide three weekday CordoVan shuttle routes linking the Villages of Zinfandel/Stone Creek and Anatolia neighborhoods, Kavala Ranch and Sunridge Park with light rail. The City of Citrus Heights contracts with RT to provide CityRide, a general public dial-a-ride service serving city residents and connecting to medical facilities in Roseville.

Medical systems also play a role in providing and promoting alternative transportation. Mercy, Sutter and UC Davis hospitals partner to provide free weekday shuttle transportation connections to and from Regional Transit’s 29th Street, 39th Street and University/65th Street light rail stations for patients, employees, visitors and the general public, in large part because they have limited parking available for employees and patients. The UC Davis Health System completed a Parking, Fleet, and TDM Plan for its Sacramento campus in 2015. Molina Healthcare is underwriting the cost to provide free Neighborhood Shuttles to residents of North and South Sacramento. The weekday Shuttles travel regular routes stopping at locations such as markets, pharmacies, service providers, community centers, as well as Molina Medical Group offices, where residents can receive primary care services and immunizations.

Chambers of commerce, property based improvement districts (PBIDs), and business associations also promote alternative modes of transportation. These private entities can have a vested interest in promoting alternative modes in order to preserve parking for business patrons, reduce traffic congestion, and make sure that their member businesses have employees with reliable transportation, and are visited frequently and convenient to access. Power Inn Alliance is a PBID that has an MOU with SACOG to promote alternative modes of transportation. McClellan Park is an industrial business park that has its own TMA that promotes alternative modes and also has an MOU with SACOG. Even without formal partnerships, many private sector entities are spending time and resources promoting alternative modes. These entities are often working with SACOG member jurisdictions, transit agencies and TMOs to plan for, implement and promote bicycle, pedestrian, and transit projects. The West Sacramento Chamber of Commerce provided travel information to its members during the Fix 50 project and continues to do so during other smaller construction projects. There is currently a pilot project funded by a TDM Tier 2 contract to provide TMA membership benefits to Midtown Business Association (MBA) members. The members of MBA are small businesses that aren’t typically members of TMAs, but this model could result in broader information distribution and awareness about alternative modes.

Universities have their own TDM program coordinators and offer substantial support in promoting alternative modes of transportation. Sacramento State University and UC Davis each have TDM programs with staff dedicated to promoting alternative transportation. Sac State offers Hornet Express service connecting the campus with the 65th Street light rail station and nearby neighborhoods. Unitrans provides extensive bus service throughout Davis serving students, staff, faculty, and the public. These entities are members of local TMAs and work in coordination with them and SACOG.

There are also non-profit entities such air quality, bicycle and pedestrian advocacy and outreach organizations that work in partnership with SACOG and outreach partners to promote alternative modes of transportation. These partners are involved in policy, planning, implementation and marketing efforts related to complete streets, safe routes to school, and transit-oriented development projects and programs. While SACOG has provided funding to some of these partners through various grant programs they are largely funded separately from the TDM rideshare program.
CHAPTER 3. INNOVATIONS & NEW TECHNOLOGIES IN TDM

As noted earlier, the world of TDM strategies, transportation information, and shared mobility is rapidly evolving. This change is partially depicted in Figure 3.1, a January 2016 graphic by Susan Shaheen, director of the Transportation Sustainability Research Center at the University of California, Berkeley. The orange circle includes a number of non-SOV modes, with carpools and vanpools in the center a tool of many traditional TDM programs. The blue circle represents the direction of innovation and strategies that services are taking.

Figure 3.1. Shared Mobility Trends

Already here in the Sacramento region are Transportation Network Companies (TNCs), certain new apps, and car-sharing through ZipCar. The Regional Bikeshare Pilot Project is slated to open in 2017. However, other cities and regions have already seen more expanded development of shared mobility options, technologies and public-private partnerships, including:

- Ride hailing
- Innovations in carpool matching and dynamic ridesharing
• Partnerships and services for first mile/last mile transit access and senior/disabled transportation
• Innovations in vanpooling
• Microtransit services
• Emergency ride home expansions
• Vehicle sharing options, including for cars, trucks, bikes and scooters
• Dynamic travel and trip planning tools
• Residentially based TDM programs
• Parking pricing, zoning and management

The sections that follow provide a snapshot of some of the more innovative approaches, partnerships and technologies that are currently underway in various parts of the country, as well as the rapidly approaching frontier of autonomous/self-driving vehicles.

Ride Hailing
Ride Hailing (also known as Ridesourcing or E-Hailing) allows passengers to connect to drivers to arrange a ride via websites or online-enabled apps, such as on a smartphone. In these systems, drivers are not going to the passenger’s destination, but looking to use their vehicle to make extra money through taking riders where they want to go. These systems are generally priced best for short trips. Examples include:

• Transportation Network Companies (TNCs) such as Lyft and Uber. Coined in September 2013 by the California Public Utilities Commission, TNCs are defined as an operator that “provides prearranged transportation services for compensation using an online-enabled application or platform (such as smartphone applications) to connect drivers using their personal vehicles with passengers.” Prices are based on a combination of base charges, time and distance rates, type of vehicle (smaller/larger, SUV, black, etc.), service fees, and surge pricing if rides are more in demand. Some services may also be booked via company websites. In Sacramento, Uber has added UberWAV (wheelchair accessible vehicles) and Uber Access (for passengers needing help due to age or disability) to its list, along with Uber Español with Spanish-speaking drivers. Lyft’s Express Drive and Uber’s Xchange Leasing programs also now provide prospective drivers who don’t have a vehicle meeting company standards to rent or lease a qualified vehicle to provide the service. Lyft has been developing incentives for drivers by reducing or waiving rental fees if drivers provide more than a certain number of rides.

• Taxi E-hailing apps. Increasingly traditional cab companies are using apps to compete with Transportation Network companies by allowing passengers to hail a cab via an app instead of making a phone call or hailing one on the street.

• In Boulder, Colorado, a new ridesourcing program is described as combining “the trust of a taxi with the ease of on-demand services.” Users can access services either by phone or app. Unlike TNCs, zTrip does not use surge pricing and offers 24-hour customer phone service to allow users to speak directly with someone if they have questions or need support. The service planned to introduce ADA accessible vehicles in March 2016.1

Innovations in Carpool Matching

Carpool matching has been a traditional TDM strategy, carried out by public agencies, TMOs, employee transportation coordinators, and others, as well as established informally by families, neighbors, and coworkers. The rate of carpooling in the U.S. has generally been flat or declining in recent years. However, websites and apps are changing the landscape, both for ongoing carpool opportunities and for periodic or instant carpooling.

Many new privately developed matching sites are emerging that allow the general public to offer or request a ride, with easy maps showing carpool origins and destinations. In March 2016, listings in the Sacramento region were identified on Carpoolworld.com (13, including several for one-time rides on a specified date), eRideShare.com (120 listings), as well as sites like Craigslist. UC Davis offers ZimRide, which is organized by private company Enterprise for numerous universities and corporations. UC Davis’ service requires a campus affiliation to be able to offer or request a ride for commutes, local events, trips, rides home for school breaks, etc.

"Casual carpooling" or "slugging" has been in existence in the Bay Area and Washington DC since the 1970s oil embargo, and for more than two decades in Houston, Texas. Casual carpool systems also provide opportunities to seek and form ongoing carpools. In these quite organized “casual” systems, drivers and passengers meet up without prior arrangement at designated locations to share a ride. For safety in numbers and to take advantage of carpool lanes and free/reduced roadway or bridge tolls, drivers generally take at least two other passengers from the line. Since everyone benefits, any payment to the driver is purely voluntary. Ride Now (http://www.ridenow.org/carpool) and Slug Lines (http://www.slug-lines.com) websites not only explain the system and etiquette, list casual carpool meet-up locations, and show comments on drivers, but also offer opportunities to create new casual carpool locations or ongoing carpools.

SchoolPool is a program that helps match parents with students attending the same school(s) to encourage carpooling and improve congestion, safety, noise, and air pollution generated by school traffic. The online Marin-based SchoolPool program enables parents to seek or offer transport to and from school. SchoolPool options include carpooling, walk pools (“walking school buses”), bike pools (“bike trains”), and arranging bus buddies for school buses or public transit. The El Dorado County Transportation Commission used to offer a free SchoolPool program that provided initial and updated ride match lists to parents for their children's school(s), so parents could make contact with others to join an existing carpool or form their own, but found that parents were not comfortable using it.

Dynamic Carpool Matching

With expanded technology, smartphones, and social networks, a number of programs and apps have emerged to facilitate carpools on short notice to share travel costs:

- Established in 2007, Carma Carpooling matches commuters going the same way at the same time through a free smart phone app. Users then reach out to trip matches to organize a carpool. Whenever a passenger takes a trip, s/he taps Start Trip on entering the car and End Trip when leaving and based on the distance traveled, the cost of the trip is deducted from the user's “Carma Credit” account. Trips cost about $0.20 per mile, with 85% of the trip cost going to the driver, and 15% going to Carma. Drivers don’t make a profit, only share the trip cost and, where applicable, get to work faster by driving in the carpool lane.
• After merging with CityCarShare in the Bay Area, Carma began CarmaZoom in a few heavy commute corridors (Berkeley/San Francisco and San Francisco/Bishop Ranch employment center). Carma provides cars at fixed locations, with morning and evening departures at commute times. Once a pre-approved driver books to drive a car for a particular commute, others can book a seat with a credit card payment for the trip (typical cost about $5.50/seat). Carma covers the gas, parking, insurance, etc. for the vehicles. CarmaZoom’s website notes they are revamping the service and locations for 2017.

• Similar to Carma Carpooling, Scoop matches drivers and riders in the Bay Area through an app. Scoop’s partners include the City of Pleasanton and Pleasanton Chamber of Commerce. All morning trips must be scheduled by 9:00 pm the night before and all afternoon trips by 3:30 pm the day of the trip. Scoop rides cost between $2 and $10, with riders capped at two per driver. For employers that sign up, Scoop will look first to match their employees with co-workers, before matching an employee with a user from another neighborhood business. Scoop will reimburse riders for their afternoon commute if they ride in the morning but can’t find a match home (although use of TNCs is not permitted in Alameda County). Scoop also has a Commute Hero Program for certain corridors in the East Bay. Riders who schedule six trips or more in a week meeting program requirements receive $1 rides and reimbursement up to $10 for transit, driving, or other back-up if no match can be made for the morning. Drivers receive guaranteed payment for one passenger every time they schedule, whether Scoop is able to find a match or not.

• In Redmond, Washington, King County Metro and the city have partnered with iCarpool, a mobile ridesharing app. iCarpool allows approved drivers to launch the App with their trip details when they’re getting ready to leave. Riders find and book a trip and learn their pick-up spot. Riders pay a flat $0.26/mile. At the pickup, the rider shows their boarding pass. Drivers mark the pickup and drop-off in the App, and the system automatically adds credits to the driver’s account using cashless payments. Both riders and drivers submit ratings, and iCarpool includes a Friend Notifier which automatically texts identified friends/family members with details when a rider gets into the carpool and upon arrival.

Real-Time Ridesharing by TNCs/Ride Sourcing Companies

Real-time, dynamic or on-demand ridesharing also arranges shared rides on short notice. Typically, apps match rides using algorithms and handle payments to drivers. Dynamic ridesharing is capable of acting as a transit feeder service, serving areas not covered by public transit, and serving one-time trips, recurrent commute trips or other scheduled trips. Entities including TNCs have begun to offer shared ride options in select cities at lower cost to passengers willing to share the ride.

• Lyft Line shared ride service matches passengers with other riders heading in the same direction. The program began operations in San Francisco in 2014 and in early 2016 accounted for more than half the TNC rides in that city. Lyft Line was also operating in Los Angeles, New York City, Austin and Boston. Passengers request a ride via the Lyft app, selecting the ridesharing option. The driver will stop at another point along the way to pick up new people who are heading the same direction. These rides are significantly less expensive than the standard ride-for-hire offered through the Lyft app. In March 2016, the Metropolitan Transportation Commission’s 511 Rideshare Program began a partnership with Lyft to bring together Lyft’s peer-to-peer ridesharing platform and MTC’s established efforts to promote carpooling in the Bay Area. According to Lyft, this marks the first time a
government agency and TNC have launched a product together. Rather than the traditional Lyft ride
types that allow drivers to earn extra income, Lyft’s new carpooling service—which will operate
separately from existing Lyft services—will allow commuters to offset the costs of driving on their
regular commute routes. MTC also has partnerships with the carpool-matching apps Carma and
Scoop, described above.

- UberPOOL operates similarly to the service offered by Lyft Line. Like the more traditional Uber, riders
request rides via a phone app, but because the ride is shared, the cost is up to 50% less. In
December 2015, Uber also rolled out two other ridesharing services. UberCOMMUTE, begun in
Chicago, allows Uber-screened drivers to pick up Uber riders going their way for a reimbursement of
54 cents/mile. Through UberHOP, offered in Seattle, riders use Uber’s app to meet an Uber driver at
a specified pick-up spot to share a ride along one of 14 fixed routes for a flat fee from $3 to $5. The
service is offered during morning and evening peak hours.

- Split is a ridesourcing company currently serving Washington, DC. Unlike other similar services, all
rides with Split are shared, significantly reducing the cost of a trip. All rides cost $2 base fare + $1
per mile. Because Split can accommodate several passengers at once, the service uses fewer
vehicles to transport the same number of passengers as more traditional providers. The service also
follows new DC Council regulations on background checks, including in-person interviews, and
insurance.

First-mile/last-mile partnerships with transit agencies

Transit agency partnerships are being formed with private sector transportation innovators as a way to
address “first mile/last mile” connections to transit. This type of connection makes it easier for travelers to
use a train or bus for the main portion of their trip, but start from or reach places that may be too far away
or inaccessible by walking or biking. Uber’s data shows significant use of Uber within ¼ of a mile from a
transit station:

- 200,000 Uber rides to or from a Los Angeles metro station (Dec. 2014 data)
- 23% of Uber trips to or from Denver RTD light rail station (Feb. 2015 data)
- 30% of Uber trips began ¼-mile from a San Diego transit station (weekday data)

Following are transit-private partnership examples:

- In 2015, Dallas Area Rapid Transit (DART) and Uber began a partnership by which travelers can
connect with the Uber application through DART’s GoPass mobile ticketing application. DART
customers can reach the Uber app to order their ride to begin or finish their transit trip through the
"Events & Offers" section of the GoPass app. Both apps are available for Android and Apple
smartphones through Google Play or the App Store. To encourage people to try the new
combination, Uber was offering a free first ride (up to $20) to new customers. Transit customers can
use the GoPass app to plan a transit trip and purchase a DART pass before arriving at the station or
stop.

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2 Source: Colorado Business Review, Volume 81, Number 2, 2015, p. 12
• The Metropolitan Atlanta Rapid Transit Authority (MARTA) and Uber entered into a similar partnership. Known as the “Last Mile Campaign,” this partnership allows MARTA passengers to link directly to Uber using the MARTA On The Go app for iPhone and Android phones. A guide to “MARTA destinations that are best paired with an Uber ride” is available online at http://martaguide.com/category/uber/.

• In February 2016, the Pinellas Suncoast Transit Authority (PSTA) in Florida began a six-month pilot, Direct Connect, where PSTA will pay half of a United Taxi or Uber ride up to $3 for passengers unable to walk safely to a PSTA bus stop or home from one after work, errands, or an appointment. The trial service is available in the mid-county Pinellas Park area and the East Lake area in northeast Pinellas County where bus service was eliminated in September because of low ridership. Both providers offer ride apps, but the taxi alternative allows those without a smart phone to pay with cash or a credit card.

• On March 7, 2016, the Kansas City Area Transportation Authority (KCATA), in partnership with Bridj and automaker Ford, began Ride KC: Bridj a one-year pilot program. The app-based service area includes downtown Kansas City, Hospital Hill, Crown Center, portions of Midtown, University of Kansas Medical Center and the Historic 18th and Vine Jazz district. The peak hour service Ride KC: Bridj features free Wi-Fi, a guaranteed seat, no transfers, and fewer stops. The 10 vehicles being used for the service were built at Ford’s Kansas City plant using a custom 14-passenger seating layout. Bridj also operates similar services in Boston and Washington, DC. Using the Bridj mobile app, riders can request on-demand shuttle service that they can access via pop-up shuttle stations. Fares range from about $1.50-$7.00 depending on demand.

Partnerships and Emerging Services for Senior/Disabled Transportation

A breadth of programs have developed over time seeking to address the needs for transportation of seniors and persons with disabilities. These transportation services have included:

• Required complementary ADA and beyond-ADA paratransit services
• General public demand response services
• Supplementary shared ride services provided by public or nonprofit agencies
• Taxi voucher programs
• Volunteer or reimbursed driver programs
• Barter programs trading transportation for other skills

Various transportation partnerships and new services are also being developed to serve elders and those with disabilities. Some examples include:

• The Massachusetts Bay Transportation Authority (MBTA) began a pilot taxi program in December 2015 with 200 customers with disabilities. Customers pay a flat fare of $2.00 – a dollar cheaper than The Ride paratransit service – and the MBTA covers $15 towards the cost. Anything over a total cost of $15 is paid by the rider. Unlike The Ride, where drivers assist customers to/from the doorway, the taxi pilot leaves passengers at the curb. Demand rose from 21 trips in December to 46 in January to an estimated 470 in March. In March 2016, MBTA issued a request for proposals for one or more ride hailing vendors to offer smartphone, app-based travel services as another option for curb-to-curb service. While the Ride follows MBTA service hours, the taxi pilot and the ride-hailing pilot
would operate around the clock and not require a reservation the day before. The MBTA also sought proposals - and received four - to create a centralized call center for the vendors that provide regular Ride service. In September 2016, the MBTA announced their ride-sharing pilot with Uber and Lyft, to run for a year from October 2016 to September 2017. According to WGBH news,

In addition to wheelchair accessible vehicles through UberACCESS, Uber will provide smartphones so that those who don’t have them can access the app. Lyft will provide wheelchair accessible vehicles through a partnership with a local Americans with Disabilities Act/Non-Emergency Medical Transportation firm, and the MBTA will offer Lyft drivers an additional $12 for every trip completed using an accessible rental. Lyft will also establish a call-in system, in addition to its app, to request rides.

- In 2015, the City of Gainesville, ElderCare of Alachua County, the Gainesville Area Chamber of Commerce, and Uber began a pilot program, Freedom in Motion, to provide on-demand transportation for seniors age 60+ living at two city residential complexes. Funded with a $15,000 city grant, participants paid $1 to $5 per ride based on their income level. Residents could request a limited capacity smartphone and receive free technology training to feel comfortable requesting a ride with Uber. The program is now being continued and expanded to all seniors in Gainesville.

- Similar to the TNC model, Lift Hero in the Bay Area was designed to engage private drivers using their own vehicles to provide door-through-door service and accompaniment for seniors and those with disabilities, with driver recruitment geared to health professionals and students (EMT's, RN's, CNA's, nursing students, and pre-meds) to provide. Lift Hero’s website now announces that “Ride Hero” is coming soon.

- National MedTrans Network, a privately owned, national non-emergency transportation benefit manager recently partnered with Lyft in to provide non-emergency medical appointment rides for seniors in New York City. Lyft’s new web-based platform, Concierge allows health care professionals to request rides for patients by entering their name, pick-up and drop-off location, and a Lyft driver is matched to give the ride. As of January 2016, National MedTrans Network reported that Lyft was providing 2,500 of 25,000 weekly rides in New York City, and its goal to eventually move all trips to Lyft.

**Innovations in Vanpooling**

In June 2015, Enterprise Rideshare and CTAA partnered to create and expand vanpool programs across the country. A component of CTAA's VanpoolWorks program, the partnership seeks to provide organizations with the resources needed to start or expand a vanpool program of any size. Vanpools can be organized through a public agency, employer, transportation management association, group of employees, or other sponsoring organization. Agencies with more robust or flexible vanpool programs include the following:

- YesWeVan operates in Massachusetts between New Bedford and Tauton. Unlike traditional vanpools, this program offers a fleet of vans with multiple schedules. It allows riders to switch between vans on either the in-bound or out-bound trip at no additional cost. Volunteer drivers receive monthly driver credits based on driving frequency, and riders receive the IRS-allowed $125 pre-tax
transportation benefit (offered through each commuter’s employer). Day riders are welcome at $10 one-way or $18 round-trip.

- The Missoula Ravalli Transportation Management Association utilizes 6-passenger minivans and 13-passenger vehicles for vanpool commuting. The vanpool system is designed to accommodate riders on different schedules, with the fare structure for each vanpool rider based on the one-way miles traveled and number of days per week or month the rider utilizes the vanpool.

- UCLA students, staff and faculty members can vanpool part-time by pre-purchasing one or more one-way Vanpool Vouchers (which do not expire). Those seeking a vanpool ride call Bruin Commuter Services or use a Live Chat application to obtain driver contact information, check whether space is available on the day of the ride, confirm the pick-up time and location, and use the voucher for payment.

- Some transit agencies have incorporated vanpools into their transportation services. CTAA also offers a self-paced training developed for transit agencies considering the benefits of offering vanpooling alongside other transit services. Ben Franklin Transit provides service to a federal worksite 35 miles outside of Richmond, Washington. Washington Intercity Transit, a mid-sized urban transit system serving Olympia, Washington and neighboring communities, uses vans in its vanpool program that are able to accommodate riders using wheelchairs. Designated individuals are available at pick-up and drop-off points to assist with securing passengers in their seat and helping them exit the vehicle. Experience has shown that once other passengers become familiar and comfortable with the process, they willingly take on those activities.

- Tennessee Vans is a program of the Center for Transportation Research at the University of Tennessee, Knoxville. It offers the opportunity to purchase vehicles for transportation purposes to qualified community agencies that provide services to persons with disabilities, workforce participants, youth, seniors, recovery program participants, and community outreach programs. The approach to develop and finance community mobility resources is based on a social business enterprise model. Vehicles are purchased by the university through competitive bid, and affordable financing provided for community agencies without interest charges or any cash down payment. Payment fees include both vehicle costs and program operating expenses. The vehicle contract cost must be paid in full within six years of the vehicle assignment date. Upon payment of these costs, the vehicle title is transferred to the participating agency. After Tennessee Vans’ program expenses are paid, the remaining funds are used to purchase additional vehicles to meet future demand for transportation resources.
Microtransit

As shown in Figure 3.2, microtransit systems are fleets of privately-owned vans and shuttle buses with flexible routes based on user demand.

Figure 3.2. Microtransit Visual

Source: Smart Circle, an initiative of Euroforum

Most microtransit systems are focused on commuter routes. At this time, microtransit services are not a significant part of the Sacramento region’s transportation landscape. For long-term planning in the region’s more suburban communities, microtransit services could act as feeder routes that help connect people to destinations or major transit hubs. Microtransit efforts in other communities include:

- Since the 1980s, dollar vans or “unofficial shuttles” have operated primarily in peripheral, lower income, immigrant communities with limited public transit. Information about their services is generally by word of mouth. A 2015 article reported 49 services running 585 licensed vans in New York City, with more likely operating illegally. Although, they have frequent departures and reliable schedules, the service lacks maps, posted timetables or web access. Networks operate in neighborhoods such as central Brooklyn, southeast Queens, and between Flushing and Manhattan. Legally, they are required to pick up riders who have called in advance, but passengers often flag down the vans. The city is now considering letting the vans make pick-ups that have not been scheduled in advance. The vans pick up and drop off anywhere along a route, and payment is made at the end of a trip. Rides generally cost $2.

- Chariot, serving the Bay Area, defines itself as the first “crowd-funded network of commuter routes.” Using 14-passenger vans, it is a shared ride shuttle that operates based on commuter demand. Chariot’s routes each have their own service hours found in its App and Chariot.com’s route pages. Service typically runs during commute hours, usually from 6:30-10:00 am and 4:00-8:00 pm. Chariot offers a 30-day unlimited ride pass ($93), and 24-, 12- and 2- ride packages, and qualifies for pre-tax commuter benefits. Chariot accepts wheelchair users under certain conditions.

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• **Via** offers on-demand shared rides in vehicles that can carry 3-6 passengers. Rather than the customer designating the exact location for pick-up, the passenger goes to the closest corner for pickup. Customers can track the vehicle’s location, as well as get a countdown until arrival time. In Chicago, Via runs from 6:30 am to 9 pm, and costs $3.95; in New York, it runs from 6:00 am to midnight, costing $5 before 9 pm, and $7.95 after 9:00, plus tax. In areas served within Washington, DC, rides are $2.95 during the hours of 7:00-10:00 am and 4:00-9:00 pm. Usage may be paid for using various commuter benefits.

• Ford has developed a Smart Mobility Plan and is engaged in 25 mobility experiments. In one pilot, Ford began offering **Dynamic Shuttles** for Ford employees who use their smart phones to obtain a ride. In early 2015, Ford reported having 21 vans serving 129 locations and 300 passengers daily. Ford’s on-demand shuttle service, powered by an evolving algorithm, has collected data for Ford’s team to compile and analyze on occupancy rates, traffic conditions, weather, and shuttle availability.

• Microsoft partners with King County Metro Transit in Seattle to augment bus service. Microsoft provides employees with a free universal transit pass and encourages them to use transit. But if service is slow or inconvenient, a **Microsoft Connector** route is provided. The Microsoft Connector, in operation since 2007, works with local churches and businesses to establish stops in white curb zones and parking lots. While they cannot stop at Metro on-street transit stops, they do have access to Metro bays at transit centers.

• In Massachusetts, the Massachusetts Bay Area Transit Authority (MBTA) pays a private provider to provide access in certain communities as a more cost effective approach.\(^5\)

### Flexible Emergency/Guaranteed Ride Home Programs

The Sacramento region’s Emergency Ride Home Program requires users to obtain a voucher for a taxi or rental car. Other programs, such as the following, are designed on a reimbursement basis, and provide additional options:

• Metro Transit in Minneapolis/St. Paul ensures Guaranteed Ride Home trips up to four times per year for pre-registered individuals who at least three times per week ride the bus, METRO or Northstar, or carpool, vanpool, bicycle or walk to work or school. Metro Transit will reimburse users for emergency transportation taken not only by taxi or rental car but also by car-share, transportation network company (Uber, Lyft, etc.), or transit.

• A number of programs, including that of the Regional Transportation Commission of Southern Nevada, will reimburse documented mileage if a coworker of an eligible employee provides the Emergency Ride Home.

### Vehicle Sharing

Shared mobility also refers to transportation assets that users share. It encompasses different modes of transportation such as cars, bikes, and even scooters, and can have both public and private business models. Some platforms require membership fees to access their vehicle fleet while others are pay-as-you go. The following describes a variety of existing and emerging shared mobility options.

\(^5\) [http://www.mbta.com/schedules_and_maps/private_bus/]
**Car Sharing**

Carshare systems such as Cars2Go and ZipCar – which has locations in the Sacramento area – provide members with short-term access to a car. Enterprise RideShare and General Motors’ Maven carshare programs are also now expanding to different cities and universities. Carshare program members reserve vehicles online or by phone, access the vehicle with an electronic key card or password, and return it once the trip is completed. They are billed at a later date for actual time used and/or mileage, depending on how the program is set up. Fuel, maintenance, and insurance are included in the cost of the rental. Most have cars parked at strategic locations; in Cars2Go’s case, there is no fixed rental/parking location. Many programs’ websites host online maps that show locations and real-time availability of vehicles. Most are profit-making ventures, but nonprofit car share programs exist, including:

- **City CarShare.** In August 2015, Carma and City CarShare in the Bay Area partnered and merged operations. The merger allows City CarShare to continue operating as a non-profit entity and maintain its programs, including services to low-wage families (CommunityShare) and AccessMobile (implemented in 2005 through a partnership with the City of Berkeley). Membership fees and driving costs are subsidized for low-income members referred by partner organizations. Applicants of San Francisco’s Working Families Credit programs are also eligible. Customized minivans can transport up to 2 people using mobility devices, along with a driver and three more passengers, depending on the size of the wheelchair(s). [https://citycarshare.org/why-city-carshare/our-programs/communityshare/](https://citycarshare.org/why-city-carshare/our-programs/communityshare/)

- **HOURCAR** is sponsored by the nonprofit Neighborhood Energy Connection. It offers sedans, hatchbacks, vans and pick-up trucks throughout Minneapolis/St. Paul in reserved spots next to major transit lines. The cost is $8.50 per hour, capped at $65 per trip. Vehicles may be reserved minutes to months ahead, and used for 30 minutes up to 72 hours.

- **Ithaca Car Share** is a nonprofit in the college town of Ithaca, New York. Ithaca College and Cornell University students, staff and faculty are eligible to obtain free or reduced-price annual memberships and discount rates to use the car sharing system. Other benefits offered to Cornell employees include free public on-campus public transportation, unlimited transit seven days a week with OmniRide, and discounted, free or rebated parking for carpool participants.

- **Zipcar** has partnered with Zagster, a bike-share platform, to pair shared cars with shared bikes. Known as Zipbike, the service is designed for university campuses to address transportation needs while reducing costs for both universities and students.

A variation on car share systems is person-to-person vehicle sharing, such as through Getaround, Just Share It, and Turo (formerly Relay Rides). In these systems, owners list their vehicle online for others to rent for hours to days, and the owner can opt to accept or deny any request. A number of systems provide insurance coverage in case of vehicle damage.

**Bike Sharing**

SACOG is leading the effort to pilot a new bikeshare system in Sacramento, West Sacramento, and Davis, anticipated to open in 2017. The business plan initially identified 88 potential bikeshare locations and work is ongoing to develop an effective system.

As with car sharing, person-to-person bike sharing has also developed, including Donkey Republic (in Europe) and Spinlister (formerly Cycleswap, and which now includes surf boards and snowboards). As
with peer-to-peer vehicle sharing systems, cyclists who own bikes allow others to rent them when not in use through a phone app.

A number of programs have also emerged to facilitate biking for transportation, including:

- **B-trikes.** Developed by Trek, these are three-wheeled bicycles that are compatible with the BCycle next-generation bike sharing system. Designed with input from an advocate for people with disabilities in Madison, Wisconsin, these bikes provide more stability for those not comfortable riding or unable to ride a two-wheeled bike.

- **Bikestation** offers memberships to use Bikestation-managed facilities in Long Beach, Oceanside, Palo Alto, Santa Barbara, and Washington, DC. Bikestations offer secure indoor bike parking, and often amenities such as restrooms, showers, and lockers.

- **Bike valets** operate similar to a coat check or car check, whereby a bike valet parks and watches individual bikes during public events. Event hosts usually pay for the service. According to the Sacramento Area Bicycle Advocates (SABA) website, SABA has parked some 15,000 bikes at more than 140 events, including the downtown Friday Night Concerts and East Sac Pops in the Park series, Farm-to-Fork Festival, Sacramento Republic FC home soccer games, SactoMoFo Food Truck Mania events, Midtown Farmer’s Market, West Coast Brew Fest, Amgen Bicycle Tour of California, Crocker Art Mix, and more.

**Scooter Sharing**

Electric scooters have now become vehicles for sharing as well. Scooters do not require a motorcycle license and can be used on regular roadways at speeds of 25-30 mph. Scooter sharing systems include:

- **Scooterino in Rome, Italy** operates similarly to Carma Carpooling. It connects people who need rides with scooter drivers traveling in the same direction to help share travel costs, but not make a profit.

- **Scoot in San Francisco.** Scoot offers regular and cargo versions of individual scooters, and recently partnered with Nissan to create Scoot Quad, an electric four-wheel, two-seat “mini-car.” With a range of 15-40 miles, the variety of scooters with helmets can be rented 24/7 at $3.00-$5.00 for 30 minutes for individual scooters, or $6.00 for quads.

**Dynamic Travel and Trip Planning Tools**

Access to real-time information through websites, mobile apps, signage, and displays is increasingly becoming a key part of the decision-making process for transportation choices. Of course, many factors (such as population, land use and transportation densities, gas prices, transit costs, personal preferences, and more) play a role in shaping travel behavior. However, breakthroughs in technology have created unprecedented amounts of data around traffic conditions, available transportation options, pricing, safety, and more.

- **511 sites** have traditionally provided traffic condition information as well as other static transportation information and links. As Google has expanded its maps function to include directions by car, transit, bike and walking, other private applications have emerged that utilize traffic and General Transit Feed Specification (GTFS) data to produce real-time and dynamic trip planning options that are highly convenient and free to the user. Various applications include multiple modes. Some include not only real-time information on traffic conditions or transit routes, and distance and trip time for trip
planning, but also prices, calories used, environmental impact/carbon cost, etc. for the different alternatives. Examples include the following:

- **Waze**, which was acquired by Google, still offers a separate app that “crowd sources” traffic information to help drivers share real-time traffic and road information. After typing in their destination address, users can drive with the app open on their phone to passively contribute traffic and other road data, or can take a more active role by sharing road reports on accidents, hazards, policing, etc., to help drivers make driving decisions. In addition to drivers using the app, Waze also has online map editors to ensure that their area’s data is as up-to-date as possible. The Google+ app includes a Waze-powered feature that shows drivers faster routes mid-trip based on real-time traffic updates.

- **RideAmigos** offers an integrated software platform that can provide localized trip planning for multimodal transportation options, rideshare/trip matching and schoolpool management, and support outreach and incentive campaigns, trip tracking, data collection, analytics and GIS reporting.

- **Roadify Transit** aggregates and distributes real time transit arrivals, schedules and service alerts for display on any type of screen, plus live service advisories relevant comments from other riders. The app also provides multi-modal travel connections, maps and step-by-step directions. It includes a favorites feature, allowing riders to save their regular routes, stops and destinations in one place for easy access.

- **CarfreeAtoZ** provides a single website that displays bus, subway, carpool, bike-pool, and walking options in Arlington County, Virginia.

- Similar to Roadify, **Transit App** is available in a number of cities in the U.S. and provides departure times for all nearby transit lines, plus trip planning, reminders, and notifications about disruptions. The app allows users to request an Uber, reserve a car2go, or find the closest bike share if transit options are not sufficient.

- **Citymapper** combines into one map all transit operators’ services and stops, bike share locations, and alerts, and allows users to set desired departure and arrival times to plan a trip. It can also tell riders where to sit in a subway car so they are nearest to their stop’s exit or a connecting platform.

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**Combining Trip Planning and Mobile Payment**

Many transit agencies now offer mobile ticketing services. These include MuniMobile in San Francisco, which allows riders to buy and use fares for buses, streetcars and cable cars directly from their smartphone, and CapMetroApp in Austin, Texas, which lets riders purchase fares for services including Local Flyer and Express routes, MetroRapid, MetroRail and MetroAccess. It also offers the ability to validate tickets and check schedules.

Some services are now beginning to integrate transportation information, trip planning and mobile ticketing in one. Through one app, **Ride Scout** (now Moovel) identifies all available options between the user’s starting and ending points— bus, rail, bikeshare, car share, taxi, carpool, walking, biking, driving and parking, shows estimated costs for each option, provides details for the chosen option, and facilitates alerts for the user to arrive on time. In 2015, RideScout acquired mobile ticketing company GlobeSherpa to allow riders not only to identify their preferred travel options but to book and pay for transit service. Ride Scout is also set to launch RideTap to integrate into an app’s existing design and provide access to “an ecosystem of diverse transportation partnerships across the country … with a few lines of code.”
Residential-Based Programs

Residentially-focused TDM programs have become more common in recent years, targeting individuals outside of the more traditional employer-based model. Several TMOs in the SACOG region include a residential focus, with North Natomas TMA focusing most of its services on reaching out to residents. Examples of various residential-based programs include the following:

- In partnership with GO Boulder in the City’s Transportation Division, Denver Regional Transit District offers a Neighborhood Eco (NECO) Pass, good for all regular bus and light rail services. The pass program is currently available at varying discount levels to about 6,700 households in 49 participating neighborhoods. Businesses can also purchase Eco Passes for their employees, through an annual contract with the transit authority. The passes are paid for either by the employer, employee, or any combination of the two. Recently, Boulder County created two new community-wide Eco Pass programs for the towns of Nederland and Lyons. In November 2013, the residents of Nederland became the first community to create an improvement district to provide free transportation access passes for all residents. The town and outlying area passed a ballot measure with a property tax increase to fund the Eco Pass (along with some transit stop enhancements) for the next 10 years.

- Transportation Demand Management for Site Plan Development is an Arlington County Commuter Services (ACCS) program in Arlington, Virginia that coordinates the design and implementation of large building projects with commuter and transit infrastructure and services to enhance the mobility of residents, workers, and visitors. TDM for Site Plans works directly with developers and property managers to mitigate the transportation impacts of residential and commercial development by increasing the availability, awareness, and use of transit, ridesharing, carsharing, biking, bikesharing, and walking. A program strategy is to incorporate physical infrastructural features, such as bike parking facilities and van-accessible garages, into new or renovated development at the time of construction. Another major strategy is actively monitoring the more than 100 (and counting) site plans to ensure they meet ongoing transportation management program responsibilities. These responsibilities range from promoting participation in carpool and vanpool programs to offering employee transit subsidies to managing showers and lockers for bike commuters to distributing brochures about bus routes and schedules, the bikeway system, and other local transportation options. Most buildings that have participated in the program have a transportation coordinator on-site. For those that did not use the program, usually a property manager or concierge takes on the role, sometimes with the ability to act as a coordinator part of their job description.

- As part of its residential program, SmartTrips Springfield in Springfield Oregon targeted 4,300 households located within the Main Street neighborhood with a program to address the specific transportation needs of residents. The program provided residents the chance to order a free travel kit complete with a pedometer; special Main Street neighborhood walking, biking, and transit map; regional bike map; and week’s worth of free Lane Transit District day passes. SmartTrips also offered special events, including a guided bike ride, guided nature walk, and bus ride to Splash! The program anticipates targeting a different neighborhood in Summer 2016.

- North Natomas TMA (NNTMA) is a local organization and outreach partner in the Sacramento region that allocates the majority of its budget to providing services to residents in the organization’s area.
NNTMA provides a shuttle service that residents can ride from the North Natomas area to Downtown Sacramento for a low cost of $1.50 per trip. The shuttle has been such a success that additional services was added after initial shuttles were reaching capacity. NNTMA also has an extensive schools program that includes weekly Walk and Bike to School programs at every elementary school, sponsoring high school “Bike Tech” Career Tech Education classes, implements a formal 10 hour, in-class bicycle education course (Project Ride Smart) that trains 5th grade students at four to five schools a year, and recruits and trains hundreds of volunteers. NNTMA holds countless events to promote riding transit, walking and bicycling in the community and to other destinations in the region. The organization is always looking for new ways to raise the awareness of its residents about how they can reduce short, local motor vehicle trips.

Residential Programs for Affordable Developments

In 2014, a mixed-income, multifamily private development, Lamar Station Crossing, opened along the Regional Transit District’s W-line light rail station in Denver, Colorado. Eighty percent of the apartment complex is classified as affordable with the rest priced for working families. An on-site resident service coordinator provides travel information and discounted transit passes for tenants. The passes, purchased from RTD and subsidized by Metro West Housing Solutions, are available for eligible residents’ use in traveling to employment or education.

- **Ride Connection** in Portland, Oregon provides transportation services for seniors and individuals with disabilities. Ride Connection partnered with REACH and Human Solutions to co-develop a mixed-use site donated by the city. Located two blocks from a major transit hub in East Portland, the site includes two buildings with 127 affordable housing units for low-income seniors and working families. REACH will manage the property and Human Solutions will provide job search and related services for residents. The first phase of the project, which includes four floors of subsidized family housing, is located directly atop Ride Connection’s offices. Ride Connection’s Travel Counselors work with residents, helping them choose the best travel option to meet their individual access needs. In addition, Ride Connection buses and vans will be housed in a large courtyard located between both buildings.

- The two public housing facilities under the jurisdiction of the Fort Worth (Texas) Housing Authority Family Investment Center are each located on a public bus route. The Housing Authority purchases day bus passes for distribution to residents who are employed, enrolled in training or educational activities, or actively engaged in job search activities. The passes are provided through a Fair Aid grant from the transit authority. New residents are provided with information about eligibility for the passes during meetings with their service coordinator and via routinely distributed flyers.

Parking Pricing, Zoning Requirements, and Management

Numerous parking pricing and management techniques are TDM strategies used by different agencies, including minimizing discounts for long-term parking, setting parking rates equivalent to or exceeding transit fares, avoiding excessive parking supply, instituting peak or dynamic parking pricing, and more. Houston employs a mobile application for parking; San Francisco’s application directs drivers to open parking spaces including dynamic pricing information. The City of Sacramento adopted a zoning code update with reduced parking requirements for central city projects that provide support for other modes, and is currently installing new parking meters and technologies in anticipation of increased parking demand with the Golden 1 Center’s opening.
According to the Victoria Transport Policy Institute, “Parking pricing provides revenue and cost recovery, encourages more efficient use of parking facilities, reduces parking facility costs and land requirements, reduces vehicle traffic and encourages use of alternative modes.” An inventory by SACOG (see Appendix B) identified only a few areas of the region that currently have paid parking.

**The Next Wave: Autonomous/Self-Driving Vehicles**

In 2009, Google began its Self-Driving Car Project. Self-driving or autonomous vehicles are being designed to perform all major functions of a traditional car without a human’s involvement, including navigation, responding to objects in the road, identifying signage, etc. Apple appears to have begun its Titan project to develop a self-driving car in late 2014. Several other partnerships on autonomous vehicles emerged in 2016, including the following:

In January 2016, General Motors and Lyft announced a long-term strategic alliance to create an integrated network of on-demand autonomous vehicles in the U.S. GM also acquired Cruise Automation, a San Francisco software company that has been working on autonomous vehicle technology, and Sidecar, one of the original ridesourcing companies. GM will invest $500 million in Lyft and sit on its Board. According to GM:

- GM and Lyft will jointly develop a network of on-demand autonomous vehicles.
- GM will become a preferred provider of short-term use vehicles to Lyft drivers through rental hubs in various cities in the U.S.
- Lyft drivers and customers will have access to GM’s wide portfolio of cars and OnStar services.
- GM and Lyft will provide each other’s customers with personalized mobility services and experiences through their respective channels.

Kelley Blue Book analyst Akshay Anand said in a statement, “GM is creating an ecosystem around ride-sharing. While ride-sharing is likely to be a supplement and not a replacement to car ownership, it is clear auto manufacturers are aware that this is becoming an avenue for not only additional revenue, but a big part of the future of mobility.”

- Uber opened a new Advanced Technologies Center in Pittsburgh and in September 2016 launched a limited public rollout in the area of engineer-staffed Uber autonomous vehicles. The same month, Uber announced its plans for a new facility in Detroit. Uber is currently using Ford Fusions but also has a partnership with Volvo for autonomous vehicles.
- In March 2016, Ford Motor Company announced the creation of a new subsidiary to design, build, grow and invest in emerging mobility services. The new subsidiary, Ford Smart Mobility LLC, is part of Ford’s expanded business model to be both an auto manufacturer and a company leader in connectivity, mobility, autonomous vehicles, the customer experience and data and analytics.
- In August 2016, nuTonomy launched a test of self-driving taxis in a small business district of Singapore.

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• Ford, Google, Lyft, Uber and Volvo founded the Self-Driving Coalition for Safer Streets to work with lawmakers and regulators on federal and state policies and regulations related to autonomous cars.

German IT company Inventio’s director, Dr. Alexander Hars asserts that “the switch towards shared mobility services based on fully autonomous vehicles will be the great transportation that self-driving car technology will bring,” citing examples of current projects including WEPods (Netherlands), CityMobil2 (Greece and EU), One-North (Singapore), Sentosa (Singapore), EasyMile, (USA, California), Google self-driving pods (United States, California and Texas), Milton Keynes driverless pods, (United Kingdom), Ultrapods (United Kingdom), Bestmile (Switzerland), DeLijn, (Belgium), RobotTaxi (Japan), Baidu (China), Yutong Bus (China).8

A Dynamic Field

This summary revealed to SACOG an innovative and dynamic arena for transportation and shared mobility choices, but also one that is constantly shifting and evolving.

- Uber and Lyft are continuing to expand their markets and services.
- Already new ventures like Commutr, Scootaway, and Las Vegas’ SHIFT have closed.
- Rides closed their commuter rideshare service in July 2016 but is exploring a carpooling service for families with children.
- Relay Rides rebranded itself as “Turo” to associate itself with words like “turbo,” “tourism,” and “adventure” rather than peer-to-peer car rentals.
- Google bought Israeli-based WAZE.
- German automotive maker Daimler AG, which includes Daimler’s Car2Go business, bought RideScout in 2014. RideScout acquired Globe Sherpa in 2015, to become a combined company renamed Moovel North America LLC.
- GM bought Sidecar, which asserted its ridesharing services could not compete with Uber’s capital.
- Autonomous vehicle efforts are now in development and testing stages.

The dynamism and change seen just in the last few months and years point to the fact that we cannot just create a TDM Strategic Plan based on what exists today, but one that sets goals for the future yet remains flexible over time to adapt to this rapid pace of change.

8 http://www.driverless-future.com/?p=881
CHAPTER 4. TDM PROGRAM ORGANIZATION IN OTHER REGIONS

TDM program structures differ nationwide. Structures depend on government involvement, policies, the presence of TMAs/TMOs or similar organizations, and more. TMAs also differ across the country. Below are results from a 2014 survey by UrbanTrans and the Center for Urban Transportation Research (CUTR) in coordination with the Association of Commuter Transportation (ACT) that provide a snapshot of information about TMAs across the country. This does not provide information about TMAs/TMOs in the Sacramento region specifically, but instead is just general background information on TMAs/TMOs. A similar survey could be administered in region to see how local TMOs/TMAs compare to this national information as part of the business plan over the summer.

Structure
- 89.5% of TMAs are independently incorporated
- 40% of TMAs have 501(c)(3) nonprofit status
- 78.9% of TMAs have a majority of its staff directly employed by the TMA
- 38.6% of TMAs share that staff with another organization
- 52% of TMAs have a budget of $100,000-$499,999
- More than 50% have a staff of at least two full time equivalents

Services
- 90% of TMAs report that the commute market makes up more than 50% of their target audience
- TMAs rank Emergency Ride Home (ERH), Promotional Events, and Ridematching and as their top three services

Data Collection and Performance Measurement
- 58.7% of TMAs survey travelers and employers
- 49.2% of TMAs keep track number of website visitors
- 46% track emails/calls in response to a marketing campaign

Funding
- 54% of TMAs have budgets that have increased either slightly or significantly
- Compared with 20% of TMAs surveyed in 2009, only 4% of TMAs receive 90% or more of their funding from membership dues
- 56% of TMAs receive 10% or less funding from membership dues
- 47% of TMAs receive no funding from membership dues
- Approximately 80% of TMAs indicate funding sources are stable

Figure 4.1 below shows the various funding sources of TMAs as recorded from the survey. The complete Survey may be found in Appendix C.
Figure 4.1 Funding Sources for TMAs from 2014 ACT Survey

TMA Funding Sources

- % Membership dues
- % Fees for services
- % Service contracts / brokered services
- % Developer funding agreements
- % Business Improvement District (or similar taxing district)
- % Any gov't grant
- % Foundation / other grants
- % Vanpool revenues
- % Shuttle / transit revenues
- % Parking fees
- % Advertising / sponsorships
Generally, there are four types of TDM program structures:

- Combination MPO/State-Centralized and Contracted
- MPO-Centralized and Contracted
- MPO/State-Centralized
- Contracted

SACOG maintains a MPO-Centralized/Contracted program structure. SACOG uses CMAQ funds to administer the regional program, and has MOUs with TMAs/TMOs who receive pass-through funding for outreach and marketing services. Some variation of this structure is used throughout many areas of the country, including Atlanta, Houston, Washington DC, and Denver. The MPO-Centralized/Contracted program is the most prevalent structure of TDM programs, although the percent of total funding that used for MPO staff, contracting services, and pass through varies greatly across the nation.

SACOG staff reached out to the Metropolitan Transportation Commission (MTC), San Diego Association of Governments (SANDAG) and Atlanta Regional Commission (ARC) for information about budget, staffing and contracting levels to compare Sacramento region’s TDM program to other regional programs. What staff discovered is that different regions consider different activities to be part of their TDM budgets, which makes it very difficult to compare different regions to one another. For example, MTC’s TDM program is largely carpool focused and the marketing of transit, bicycling and walking happens through local cities, counties or non-profit groups. MTC provides some funding to counties in the Bay Area but local TDM programs are largely funded separately from the regional organization. On the opposite end of the spectrum, SANDAG funds a variety of TDM projects that include land use planning, pilot projects, specific area TDM plans, employer programs and general outreach. ARC’s TDM program is in a transitional phase. Currently the state provides funding for mass marketing campaigns that promote TDM programs in the Atlanta region and across Georgia, but ARC’s program is moving from a structure that is state-centralized to one that is MPO-centralized.

Teasing out the specific dollars tied to TDM efforts becomes increasingly difficult in these scenarios. Therefore, SACOG staff is only providing some information about structures at this time, because the staffing and budget levels for each region vary greatly depending upon what the regional organizations fund and consider to be TDM programs.

Table 4.1 compares the Sacramento region with several other major regional programs and their corresponding organizational models. More detailed descriptions of several programs follow.

---

9 Insert Source
Table 4.1. Sample Regional TDM Organizational Structures

<table>
<thead>
<tr>
<th>Organizations</th>
<th>Organizational Model</th>
<th>Partners with TMAs/TMOs</th>
<th>Uses Contractors</th>
</tr>
</thead>
<tbody>
<tr>
<td>SACOG</td>
<td>MPO-Centralized and contracted</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Atlanta Regional Commission</td>
<td>Combination of State-Centralized/Contracted &amp; MPO-Centralized/Contracted in 2016; transitioning to MPO centralized in 2017 with oversight by GDOT</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Birmingham</td>
<td>MPO-Centralized</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Houston</td>
<td>MPO-Centralized and contracted</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Metropolitan Washington COG</td>
<td>MPO-Centralized and contracted</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>MTC/Bay Area AQMD</td>
<td>Contracted</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Denver</td>
<td>MPO-Centralized and contracted</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Twin Cities</td>
<td>MPO-Centralized and contracted</td>
<td>Yes</td>
<td>?</td>
</tr>
<tr>
<td>SANDAG</td>
<td>MPO Centralized</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Atlanta Regional Commission (ARC)**

*State-Centralized/Contracted & MPO Centralized/Contracted*

ARC is the regional planning and intergovernmental coordination agency for the Atlanta region in Georgia, supporting a 10-county area including the City of Atlanta. It also serves as the metropolitan planning organization for an additional ten counties in the region.

The Georgia Commute Options program is funded by the Georgia Department of Transportation (GDOT). ARC’s Mobility Services Division administers a portion of the Georgia Commute Options program in the Atlanta region, including ridematching system, TMA oversight and a regional Guaranteed Ride Home program, and provides technical and financial management for seven area Transportation Management Associations, who work with area employers to help establish and operate commute options programs for their employees. GDOT provides oversight and funding to the rest of the Georgia Commute Options program until 2017 when ARC will take over the management of it for the Atlanta region.

There are currently multiple contracted organizations working on TDM in the Atlanta region, including TMAs and vanpool vendors vRide and Enterprise Rideshare. All are currently playing key operating roles under contract to one of the funding agencies, GDOT, ARC and/or the Georgia Regional Transportation Authority, which addresses mobility and air quality in metro Atlanta and serves as the Governor’s voice for
strategic direction in transportation planning for 13 counties. The entire regional TDM program is a 20 county non-attainment program.

**Commuter Connections, Metropolitan Washington Council of Governments (MWCOG)**

*MPO-Centralized/Contracted*

Commuter Connections is a program of the National Capital Region Transportation Planning Board at the Metropolitan Washington Council of Governments (MWCOG). It is a regional network of transportation organizations funded by the city of Washington, DC; Maryland and Virginia state Departments of Transportation as well as the U.S. Department of Transportation. Many of the local Commuter Connections members receive grant funding directly from their respective state governments. Commuter Connections provides transportation emission reduction measure (TERM) benefits for inclusion in the air quality conformity determination approved by the Transportation Planning Board. The program provides regional ridematching via a website and mobile application, provides regional outreach services to encourage large private-sector and non-profit employers voluntarily to implement commuter assistance strategies that will contribute to reducing worksite vehicle trips, administers the Guaranteed Ride Home Program, conducts mass marketing in the region, and has triennial program reviews.

**Metropolitan Transportation Commission/Bay Area Air Quality Management District**

*Contracted*

The Bay Area Commuter Benefits Program is a partnership of the Metropolitan Transportation Commission (MTC), which manages employer outreach for the program, and the Bay Area Air Quality Management District (BAAQMD), developer of the regulations and program compliance manager.

The Bay Area’s rideshare program largely focuses on facilitating and maintaining carpools, with cities and counties executing broader TDM programs that suit their specific geographies. Bay Area employers with 50 or more full-time employees within air district boundaries are required to register and offer one of four commuter benefits to their employees in order to comply with BAAQMD’s Regulation 14, Rule 1, known as the Bay Area Commuter Benefits Program. Employers must select one of four commuter benefit options to offer their employees: pre-tax transportation benefits as allowed by federal law; an employer-provided transit pass, transit or vanpool subsidy up to $75 per month; employer-provided free or low cost bus, shuttle or vanpool service operated by or for the employer; or another equally effective program. The Rideshare program supports but is separate from the Commuter Benefits Program.

MTC contracts for 511/ridematching services and Employer Services Representatives to assist employers with the benefits program. Recently, MTC has restructured its TDM program and is reducing the program budget from $3.4 million to $1.6 million by reducing the amount it spends to contract for services to promote its 511 Rideshare program. The agency has decided to continue some mass marketing of the program but is no longer going to work directly with employer sites. They have launched a partnership with Lyft and other carpool matching applications in the hopes the private sector will be able to provide more effective matching tools such that a government-provided tool is not necessary. MTC is interested in encouraging carpooling regardless of the tools and technology used to facilitate matching. In the short term the agency does see a need to continue incentivizing behavior by providing education and subsidy programs.
San Diego Association of Governments (SANDAG)

MPO Centralized
Staffed by SANDAG in cooperation with the 511 transportation information service, iCommute is the primary Transportation Demand Management (TDM) program for the San Diego region. iCommute encourages use of transportation alternatives to help reduce traffic congestion and greenhouse gas emissions through providing carpool and ridematching services, a subsidized vanpool program, transit solutions, assistance to businesses and jurisdictions to develop and implement employee commuter benefit/TDM programs, regional support for biking, the Guaranteed Ride Home program, information about teleworking, and bike and pedestrian safety program support for schools.

Table 4.3 provides a summary of different programs offered by major regions in the U.S., and Table 4.4 summarizes major incentives provided by different TDM programs.
### Table 4.3: Sample Regional TDM Program and Service Offerings

<table>
<thead>
<tr>
<th>Program/Service</th>
<th>Sacramento</th>
<th>Atlanta</th>
<th>Washington DC</th>
<th>Houston</th>
<th>Birmingham</th>
<th>San Francisco Bay Area</th>
<th>Denver</th>
<th>Twin Cities</th>
<th>SANDAG</th>
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<td><strong>Ridesharing Services</strong></td>
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<td>Centralized call center or #</td>
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<td>Bike Trip Planner</td>
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<td>Commute Calculator</td>
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<td><strong>Promotions and Incentives</strong></td>
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<td><strong>Parking Pricing Strategies</strong></td>
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<td>Demand-Response</td>
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<td>Mobile App/Phone</td>
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<tr>
<td>Region</td>
<td>Program &amp; Amount of Incentive</td>
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<tr>
<td>Sacramento</td>
<td>Vanpool Incentive Program- $300/month for new vanpools for up to 6 months (coordinators send monthly report) Commuter Prizes- randomized drawings for participants who log commuter information online</td>
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<tr>
<td>Atlanta</td>
<td>$5 A Day Program- $5/day for commuters switching to alternative modes (over a 90-day period, up to $150) $40-$60 Gas Cards Program for carpools that log 15 carpool days with three or more riders during a month (carpools can earn up to 12 monthly gas cards within a three-year period). Additionally there is a rider referral bonus for vanpooling. Commuter Prizes- $25 gift cards through drawings for logging alternative modes</td>
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<tr>
<td>Birmingham</td>
<td>GetGreen (for new CommuteSmart Participants) - $1 per day for commutes logged online up to $120 Commuter Club- (for continued non SOV commuters) $25 gift card when participants log over 20 alternative commutes over 3-month period</td>
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<tr>
<td>Washington DC</td>
<td>Pool Rewards program- 1) $200 per month subsidy for newly-formed vanpool of 7+ people for lifetime of van and 2) $1 per trip ($2/day round-trip) up to $130 for newly-formed carpools up to $130 over 90 day period Commuter Prizes- randomized drawings for participants who log commuter information; $5 coffee gift cards to new carpool sign-ups/ first-trips, vanpool and other related incentives: <a href="http://rideshare.511.org/benefits/rewards.aspx">http://rideshare.511.org/benefits/rewards.aspx</a>; many other Bay Area entities offer monetary incentives for participation (CCTA, Commute.Org, and more)</td>
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<tr>
<td>San Francisco</td>
<td>Spin the Wheel- Randomized drawings for participants who log commute information online</td>
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<td>Denver</td>
<td>TMA-specific</td>
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<tr>
<td>Twin Cities</td>
<td>Bike2Benefits- Eligible for grand prize if log one bicycling trip per week for an eight-week period</td>
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<td></td>
<td>Van-Go- Driver rides free and can use vans for 200 personal miles/month; 55% lease subsidy; $100 cash incentive to driver for first 6 months of service and $100 per year thereafter; back-up drivers receive $50 after the first 6 months and $50 per year thereafter (for vans of at least 5 passengers &amp; registration in MTS database)</td>
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<tr>
<td>San Bernardino</td>
<td>Rideshare Plus- $2/day in the first 3 months of ridesharing with $50/month max; paid in the form of gift certificates; ongoing rideshares get access to hundreds of discounts in the region</td>
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<tr>
<td>Las Vegas</td>
<td>Club Ride- commuters are eligible to win 45, $25, $50 gift cards + selected merchandise; employer based and can log trips via smart phone, online or through worksite computer swipe system EZ Rider- discounted transit pass for employees; 5-15% discount if Club Ride partner</td>
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<tr>
<td>SANDAG</td>
<td>Vanpool Investment Program- $400/month to vanpools; Try Transit pilot offers one month transit pass to new riders; monthly prize drawings - (4) $100 prizes for logging qualifying trips online; Two mini-grant programs ($30,000 each) – GobyBike Mini Grants and Walk, Ride and Roll to School Mini Grants.</td>
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</table>

Table 4.4 Incentives offered by major regions in US
CHAPTER 5. TDM PROGRAM MEASUREMENT IN OTHER REGIONS

Quantifying TDM Strategies

While traditional TDM strategies focus on employer-based outreach, many regions are applying new concepts by connecting traditional TDM measures with other regional planning goals, such as sustainable, healthy, and livable communities; accessible transit; increased mobility; economic development; and addressing climate change. In general, a TDM program is now part of a comprehensive regional vision intended not only to reduce SOV trips, but also to increase transportation choices, reduce household transportation costs, and provide an efficient transportation network for transporting people and goods.

Many studies and reports have sought to assess and/or quantify the effectiveness of TDM strategies. Some studies have tested or evaluated financial incentive programs for how they impact commuting behavior change and the longevity of that change. Others have sought to assess individual strategies or combinations of strategies for shifting travel behavior and reducing air pollution.

The online TDM Encyclopedia has a chapter devoted to TDM evaluation, providing links to articles on the various methods that have been used to evaluate TDM, including such economic evaluation methods as cost-effectiveness measurement, benefit-cost analysis, lifecycle cost analysis, least cost planning, and multiple accounts evaluation.

However, as noted in a 2012 issue of TDM Review:

There is no question that establishing TDM measures can be challenging. Given the difficulty of assessing the effects of education, marketing and outreach initiatives on changing travel behavior, TDM measurement is no easy task. Unlike a new transit route or roadway investment, where changing ridership, travel speeds or delay can be calculated for a discrete project, TDM efforts typically involve promotion of a wide range of options across a broad area. Development of performance measures and establishment of valid methodologies and procedures to assess impacts therefore requires special attention for TDM programs.

For TDM programs, performance measures include any metric or indicator that documents the progress in the promotion of alternative modes in order to reduce single occupant vehicle (SOV) travel, vehicle miles traveled (VMT), and greenhouse gas (GHG) emissions. There are several general categories of performance measures most recognized as suitable for TDM programs, including inputs and outputs, outcomes or direct effects, and cost-effectiveness. The table below outlines types of performance measures for TDM, their purpose, and specific examples of those measures.

---

### Table 5.1 Types of Performance Measures for TDM Programs

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Purpose</th>
<th>Example</th>
</tr>
</thead>
</table>
| **Input Activity Measures**       | Shows quantitative data on the number activities of efforts initiated by the program. Refers to actions or activities on the part of the program. | • Number of employer outreach events held  
• Number of presentations given  
• Number of brochures distributed  
• Number of calls made by sales staff to businesses |
| **Output Activity Measures**      | Shows quantitative data on the number of activities or results initiated by the customer or client, often in response to the program’s input activities. Refers to actions or activities on part of the client or customer. | • Number of hotline calls received  
• Number of ride match applications received  
• Number of web hits online  
• Number of guaranteed ride home sign ups |
| **Outcome/Direct Effect Measures**| Quantifies the results of the input and output activities. Often a result of extrapolating the input or output data. | • Single occupant vehicle (SOV) trips reduced  
• Parking spots saved  
• Vehicle miles traveled (VMT) reduced  
• Greenhouse gases reduced |
| **Cost Effectiveness Measures**   | Associates a dollar amount with each input or output activity and each outcome measure to show the level of effort associated with each action. Sometimes a result of extrapolating the input, output or outcome data. | • Cost per rideshare application  
• Cost per employer sign up  
• Cost per VMT reduced  
• Cost per carpool formed |

### Best Practices Research on TDM Evaluation

Because of the challenges of performance evaluation and measurement, MPOs and COGs often look to other regions for best practices. As a result, there have been a number of studies commissioned assessing the practices of others, including the following:

**Transit Cooperative Research Program**

Cambridge Systematics, Inc. prepared a 2010 report, *Evaluate the Interaction between Transportation-Related Particulate Matter, Ozone, Air Toxics, Climate Change, and other Air-Pollutant Control Strategies* seeking to quantify the effects of TDM strategies on various environmental pollutants. The American Association of State Highway and Transportation Officials requested the report and it was conducted as part of the National Cooperative Highway Research Program Project (NCHRP) 25-25. This work helped inform the Sierra Research assessment described in Chapter 6. The study assessed the effectiveness and cost-effectiveness of a variety of transportation emission control strategies at reducing emissions of various pollutants, including ozone precursors, particulate matter (PM), air toxins, and greenhouse gases (GHG); and identified which strategies may reduce some pollutants while increasing others. A total of 34 control strategies were reviewed in three categories- transportation demand management (TDM), transportation systems management (TSM), and vehicle and fuel technology.
A key finding was that commute-focused TDM outreach programs, including employer-based outreach, rideshare and vanpool programs, often have relatively good cost-effectiveness. However, these programs also show wide variation. This suggests that their cost-effectiveness depends strongly upon the specific context, whether there are employer mandates, and how effectively the program is implemented. Notably the report also states, “It is almost never the case that a given TDM strategy is implemented (or evaluated) in isolation, as a unique action. Rather, strategies are normally implemented in combinations, or “packages” such that ascertaining the effectiveness of an individual action is statistically very challenging.”

**Michigan Sustainable Communities**

A State of the Practice Report based on a variety of TDM literature was developed by Nelson\Nygaard Consulting Associates, Inc. for Michigan Sustainable Communities. The report found the most effective strategies to reduce employee vehicle trip reduction impact were parking charges (20-30%) and the combination of TDM services with monetary incentives (24.5%). Providing services alone (ridematching, Guaranteed Ride Home, and shuttles) only provided an 8.5% effectiveness rate, indicating that incentives must be combined with services in order to be effective.\(^\text{11}\) Table 5.2 displays these findings.

**Table 5.2. Impact of Selected Employer-Based TDM Strategies**

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Details</th>
<th>Employee Vehicle Trip Reduction Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking Charges(^1)</td>
<td>Previously Free Parking</td>
<td>20%-30%</td>
</tr>
<tr>
<td>Information Alone(^2)</td>
<td>Information on Available SOV Alternatives</td>
<td>1.4%</td>
</tr>
<tr>
<td>Services Alone(^3)</td>
<td>Ridematching, Shuttles, Guaranteed Ride Home</td>
<td>8.5%</td>
</tr>
<tr>
<td>Monetary Incentives Alone(^4)</td>
<td>Subsidies for carpool, vanpool, transit</td>
<td>8-18%</td>
</tr>
<tr>
<td>Services + Monetary Incentives(^5)</td>
<td>Example: Transit vouchers and Guaranteed Ride Home</td>
<td>24.5%</td>
</tr>
<tr>
<td>Cash Out(^6)</td>
<td>Cash benefit offered in lieu of accepting free parking</td>
<td>17%</td>
</tr>
</tbody>
</table>

\(^1\) Based on research conducted by Washington State Department of Transportation.
\(^2\) Schreffler, Eric. “TDM Without the Tedium,” Presentation to the Northern California Chapter of the Association for Commuter Transportation, March 20, 1996.
\(^3\) Ibid
\(^4\) Washington State Department of Transportation
\(^5\) Schreffler (1996)

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\(^{11}\) Smart Growth America, Transportation Demand Management: State of the Practice, 2013
**Metropolitan Council**
The Metropolitan Council, the regional transportation agency for the Twin Cities metro area of Minnesota, supported a 2010 study of five regions identified as demonstrating best practices in program evaluation:

1. Phoenix and Maricopa County region, AZ
2. Washington DC metropolitan region
3. Atlanta region, GA
4. Miami/Ft. Lauderdale region
5. San Francisco Bay Area, CA

In its study of these five regions, The Council found that all of these regional governments used “employee and participant surveys as the underlying data collection mechanism to derive performance metrics.” Based on its analysis, it recommended that, in evaluating its own program, it ask survey questions measuring awareness of TDM strategies, whether they changed modes as a result of strategies, how long they have participated in TDM programs, what services help them maintain an alternative mode, and the frequency of their alternative mode. More detail on the Council’s peer analysis is in Appendix D.

**Fredericksburg Area Metropolitan Planning Organization - Vanpool Programs**
In Virginia, the Fredericksburg Area Metropolitan Planning Organization (FAMPO) hired a consultant to survey 10 regional vanpool programs in the U.S. It also analyzed how it might best track the necessary vanpool data for reporting to the National Transit Database (NTD), which can affect formula funding to regions. The 2010 FAMPO study concluded the following:

1. There are significant distinctions between vanpools operated by the public organization versus those contracted out as turnkey operations. Those that contracted out were able to save money at the cost of giving up some control.

2. Generally, all programs “limit the number of rules...so as to not discourage participation.”

3. Vanpool programs are generally marketed as part of an overall comprehensive TDM program.

4. “Unified vanpool program branding, having an identifiable program logo, website, and branded vanpool vehicles, was standard at all agencies interviewed.”

5. Regions generally provided some set of incentives for starting a vanpool, but only two regions surveyed, MTA Houston and LA Metro, offered ongoing subsidies, referred to as “a true monthly subsidy.” MTA Houston pays $35 per rider, but warns that their subsidy is prone to fraud. LA Metro subsidizes half of the cost of the van, up to $400.

Table 4.3 in Chapter 4 above provides additional detail on variations in vanpool subsidies.
Regional Agency Evaluation Efforts
As part of its consulting work to SACOG to help develop this strategic plan, Sierra Research looked at a number of other regions that regularly evaluate TDM program performance, including:

- Atlanta, GA
- Washington DC
- Twin Cities, Minnesota
- Miami/Ft. Lauderdale, FL
- Birmingham, AL
- San Diego, CA
- San Francisco Bay Area, CA
- South Coast, CA
- Phoenix/Maricopa, AZ
- Houston-Galveston, TX

Sierra reported that it became apparent that most agencies find quantitative performance assessment of their TDM programs challenging due to the lack of available empirical data, and therefore choose to evaluate performance measures and co-benefits qualitatively. The more robust TDM program assessments they found were generally prepared by third-party consultants on behalf of regional transportation agencies that engage in both large commuter surveys and the use of sophisticated quantification techniques and modeling to evaluate the VMT and emission reductions realized from the implementation of TDM strategies.

Sierra selected plans implemented in South Florida, Washington DC, and Atlanta as “TDM best practices” based on their varied approaches to identifying performance measures, collecting required travel and commuter data, and quantifying VMT and emission benefits of implemented TDM strategies, respectively. Some of these plans are discussed in more detail below.

**South Florida Commuter Assistance Program**
The Florida Department of Transportation (FDOT), in collaboration with the Center of Urban Transportation Research (CUTR) at the University of Florida, conducted a comprehensive evaluation of five largest commuter assistance programs (CAPs) in South Florida. Their services include ridematching, vanpooling, encouraging telework and alternative work schedules, as well as promotion of transit and active transportation mode options. Under CUTR management with FDOT support, a comprehensive set of interviews and surveys was conducted via telephone and internet targeting the following groups:

- General public;
- Customers pre-contact; and
- Customers post-contact.

The surveys conducted by CUTR focused on the following performance measures:

- Share of commuters aware of brand;
- Profiles of TDM elements for each employer;
- Number of employers with telework and compressed work week programs;
- Number of employees teleworking or working a compressed work week;
- Number of calls received;
- Mode shift from drive alone;
- Mode shift from alternative modes;
- Number of vanpool trips and actual vans;
- Customer turnover; and
- Percent of non-SOV travel reverting to SOV.
The types of questions asked were specifically designed to collect data required for performance measurement. Questions focused on concrete choices, with “I don’t know” response options removed, so that it would be harder to click through the questions without actually providing an answer.

A summary of program performance measures are included in Appendix E. Costs were based on DOT commuter assistance program costs in FY 2013 for the five largest commuter assistance programs in Florida. Societal benefits were calculated based on the surveys obtained across the five programs.

This effort was also designed to inform UCARE (Uniform Cost Accounting and Reporting Elements), undertaken by CUTR. The purpose was to develop and test a reporting system, UCARE.TRIMMS (Trip Reduction Impacts of Mobility Management Strategies), which would measure commuter assistance programs by uniform financial and operating categories for benchmarking and comparing their performance with other commuter assistance programs with similar characteristics.

Measures included in UCARE.TRIMMS are:

- Annual change in VMT
- Estimated cost per VMT reduced (DOT CAP funding only)
- Annual change in non-SOV passenger miles traveled
- Cost per added non-SOV passenger mile traveled
- Change in social cost
  - Pollution
  - Congestion
  - Excess fuel consumption
  - Global climate change
  - Health and safety
  - Noise Pollution
- Change in gasoline consumption (gallons/day)
- Total annual benefit
- Total annual cost
- Net benefit
- Benefit to cost ratio

However, the Florida work was based on 1,568 surveys, administered on-line and by phone. The surveys exceeded 75 questions, with multiple sub-questions, which would limit replicability by many agencies. The Florida study itself concluded that telephone surveying is no longer effective given today’s state of technology, and that short but focused survey methods are most successful, with the key to avoid open-ended questions and target participants prior to and after program participation.

**Washington DC Commuter Connections**

The Metropolitan Washington Council of Government (MWCOG) administers the Commuter Connections program and is responsible for implementing five Transportation Emission Reduction Measures (TERMs) in support of the region’s efforts to meet its air quality goals. The program is overseen by a Transportation Planning Board representing all major jurisdictions.
TERMs are carefully assessed through robust annual surveys and triennial evaluation reports as described below. The TERM analysis compares agency goals to daily reduction results for:

- Vehicle trips (VT) and Vehicle miles traveled (VMT)
- Emissions (VOC, NOx, PM$_{2.5}$ and PM$_{2.5}$ pre-cursor NOx, and GHG);
- Fuel savings and consumer cost savings; and
- Cost-effectiveness.

The data to complete the TERM evaluation are typically gathered through databases, participants in various programs and general activity tracking. In addition, MWCOG conducts a series of surveys specifically designed to determine Commuter Connection “placement” or mode shift rates, as well as surveys specific to the Guaranteed Ride Home, employer-outreach telework, and Bike-to-Work Day. Additional data are gathered through the State of Commute survey. Table 5.4 summarizes the TERM strategies, data and measurement variables used.

Table 5.4
Transportation Emission Reduction Measures (TERM) in Washington, DC

<table>
<thead>
<tr>
<th>TDM Strategy</th>
<th>Description</th>
<th>Data Collection Method</th>
<th>Evaluation Methodology Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maryland and Virginia Telework</td>
<td>Assistance to commuters and employers to encourage in-home and telecenter-based work programs</td>
<td>Assisted Employer Telework Survey, State of Commute Survey (all commuters)</td>
<td>Number of total regional teleworkers, daily trips, telework placement rate, vehicle trip reduction factors, average trip distance, emission factors</td>
</tr>
<tr>
<td>Guaranteed Ride Home (GRH)</td>
<td>Free rides home in the event of a personal emergency for commuters using alternative commute modes</td>
<td>GRH Survey</td>
<td>Number of total GRH registrants, placement rates, vehicle trip reduction factors, average trip distance, emission factors</td>
</tr>
<tr>
<td>Employer Outreach</td>
<td>Regional outreach to encourage employers to implement commuter assistance strategies</td>
<td>ACT! Contact Database recorded by level of services employers offer</td>
<td>Number of participating employees, average vehicle occupancy before and after program (EPA COMMUTER Model), vehicle daily trips per employee, SOV access percentage and travel distance, interactions with other programs, emission factors</td>
</tr>
<tr>
<td>TDM Strategy</td>
<td>Description</td>
<td>Data Collection Method</td>
<td>Evaluation Methodology Variables</td>
</tr>
<tr>
<td>----------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mass Marketing</td>
<td>Comprehensive media campaign to inform commuters of services available from Commuter Connections</td>
<td>Regional commuter survey (reason for mode change). Contacts with Commuter Connections. State of Commute Survey.</td>
<td>Number of respondents to marketing ads, number of Commuter Connections applicants during ads, vehicle trip reduction factors, interaction with other programs, emission factors</td>
</tr>
<tr>
<td>Info Express Kiosks</td>
<td>Self-service kiosks with transit schedules, maps, and ridematching capability</td>
<td>State of Commute Survey (use of kiosks)</td>
<td>Number of total commuters, percent of commuters that used kiosks, temporary vs, permanent placements, vehicle trip reduction factors, average trip distance, emission factors</td>
</tr>
<tr>
<td>Commuter Operations Center</td>
<td>Marketing, outreach, and ridematching services to increase commuter awareness of alternative commute modes</td>
<td>Commuter Connections Placement Survey, interviews</td>
<td>Total number of commuters, placement rates from interviews, vehicle trip reduction factors, average trip distance, emission factors</td>
</tr>
<tr>
<td>Bike-to-Work</td>
<td>Administered through employer outreach program to encourage bicycling to work</td>
<td>Bike-to-Work Day survey</td>
<td>Total number of riders, percent of biking before event, percent increase in riding days, average bike trip distance, emission factors</td>
</tr>
</tbody>
</table>

The general methodology used in the TERM analysis is summarized below:

1. Determine the base pool of participants. This may include the total number of commuters in the region, the number of participating employees for employer-based programs, or the total number of people reached by marketing campaigns.
2. Calculate the “placement rate” or the percentage of commuters that exhibit mode shift or trip-making behavior due to a TDM strategy.
3. Apply this rate to the total pool of participants to arrive at the number of commuters affected by the strategy (number of placements).
4. Multiply the vehicle trip reduction (VTR) factor from survey data by the number of placements in their respective categories to calculate total daily vehicle trips reduced.
5. Multiply the average commuter trip distance from survey data by the number of trips reduced to calculate the reduction in VMT.
6. Multiply the VMT reduction by appropriate regional emission factors to determine VOC, NOx, PM$_{2.5}$, and CO$_2$ reductions.
The analysis provides information to help improve the structure and implementation of Commuter Connections programs and refine future data collection tools and methodologies. Detailed results of the 2011-2014 analysis are in Appendix F. While this is considered by many to be the most robust TDM program measurement effort, the methodology involves making assumptions about program placement rates based on self-reported survey data.

**Atlanta Regional Commission TDM Program**

Currently, GDOT administers the Atlanta region’s TDM program, but in 2017 the program administration will move to the Atlanta Regional Council (ARC). Per Sierra Research, ARC has invested heavily in both research and implementation of TDM strategies in the region and has an impressive partner network. The program provides commuters with mobility options by implementing employer-based and general public outreach and marketing programs, promotions, and incentives to encourage alternative transportation options, as well as active transportation projects, transit expansion, and land use practices as part of their regional transportation planning process. The following specific programs are identified in the ARC TDM Plan:

- Ridesharing/ridematching;
- Vanpooling;
- Transit;
- Bicycle/Pedestrian Projects;
- Telework/Alternative Work;
- Guaranteed Ride Home;
- Senior Mobility Program; and
- Regional Mobility Management.

The plan also lists future direction of the program including a need to focus on construction mitigation, university outreach and diversification of funding sources to broaden the conversation to all trip types and not just peak trips. In 2012, the Atlanta Regional Commission (ARC) completed a TDM Inventory Baseline Report identifying its then-current TDM performance measures and including a TDM+ best practices/benchmarking analysis of Washington, DC; San Francisco, California; Houston, Texas; and Birmingham, Alabama. (See Appendix G, pp. 90-106 for the benchmarking analysis.) Building on this base, ARC completed a TDM Plan in 2013 to go beyond traditional TDM efforts, stating,

> While conventional definitions of TDM focus primarily on employer-based programs, the Atlanta Regional TDM Plan proposes a broader set of strategies. Known as TDM+, this broader definition expands the view of traditional TDM strategies (employer-based rideshare, vanpools and telework programs) by making the connection between traditional TDM and livability, sustainability, transit, walking and biking, systems operations, transportation planning, economic development, climate change, healthy communities, and active aging.

The region’s approach to evaluating the Plan’s performance considers more than just reductions in VMT and emissions. As cited in the thesis written by SACOG Associate Analyst Jose Luis Caceres (described in more detail in Chapter 6), effective marketing requires understanding consumer behavior, including for

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13 Atlanta Regional Commission, Atlanta Regional Transportation Demand Management Plan, 2013, p. 9.
marketing alternative transportation modes. The “consumer behavior model” treats the process of becoming a customer as a progression that starts with awareness. If the customer is not aware of the product or service, he or she will not consume it. This is the reason why marketing surveys focus so much on measuring awareness. After awareness comes perception. How does the customer view the product? Then consideration: how likely is the target group to try the product or service? Then comes trial, and finally, a happy customer. Figure 5.1 illustrates the model and the various approaches that tend to be used at each stage.

The Georgia Department of Transportation (GDOT) used to contract with the Center for Transportation and the Environment (CTE) in Atlanta to help GDOT and TDM decision makers in the region make decisions for program focus, funding and resource allocation, and evaluate TDM programs. Although the contract was statewide, CTE’s efforts are largely focused within the Atlanta non-attainment area. This contract ended in 2015 with the intent that ARC would assume these responsibilities when it takes over administration of the program in 2017.

In 2001, CTE developed a Performance Measures Continuum to track TMD program progress on the behavior change spectrum, similar to the Max-Sumo approach developed in Europe and described in Appendix L. The last stage of the continuum is a permanent change in commute patterns that results in quantifiable VMT and emission reductions. Table 5.5 shows each performance category with its
associated measures and information sources/tools. As shown, CTE’s evaluation approach is focused in three main areas: performance data provided by Employer Service Organizations through required monthly/quarterly reports; programmatic data collected through program user surveys; and regional survey data reflective of attitudes and awareness of programs as well as regional commute behavior. However, a number of the information sources and tools listed in the chart below are no longer produced, with the exception of the regional commuter survey, and ARC will be looking to update the continuum to better measure outcomes of the current TDM efforts in the region. ARC staff have found that the programs have high awareness and see a need to focus on measuring the participation and utilization of those programs.
<table>
<thead>
<tr>
<th>Performance Category</th>
<th>Performance Measure</th>
<th>Population of Interest</th>
<th>Information Sources/Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness</td>
<td>• Media Messages</td>
<td>Commuters and Employers</td>
<td>• Regional Awareness and Attitudes Survey</td>
</tr>
<tr>
<td></td>
<td>• Problems/Issues/Solutions</td>
<td></td>
<td>• Regional Business Leader Survey</td>
</tr>
<tr>
<td></td>
<td>• Commute Alternatives</td>
<td></td>
<td>• Employer Partner Employee Travel Survey</td>
</tr>
<tr>
<td></td>
<td>• Programs Offered</td>
<td></td>
<td>• Target Incentive Program Surveys</td>
</tr>
<tr>
<td></td>
<td>• Assistance Outlets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitudes</td>
<td>• Problems/Issues/Solutions</td>
<td>Commuters and Employers and Program Users</td>
<td>• Regional Awareness and Attitudes Survey</td>
</tr>
<tr>
<td></td>
<td>• SOV Use</td>
<td></td>
<td>• Regional Business Leader Survey</td>
</tr>
<tr>
<td></td>
<td>• Commute Alternatives</td>
<td></td>
<td>• Employer Partner Employee Travel Survey</td>
</tr>
<tr>
<td></td>
<td>• Programs Offered</td>
<td></td>
<td>• Target Incentive Program Surveys</td>
</tr>
<tr>
<td></td>
<td>• Assistance Outlets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation</td>
<td>• Commuter Contacts (e.g., web site hits, transportation fair contacts, rideshare</td>
<td>Commuters and Employers and Program Users</td>
<td>• Regional Awareness and Attitudes Survey</td>
</tr>
<tr>
<td></td>
<td>applications, GRH registration)</td>
<td></td>
<td>• Regional Business Leader Survey</td>
</tr>
<tr>
<td></td>
<td>• Employer Contacts (e.g., employer calls, employers assisted/employer partners,</td>
<td></td>
<td>• Regional Rideshare Database Employer Partner Employee Travel Survey</td>
</tr>
<tr>
<td></td>
<td>employers with TDM Programs)</td>
<td></td>
<td>• Target Incentive Program Surveys</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Partner Performance Measure Reports</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>• Satisfaction characteristics (e.g., time to obtain assistance, program convenience,</td>
<td>Commuters and Employers and Program Users</td>
<td>• Regional Business Leader Survey</td>
</tr>
<tr>
<td></td>
<td>accuracy and quality of information, usefulness of information)</td>
<td></td>
<td>• Regional Rideshare Database Placement Survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Transit Pass User Survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Vanpool Rider Survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Target Incentive Program Surveys</td>
</tr>
<tr>
<td>Utilization</td>
<td>• Program User Mode Split and Alternative Mode Placements</td>
<td>Program Users</td>
<td>• Employer Partner Employee Travel Survey</td>
</tr>
<tr>
<td></td>
<td>• Employer Partner Employee Mode Split and Alternative Mode Placement</td>
<td></td>
<td>• Regional Rideshare Database Placement Survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Transit Pass User Survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Vanpool Rider Survey</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Target Incentive Program Surveys</td>
</tr>
</tbody>
</table>
### Performance Category

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>Performance Measure</th>
<th>Population of Interest</th>
<th>Information Sources/Tools</th>
</tr>
</thead>
</table>
| Travel and Emission Reductions | • Vehicle trips reduced  
• VMT reduced  
• Emissions reduced  
• Energy and consumer savings  
• Program cost-effectiveness | Program Users | • Employer Partner Employee Travel Survey  
• Regional Rideshare Database Placement Survey  
• Transit Pass User Survey  
• Vanpool Rider Survey  
• Target Incentive Program Survey |

### VMT Reductions

In its review of TDM measurement programs, Sierra Research also compiled the combined programmatic VMT reductions reported in other regional TDM plans, based on the various quantification and estimation methodologies used by different planning agencies to report VMT reductions. On average, the VMT reduction attributed to TDM was estimated to be 0.6 percent of regional VMT.

#### Table 6.11

<table>
<thead>
<tr>
<th>Region/MPO</th>
<th>VMT Reduction (millions)</th>
<th>Total VMTc (millions)</th>
<th>% VMT Reduced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington, DC</td>
<td>643</td>
<td>43,000</td>
<td>1.52%</td>
</tr>
<tr>
<td>Atlanta, GA</td>
<td>340</td>
<td>37,400</td>
<td>0.91%</td>
</tr>
<tr>
<td>San Diego, CA</td>
<td>136</td>
<td>26,500</td>
<td>0.51%</td>
</tr>
<tr>
<td>Twin Cities Region, MN</td>
<td>66</td>
<td>17,400</td>
<td>0.38%</td>
</tr>
<tr>
<td>South Florida, FL</td>
<td>258</td>
<td>32,600</td>
<td>0.79%</td>
</tr>
<tr>
<td>Houston-Galveston, TX</td>
<td>118</td>
<td>38,700</td>
<td>0.30%</td>
</tr>
<tr>
<td>Birmingham, AL</td>
<td>14</td>
<td>8,000</td>
<td>0.18%</td>
</tr>
</tbody>
</table>

- **Note:**
  - VMT reduction estimate range
  - CA regional total VMT modeled with EMFAC2014 for 2015. Non-CA regional VMT was obtained from most recent Transportation Improvement Program documents for each MPO.

### Needs for Data

Evaluating components of the SACOG TDM program will be essential to the program’s long-term success. Limited funding resources require strategic investments that most benefit transportation system users and those most likely to shift to alternative modes. Data collection and evaluation are useful tools for pinpointing the system’s most important needs and the most effective TDM strategies to achieve regional goals for transportation choice, VMT and emission reductions.

SACOG’s robust regional data collection and analysis activities provide an important foundation for building performance measurement into the TDM program. To date, these technical resources have not been fully utilized in program activities. They are not fully shared with regional and local TDM...
stakeholders, and are only loosely incorporated into plans involving TDM program operations, performance, efficiency, or awareness.

The common theme among all of the case study measurement systems studied is data, particularly survey data. If SACOG is to expand its capacity for performance measurement of the TDM program, attention and resources will need to be devoted to developing performance measures and the associated methods to collect data. For an approach taken by the Arlington, see the article excerpt on the following page. (Full article is in Appendix H.)
Research Elevates TDM to the Strategic Level in Arlington County, Va.

Howard Jennings
Director of Arlington County Commuter Services

Research: An On-Going, Integral Part of the Commuter Services Program

“The research is the lifeblood of our program,” remarked Arlington County Commuter Services Bureau Chief Chris Hamilton in a recent strategy session. In many ways, this is true, as our on-going research program, now in its sixth year, serves many vital purposes. We use our research findings for such things as demonstrating the benefits of our services to employers and funders. Our Transportation Division director uses it regularly to document the success of the County’s transit-oriented development policies. County Board members cite it in justifying funding for Commuter Services. Far from sitting on the shelf, our research program is a living part of our whole TDM program which we use to evaluate our customer service, to inform our annual strategic plan and monthly work plans, and to craft our marketing messages.

In 2006 we realized we had plenty of data on what we were doing: number of sales visits to employers, number of customers served in our Commuter Stores, hits to our websites, etc. But we didn’t really know what impact we were having: how many commuters did we shift from SOV to other modes, how many miles of travel did we reduce, or what did our customers think of our services? Nestled in the core of the Washington, DC metropolitan area, Arlington is small in population, but a major employment center of 212,000 jobs, attracting commuters from the entire region; so we wanted information on our regional customers as well.

We wanted research that could answer these questions with credibility and which could also help us in refining our current programs and identifying the need for new or different services. We wanted a consultant who really understood market-based product development, customer service, and the TDM industry. In the end we hired two: Southeastern Institute of Research in Richmond, Virginia, and LDA Consulting of Washington, D.C., who first helped us develop a strategic plan for our research. The planning process became a very hands-on, intensive evaluation of our program with active involvement of all our management team. Together we laid out our many target audiences, the survey methodologies to reach them, analysis techniques to document the benefits, and a multi-year schedule to phase the work to cover our comprehensive array of services within budgets we could afford.

This process and the results have been of huge value to us from the very onset, so much so that the research process has been institutionalized as an integral, on-going program within our Commuter Services Bureau. It has also come to be recognized by the rest of the larger Transportation Division as an important source of strategic level information benefitting all of Arlington County’s mode services. An important by-product of the research program thus has been to substantially raise the credibility and role of TDM as a major player in the County’s transportation program.

Monthly research team meetings have become a staple of the bureau’s operations. Most of our senior management is at the table as we review new survey results, evaluate what the data means for our program operations, and plot new strategies for research and services. Our TDM research spending each year is approximately 5% of our total budget — a rule of thumb in line with private industry practices.
CHAPTER 6. STRATEGIC PLAN ASSESSMENT OF CURRENT SACOG AND OUTREACH PARTNER PROGRAMS

This chapter describes the initial assessment undertaken of SACOG’s current TDM Program to inform this Strategic Plan. The assessment included the following:

- SACOG staff compiled and assessed data from the Commuter Club database.
- Sierra Research conducted a literature review of research on cost-effective TDM programs, and then used that information to examine SACOG and TMO investments by activity categories to estimate cost-effectiveness and emission benefits resulting from the current mix of programs.
- SACOG Associate Analyst Jose Luis Caceres completed a thesis project in 2015 which included surveys and analysis examining the awareness and effectiveness of rideshare programs, and potential areas for future focus.
- The Community Transportation Association of America (CTAA) and SACOG staff conducted interviews with outreach partners and end users to qualitatively assess current programs. This included questions about what is working or not working as well as identifying trends, challenges and opportunities for the program into the future.
- SACOG and TMA/TMO outreach partners conducted internal self-assessments and external evaluations with each other to qualitatively evaluate the TDM program. This section of the chapter is still under development and will be provided once it is completed.

Assessment Background

While commute-focused TDM outreach programs, including traditional employer-based outreach, rideshare and vanpool programs, often show relatively good cost-effectiveness in the national literature, it is important to understand that these programs also show wide variation. TDM programs focus on raising awareness about alternative modes of transportation and encouraging their use, but if the infrastructure doesn’t exist for significant transportation choices, then the TDM program will only be so effective. This suggests that programs’ cost-effectiveness (defined as the greatest reduction in vehicle miles and trips achieved for the least amount of money) depends strongly on how effectively the program is implemented, whether or not there are employer mandates, and upon the specific location and context. The national literature used by Sierra Research to conduct the TDM program cost-effectiveness assessment for SACOG recognizes that, “It is almost never the case that a given TDM strategy is implemented (or evaluated) in isolation, as a unique action. Rather, strategies are normally implemented in combinations, or ‘packages’ such that ascertaining the effectiveness of an individual action is statistically very challenging.” Given these interactions and “packages” of projects/programs/services, the data provided in this chapter, rather than yielding definitive conclusions about the program and its effectiveness, should only be understood as initial information to help guide the Strategic Plan and further assessment and evaluation efforts.

In fact, to better determine which programs are most effective in the region would involve collecting much more precise data on our current programs than we currently have. One type of data collection effort

needed to better evaluate the TDM Program includes surveys asking employees, employers and travelers in the region about their levels of awareness, attitudes, willingness, participation, satisfaction and utilization of all the TDM programs and services currently offered. SACOG and outreach partners also need to collect information about mode shift as it relates to programs and services offered by the TDM program. For example, of the TMAs who offer a carpool or vanpool subsidy, is that subsidy shifting solo drivers, or is it motivating riders to switch from taking transit? Are people changing their mode of transportation because of the programs and services offered, or simply because they moved closer to a transit stop or can now bike to work? How many employers offer transit subsidies or discounted/ or preferential parking to vanpools or carpools? How many employers encourage telework? How heavily are these programs promoted to employees? How much are programs encouraging non-commute trip modal shifts?

Expanded surveying related to TDM programs and services would enable tracking over time to better estimate VMT reductions and cost effectiveness of TDM program investments. SACOG and outreach partners should ultimately have a third party expert in program evaluation help with a more in-depth program assessment. To save on associated costs, SACOG and outreach partners could look for opportunities to work with non-profits or universities with expertise in program evaluation to provide such support.

**TDM Program Assessment to Date**

As discussed in Chapter 5 and above, assessing TDM programs is a difficult task due to program interdependencies, frequent lack of data, and reliance on the type of costly ongoing surveying which SACOG has not yet been able to undertake. However, despite the level of current data, SACOG staff and consultants identified several quantitative and qualitative methodologies for conducting a preliminary assessment of the TDM program, including emission reductions and associated cost-effectiveness.

The following sections summarize these quantitative and qualitative analysis efforts. While the initial learnings, goals and strategies included in Chapter 7 are based on this analysis to date, the information that follows should be considered only a starting point for assessing and developing the near-term and long-term direction for the TDM program, with more information and analysis to come.

**Commuter Club**

SACOG tracks various TDM programs through one portal – the Commuter Club. This poses a challenge for program evaluation since specific benefits of a given program are hard to quantify due to the multiple strategies used by SACOG and outreach partners. In addition, not all commuters who benefit from TDM programs are registered in the database. For instance, Emergency Ride Home service may be one of the major incentives for an eligible employee or resident to continue using one or more alternative modes for commute trips but this can be difficult to measure if they are not registered with the Commuter Club and never use the ERH program. Despite these limitations, the Commuter Club database does provide some valuable insights into the TDM program, and also helped inform the analysis undertaken by Sierra Research.

As shown in Table 6.1, nearly 23,000 individuals are registered in the Commuter Club database, with their work location indicated by the TMA association. The largest group falls within the Sacramento TMA, which includes downtown Sacramento. The Commuter Club registrants represent about two percent of the total employees in the region, based on SACOG’s regional employment figures.
<table>
<thead>
<tr>
<th>TMA</th>
<th>Number of People in Commuter Club Database</th>
<th>% of Total People Registered in Commuter Club Database</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Corridor TMA</td>
<td>2,768</td>
<td>12.2%</td>
</tr>
<tr>
<td>City of Elk Grove</td>
<td>433</td>
<td>1.9%</td>
</tr>
<tr>
<td>City of Roseville</td>
<td>1,495</td>
<td>6.6%</td>
</tr>
<tr>
<td>EDCTC</td>
<td>319</td>
<td>1.4%</td>
</tr>
<tr>
<td>McClellan Park TMA</td>
<td>332</td>
<td>1.5%</td>
</tr>
<tr>
<td>North Natomas TMA</td>
<td>453</td>
<td>2.0%</td>
</tr>
<tr>
<td>Northeast Sacramento</td>
<td>437</td>
<td>1.9%</td>
</tr>
<tr>
<td>PCTPA</td>
<td>626</td>
<td>2.8%</td>
</tr>
<tr>
<td>Point West</td>
<td>662</td>
<td>2.9%</td>
</tr>
<tr>
<td>Power Inn Alliance</td>
<td>341</td>
<td>1.5%</td>
</tr>
<tr>
<td>Sacramento TMA</td>
<td>11,055</td>
<td>48.6%</td>
</tr>
<tr>
<td>South Natomas TMA</td>
<td>939</td>
<td>4.1%</td>
</tr>
<tr>
<td>Yolo TMA</td>
<td>2,599</td>
<td>11.4%</td>
</tr>
<tr>
<td>Yuba-Sutter TMA</td>
<td>280</td>
<td>1.2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>22,739</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
Table 6.2 indicates that registration in the Commuter Club is still growing, with significant additions in 2014 and 2015.

Table 6.2
Number of New Users In Commuter Club Database

<table>
<thead>
<tr>
<th>Year First Registered</th>
<th>Number of New Registrants</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>3,818</td>
</tr>
<tr>
<td>2012</td>
<td>1,962</td>
</tr>
<tr>
<td>2013</td>
<td>2,608</td>
</tr>
<tr>
<td>2014</td>
<td>7,599</td>
</tr>
<tr>
<td>2015</td>
<td>6,534</td>
</tr>
</tbody>
</table>

Table 6.3 shows the primary travel mode of Commuter Club registrants. Fifty-three percent use alternative modes for their commute, particularly bicycling, carpooling, and public transit, while 47 percent drive alone to work.

Table 6.3
Sacramento Commuter Club Travel Mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>Number of Registrants</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Alone</td>
<td>10,682</td>
<td>47%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>4,184</td>
<td>18%</td>
</tr>
<tr>
<td>Carpool</td>
<td>2,853</td>
<td>13%</td>
</tr>
<tr>
<td>Transit Bus</td>
<td>2,295</td>
<td>10%</td>
</tr>
<tr>
<td>Light Rail</td>
<td>1,207</td>
<td>5%</td>
</tr>
<tr>
<td>Vanpool</td>
<td>607</td>
<td>3%</td>
</tr>
<tr>
<td>Walk</td>
<td>398</td>
<td>2%</td>
</tr>
<tr>
<td>Telecommute</td>
<td>213</td>
<td>1%</td>
</tr>
<tr>
<td>Amtrak</td>
<td>186</td>
<td>1%</td>
</tr>
<tr>
<td>Motorcycle/Scooter</td>
<td>106</td>
<td>0%</td>
</tr>
<tr>
<td>NA</td>
<td>8</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>22,739</td>
<td>100%</td>
</tr>
</tbody>
</table>
The Emergency Ride Home Program tends to be used for longer trips home. ERH data showed that approximately 300 commuters representing about 3% of total Commuter Club participants travelled nearly 12,000 miles utilizing this service in 2015, as shown in Table 6.4, or an average of about 40 miles per trip.

<table>
<thead>
<tr>
<th>TMA</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 Corridor TMA</td>
<td>1,368</td>
</tr>
<tr>
<td>City of Roseville</td>
<td>155</td>
</tr>
<tr>
<td>McClellan Park TMA</td>
<td>26</td>
</tr>
<tr>
<td>North Natomas TMA</td>
<td>259</td>
</tr>
<tr>
<td>Power Inn Alliance</td>
<td>21</td>
</tr>
<tr>
<td>Sacramento TMA</td>
<td>9,758</td>
</tr>
<tr>
<td>South Natomas TMA</td>
<td>58</td>
</tr>
<tr>
<td>Yolo TMA</td>
<td>78</td>
</tr>
<tr>
<td>Yuba-Sutter TMA</td>
<td>93</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11,816</strong></td>
</tr>
</tbody>
</table>

The "May is Bike Month" (MIBM) program is Sacramento region’s biggest regional active transportation campaign. Review of the MIBM registration database shows that in 2015, nearly 10,000 residents logged 1.8 million bicycle miles in the one month of the campaign. SACOG administers a MIBM survey after the campaign completion, and then again in the fall, to determine longer-term impacts. Some of the relevant findings from this survey are summarized below:

- A majority of participants heard about MIBM through their employer or coworkers.
- Nearly 80% of participants log their miles into the MIBM database regularly.
- 97% of participants responded that they plan to continue biking as long as possible.
- Only about 18% of respondents mentioned another method of transport during their bike commute, such as bus or rail.
- The vast majority of respondents reported commuting 3-5 days a week or more.
- Over 30% of respondents reported that they stopped biking after the MIBM campaign ended. The reasons cited included summer weather conditions and the end of the MIBM campaign and incentives.

**Sierra Research Emission and Cost-Effectiveness Assessment**

Sierra Research was tasked with evaluating the performance of the Sacramento TDM program in terms of emission reduction and cost-effectiveness benefits for criteria pollutants and greenhouse gases (GHG). In beginning the assessment, Sierra identified an issue in the SACOG region common to many agencies: lack of mode shift data to determine the number of commuters who have permanently shifted their travel behavior from single-occupancy vehicle (SOV) trips due to TDM programs and services. To address this
challenge, Sierra used the best available research regarding cost-effectiveness of various TDM strategies, in conjunction with detailed TDM program funding data provided by SACOG.

**Literature Review**

Sierra examined peer-reviewed literature and research reports focused on cost-effectiveness evaluation of various TDM strategies. The National Cooperative Highway Research Program (NCHRP) released a report in 2012 that summarizes the cost-effectiveness of over 200 TDM projects implemented nationwide. This report was particularly useful in this analysis. However, since cost-effectiveness estimates identified in the literature are highly variable depending upon local conditions, level of outreach, combination of strategies, and other factors, considerable effort was taken by Sierra to assess the relevance of estimates before using them to evaluate Sacramento’s TDM program.

Tables 6.5 and 6.6 show the cost-effectiveness rankings for different TDM strategies that Sierra derived from the NCHRP report and other literature for criteria pollutant and GHG emissions. The NCHRP cost-effectiveness estimates were scaled to account for inflation and vehicle technology improvements to make these values more suitable for present and local conditions. In order to account for inflation, cost-effectiveness values were adjusted using Consumer Price Index Information (CPI) for 2002 (the year of the NCHRP report) and 2015 from the Bureau of Labor Statistics. To account for vehicle technology improvements between 2002 and 2015, emission factor ratios for light-duty vehicles for each pollutant were applied separately. Annual emission factors for both 2002 and 2015 were modeled with EMFAC2014 for the SACOG region for LDA, LDT1, and LDT2 vehicle classes only. Note that for criteria pollutants, emissions-weighted cost-effectiveness values were calculated based on the California-approved methodology for cost-effectiveness determination using Carl Moyer Program guidelines.

As the figures show, it appears that the most cost-effective TDM measures to further both regional air quality and climate change goals are pricing strategies (e.g., road, parking), as transportation costs are perhaps the strongest drivers of changes in travel behavior. However, the results also show that marketing, alternative mode, and employer-based TDMs—all strategies that SACOG administers—are reasonably cost-effective as well. Another interesting finding is that telework programs have not historically produced significant emission benefits relative to the costs associated with program administration. This may be because telework impacts are difficult to quantify due to other program interactions and because telework doesn’t generally produce permanent commute pattern changes. It is also important to differentiate telework from working at home, such as in a home-based business, where travel behavior is often different for business purposes. The cost-effectiveness of transportation control strategies that involve new infrastructure or technology, such as acquiring new alternative fuel buses or constructing intermodal stations, is generally longer term because of high upfront costs.

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16 CPI data is available at www.bls.gov/cpi/tables.htm.
17 http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm
For GHG emissions, it is also important to note that land-use strategies appear to be the most cost-effective if only planning and administration costs are considered. According to the Moving Cooler report\textsuperscript{18}, the following are the most successful GHG reduction strategies:

- Pricing strategies that increase the cost of single-occupancy vehicle travel;
- Land use and smart growth strategies;
- Regulatory strategies that reduce and enforce speed limits;
- Educational strategies to encourage eco-driving behavior; and
- Multimodal strategies that expand travel options.

Table 6.6
TDM Strategy Cost-Effectiveness for GHG Emissions

<table>
<thead>
<tr>
<th>TDM Cost-Effectiveness, $/ton (GHG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use</td>
</tr>
<tr>
<td>Vanpools</td>
</tr>
<tr>
<td>Ridesharing</td>
</tr>
<tr>
<td>Marketing (Other TDM)</td>
</tr>
<tr>
<td>Bicycle/Pedestrian Projects</td>
</tr>
<tr>
<td>Road Pricing</td>
</tr>
<tr>
<td>Employer-Based TDMs</td>
</tr>
<tr>
<td>Freight/Rail</td>
</tr>
<tr>
<td>Transit Pricing/Fare Incentives</td>
</tr>
<tr>
<td>Telework/Alternative Work</td>
</tr>
<tr>
<td>Expanded Transit</td>
</tr>
</tbody>
</table>

**TDM Program Assessment**

The first step in the evaluation was to appropriately match TDM program elements implemented in the Sacramento region to TDM categories for which cost-effectiveness estimates were reported in the NCHRP report. Additional research was conducted by reviewing reports and projects referenced in the NCHRP study to ensure that the category placement was appropriate. Next total program budgets for each category were added. TDM categories, descriptions and costs are shown in Table 6.7, and a cost breakdown in Figure 6.1. Costs are based on SACOG and partner TMO 2016 budgets and calculations for each category. The bicycle/pedestrian and land use categories include program expenditures towards land use planning and bike/ped infrastructure that are critical to providing more transportation choices that support TDM, but represent only a small portion of SACOG’s, EDCTC’s, and PCTPA’s work in these areas.

It should also be noted that this analysis is only one attempt to estimate what current TDM investments could be achieving, not what they are actually achieving, in regards to air pollution and GHG emission reductions. This information should not be interpreted as meaning that simply spending more money on TDM programs will result in more reductions in air pollutants and GHG emissions. While this may be true, this cost-effectiveness analysis was an initial step in examining which TDM programs tend to achieve the greatest reductions in air pollution and GHG emissions with the least amount of resources, and therefore are likely most cost-effective in achieving program goals.

The primary considerations for grouping programs into the TDM categories shown in Table 6.7 were actual project descriptions upon which the reported cost-effectiveness values were based, as well as how the shift to alternative mode would typically occur if the program were to reach its expected performance goal. This is important since the underlying assumptions used to quantify emission benefits of TDM projects are dependent on project type. For instance, although Sacramento’s “May is Bike Month”
The program is largely a marketing campaign, since the anticipated impact is to shift single occupancy vehicle travel to bicycling, this program was evaluated as part of the Bike/Pedestrian Programs and Projects. More detailed budget information used for this analysis can be found in Appendix K. To give some background on revenue sources, SACOG contributes $1.2 million per year to the TDM program and this is matched with about $3.5 million in TDM investments from TMOs/TMAs in the region.

<table>
<thead>
<tr>
<th>TDM Category</th>
<th>TDM Projects – NCHRP</th>
<th>TDM Projects - Sacramento</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employer-Based Programs</td>
<td>Employer trip reduction programs, employer outreach, employer-promoted bicycling and ridesharing programs in the context of trip reduction program, employer educational programs. Does not include telework/flexible schedules.</td>
<td>Education and training to Employee Transportation Coordinators; employer-based marketing (e.g. promoting all non-drive alone modes of transportation, promoting regional programs/services/campaigns, encouraging employers to offer incentives, promoting local programs/services/campaigns)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Funding: $1,454,407</strong></td>
</tr>
<tr>
<td>Marketing/ Promotion/ Incentives</td>
<td>“Other/Miscellaneous TDM” – includes marketing, as well as general educational and outreach strategies</td>
<td>Promoting local TDM programs/services/campaigns to general public; coordinating events and campaigns (e.g. October is Smart Commute Month); managing website, events and marketing materials; conducting prize drawings as incentives to commuters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Funding: $540,692</strong></td>
</tr>
<tr>
<td>Bicycle/Pedestrian Programs/Projects</td>
<td>Bikeways, new bicycle/pedestrian facilities (e.g., paths, lockers etc), bike subsidies, bikeshare programs, bike safety education.</td>
<td>Bike and pedestrian projects such as bike parking facilities, lanes and trails; “May is Bike Month” campaign including website management, events and materials; bike and walk subsidies; Walk/Bike to School Education; Bike Education Courses &amp; Program.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Funding: $1,044,563</strong></td>
</tr>
<tr>
<td>Expanded Transit Service</td>
<td>Shuttle feeder service; increased service frequency</td>
<td>Shuttle services supported by North Natomas and McClellan Park TMAs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Funding: $469,609</strong></td>
</tr>
<tr>
<td>Ridesharing Programs</td>
<td>Area-wide ride matching services, commuter services programs</td>
<td>Commuter Club Database/website, maintaining Ridematching Tool, 511 Call Center; general regional rideshare program marketing; Emergency Ride Home Program and carpool subsidies offered by TMOs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Funding: $243,900</strong></td>
</tr>
<tr>
<td>Land Use Planning</td>
<td>Land-use planning</td>
<td>Land-use and multi-modal planning and studies.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Funding: $243,000</strong></td>
</tr>
<tr>
<td>Vanpool Program</td>
<td>Vanpool subsidies</td>
<td>Vanpool subsidies and Vanpool Incentive Program.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Funding: $52,120</strong></td>
</tr>
<tr>
<td>Transit Pricing/ Fare Incentives</td>
<td>Transit fare subsidies</td>
<td>Transit Subsidies</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Total Funding: $38,500</strong></td>
</tr>
</tbody>
</table>
Figure 6.1 Sacramento Region TDM Program Expenditures
Next, the median cost-effectiveness values from Tables 6.5 and 6.6 were applied to SACOG and TMA combined funding amounts for each TDM category, as shown in Table 6.8.

| TDM Category                             | SACOG Region Total Funding | Cost Effectiveness, $/ton | | |
|------------------------------------------|----------------------------|----------------------------|---|---|---|---|
| Employer-Based TDMs                      | $1,454,407                 | 78,078                     | 68,801 | 1,668,784 | 105 |
| Bicycle/Pedestrian Projects and Programs | $1,044,563                 | 77,096                     | 77,096 | NA       | 100 |
| Marketing (Other TDM)                    | $540,692                   | 42,876                     | 29,941 | NA       | 90  |
| Expanded Transit Service                 | $496,609                   | 241,528                    | 172,977 | 13,287,023 | 2,250 |
| Land Use                                 | $243,000                   | NA                         | NA     | NA       | 10  |
| Ridesharing                              | $243,900                   | 87,626                     | 62,065 | 4,867,780 | 80  |
| Vanpool Program                          | $52,120                    | 57,315                     | 34,735 | 2,685,195 | 80  |
| Transit Pricing/Fare Incentives           | $38,500                    | 196,551                    | 152,617 | NA       | 1,300 |

* Cost-effectiveness estimates for PM$_{2.5}$ were not available for all strategies.
** When a range was provided, values were averaged.

Finally, the revised cost-effectiveness values for HC, NO$_x$, PM$_{2.5}$ (if available), and CO$_2$ were applied to funding amounts summed for each TDM category. The resulting emission reductions in tons/year for the Sacramento TDM program are shown in Table 6.9. Note that the TDM measures are ranked in order of their estimated emission benefits.

<table>
<thead>
<tr>
<th>TDM Category</th>
<th>HC</th>
<th>NO$_x$</th>
<th>PM$_{2.5}$</th>
<th>CO$_2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land-Use</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>17,641</td>
</tr>
<tr>
<td>Employer-Based Programs</td>
<td>4.43</td>
<td>3.93</td>
<td>0.48</td>
<td>10,056</td>
</tr>
<tr>
<td>Bicycle/Pedestrian Projects and Programs</td>
<td>3.22</td>
<td>2.52</td>
<td>NA</td>
<td>7,583</td>
</tr>
<tr>
<td>Marketing (Other TDM)</td>
<td>3.00</td>
<td>3.36</td>
<td>NA</td>
<td>4,361</td>
</tr>
<tr>
<td>Ridesharing</td>
<td>0.66</td>
<td>0.73</td>
<td>0.03</td>
<td>2,213</td>
</tr>
<tr>
<td>Shuttles</td>
<td>0.49</td>
<td>0.53</td>
<td>0.02</td>
<td>160</td>
</tr>
<tr>
<td>Vanpool Incentive Program</td>
<td>0.22</td>
<td>0.28</td>
<td>0.01</td>
<td>473</td>
</tr>
<tr>
<td>Transit Pricing/Fare Incentives</td>
<td>0.0</td>
<td>0.05</td>
<td>NA</td>
<td>21</td>
</tr>
<tr>
<td>TOTAL TDM</td>
<td>12.1</td>
<td>11.4</td>
<td>0.5</td>
<td>42,509</td>
</tr>
</tbody>
</table>
As shown, it is estimated that the overall impact of Sacramento’s TDM program is the annual reduction of approximately 12 tons for hydrocarbons, 11 tons for nitrogen oxides, 0.5 tons for fine particular matter, and over 45,000 tons for carbon dioxide. The employer-based outreach is expected to have produced the highest emission reductions in the region for all pollutants, both because of its relatively high cost-effectiveness and because of investment emphasis in this TDM program from SACOG and its partner TMOs. Similarly, bike and pedestrian programs, as well as marketing strategies, are expected to have achieved significant emission reductions. Sierra’s evaluation also showed that ridesharing has a greater potential for emission reductions due to its favorable cost-effectiveness.

**Validation**

Because of the lack of sufficient data attributable to all of the TDM programs, Sierra undertook a validation effort to compare the cost-effectiveness approach to a data approach for emission reductions for the Sacramento vanpool program.

In order to estimate emissions from vanpools for 2015, the actual number of vans was multiplied by van ridership and assumed two trips per day to calculate light-duty VMT reduction. This number was adjusted using assumptions recommended in the CARB guidance; specifically, the fraction of riders commuting to the vanpooling location (0.75) and the average commuting distance (5 miles). This VMT reduction was then applied to light-duty emission factors from EMFAC2014 to estimate potential emissions reductions. Next, new mileage created by vans was calculated, and appropriate emission factors for medium-duty vehicles from EMFAC2014 were applied for each pollutant to calculate the resulting annual emissions increase from vans. Van emissions were subtracted from emissions obtained in the first step, to arrive at the total emission benefits for the vanpool program. Table 6.10 compares the emission results using this approach to the cost-effectiveness approach described above.

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Data Approach</th>
<th>Cost-Effectiveness Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx</td>
<td>0.31</td>
<td>0.28</td>
</tr>
<tr>
<td>ROG</td>
<td>0.45</td>
<td>0.22</td>
</tr>
<tr>
<td>PM$_{2.5}$</td>
<td>0.04</td>
<td>0.01</td>
</tr>
<tr>
<td>CO$_2$</td>
<td>609</td>
<td>473</td>
</tr>
</tbody>
</table>

Sierra concluded that the cost-effectiveness approach was a good proxy to estimate emission benefits for this TDM strategy, noting that using median cost-effectiveness values reported by NCHRP produced conservative estimates.

**Sierra Research Conclusions**

Sierra Research concluded that employer-based TDM, marketing, and bicycle/pedestrian projects have likely made the most significant contributions toward achieving the region’s air quality and climate change goals. This is due both to the fact these programs are cost-effective, and the current level of investment in these strategies by SACOG and its partner TMOs. Sierra also concluded that SACOG’s ridesharing
program is estimated to produce significant emission reductions even at the current relatively low funding levels. Given this, Sierra recommended that SACOG look for opportunities to update and refine its program.

As discussed earlier, it appears that only about two percent of all regional employees, and an even smaller percentage of residents, have registered with the Commuter Club. Given this, SACOG should assess alternatives to the Commuter Club for collecting the data needed to better inform future assessments of the Sacramento region’s TDM programs.

Finally, TDM funding data show that Sacramento is currently spending less than one percent of its TDM program funds on program evaluation. Sierra notes that additional funding could be warranted for surveying and data collection efforts to obtain more robust data for program evaluation as discussed in their report. For the full Sierra Research report, see Appendix I.

**Ridesharing Surveys**

In addition to the work by Sierra Research, SACOG Associate Analyst Jose Luis Caceres completed a thesis project in 2015 towards his Masters of Science in Transportation Management from the Mineta Transportation Institute at San Jose State University. His capstone project focused on assessing SACOG’s rideshare program, the sub-section of the full TDM program consisting of the 511 website and 511 travel information hotline, Vanpool Incentive Program, Trip Diary Raffle, Emergency Ride Home program, and Ridematch Tool/Database. His thesis was done on his personal time without SACOG supervision, but was related to his work in this area and has ultimately helped provide survey data and information for this strategic plan effort.

Caceres built his study around the consumer behavior model described in Chapter 5 to assess the effectiveness of SACOG’s TDM program. Using surveys, interviews and public information, Caceres collected information for the following eight areas:

- **Activities:** How much have SACOG and its partners done?
- **Awareness:** How knowledgeable is the target group of the rideshare services?
- **Participation:** How much is the target group using the services?
- **Satisfaction:** For those who tried the service, how satisfied were they?
- **Willingness:** How willing is the target audience to try the service and how willing are they to try carpooling or vanpooling?
- **Utilization:** The degree to which the target audience has changed their travel patterns in response to rideshare programs. What percentage actually tried carpooling or vanpooling?
- **Attitudes:** How inclined is the target group to try alternative modes?
- **Impacts:** What amount of impacts to the transportation system can be attributed to the Rideshare Program?
By measuring these levels, this study identified weaker links across consumer behavior change stages, and where opportunities exist for more targeted TDM efforts.

Caceres developed two surveys, one for Commuter Club members and one for employees of TMA/TMO member employers. He worked with TMOs and Employee Transportation Coordinators (ETCs) to distribute the surveys electronically.

Of the 32,258 people in the Commuter Club database at the time of the survey, only 7,261 had opted to receive direct emails from the Commuter Club, so only those were emailed with a link to the survey. TMOs and ETCs were encouraged to share the survey through their social networks and email lists. The survey received a response rate of 11% with 787 completing the survey. This provided the study with a 95% level of confidence and a 4% margin of error, even with the population size set at 32,258.

The response rate to the TMA member employee survey had similar validity. Of a total of 649 respondents, 420 were already Commuter Club registered users and 226 were not registered users. According to operational data in the Commuter Club database, Sacramento TMA and 50 Corridor TMA have a combined membership of 121,000 (97,000 and 24,000). Although the 649 respondents made up only one percent, or a small fraction, of the TMA members in the direct target group, the responses were still considered 95 percent accurate, with a 4% margin of error. The City of Roseville conducts its own statistically significant surveys at its employment sites and Caceres has included some of this information in the figures below. Since the surveys conducted in the City of Roseville are of all employer sites, and not just Commuter Club members, there is a lower percentage of people who are aware of the programs. It is expected that a greater number of people in the Commuter Club database would be aware of programs than employees in general who aren’t necessarily registered in the Commuter Club.

**Survey Results**

After analyzing the responses from these surveys, Caceres found that awareness of these programs and services was generally low, with the exception of the Emergency Ride Home program which had high awareness but opportunities for improvement regarding attitudes and willingness to try the program. Figures 6.1 to 6.5 provide a summary for each program, showing levels of awareness, satisfaction and willingness to try different alternatives identified through the surveys, and highlighting areas for potential improvement across the behavior chain.

For each of the programs, the following colors correspond to the:

- TMA Members Survey
- CC Users Survey
- Roseville Survey
- Miscellaneous (Surveys, Interviews, etc.)
Figure 6.1. Survey Results: Vanpool Incentive Program

- Awareness: 37%
  - 2 interviews: Very Satisfied

- Willingness:
  - With Long Commutes: 48% willing
  - With Long Commutes: 50% willing
  - 26-68% willing

- Satisfaction:
  - Consideration: 83% well informed
  - Trial: 6 New Vanpools 100% Success
  - Utilization: 2 Yr. Avg. Life of Vanpool
Table 6.2. Survey Results: Emergency Ride Home Program

<table>
<thead>
<tr>
<th>Awareness</th>
<th>Perception</th>
<th>Consideration</th>
<th>Trial</th>
<th>Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>94%</td>
<td>78% Very Good</td>
<td>41% well informed</td>
<td>500 Uses</td>
<td></td>
</tr>
<tr>
<td>Roseville: 16% Aware of Commuter Club Website</td>
<td>Roseville: 45% say having their car for emergency ride home is &quot;very important&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Willingness</th>
<th>Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>84% Very Easy</td>
<td>76% Willing</td>
</tr>
<tr>
<td>Roseville: 2% Visited Commuter Club Website</td>
<td>153</td>
</tr>
</tbody>
</table>

Emergency Ride Home

Activities

Satisfaction

Utilization
Figure 6.3 Survey Results: 511 Website and Hotline
Figure 6.4 Survey Results: Trip Diary Raffle
In addition to this survey work, Caceres also examined:

- Public data on mode split (Census information), spending reports from TMAs and SACOG
- Operational data from the Commuter Club and 511 websites, vanpool incentive program, and emergency ride home program
- Enthographic stakeholder interviews with TMAs and employers
- City of Roseville Triennial TDM Survey
- Interregional TDM Action Plan Final Report that examined travel between SACOG and SJCOG regions.

Details on all of this information may be found in Appendix J. The information that was provided to Sierra Research was for the following year (2015 instead of 2014 data). Caceres’ analysis concluded that the TDM program does reduce VMT with the Vanpool Incentive Program alone reducing emissions by 1,000 kg/day of emissions in 2014, which is substantially higher than the 1.04 kg/day previously reported by SACOG. Despite this cost-effective finding, Caceres concludes that SACOG’s Rideshare Program is showing signs of age, with programs remaining unchanged for many years, having lackluster subsidies and incentives, and showing low awareness among target demographics. The May is Bike Month campaign is the exception to the rule as it has high levels of awareness even among those who are not
able to bicycle to work. Caceres recommended applying more robust tactics to promoting rideshare to achieve greater impacts than the program already achieves.

**Qualitative Assessment**

SACOG also worked with CTAA and conducted an internal staff assessment to more qualitatively evaluate the TDM program.

*Community Transportation Association for America (CTAA) Assessment*

SACOG worked with CTAA to begin a “design thinking”\(^\text{19}\) process to take a fresh look at the TDM program. CTAA and SACOG staff conducted over 40 interviews with outreach partners, stakeholders, subject matter experts, MPOs and users of TDM services. The information collected during this process was used to develop “personas” reflecting typical types of travelers across the region and thematic information that was used in two workshops. Partners, stakeholders and SACOG staff reviewed the personas and information and identified trends challenges and opportunities they considered important to include in this TDM strategic plan. Below is a summary of the information gathered and recommendations provided by CTAA, organized by TDM program/service.

**Regional Education and Outreach**

*What we heard:* While there are high levels of dedication and commitment among SACOG outreach partners to reducing single occupant vehicle usage, there is not a consistency among them in what they do or offer. From a local perspective this may be fitting, since local partners are targeting programs to respond to the needs they see locally. But, for a regional TDM program, this does not enable SACOG to operationalize its priorities consistently. SACOG needs to have a unified message, branded materials, and consistent levels of regional-level programming and incentives.

*Recommendation:* Invest in regional branding and programming where it matters most, such as raising awareness about benefits associated with alternative modes and general travel options that are available.

**Commuter Club**

*What we heard:* There is confusion about the difference between Commuter Club and 511. Some people think they are the same website and would use “Commuter Club” and/or “511” interchangeably. They might know that a website exists for ridematching but wouldn’t remember what it was called.

Others knew that there were two different websites, but didn’t understand the difference between the two or wanted a one-stop location to send people. We heard that it is hard to explain the difference when trying to promote alternative options. One person mentioned that they incorrectly sent an inquirer to the wrong site. As one ETC noted, “For vanpooling, we don’t use the regional 511 database,” when it’s the Commuter Club website that can help people find vanpools, not 511. In this ETC’s case, he used another process altogether to start vanpools. Beyond serving as a general website, when travelers mentioned Commuter Club it was for logging trips and entering to win prizes.

\(^\text{19}\) Design thinking is a systematic process for problem solving. The process involves reframing a challenge and working with a broad list of customers to gather information and research that will help inform innovative solutions to the problems at hand.
Recommendations:

1. Offer one regional site to host information geared to encouraging people to change to alternatives to driving alone.
2. In addition to offering resources by mode, consider building the site, or other platforms (Twitter, Facebook, Instagram), to move people through the Consumer Behavior Change pathway described in Chapter 5:

Alternatives/Choices Present → Awareness → Perception/Attitude → Consideration/Willingness → Trial/Participation → Use/Customer → Loyalty/Relationship → Recommend

Emergency Ride Home

What we heard: Emergency Ride Home (ERH) is a popular program that does not seem to be overused. Many interviewed said they are enrolled but have seldom used it, if at all. This is consistent with programs around the country: it is a safety net that is not overused or abused, except maybe by an occasional few.

Recommendations:

1. If SACOG has a target to move a higher number of people out of their cars and into shared commuting situations in the next 5 years to help meet its 10% VMT reduction goal, CTAA recommends reducing the number of ERH rides that eligible commuters can receive. Recommend reducing the number from 6 to 3-4, perhaps with long time alternative mode commuters maintaining their 6 as a thank you. Reducing the number below 6 rides a year is consistent with other metropolitan areas. MassRIDES in Boston, the San Francisco CommuteSmart and Washington’s Commuter Connections programs each cap ERH rides at 4 per year.

2. Make ERH a program offered region-wide. While we heard that many of the TMAs were promoting the program, currently not all areas offer the program. Especially if further research shows this program is not overused, this is one program that should be consistently offered. It provides confidence in taking an alternative mode at low economic cost.

3. CTAA heard a few suggestions to expand the options people can choose to get home using ERH to include technology-based providers, such as Uber and UberPool, and Lyft and LyftLine.

Other Considerations:

1. Explore whether the program should continue to be tied to Outreach Partners’ individual budgets, or funded out of a dedicated regional source.

2. Explore ways to partner with public transit agencies, private transportation companies and large employers to leverage communication and funding to support and expand the program.

3. Consider whether there is another revenue source to fund ERH. At Tri-Met in Portland, for instance, employers pay $2.16 per employee for companies with 100+ employees, or a fixed rate for companies with less than 100 employees.

Teleworking

What we heard: Several people CTAA interviewed emphasized the value of teleworking to reduce single occupant driving. With more people having access to technology right from their homes and no need to
drive to telework centers, many thought there was untapped potential for VMT reductions through the promotion of telework.

Few of the Outreach Partners promoted telework, feeling that it was difficult to promote, with employers either doing it on their own or not being interested in offering it to their employees. We heard that most employers don’t have a telework option and that there was some opportunity to promote it but no package or incentive program/subsidy to offer them.

CTAA Observations: Currently, the Commuter Club does not offer information on teleworking. The Sac Region 511 lists teleworking on its site, but confusingly, it is listed as a resource under Ridesharing. Additionally, sacregion511 promotes it for the employee, not the employer, and doesn’t provide additional resources other than text.

Recommendation: Develop a package for teleworking that can be promoted to employer sites and employees. This information could also be listed on the regional website and featured by promoting Telework Week, a national campaign in March.

Campaigns
What we heard: May is Bike Month is highly recognizable. Awareness seems high. People know about it, what is does, and what it offers. People had stories to tell about their experiences participating, knew details about the miles they and their team rode, and how many people signed up. One ETC said: “People respond to May Is Bike Month t-shirts. People love them. A few love the badges.” At one work location the ETC noted that 1,300 to 2,000 people sign up for MIBM, rode 2,000 miles, and were in the top 10. This employer site had an inter-departmental competition and gave t-shirts to staff if they registered.

People did mention other campaigns, but they paled in comparison to May is Bike Month. A few mentioned Spare the Air for Bucks. Several referred to SACOG’s October campaign, one wishing that the campaign name didn’t change so it could have some consistency.

Recommendation: Leverage other national or international campaigns when they fit with the regional TDM message, such as the following campaigns promoting other modes:

- Car Free Day (World Car Free Day 2016 - Sep 22, 2016)
- Try Transit Week (September)
- Dump the Pump (June)
- Telework Week (March)
- American Heart Association’s National Walking Day (April)

Expanding on the Consumer Behavior Model
Per CTAA, SACOG staff’s addition of the Consumer Behavior Model in Figure 5.1 was a valuable contribution to understanding the change process for consumer shifts away from driving alone and for eventually evaluating SACOG’s progress in making the shift. Among others, the benefits of a stepwise tool provides a framework for:
• Understanding journeys and experiences of customers and customer archetypes at each of the stages.
• Setting objectives, activities, and targets to move people through specific stages.
• Evaluating progress and diagnosing problems.
• Generating ideas to improve results in subsequent program years.

Based on the qualitative data garnered from the traveler interviews, the interviews with stakeholders, and the workshops, CTAA recommends adding a few steps to the Customer Behavior Model shown in red to customize it to the opportunities and goals of SACOG, namely:

Alternatives/Choices Present → Awareness → Perception/Attitude → Consideration/Willingness → Trial/Participation → Use/Customer → Loyalty/Relationship → Recommend

Adding “Alternatives/Choices Present” to the beginning of the customer lifecycle.
The people CTAA heard from during the qualitative research phase of this strategic planning process made it clear that “real choices” need to be present before people can think about using transportation alternatives. Conversation focused on targeting customers where infrastructure is already good, building infrastructure for biking, walking and transit where it is lacking, and then conducting campaigns to support use of that new infrastructure.

Conversations also led to thinking about how to work with people with complexities in their locations and schedules to tailor-make “real choices” for them. Suggestions included:

• Thinking beyond simply origin and destination of commutes to create opportunities at mid-points, such as schools where commuting parents drop off their children.
• Making it a win to carpool even one day a week, sending the message that this will still make a difference.
• Not using the car on weekends even though the car is the primary option during the week.

Adding Referrals to the end of the customer lifecycle.
A 2013 Nielsen Trust In Advertising report noted, “Word-of-mouth recommendations from friends and family, often referred to as earned advertising, are still the most influential, as 84 percent of global respondents across 58 countries to the Nielsen online survey said this source was the most trustworthy.”20 A 2016 Harvard Business Review article lists the following benefits of having a referral marketing program: “greater credibility of friend/family member recommendations over paid advertisements, access to new customers that traditional marketing programs may not reach, and better matching of referred customers’ needs to a good or service.”21

Learning about SACOG programs and area transportation options via word-of-mouth was mentioned on many occasions as the way people learned about a service or program. Many mentioned that they had recommended a service or program to a friend or colleague. Based on these findings, CTAA also

20 Word-of-mouth recommendations from friends and family, often referred to as earned advertising, are still the most influential, as 84 percent of global respondents across 58 countries to the Nielsen online survey said this source was the most trustworthy.
21 https://hbr.org/product/referral-marketing-harnessing-the-power-of-your-customers/BH713-PDF-ENG
recommended that SACOG build in steps to acknowledge the importance of customer referrals as an essential way to reach SACOG TDM program goals. Suggested strategies include:

- Continue value-added traditional marketing, but incorporate referral marketing, which relies on satisfied customers to refer a service to a friend or colleague.
- Build loyalty and relationships with customers.
- Launch a referral marketing campaign to encourage travelers to recommend alternatives to friends and colleagues.
- Use prizes, rewards, and coupons.
- Take advantage of social media and other networks.
- Develop avid users through making travel an experience, telling stories, and helping loyal customers refer their friends and colleagues.

CTAA also recommended several approaches to other phases in the Consumer Behavior Model, described below.

**Trial/Participation**

Having people try out SACOG programs and area transportation options was mentioned often during the qualitative research – by travelers who had the opportunity to try out a mode with a support system, by a vanpool lead looking to recruit more people into his vanpool, and by interviewed employee transportation coordinators.

A blog post from Clarity Coverdale Fury, an independent marketing and advertising agency, notes that, “Getting people to try things is one of the best ways to get them to purchase. …[T]he same methods that get someone to buy a new product or service can work to get someone to adopt a new behavior. Making trial easy is a brilliant way to move consumers from ‘consideration’ to ‘adoption,’ but the important part is that it’s not just for products. Those of us who are working toward large-scale behavior change need to find innovative, rewarding ways to spur trial as well.”

CTAA points to the opportunity for SACOG to set up trialability programs targeted to SACOG’s target locations, and target personas to encourage trial of alternative modes with relevant supports and incentives.

**Windows of Opportunities and Windows of Vulnerability of Relapse**

The article *A Universal Lesson in Breaking the Habit of Car Commuting* discusses the importance of reaching people to encourage mode shift during major life changes, such as moving, starting a new job, or having a child start school. Per the article, “At these moments, the normal cues that automate commute habits get disrupted, transit options and price incentives come back into play, and people can establish new behavioral patterns.” The authors call this the *Window of Opportunity*, but assert there is also a *Window of Vulnerability of Relapse*, which makes it important to design programs to support people through this window. The authors note, “If a commuter mode-shift program isn't sustained for long enough, there's a real possibility of relapse, since the old habits tend to linger even after the new one starts to form, and since the new one doesn't reach the power of the old even after a month."

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22 http://blog.claritycoverdalefury.com/inspiring-behavior-change-through-trial/
23 “A Universal Lesson in Breaking the Habit of Car Commuting: How one U.K. company got its employees to stop driving to work”, citylab.com, September 26, 2014
During the interviews and workshop sessions, CTAA heard about how employee transportation coordinators had programs for new hires. We also heard about the essential role for maintaining close connections with people on the cusp of and during the process of trying out a new travel mode or service. Both travelers and stakeholders interviewed talked about fear of trying something new, as well as being unsettled during the time using the new mode. This indicated that behavior change programs must last long enough to maintain the new habit.

Residential programs are becoming increasingly popular in the TDM field because they offer opportunities to shape travel behavior when people first move into new locations, before they have formed habits of driving alone. These programs focus on all types of trips (to schools, stores, errands, appointments) and not just commute trips, which could have huge benefits in the Sacramento region since only 20 percent of trips are commute trips. While some areas of the region do focus on residential areas (e.g., North Natomas TMA), we heard about the importance of working with more residential areas as a focus for SAGOG, including:

- Targeting those new to a residential area through programs such as the former “welcome wagon.”
- Working with real estate agencies, neighborhood associations, and apartment and condo concierges to share transportation information.
- Developing a regional rewards program for residential property owners, multi-family residences, and neighborhoods.

**TDM Program Self-Assessment**

In addition to the information collected through the interview and workshop processes, SACOG also conducted a series of internal and partner self-assessment efforts. These included:

- One-on-one meetings and an internal group discussion with SACOG staff members who have worked in some capacity on TDM-related programs/activities.
- A joint SACOG-TMA/TMO assessment meeting in May 2016, facilitated by LPC Consulting, to finalize the assessment of the ways in which SACOG and its outreach partners have been doing well, and how program outcomes could be improved and better measured.

The following provides a compilation of the self-assessment findings. Appendix M contains a more detailed summary from these activities.

**TDM Outreach and Behavior Change**

One of the most utilized TDM methods is outreach to employers that is ultimately designed to inform and encourage employees to use alternatives to driving alone to work. The most responsive employers designate commute or employee transportation coordinators (ETCs). Some of these coordinators are especially active at their own work sites and through serving on TMA Boards of Directors, support their employees with information, programs and subsidies, and attend TMA meetings and trainings. The Commuter Club saw 103 new employers join in 2014 and 32 new employers join in 2015;

A number of TMOs in the region have also had success with residentially-based outreach to neighborhood associations, clubhouses, and residents and forming vanpools/carpools, providing shuttle services, and/or support school-related bike/walk programs in schools. Providing transportation
information to people when they first move into a neighborhood can influence long-term travel behavior. A number of TMO area schools with active programs have succeeded in encouraging increased walking and biking to school, with its multiple health and auto trip reduction benefits.

The Emergency Ride Home (ERH) program is considered a key service for encouraging alternative mode use and as a lever for TMA membership. May is Bike Month is also considered one of the most successful TDM activities in the region, with awareness, registration, and trip replacement miles generally growing each year. SACOG and partners have continued to find innovative and creative ways to promote the campaign to employees, schools and residents. Some TMOs provide localized materials as well as incentives for bike purchase, repair and accessories. Several reported that bike safety clinics are one of their most effective programs in helping people feel more comfortable and confident in bicycling for more trips.

Nevertheless, some TMOs are experiencing outreach challenges and declines in membership. Several TMOs primarily have big box retail, warehouse, or smaller employers in their areas. These types of employers frequently show little interest in joining a TMA, designating or replacing an in-house commute coordinator, or providing in-house or TMO staff with time to offer TDM information or services to their employees. In some areas employers are required to be members of TMAs by city or county Transportation Management Plans or as mitigation measures that are part of Environmental Impact Reports (EIRs), but local enforcement of participation is inconsistent or lacking. Some schools have Safe Routes to School programs and staff, while others do not, which stretches TMO resources even more. Many older neighborhoods have neither the development agreements that include TDM provisions nor the density of transportation options that support effective TDM efforts.

SACOG and its outreach partners agree that the TDM program should broaden its focus beyond work trips to non-commute and school travel, which now make up the largest proportion of trips in the region. However, all of these forms of outreach are time- and resource-intensive. Not only do people need information but they also need to move beyond habits and fears to try out and ultimately fully adopt new travel behaviors. With limited resources, SACOG and TMO staff have not necessarily had the consistent time, resources or tools to move people through the behavior change steps, yet other “ambassadors” are often lacking to support people through that process.

There is still a role for educating and raising awareness about alternative modes of transportation, and supporting travelers through the behavior change process. SACOG and its outreach partners are in a position to leverage each other’s work and maximize results through coordination and collaboration. SACOG should give more of its time, energy, creativity and innovation to this program so that it can thrive like other SACOG programs. Staff also needs to continue to examine opportunities for partnerships, pilots, new funding opportunities, technological and program improvements so collectively SACOG and partners can become even more effective in improving options, managing transportation demand, and reducing VMT and emissions. Other partners to bring into the conversation include transit agencies, vanpool vendors, TNCs, transportation app providers, schools, Chambers of Commerce, community organizations, and other local groups.

Specific Programs, Resources and Tools
A number of specific challenges, weaknesses and opportunities related to current TDM programs and tools were also identified in the self-assessment process:
• **Vanpool Matching:** Successful vanpools require 7-15 riders with similar work locations and schedules, sufficient commute distances to be cost-effective, significant hand-holding to form and maintain, and then ultimately depend on the compatibility of the personalities over time. Private providers Enterprise and V-Ride often market vanpools separately from the TMOs, and federal agencies often prefer to set up their own vanpools. Federal, state and other employees receive varying subsidy levels, or none at all. Some vanpools only form because of the region’s six-month Vanpool Incentive Program, and then fold when that subsidy ends. Identified opportunities to strengthen the program include greater regional coordination/support, more targeted marketing efforts, and reassessing vehicle types, rules, and amounts and duration of incentives to increase the attractiveness of vanpooling where it is a viable option.

• **Rideshare Matching:** Some people use the regional Commuter Club website for carpool and vanpool matching, while others have not found it useful in finding ride matches. Users have said they will send messages to potential matches and never receive replies. Additionally, the Commuter Club database does not provide any dynamic ridesharing options, and has not been updated to remove those who are no longer interested. Those seeking to rideshare can become discouraged if they don’t find a match quickly, but with the variety of existing and emerging websites and apps, rideshare matching efforts in the region don’t pool all of the options, making matches and outcome measurement more difficult.

• **Commuter Club and 511 websites:** While the Commuter Club is the only current measurement tool, it allows registrants to opt out of receiving any calls, texts or emails, so SACOG and TMOs have no authorized way to contact or survey them. Many people do not know the difference between SacRegion511 and the Commuter Club. Some TMOs use the email and database features of the Commuter Club website, while others do not find it useful or trustworthy, and so have developed their own customer relations databases using various software programs. A detailed evaluation is needed of the Commuter Club, 511 website and other current and emerging database and ridesharing tools, incentives, technologies, and marketing strategies to identify specific steps to improve and facilitate rideshare matching and non-drive alone trip planning in the region.

• **Emergency Ride Home:** The assessment found that a number of further improvements could be made to the ERH program in terms of expanding eligibility and ride options, modifying and clarifying rules, potentially changing the structure of the program and facilitating use of the program when a ride is needed.

• **Teleworking:** Some TMOs suggested that employers seem willing to fund teleworking options. There are more formal TDM-related telework programs in other regions. Training, education and promotion of telework alternatives, policies and programs could be a good use of SACOG resources.

• **Fall Campaign:** A number of TMOs noted that the focus of the Fall TDM campaign keeps shifting, and the campaign has not been as successful as May is Bike Month. If a fall campaign is desirable, a more consistent theme should be identified, with greater coordination and advance planning so the campaign is more effective.
• Communication & Coordination: Staff and partners have identified a number of opportunities for improved internal and external coordination between existing and new partners and projects. These opportunities are discussed in great detail below in the Coordination and Partnership section.

Disincentives for Shifting Modes
A variety of external disincentives were identified to changing modes that make TDM efforts challenging:

• With the exception of a few locations such as downtown Sacramento and university/medical center campuses, most employees have free parking available.
• Those who have a priority or reserved parking space often don’t want to lose it while they try out an alternative mode.
• In many areas in the region, there is a lack of effective public transit that fits people’s trip needs.
• Heavy traffic flow and insufficient infrastructure for pedestrians and bicyclists, including lack of safe sidewalks, bike lanes, and crossings, secure bike parking, and showers and facilities for bike commuters, discourage bicycling and walking as trip modes to work, school, and other destinations.
• Automobile operating costs are decreasing; vehicle fuel efficiency is improving while fuel costs are remaining constant if not lowering in cost, so the out-of-pocket cost of driving a car is fairly flat.

Several TMO staff noted that through their outreach, they often receive complaints about transit services and infrastructure problems that they cannot themselves fix. This can negatively affect their alternative transportation efforts if nothing changes after concerns are forwarded to the appropriate agency. Listening to these complaints can also take a great deal of time – time that could otherwise be spent promoting alternative modes to people who do have travel options.

To address such disincentives, some TMOs advocate, partner, and/or collaborate with local jurisdictions on infrastructure improvements, and/or provide capital improvement funds in their local areas for infrastructure improvements such as bike racks, lockers, wayfinding/signage, lane striping, etc. SACOG has been steadily increasing the share of its regional funding allocated for transit, shared mobility, complete street, bicycle and pedestrian projects and programs that improve transportation choices and thereby support TDM, VMT and greenhouse gas emission reduction efforts in the region.

The research and analysis completed by CTAA, Sierra Research and SACOG staff point to land use patterns being cost-effective in reducing GHG emissions. To that end, SACOG has focused a portion of its TDM effort on education for the Blueprint and MTP/SCS. To inform and implement the MTP/SCS, SACOG has taken the lead on various TDM-supportive plans, studies, technical assistance efforts and projects. These include the regional Bicycle, Pedestrian and Trails Master Plan, Downtown Transit Circulation study, transit agency Short Range Transit Plans, and research into parking pricing and zoning policies; research and technical assistance on transit-oriented development, complete streets and infill/revitalization; and facilitating new transportation services such as the Connect Card fare medium across eight transit agencies, Streetcar between West Sacramento and Sacramento, and regional Bikeshare Pilot Program starting in Sacramento, West Sacramento and Davis. Staff believes it may be cost-effective to expand such activities in the long-term.
The opening of supportive transit services and infrastructure projects also provide opportunities for TDM-sponsored celebrations and marketing of their use for vehicle replacement trips.

**SACOG & TMO Coordination and Partnership**

TMO staff report being very engaged, having many success stories, and enjoying their work. They find the TDM partnership of value, including regional materials, campaigns, websites, tools, coordination of individual efforts, consistent messaging, and opportunities to share information, learn from one another, and create behavior change.

However, most TMOs have only 1-2 staff, and some staff have other responsibilities besides TDM. Some TMOs have special, dedicated funding sources and assets, while others have limited funds and low levels of reserves. Many are interested in SACOG researching other funding structures and opportunities to ensure TDM services are provided if TMA dues decrease.

In general, both SACOG and TMO staff expressed interest in more joint efforts. SACOG staff also observed that while the TDM program has received ongoing and dedicated funding and staff support, TDM efforts have continued a similar focus in recent years, and have not necessarily been as creative and innovative as they could be, especially in light of emerging private sector initiatives. SACOG staff identified a need to improve internal coordination between the TDM Team and related staff teams, including those working on the Connect Card, Bikeshare, Intelligent Transportation Systems, Open Data, Active Transportation and Transit. Some coordination already happens, but it needs to be more formalized and prioritized.

SACOG staff also suggested there is a need to improve and expand external coordination by linking up partners who attend different SACOG advisory committee meetings, notifying members of various funding opportunities (both SACOG funding and other funding), and helping to build further partnerships with and between existing and new partners to ensure everyone is leveraging TDM and marketing opportunities to the greatest extent possible.

At the same time, TMOs would like to have more SACOG staff available to help with time-consuming employer outreach and events; more streamlined billing and reporting requirements; clarity on staff roles at SACOG and who they should contact when they have a question, request or concern; opportunities for more idea sharing amongst TMOs; as well as greater transparency and collaboration on development of the TDM budget and regional campaigns.

**Measurement**

Lastly, SACOG and TMO staff and Board representatives assessed opportunities for improving measurement of the TDM program to communicate program performance, outcomes and successes. TMO staff would like to feel valued and respected for the work they do that benefits the region, and acknowledged for how hard it is to make and maintain connections and enthusiasm for TDM efforts. The partnership will be stronger if we develop metrics and accountability measures that help demonstrate what we accomplish together. Yet, each agency has different programs, and each reports on different measures to different audiences. We miss the opportunity to tell a collective story. There is interest in collaboration between TMOs and SACOG staff on better documenting program success.

TMOs are concerned with how to meet performance goals for outcomes that are challenging to measure. Vanpool miles and GHG reductions are straightforward to compute, but it is more difficult to determine to
what extent other TDM programs ultimately result in mode shifts and VMT, congestion and air quality improvements. Also, TMO geographies, staffing and funding resources differ significantly across the region. If targets are eventually set for outreach partners, those targets should recognize these contextual and resource differences. SACOG’s TDM activities should also be included in any measurement system that is developed.

Even some agencies seen as having robust TDM measurement practices tend to use measures of activity and then extrapolate to impacts on VMT and air quality. As a starting point for developing a more robust TDM performance measurement program for the SACOG region, it was suggested that SACOG collect reports already produced by TMOs to determine common measures that would be easy to report. Work would then continue over the summer towards a more defined measurement system.

**Conclusions**

Based on the reliance of the MTP/SCS on transportation demand management for a portion of its performance as well as current research and program knowledge, and a transportation landscape that is changing before us with new technologies coming online every day, staff concludes that there is a continuing role for a strong, performance-based TDM program. SACOG and an expanding group of partners’ involved in TDM efforts can have a significant impact on reducing VMT not only now, but also as infrastructure investments are made that offer more transportation options to more people in the region.
CHAPTER 7. KEY LEARNINGS, GOALS AND STRATEGIES

SACOG and partners have learned much about the current TDM program, what other regions are doing, and opportunities for improvement. The following are key learnings and initial goals and strategies that have come out of them. The information in this chapter is a framework that can be used to build a business plan for the TDM program that will identify specific actions and budgets to align with these goals and strategies. SACOG will work with TMAs/TMOs, transit agencies, air districts, bike/ped planners, non-profit groups, chambers of commerce, business associations, and other interested parties on developing this business plan through the summer of 2016.

Key Learnings

Technology is changing the TDM landscape. How will companies like Uber, Lyft, Ridescout, WAZE, Getaround and others affect how people choose to travel? Will more people share rides or reduce vehicle ownership because of these private sector efforts and technologies? Or will they result in more trips? How might they impact, supplement or supplant traditional public transit and paratransit services? Will autonomous vehicles lead to more people driving alone or bring more transit and ridesharing opportunities? Will Connect Card and Bike Share technologies result in mode shifts? Will these endeavors ultimately reduce or increase VMT, greenhouse gas emissions and roadway capacity demand? We have more questions than answers but we know that these ventures and technologies will have an impact on travel behavior.

The shared economy is here and is a huge opportunity for TDM programs. Data from shared services providers points to a beneficial relationship between transit agencies and providers, especially for first and last mile connections. Car share services are already in Sacramento and there will be a bike share system launching in spring of 2017. Uber currently offers ride sourcing services across the entire region and Lyft offers services to the greater Sacramento area reaching cities like Auburn, El Dorado Hills, Elk Grove and Davis. Nationally, transit agencies have been partnering with TNCs, microtransit, and others to provide first-mile/last-mile connections. UberPool and LyftLine have launched ridesharing services (UberPool and Lyft Carpool) in the San Francisco Bay Area and are choosing new markets frequently. The possibility for partnerships presents a unique opportunity to gather valuable data from these private entities. Formal partnerships have happened in Dallas, LA and other major metropolitan areas.

Partnerships matter. All TDM programs leverage partnerships in order to have the greatest impact. Our partners bring TDM expertise, local knowledge and match funding that help SACOG reach more people than it otherwise might reach. Maintaining these good partnerships and fostering new partnerships will create a stronger more successful program.

Awareness is a key first step in making new travel choices, but awareness of current TDM programs and services is low. While more research is needed to fully understand the levels of awareness for various programs and services, preliminary research shows that generally many people do not know about existing programs, such as the Emergency Ride Home program, vanpool incentive program and the differences between 511 and Commuter Club.

Few TDM programs are measuring performance. Even the programs that are known for good performance measurement make many assumptions about the impacts of their programs. Almost every
MPO we reached out to would really like to see what we develop for linking performance to investment decisions. It is difficult to measure TDM activities in part because services and programs are almost always offered in combinations of funding packages. However, everyone is interested in better measuring their programs and there are methodologies we can draw on and improve upon.

Short trips matter, too. TDM programs often focus on reducing long commute trips through carpools, vanpools, and transit. While these efforts are very important to VMT and GHG reductions, data shows that reducing short trips can also have a significant impact on reducing emissions as it is the cold start of a vehicle that releases the most pollutants. Additionally, only 20 percent of trips are commute trips. Some efforts have been made to promote mode shifts for shorter trips, particularly through the May is Bike Month campaign and Safe Route to Schools efforts, but the program overall could focus more on promoting all types of alternative modes for shorter trips to work, grocery stores, restaurants, schools, transit stations, etc. The TDM program could benefit by working with partners to provide more residential-based outreach and marketing that goes beyond a focus on commute trips.

TDM marketing programs can be cost-effective, especially when combined with infrastructure investments. From the literature we have reviewed, TDM marketing and employer-based programs can be cost effective alternatives for reducing VMT and emissions on their own, but particularly when combined with longer term infrastructure investments like roadway, bicycle and pedestrian improvements and transit expansion that provide real choices. However, the degree of effectiveness depends greatly on the combination of services, incentives and programs provided. It also depends on whether TDM alternatives can result in delaying or deferring the need for a more costly transportation expansion projects.

Demographics in the region are changing. Over the next 20 years the region is going to have a higher percentage of people over 65 years of age, and will continue to see a large percentage of people between the ages of 20 and 34. There is a need to consider how these residents will want to travel and how TDM programs can provide information and promote new travel options that respond to demographic changes.

Infrastructure matters. Targeting markets in which diverse transportation options exist will likely result in greater VMT reduction. Encouraging people to bike or take transit when they don’t live or work in areas that have good bike opportunities or transit service is not efficient. Instead, a greater share of resources should go to creating diverse transportation choices, marketing to people who live near those services or infrastructure and actually have the option to take an alternative mode, and providing ambassadors, incentives, and ongoing support to encourage more enduring use of those modes.

Travel options need to be safe, efficient, convenient and reliable. This is old news in transportation circles but important to call out because travelers noted over and over that they would not chose a mode other than their cars unless that mode was perceived to be at least as safe, efficient (both from a time and cost perspective), convenient and reliable as their car. And in some cases it would have to actually save them time or money to motivate them to change their mode.

The ways we pay for transportation may be shifting, but the extent to which that may affect people’s travel is not yet clear. With revenues from fuel taxes decreasing, transportation finance strategies that involve road pricing by time of day or measuring vehicle miles traveled are being studied and implemented. If new “user-based” finance strategies are implemented in California, what new TDM
efforts will be needed to inform drivers of alternative options? How might we take advantage of other funding sources (e.g., competitive grant programs, mitigation dollars, pre-tax benefits, etc.) to support TDM strategies and people’s transportation options?

There is still much to learn. While we have collected much information in the past six months that can be used to inform the next 2-5 years of work in the TDM program, there is also much that needs to be further researched, tested and evaluated to get a better handle on this dynamic field and all of the challenges and opportunities that lie ahead.

Draft Goals, Objectives and Strategies

Goal 1. Leverage existing and new partnerships to maximize technological opportunities, raise awareness of programs/services, and offer improved and new cost-effective programs/services that support alternative mode use and behavior change.

Draft Objective 1A. Sharpen the focus and efficiencies of SACOG’s Traditional TDM Programs. SACOG’s TDM program has primarily been focused in these areas:

1. Regional convening of TMA/TMO outreach partners through the monthly TDM Task Force.
2. Funding, planning and operational support for employer-based TDM marketing efforts by TMA/TMO partners and SACOG.
3. Maintaining and clarifying the identity of the 511 and Commuter Club websites.
4. Managing the large, annual May-is-Bike-Month (MIBM) marketing campaign.
5. Each of these traditional areas of the TDM program offer opportunities for enhanced effectiveness.

Draft Strategies

1. Update SACOG’s rideshare database through coordination with TMA/TMO partners.
2. Expand the TDM Task Force to include air districts, transit agencies, health and active transportation partners, Caltrans, private sector representatives (e.g., TNCs) etc., and explore options for joint ad-hoc task forces or working groups for ongoing and opportunistic marketing and outreach efforts.
3. Strengthen employer-based TDM outreach and marketing efforts where there are strong transit and bike/ped connections to employers and there is evidence that shifting employees’ mode-share has unrealized benefits and opportunities for TDM effectiveness.
4. Explore Vanpool Program improvements most likely to support increased vanpooling activity, including identifying areas with many commuters making similar long commutes, and assessing the vanpool program structure, duration of incentives, benefits of reporting to the National Transit Database, and opportunities for additional matching tools and targeted marketing efforts.
5. Evolve May is Bike Month (MIBM) into a program more focused on VMT reductions, based in how people become users of bicycling as a transportation choice, and with more year-round promotion of bicycling as an auto trip-replacement option.
6. Assess with the TDM Task Force and stakeholders ways to strengthen regional TDM branding, messaging and marketing efforts where effective, while encouraging local efforts and customization as needed to target local differences and specific market segments.

**Draft Objective 1B. Enhance user experience and increase mobility options through technology-based solutions**

**Draft Strategies**

1. Assess more cost-effective methods to provide both static and real-time transportation and alternative modes information, encourage ongoing and dynamic ride sharing, and collect data for program evaluation through assessing the potential to combine 511 and Commuter Club websites, emerging technologies, potential public/private partnerships, open data, etc.

2. Identify strategies to integrate TDM into the SACOG-led Local and Regional Intelligent Transportation System (ITS) Master Plan and Architecture Updates to be launched in FY 2016/17, such as how TDM can be used by local governments to support integrated demand management to promote transportation choices, reduce congestion, and address incidents.

3. Explore data collection opportunities and potential partnerships with Transportation Network Companies (TNCs) and other emerging private sector transportation ventures to increase travel choices, sharing, connectivity, accessibility, and to leverage private expertise, capacity and funding.

**Goal 2. Better integrate TDM with planning and project delivery both to improve the land use/transportation planning process and promote new multimodal infrastructure when it is completed.**

**Objective 2A. Support Blueprint and MTP/SCS Implementation Efforts that Increase Travel Choices, Connectivity, and Accessibility.**

**Draft Strategies**

1. Strengthen internal coordination between SACOG staff teams working on TDM, Active Transportation, Transit, MTP/SCS Implementation, and Programming and Project Delivery.

2. Further study VMT reduction opportunities in MTP/SCS geographies where transportation choices exist and TDM efforts could most effectively promote alternative modes for work, school, and short trips.

3. Assess potential market segments for expanded TDM efforts, including seniors, youth, and young adults.

4. Explore best practices and opportunities to adopt or pilot TDM strategies in the SACOG region targeted to specific market segments, neighborhoods, new trip attractors, special events, major construction projects, and new “tiers” of alternative modes.

5. Support the development of a Regional Complete Streets Program and implementation of MTP/SCS capital projects that reinforce TDM program performance outcomes, and support and encourage use of new projects – such as complete street improvements, new bike/ped infrastructure, and new/revised transit services – through timely TDM activities and education.
6. Provide technical assistance to incorporate TDM strategies into local plans, including general and specific plans, corridor plans, short range transit plans, TOD/station area plans, and others.

**Goal 3. Collect & analyze data to make smart investments that focus on long term behavior change.**

**Objective 3A. Evolve to Become a Truly Performance-Based Regional Program**

**Draft Strategies**

1. Work with TDM outreach partners and stakeholders to develop specific goals and performance measures for TDM programs, and methods for collecting data to track progress.
2. Work with a third party with program evaluation expertise to help continue to assess the effectiveness of SACOG’s TDM programs and provide guidance on potential performance assessment measures and methods.
3. Incorporate performance-based planning, coordinated with regional performance measures, into SACOG’s TDM decision-making, funding programs, and program management.
4. Provide funding support for technical tools that help inform the ongoing evaluation of VMT reduction strategies, such as scenario planning tools, project-level benefit-cost analysis to inform infrastructure project selection and programming to meet TDM goals, and GHG reduction target-setting work and forecasts of “off model” benefits from investments in programs such as TDM.
5. Provide funding support towards the Regional Household Travel Survey Project to ensure it addresses TDM considerations.
6. Support an online Regional Monitoring Report to communicate regional performance and progress on a variety of measures, including those related to TDM program impacts and benefits, transit ridership, congestion, etc.

**Objective 3B. Diversify TDM Funding Sources and Leverage External Funds to Implement Creative, Innovative and Long-Term Efforts**

**Draft Strategies**

1. Identify funding and grant opportunities for expanding the focus of the TDM Program beyond employers, to include more residential-based programs and marketing to promote alternative modes for all types of trips.
2. Increase opportunities for capturing more TMP funds through supporting inclusion of TMPs in new environmental review, and inventory and analysis of major CEQA documents with identified TMP mitigations.
3. Provide technical assistance on various revenue/fee options that could be implemented by local governments to fund TDM related programs and infrastructure, and encourage development patterns and projects supporting enhanced transportation choices.
4. Explore the potential benefits of any TMA/TMO sharing of “back-office” and event services, such as administrative support, bookkeeping/accounting, events coordination/staffing support, etc.
5. Continue to explore the development of financial Incentives for more transit-oriented development (TOD), building on prior analytical work and examples from other areas.
6. Pursue opportunities to leverage SACOG’s TDM program funds with related external programs that support MTP/SCS implementation, such as the Sacramento Transportation Authority’s TOD set-aside, SMAQMD’s Infill Streamlining Program, Cap-and-Trade programs and the state Active Transportation Program, and federal programs.
CHAPTER 8. IMPLEMENTATION PLAN

Introduction
As discussed in Chapter 1, the current Transportation Control Measure (TCM) that guarantees $1.2 million in annual funding for TDM efforts will sunset in 2018. To help realize the goals, objectives and strategies from Chapter 7, this chapter puts forth an action plan for using the remaining TDM funds for Fiscal Years 2016/17 and 2017/18 to move the TDM program forward, as well as to prepare for the period beyond the expiration of the TCM. This implementation plan was developed with input from the TDM Task Force and two stakeholder workshops to identify, hone, and prioritize action steps and timelines.

A number of the actions in this implementation plan focus on preparing for the evolution of the funding program from one that has guaranteed, off-the-top funding allocated specifically to TDM, to one that is more flexible and performance-based in showing progress toward reducing air pollution and greenhouse gas emissions. Some of the themes and larger recommended changes to the program include:

- Creating a new TDM Innovations Funding Program for grants to be awarded no later than the beginning of FY 2017/18, the final year of guaranteed TDM funding. The competitive program would be open to all applicants interested in piloting/supporting more innovative and cost-effective TDM strategies that promote behavior change.
- Embarking on more detailed work to assess and recommend technologies and methodologies that SACOG and its partners could institute to advance more integrated traveler information in the region, and improve upon the performance measurement methods used in other regions.
- Rethinking regional branding and marketing by developing more consistent messages, tools, strategies and resources.
- Becoming more integrated with planning and delivering projects that provide additional transportation options that would benefit from TDM programs, campaigns and promotions.
- Completing a variety of smaller research projects to inform expenditures for FY 2017/18 to help SACOG determine the best use of remaining TDM funding in the short term, while preparing for longer term changes.

Action Recommendations
The following are recommendations for actions to further the TDM goals and objectives from Chapter 7. A summary table of actions, recommended timeframes, and proposed funding allocations for the different actions are shown in Table 8.1. Proposed funding allocations will be considered by the SACOG Board in conjunction with adoption of the Strategic Plan. Allocations for FY 2017/18 will be considered as part of SACOG’s FY 17/18 Overall Work Program and budget, to be adopted by the Board in May 2017.
Goal 1. Leverage existing and new partnerships to maximize technological opportunities, raise awareness of programs/services, and offer improved and new cost-effective programs/services that support alternative mode use and behavior change.

Objective 1A. Sharpen the focus and efficiencies of SACOG’s Traditional TDM Programs.

Objective 1B. Enhance user experience and increase mobility options through technology-based solutions.

This Implementation Plan chapter includes the following recommended actions to help meet Goal 1 and Objectives 1A and 1B above: 1) improve integrated traveler information; 2) rethink and strengthen marketing and outreach to encourage mode shifts and behavior change; and 3) strengthen incentives/disincentives.

1. Improve Integrated Traveler Information

Currently the SACOG region does not have the level of integrated information on transportation options available in some of the nation’s larger cities and metropolitan regions. The SACOG region’s system was updated to feed real-time traffic information to the sacregion511 website but other travel information has not been fully updated, and the 511 website is separate from the Commuter Club website. Google’s trip planner is still the broadest application for trip planning in the region, but real-time transit information is not universally available across the region. The Connect Card and regional bikeshare pilot program are still in final development. Static ridesharing information is found separately on the Commuter Club website or private operators’ vanpool websites, and Commuter Club offers and requests for rideshares are not always up to date. Apps also tend to be separate for other current transportation options such as TNCs (Uber and Lyft) and car-sharing services.

The following are recommended actions over the next two years to improve and better integrate traveler information in the region:

1a. In the short term, make low-cost updates and improvements to the traveler information available on the sacregion511 website.

1b. Research in more detail the role that MPOs and the private sector have played in developing or supporting integrated website and mobile information on available transportation options and real-time travel, such as enhancing their 511 websites or supporting through partnerships, data and/or funding the development of integrated websites and mobile apps. This will also be informed by Action 5 work on performance measurement. Also consult with agencies in the SACOG region involved in smart city, shared mobility, bike/car share, transit and mobile app development for collaboration and integration opportunities for traveler information. Assess the experience, benefits, costs, outcomes, and lessons from these endeavors, and any potential for building on or leveraging existing platforms. Based on this further research, identify the most appropriate approach for SACOG to pursue in facilitating or supporting better integrated traveler information, and the follow-up actions needed to implement that approach.
2. Rethink and Strengthen Marketing and Outreach to Encourage Mode Shifts and Behavior Change

SACOG has traditionally funded outreach partners to help reduce commute trips through promoting transit, carpooling, vanpooling and bicycling through employers. SACOG also funds and coordinates two region-wide campaigns each year: May is Bike Month and the October is Smart Commute Month campaign. As noted in Chapter 2, individual TMOs/TMAs also offer direct shuttle services, and promote alternative modes to residents through local campaigns, events, and schools.

For FY 2016/17, the SACOG Board approved the use of $509,595 in CMAQ funds for TDM outreach and marketing. This included approximately $329,595 in pass-through funds for FY 2016/17 Tier I contracts with TMAs to support their TDM promotional efforts; and $80,000 for Tier II TDM grants. The FY 2016/17 Tier II competitive grants were available to TMAs to “help fund new or innovative TDM strategies, extend coverage of current partners, or fund other demonstration projects or programs. The intent is that the Tier II awardees will provide quantifiable performance-outcome results that can also help to inform future competitive funding programs.” Another $100,000 was authorized for a new marketing/outreach effort: an activation campaign at light rail stations to encourage transit travel to the new Golden 1 Center.

The following are the actions recommended over the next two years to support and strengthen TDM-related marketing and outreach:

2a. Continue funding of existing TMO employer- and residential-based services while continuing to work with contracted TMOs to strengthen performance measurement practices.

2b. Implement approved Tier II FY 16/17 projects.

2c. Implement Transit Station Activation events for Golden 1 Center through existing contract.

2d. Implement transit-focused fall campaign for FY 16/17.

2e. Create a regional marketing and advertising strategy to leverage resources and ensure consistent branding for promoting transportation options in the region. SACOG should identify lessons from similar efforts by other MPOs/TMOs before procuring a third party marketing expert to work with SACOG and broad stakeholder interests to develop the regional marketing and branding approach. This regional strategy can complement local efforts and customization as needed to target local differences and specific market segments. This would also include expanding partnerships and leveraging resources of other entities and campaigns.

2f. Continue May is Bike Month (MIBM) but assess how to evolve over time into a program that is more focused on VMT reductions and promotion of bicycling as an auto trip-replacement option. This will also include examining opportunities for delivering the campaign at a lower cost by hiring consultants or leveraging other external resources.
2g. Create a new TDM Innovations Funding Program that would be a competitive pot of $450,000 for grants to be awarded no later than the beginning of FY 2017/18, the final year of guaranteed funding. The competitive program would replace the TDM Tier II Funding Program and be open to all applicants interested in piloting/supporting more innovative and cost-effective TDM strategies that promote behavior change. Criteria for this funding program would be developed to ensure that the funds are used for examining/testing opportunities to incorporate the shared economy, new technologies and cutting-edge TDM programs, tools and strategies. Pilot project types might include but not be limited to working with TNCs to offer first mile/last mile connections, Emergency Ride Home services, or carpool options; partnering with technology companies to launch or test travel planning apps in the region; offering a city or employer the opportunity to test parking pricing strategies in its area, and other innovative projects or programs on the leading edge of the TDM field. Staff will work to develop criteria immediately and call for projects as soon as possible but will do so no later than spring of 2016 to ensure projects are awarded no later than the beginning of FY 2017/18. Projects awarded in FY 2017/18 could still be implemented over a two-year time frame.

3. Strengthen Incentives/Disincentives for Modal Choices
As noted in Chapter 5, research has found that some of the most effective strategies to reduce employee vehicle trips are emergency ride home programs, a combination of TDM services with monetary incentives, and parking pricing.

SACOG as described in Chapter 2 currently offers a six-month Vanpool Incentive Program. This is currently the region’s subsidy program offered to groups of riders starting a vanpool that travels at least 75 percent of its miles in the Sacramento six-county region. In terms of other incentives, anyone who works or lives in the Sacramento region is eligible for prize drawings by registering in the Commuter Club or May is Bike Month and logging their trips. Many public agencies and some private employers also offer subsidies towards transit passes, vanpool costs, and carpools. Depending on the TMO/TMA area, other traveler incentives include subsidies for teleworking, biking and walking; incentives for bike purchase, repair and accessories; and the Emergency Ride Home (ERH) program. ERH is currently only offered to employees of TMA/TMO member employers, and residents in the North Natomas TMA area, and is administered by TMA/TMO partners.

The following are recommended actions to strengthen the incentives available for mode shifts and behavior change and disincentives for solo driving.

3a. Maintain existing vanpool subsidy program while examining other options. This could include expanding or reducing the existing subsidy amount or the number of months the subsidy is paid to participants.

3b. Research the specific structures and accounting/payment systems of agencies with Emergency Ride Home (ERH) programs offering options beyond car rentals and taxis (such as Uber/Lyft rides and rides from coworkers), and reimbursements instead of advance vouchers. With input from stakeholders, assess projected usage, financial costs, and benefits to trip reduction of revising/expanding the ERH program, and potential administrative/structural options. Develop action steps to revise/expand the program based on findings and cost/benefit analysis.
3c. Assess the costs vs. financial returns of reporting vanpool trips to the National Transit Database. Assess the financial feasibility and benefits of revising the monthly vanpool subsidy program to extend beyond six months.

3d. Through Census information and SACOG tools, identify areas where travelers have transit, carpool, vanpool, bike and walk options and would be prime areas for targeted marketing and incentive efforts. This could include examining areas with many commuters making similar long commutes for targeted vanpool/carpool potential and areas where good transit service already exists but is underutilized.

3e. Build on prior SACOG research into parking pricing by working with local jurisdictions or employers interested in piloting parking pricing initiatives. These pilot projects could be funded through the expanded TDM Innovations Funding Program (formerly Tier II).

**Goal 2. Better integrate TDM with planning and project delivery both to improve the land use/transportation planning process and promote new multimodal infrastructure when it is completed.**

**Objective 2A. Support Blueprint and MTP/SCS Implementation Efforts that Increase Travel Choices, Connectivity, and Accessibility.**

People who would be open to driving alone less often must have viable alternatives and knowledge of those alternatives or they will not be able to make other choices. SACOG has focused a portion of its TDM resources on planning and implementing the MTP/SCS and Blueprint. This helps support integrated local land use and multimodal transportation planning and project delivery, which results in increased transportation options to promote.

**4. Continue Coordination and Complementary Multimodal Transportation & Land Use Planning Support**

This Implementation Plan recommends continuing work in partnership with local jurisdictions and stakeholders as follows:

4a. Work with member cities and counties’ elected officials, executives, planning and public works staff, in concert with broad TDM partners, on more coordinated efforts to plan for, deliver, implement and promote TDM projects and programs that help implement and achieve the outcomes of the MTP/SCS. These efforts would include:

- Identifying high priority areas where bicycle and pedestrian infrastructure and transit improvements could have maximum impact on reducing VMT, and incorporating development patterns and projects supporting enhanced transportation choices into local plans.
- Prioritizing and delivering projects that offer and promote the use of non-solo driving options (complete streets, improvements to bike and/or pedestrian facilities, transit services, ridesharing options, etc.).
- Promoting alternative mode programs and multimodal use of new infrastructure projects when complete.

4b. Work with local jurisdictions and the Office of Planning and Research on opportunities to support the implementation, monitoring and enforcement of Transportation Management Plans and EIR TDM mitigation measures (e.g., mitigations that require membership in a TMA, transit pass provision, car share memberships, etc.).

4c. Continue to encourage broader participation in the TDM Task Force to expand knowledge-sharing and collaborative opportunities for TDM efforts between sectors and partners.

4d. Explore with SACOG staff and the ITS Partnership ways to integrate TDM into the Local and Regional Intelligent Transportation System (ITS) Master Plan and Architecture Updates to be launched by SACOG in FY 2016/17.

**Goal 3. Collect & analyze data to make smart investments that focus on long term behavior change.**

**Objective 3A. Evolve to Become a Truly Performance-Based Regional Program**

**Objective 3B. Diversify TDM Funding Sources and Leverage External Funds to Implement Creative, Innovative and Long-Term Efforts**

As noted in Chapter 6, SACOG and an expanding group of partners’ involved in TDM efforts can have a significant impact on reducing VMT not only now, but also as infrastructure investments are made that offer more transportation options to more people in the region. A more robust performance measurement system and increased ability to leverage and compete successfully for outside funds will support investments in these transportation options and TDM strategies most likely to achieve regional goals for mode shifts, VMT and emission reductions, as well as help communicate program performance, outcomes and successes.

**5. Develop, Test and Implement TDM Performance Measures**

SACOG’s research, described in more detail in Chapter 6, found that the agencies considered as having the “best practices” for TDM performance measurement largely depend on a high level of surveying. However, traditional surveys can be costly and time-consuming, and therefore tend to be administered on an annual or less frequent basis.

SACOG is committed to expanding the region’s capacity for evaluating its TDM programs and strategies, and recognizes that attention and resources will need to be devoted to developing performance measures and associated methods to collect data. For this reason, SACOG is considering engaging a consultant to assess a variety of technologies and platforms for collecting and quantifying outcome data more simply and efficiently, and recommend a plan for establishing more systematic TDM measurement approaches.
This work will also help inform the future role of the 511 and Commuter Club websites in concert with Task 1b.

The following are recommended actions to move towards a more performance-based program:

5a. Continue to fund Commuter Club and May is Bike Month websites while examining opportunities where other technologies may offer more cost-effective features. While the Commuter Club and May is Bike Month websites offer some outreach and user engagement features that are valuable, it is important to examine other technologies that might allow for similar engagement levels while providing better data collection and performance measurement opportunities at a lower cost. Depending on the work that results from the actions below, funding allocations for these websites may need to be altered.

5b. Conduct projects to assess new technologies and methodologies for data collection, and develop recommendations for more systematic measurement/evaluation of TDM programs and strategies.

5c. Incorporate findings on how to institutionalize a more performance-driven measurement system into TDM program work plans, funding guidelines, and contracts. This could include how to make revisions to Commuter Club, 511 and May is Bike Month websites or adopt new methodologies for data collection and measurement.

6. Identify and Leverage Additional Funding Opportunities

There are a variety of funding programs that could potentially fund TDM activities and/or leverage TDM activities, such as the Sacramento Transportation Authority’s TOD set-aside, SMAQMD’s Infill Streamlining Program, Cap-and-Trade programs, the state Active Transportation Program, and federal programs. New funding programs such as the Federal Transit Administration’s Mobility on Demand program also provide new opportunities for partnership and program funding. The following actions are recommended to capitalize on additional funding opportunities:

6a. Monitor funding opportunities related to TDM that could provide funding to SACOG, TMOs and other partners that might allow for more pilot programs, innovation opportunities, or expansion of cost-effective programs, that increase travel behavior change.

6b. Communicate these funding opportunities to partners and provide technical assistance in applying for funds and/or assist with connecting partners that might have shared interests and goals in applying for funds.

7. Plan and Implement Program Revisions

SACOG will continue to make progress on the actions above with the overarching goal being to move the TDM program to one that is more performance-based and outcomes-oriented. This final action step involves setting aside a small amount of funding to be allocated in the final year of the TCM requirement based on the findings from the research and actions outlined above, as well as to continue longer range planning for TDM efforts beyond FY 2017/2018.

7a. Put money aside as a contingency for additional resource needs as they become clearer for FY 2017/2018 based on the above actions.
7b. Building on above actions, plan for TDM program transition and revisions in funding allocations and funding programs beyond the TCM expiration in FY 2017/2018.
<table>
<thead>
<tr>
<th>Broad Action</th>
<th>Specific Action</th>
<th>Timeline July 1, 2016 - June 30, 2018</th>
<th>Proposed Two Year Total Budget</th>
<th>Proposed Fiscal Year 16/17</th>
<th>Estimated Fiscal Year 17/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Improve Integrated Traveler Information</td>
<td>1a. In the short term, make low-cost updates and improvements the traveler information available on the sacregion511 website.</td>
<td>July-December 2016</td>
<td>$15,000</td>
<td>$15,000</td>
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<td>1b. Research in more detail the role that MPOs and the private sector have played in developing or supporting integrated website and mobile information on available transportation options and real-time travel, such as enhancing their 511 websites or supporting through partnerships, data and/or funding the development of integrated websites and mobile apps. This will also be informed by Action 5 work on performance measurement.</td>
<td>December 2016 - December 2017</td>
<td>$20,000</td>
<td>$20,000</td>
<td>-</td>
</tr>
<tr>
<td>2. Rethink and Strengthen Marketing and Outreach to Encourage Mode Shifts and Behavior Change</td>
<td>2a. Continue funding of existing TMO employer- and residential-based services while continuing to work with contracted TMOs to strengthen performance measurement practices.</td>
<td>July 2016 - June 2018</td>
<td>$659,190</td>
<td>$329,595</td>
<td>$329,595</td>
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<td>2b. Implement approved Tier II FY 16/17 projects.</td>
<td>July 2016 - June 2017</td>
<td>$80,000</td>
<td>$80,000</td>
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<td>2c. Implement Transit Station Activation events for Golden 1 Center through existing contract.</td>
<td>July 2016 - January 2017</td>
<td>$125,000</td>
<td>$125,000</td>
<td>-</td>
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<td>2d. Implement transit-focused fall campaign for FY 16/17.</td>
<td>July 2016 - November 2016</td>
<td>$50,000</td>
<td>$50,000</td>
<td>-</td>
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<td>2e. Create a regional marketing and advertising strategy to leverage resources and ensure consistent branding for promoting transportation options in the region.</td>
<td>January 2017 - June 2017</td>
<td>$50,000</td>
<td>$50,000</td>
<td>-</td>
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<td>2f. Continue May is Bike Month (MIBM) but assess how to evolve over time into a program that is more focused on VMT reductions and promotion of bicycling as an auto trip-replacement option.</td>
<td>Months 6-24</td>
<td>$430,000</td>
<td>$215,000</td>
<td>$215,000</td>
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<td>2g. Create a new TDM Innovations Funding program that would be a competitive pot of $450,000 for grants to be awarded at the beginning of FY 2017/18, the final year of guaranteed funding. The competitive program would replace the TDM Tier II Program and be open to all applicants interested in piloting/supporting more innovative and cost-effective TDM strategies that promote behavior change.</td>
<td>January 2017 - June 2018</td>
<td>$450,000</td>
<td>-</td>
<td>$450,000</td>
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<tr>
<td>3. Strengthen Incentives/Disincentives for Modal Choices</td>
<td>3a. Maintain existing vanpool subsidy program while examining other options.</td>
<td>July 2016 - June 2017</td>
<td>$60,000</td>
<td>$30,000</td>
<td>$30,000</td>
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<td>3b. Research the specific structures and accounting/payment systems of agencies with Emergency Ride Home (ERH) programs offering options beyond car rentals and taxis (such as Uber/Lyft rides and rides from coworkers), and reimbursements instead of advance vouchers.</td>
<td>November 2016 - February 2018</td>
<td>$10,000</td>
<td>$10,000</td>
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<td>3c. Assess the costs vs. financial returns of reporting vanpool trips to the National Transit Database. Assess the financial feasibility and benefits of revising the monthly vanpool subsidy program to extend beyond six months.</td>
<td>November 2016 - October 2017</td>
<td>$10,000</td>
<td>$10,000</td>
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<td>3d. Through Census information and SACOG tools, identify areas where travelers have transit, carpool, vanpool, bike and walk options and would be prime areas for targeted marketing and incentive efforts.</td>
<td>December 2016 - October 2017</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
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<td>3e. Build on prior SACOG research into parking pricing by working with local jurisdictions or employers interested in piloting parking pricing initiatives. These pilot projects could be funded through the expanded TDM Tier II funding program.</td>
<td>December 2016 - July 2017</td>
<td>$10,000</td>
<td>$5,000</td>
<td>$5,000</td>
</tr>
<tr>
<td>Broad Action</td>
<td>Specific Action</td>
<td>Timeline</td>
<td>Proposed Two Year Total Budget</td>
<td>Proposed Fiscal Year 16/17</td>
<td>Estimated Fiscal Year 17/18</td>
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<tr>
<td>4. Continue to improve Complementary Multimodal Transportation &amp; Land Use Planning Support</td>
<td>4a. Work with member cities and counties' elected officials, executives, planning and public works staff, in concert with broad TDM partners, on more coordinated efforts to plan for, deliver, implement and promote TDM projects and programs that help implement and achieve the outcomes of the MTP/SCS.</td>
<td>November 2016 - June 2018</td>
<td>$380,000</td>
<td>$200,000</td>
<td>$180,000</td>
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<td>4b. Work with local jurisdictions and the Office of Planning and Research on opportunities to support the implementation, monitoring and enforcement of Transportation Management Plans and EIR TDM mitigation measures.</td>
<td>December 2016 - June 2017</td>
<td>$15,000</td>
<td>$15,000</td>
<td>-</td>
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<td>4c. Continue to encourage broader participation in the TDM Task Force to expand knowledge-sharing and collaborative opportunities for TDM efforts between sectors and partners.</td>
<td>July 2016 - June 2018</td>
<td>$25,000</td>
<td>$12,000</td>
<td>$13,000</td>
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<td>4d. Explore with SACOG staff and the ITS Partnership ways to integrate TDM into the Local and Regional Intelligent Transportation System (ITS) Master Plan and Architecture Updates to be launched by SACOG in FY 2016/17.</td>
<td>September 2016 - December 2016</td>
<td>$15,000</td>
<td>$15,000</td>
<td>-</td>
</tr>
<tr>
<td>5. Develop, Test and Implement TDM Performance Measures</td>
<td>5a. Continue to fund Commuter Club and May is Bike Month websites while examining opportunities where other technologies may offer more cost-effective reporting and engagement features.</td>
<td>July 2016 - June 2018</td>
<td>$230,000</td>
<td>$115,000</td>
<td>$115,000</td>
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<td>5b. Conduct project to assess new technologies and methodologies for data collection, and develop recommendations for more systematic measurement/evaluation of TDM programs and strategies.</td>
<td>September 2016 - September 2017</td>
<td>$138,000</td>
<td>$50,000</td>
<td>$88,000</td>
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<td>5c. Incorporate findings on how to institutionalize a more performance-driven measurement system into TDM program work plans, funding guidelines, and contracts. This could include how to make revisions to Commuter Club, 511 and May is Bike Month websites or adopt new methodologies for data collection and measurement.</td>
<td>September 2016 - September 2017</td>
<td>$20,000</td>
<td>$12,000</td>
<td>$8,000</td>
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<td>6. Identify and Additional Leverage Opportunities</td>
<td>6a. Monitor funding opportunities related to TDM that could provide funding to SACOG, TMOs and other partners that might allow for more pilot programs, innovation opportunities, or expansion of cost-effective programs, that increase travel behavior change.</td>
<td>July 2016 - June 2018</td>
<td>$30,000</td>
<td>$15,000</td>
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<td>6b. Communicate these funding opportunities these funding opportunities to partners and provide technical assistance in applying for funds and/or assist with connecting partners that might have shared interests and goals in applying for funds.</td>
<td>July 2016 - June 2018</td>
<td>$10,000</td>
<td>$5,000</td>
<td>$5,000</td>
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<tr>
<td>7. Plan and Implement Program Revisions</td>
<td>7a. Put money aside as contingency for additional resource needs as they become clearer for FY 2017/18 based on above actions.</td>
<td>January 2017 - June 2018</td>
<td>$151,400</td>
<td>-</td>
<td>$151,400</td>
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<td></td>
<td>7b. Building on above actions, plan for TDM program transition and revisions in funding allocations beyond TCM expiration in FY 17/18.</td>
<td>July 2017 - June 2018</td>
<td>$35,000</td>
<td>$10,000</td>
<td>$25,000</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>3,038,590</strong></td>
<td><strong>1,398,595</strong></td>
<td><strong>1,639,995</strong></td>
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</tbody>
</table>