DRAFT SACOG TDM STRATEGIC PLAN

April 12, 2016

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.

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	Marysville
Citrus Heights	Placerville
Colfax	Rancho Cordova
Davis	Rocklin
Elk Grove	Roseville
Folsom	Sacramento
Galt	West Sacramento
Isleton	Wheatland
Lincoln	Winters
Live Oak	Woodland
Loomis	Yuba City

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 5 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 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 and a 39 percent population increase in those ages 50+.

2012			203	36	
Age	РОР	POP%	Age	РОР	POP%
< 20	633,190	28%	< 20	759,257	25%
20-24	174,746	8%	20-24	234,651	8%
25-34	285,808	13%	25-34	344,848	11%
35-49	426,515	19%	35-49	541,058	18%
50-64	464,748	20%	50-64	554,866	18%
65+	283,131	12%	65+	644,092	21%
Total	2,268,138	100%	Total	3,078,772	100%

Table 1.1 MTP/SCS Population and Age Comparison

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





Age in		
2012	2036	
(BY of MTP/SCS)	(Horizon Year of MTP/SCS)	
48 to 66 Years	72 to 90 Years	
28 to 47 Years	52 to 71 Years	
8 to 30 Years	32 to 54 Years	
	Age in (BY of MTP/SCS) 48 to 66 Years 28 to 47 Years 8 to 30 Years	

Changes in federal 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 s 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 comparing 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-profits.

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 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 <u>Parking Cash-Out Program</u>, 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.
- 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 sign ups 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 outreach partners, SACOG manages and coordinates broad aspects of the campaign, including:

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

Table 2.1 TMA/TMO Geographic Areas



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The TMAs/TMAs 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 residentially-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 Watt Avenue 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
- 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.

Table 2.1 Current TMA/TMO Activities

			Has MOU with SACOG				No MOU with SACOG								
CATEGORY	Program/Activity	SACOG	50 Corridor TMA	McClellan Park TMA	North Natomas TMA	Point West TMA	Power Inn Alliance	Sac TMA	South Natomas TMA	Yolo TMA	Yuba Sutter TMA	City of Elk Grove	City of Roseville	РСТРА	EDCTC
Bike/Pedestrian	Programs & Projects			-			-		•						
May is Bike Mon	th: Website, Events and Materials (not staff time)	x	х	х	х	x	х	x	x	х	х	х	х	х	х
Bike Subsidies				х					х	х			х	x	
Walk Subsidies				x					х						
Bike/Ped Project	s (bike parking, lanes and trails) - Funding that goes beyond	v			v							v	v	~	v
jurisdiction/regi	onal funding	Â			^				^			Ŷ	^		^
Walk/Bike to Sch	nool Education (in schools)		х		х							х	х	x	х
Bike Education C	ourses & Programs	х	х	х	х	x	х	x	х	х	х		х	х	х
Electric Vehicle			T				1			T	r		r		
High Efficiency A	uto Subsidies (EV and Hybrids)								x						
Fund EV Charging	g Infrastructure			х		<u> </u>			x					x	
Employer-Based	Outreach	r	T			T		1	-	10.	r		r		
Employer-Based	Marketing (staff time and materials spent on promoting														
encouraging em	es, promoting regional programs/services/campaigns,	x	х	x	x	x	×	x	x	x	x	x	х	х	x
programs/servic	es/campaigns)														
Education/Traini	ing for Employee Transportation Coordinators (AKA Commute														1
Coordinators)			x	x		×	×	x	x				х	x	
Expanded Transit							-					-			
Shuttle Service				x	x										
Marketing			1								-				
Prize Drawings		х							х	х	х			\square	<u> </u>
Regional TDM pr	ogram implementation (staff time and materials on convening														
meetings, manag	ing contracts, procuring materials, coordinating	×													
events/campaign	d Marketing at regional level)													+	+
nrograms/servic	es/campaigns_encouraging alternative modes_promoting local	×	×	×	×		×	×		×		×	×	×	×
programs/servic	es/campaigns)	~	Â	, n			~	^		Â		~	~	Â	~
October is Smart	Commute Month: Website. Events & Materials (not staff time)	x	x	x		х	х	х	х	х	х	х	х	x	x
Planning											•				
Planning and Stu	idies (Transportation Control Measures parking study, TDM	v			~		v						v		
research, Multin	nodal planning)	^			<u>^</u>		^						^		
Regional Rideshare Programs															
Commuter Club [Database/website (vendor contracts that include enhancing and														
maintaining Ride	ematching Tool, database with admin features, and database	×	x						×						
F11 Call Contor (website is funded congrately)	×	-											+	+
SII Call Celler (website is funded separately)	~	-			-								+	
General regional	marketing materials (items branded with 511 and commuter	x													
Emergency Ride I	Home Program (not admin time, just costs of paving for rides)		×	x	x	x	x	x	x	x	x			×	
Corpool Subsido				v					v	v					-
Surrey and compile data to before understand areas of encortunity and pools for															
local area	The data to better understand areas of opportunity and needs for	×	х	х	x		х						х		
Transit Pricing/Fare Incentive															
Transit Subsidie	S			x					х	х					
Vanpool															
Vanpool Incentiv	Vanpool Incentive Program X V Vanpool Incentive Program Vanpool Incent														
Vanpool Subsidi	es		х	х					x	х					

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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, 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 Department of Motor Vehicles 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, 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 Department of Motor Vehicles 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 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. McClellan Park TMA and Power Inn Alliance are PBIDs that have MOUs with SACOG to promote alternative modes of transportation. 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 changing 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

¹ <u>http://www.prnewswire.com/news-releases/stop-electronic-hitchhiking-your-safe-ride-home-has-arrived-</u> 300213618.html

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. Upon submission of an application, El Dorado County Transportation Commission's free SchoolPool program provides initial and updated ride match lists to parents for their children's school(s), so parents can make contact with others to join an existing carpool or form their own. 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.

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 has also begun CarmaZoom in a few heavy commute corridors (currently 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 is about \$5.50/seat). Carma covers the gas, parking, insurance, etc. for the vehicles.
- Through an extensive app system, Ride runs an algorithm that matches passengers and drivers. Ride suggests passengers that match a driver's route, and calculates the added time and reimbursement the driver would receive. Both passengers and drivers have the opportunity to accept or reject matches. Once matches are accepted, Ride creates an efficient route based on passenger locations and traffic information, alerts drivers to new matches, and processes transactions. The pricing structure for each Ride is calculated by distance to work, average fuel cost plus, when applicable, any parking or necessary tolls. Each week, Ride automatically takes care of financial transactions, transferring money from passenger to driver using a secure online payment system. Drivers receive regular invoicing with a rolling calculation of annual savings, and 24/7 access to support. The Ride app allows the carpool group to communicate concerning any issues, passengers to track where their ride is, and access a Ride concierge in case of the need for a Guaranteed Ride Home. For partnering companies, Ride has a number of cars available at their work location for Ride users to take and return.
- Similar to Carma Carpooling and Ride, 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 \$2.00 and \$10.00, 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 6 trips or more in a week meeting program requirements receive \$1.00 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 now accounts for more than half the TNC rides in that city. Lyft Line also operates 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.
- **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)²

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 <u>GoPass[™] mobile ticketing application</u>. 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

² Source: Colorado Business Review, Volume 81, Number 2, 2015, p. 12

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.³

- 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 <u>http://martaguide.com/category/uber/</u>.
- 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 will include downtown Kansas City, Hospital Hill, Crown Center, portions of Midtown, University of Kansas Medical Center and the Historic 18th and Vine Jazz district. Using the Bridj mobile app, riders can request on-demand shuttle service that they can access via pop-up shuttle stations. The peak hour service will be available from 6 to 10 a.m. and 3 to 7 p.m, Monday through Friday. The introductory fare will be \$1.50, the same as local bus fare, with the first 10 rides free by using a promo code. 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.

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:

³ http://www.dart.org/news/news.asp?ID=1179

- 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 \$13 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 for those not requiring a wheelchair lift. 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. MBTA asserts that shifting a portion of customers to ride-hailing services and taxis will be more economical, as each Ride trip costs an average of \$31 (\$46 including both fixed and variable costs) while each taxi or TNC trip would cost up to \$13.00. MBTA hopes that the move may create a market for more accessible vehicles. The MBTA also sought proposals and received four to create a centralized call center for the vendors that provide regular Ride service.
- 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 engages private drivers using their own vehicles to provide transportation for seniors and those with disabilities. However, driver recruitment is geared to health professionals and students (EMT's, RN's, CNA's, nursing students, and pre-meds) who must meet requirements for driving record and vehicle condition, and obtain training and experience working with the elder population to provide door-through-door service and accompaniment. Lift Hero also provides a "concierge service" that coordinates with third party appbased transportation services on an individual's behalf. The concierge books the ride through an app, whether immediate, pre-scheduled, or recurring, and reschedules the ride with another driver if the first cancels. The rider receives reminder calls and texts, and their credit card is charged at the end of the ride. Lift Hero also monitors the ride through GPS. Lift Hero's coordination fee is \$4.00 plus 2.9% of the cost of the ride, with a total cost estimate provided at the time of booking. Lift Hero hopes to expand to other areas over time.
- 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-bond trip at no additional cost. Volunteer drivers receive monthly driver credits based on driving frequency, and riders receive the IRS-allowed \$125.00 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 oneway 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 bases running 585 licensed vans in the city, with more likely operating illegally. Although they have frequent departures and reliable schedules, the service lacks maps, posted timetables or web access. In New York City, 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 \$2.00.⁴
- 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.

⁴ NY Daily News article, 9/22/15: <u>http://www.nydailynews.com/new-york/plan-steer-nyc-dollar-vans-path-officials-</u> <u>article-1.2408134</u>

- **Bridj** is a pop-up bus service that can accommodate up to 14 riders. Rides are available during commuting hours in Boston, and more broadly in Washington, DC and Kansas City. Vehicles travel around pre-determined service zones, with dynamic pick-up and drop-off spots based on ride reservations. Per the Bridj website, cost falls in the \$2 to \$6 price point.
- 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 \$5.00; in New York, it runs from 6:00 am to midnight, costing \$5 before 9 pm, and \$7.95 after 9:00, plus tax. Usage may be paid for using various commuter benefits.
- Ford is offering an on-demand shuttle service 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 **Dynamic Shuttles** are powered by an evolving algorithm that collects 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

⁵ <u>http://www.mbta.com/schedules_and_maps/private_bus/</u>

models. Some platforms require membership fees to access their vehicle fleet while others are pay-asyou go. The following describes a variety of existing and emerging shared mobility options.

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/
- 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 pubic on-campus public transportation, unlimited transit seven days a week with OmniRide, and discounted, free or rebated parking for carpool participants.

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 discount rates with a \$19
 monthly membership.

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 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.
- 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.

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** 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. 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, Smart Trips 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.

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 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, and just announced it is looking into self-driving bicycles. 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 early 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."⁶

Kelley Blue Book analyst Akshay Anand said in a statement, "GM is creating an ecosystem around ridesharing. While ride-sharing is likely to be a supplement and not a replacement to car ownership, it's 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." ⁷

- In February 2016, Uber announced that it will open a new Advanced Technologies Center in Pittsburgh, where its autonomous vehicle research operations are headquartered. The company will build temporary roadways to test self-driving cars as part of its expansion, as well as housing and park space. Uber has hired 50 engineering researchers from Carnegie Mellon University.
- 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.

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 <u>WEPods</u> (Netherlands), <u>CityMobil2</u> (Greece and EU), <u>One-North</u> (Singapore), <u>Sentosa</u> (Singapore), <u>EasyMile</u>, (USA, California), <u>Google self-driving pods</u> (United States, California and Texas), <u>Milton Keynes driverless pods</u>, (United Kingdom), <u>Ultrapods</u> (United Kingdom), <u>Bestmile</u> (Switzerland), <u>DeLijn</u>, (Belgium), <u>RobotTaxi</u> (Japan), <u>Baidu</u> (China), <u>Yutong Bus</u> (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. Already new ventures like Commutr,

⁶ http://media.gm.com/media/us/en/gm/home.detail.html/content/Pages/news/us/en/2016/Jan/0104-lyft.html

⁷ http://www.latimes.com/business/autos/la-fi-hy-lyft-gm-rentals-20160315-story.html

⁸ http://www.driverless-future.com/?p=881

Scootaway, and Las Vegas' SHIFT have closed. Uber and Lyft are rapidly expanding their markets and services. 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, RideScout acquired GlobeSherpa, and GM bought Sidecar, which asserted its ridesharing services could not compete with Uber's capital. Rumors and predictions abound concerning the timing, types, and uses of autonomous vehicles.

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.

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. A 2014 survey by UrbanTrans and the Center for Urban Transportation Research (CUTR) in coordination with the Association of Commuter Transportation (ACT), discovered the following about TMAs:

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.



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Generally, there are four types of TDM program structures:

- Combination MPO/State-Centralized and Contracted
- MPO-Centralized and contracted
- MPO/State-Centralized
- Contracted⁹

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. This structure is used throughout many areas of the country, including Atlanta, Houston, Washington DC, and Denver.

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.

Ormanizationa	Organizational Madal	Partners with	Uses
Organizations	Organizational Model		Contractors
SACOG	MPO-Centralized and contracted	res	INO
	Combination of State-		
Atlanta Regional	Centralized/ Contracted & MPO-		
Commission	Centralized/ Contracted	Yes	Yes
Birmingham	MPO-Centralized	No	Yes
Houston	MPO-Centralized and contracted	Yes	Yes
Metropolitan Washington			
COG	MPO-Centralized and contracted	Yes	Yes
MTC/Bay Area AQMD	Contracted (?)	No (?)	Yes
Denver	MPO-Centralized and contracted	Yes	Yes
Twin Cities	MPO-Centralized and contracted	Yes	?
SANDAG	MPO Centralized	No	No

Table 4.1. Sample Regional TDM Organizational Structures

⁹ Insert Source
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 Georgia's state Department of Transportation (GDOT). ARC's Mobility Services Division administers the Georgia Commute Options program in the Atlanta region, including a regional Guaranteed Ride Home program, and provides technical and financial management for Employer Service Organizations (ESOs) who work with area employers to help establish and operate commute options programs for their employees.

There are currently multiple contracted organizations working on TDM in the Atlanta region, including TMAs, The Clean Air Campaign, the Center for Transportation and the Environment, 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.

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.

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. 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. It is reducing the amount it spends to contract for services to promote its 511 Rideshare program. The agency has decided to reduce its mass marketing of the program and is going to continue to work directly with employer sites to encourage them to offer incentives to employees for using alternative modes. They have also launched a partnership with Lyft in the hopes that they will eventually be able to eliminate the need to provide ridematching services. 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 4.2 provides a summary of different programs offered by major regions in the U.S., and Table 4.3 summarizes major incentives provided by different TDM programs.

Table 4.2: Sample Regional TDM Program and Service Offerings

Program/Service	Sacramento	Atlanta	Washington	Houston	Birmingham	San	Denver	Twin Cities	SANDAG
Ridesharing Services	Jacramento	Atlanta	DC	nouscon	Diriningnam	Trancisco	Denver	Citles	JANDAG
Online Ridematching	x	x	x	x	x	x	x	х	x
GRH	x	x	x	x	x	x	x	x	x
Real-Time/Dynamic (incl. pilots)				x		X	~	~	
SchoolPool			х				x		
Vanpool Services	х	х	X	x	X	х	x	х	х
Employer Outreach									
Meeting and TDs	Х	х	X	х	x	х	х	Х	х
Leadership/Recognition Awards		х	X	х	х		х	Х	х
Traveler Information									
511 Rideshare Information	Х					Х			х
Centralized call center or #	Х		X	х	X				х
Regional Trip Planner			x			Х	х		
Bike Trip Planner			X			Х	х		
Commute Calculator		Х	X	х	Х	Х			х
Alt. Work Methods Support									
Implementation Assistance		x	x	x			х	х	х
Promotions and Incentives									
Mass Marketing/Advertising			x	х	Х	х	х		х
Incentives	х	x	x	х	Х	х		х	х
Parking Pricing Strategies									
Demand-Response						х			
Mobile App/Phone				х					

Table 4.3 Incentives offered	l by m	najor	regions	in	US
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Region	Program & Amount of Incentive
Sacramento	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
Atlanta	Cash for Commuters- \$3/day for commuters switching to alternative modes (over a 90-day period, up to \$100)
	Carpool Rewards- \$40-\$60 gas cards for carpools that log 15 carpool days with three or more riders during a month (carpools acan earn up to 12 monthly gas cards within a three-year period)
	Commuter Prizes- \$25 gift cards through drawings for logging alternative modes
Birmingham	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
Washington DC	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
San Francisco	Rideshare Rewards- New carpoolers get up to \$100 in gas or grovery gift cards; 50 percent of vanpool fee covered for first 3 months of participation
	Spin the Wheel- Randomized drawings for participants who log commute information online
Denver	TMA-specific
Twin Cities	Bike2Benefits- Eligible for grand prize if log one bicyclicng trip per week for an eight-week period
	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 & registration in MTS database)
San Bernardino	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
Las Vegas	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
SANDAG	Vanpool Investment Program- \$400/month to vanpools

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 Review¹⁰,

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.

¹⁰ Need citation

Table 5.1 Types of P	erformance Measures	for TDM Programs
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Performance Measure	Purpose	Example
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.¹¹ Table 5.2 displays these findings.

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

Table 5.2. Impact of Selected Employer-Based TDM Strategies

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)

6 Donald Shoup (1997), "Evaluating the Effects of California's Parking Cash-out Law: Eight Case Studies," Transport Policy, Vol. 4, No. 4, 1997, pp. 201-216. http://www.commuterchallenge.org (accessed November 2, 2007)

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, vanpoooling, 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
 - o Pollution
 - o Congestion
 - Excess fuel consumption
 - o Global climate change
 - Health and safety
 - o 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					
TDM Strategy	Description	Data Collection Method	Evaluation Methodology Variables		
Maryland and Virginia Telework	Assistance to commuters and employers to encourage in-home and telecenter-based work programs	Assisted Employer Telework Survey, State of Commute Survey (all commuters)	Number of total regional teleworkers, daily trips, telework placement rate, vehicle trip reduction factors, average trip distance, emission factors		
Guaranteed Ride Home (GRH)	Free rides home in the event of a personal emergency for commuters using alternative commute modes	GRH Survey	Number of total GRH registrants, placement rates, vehicle trip reduction factors, average trip distance, emission factors		
Employer Outreach	Regional outreach to encourage employers to implement commuter assistance strategies	ACT! Contact Database recorded by level of services employers offer	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		

Transport	Table 5.4 Transportation Emission Reduction Measures (TERM) in Washington, DC					
TDM Strategy	Description	Data Collection Method	Evaluation Methodology Variables			
Mass Marketing	Comprehensive media campaign to inform commuters of services available from Commuter Connections	Regional commuter survey (reason for mode change). Contacts with Commuter Connections. State of Commute Survey.	Number of respondents to marketing ads, number of Commuter Connection applicants during ads, vehicle trip reduction factors, interaction with other programs, emission factors			
Info Express Kiosks	Self-service kiosks with transit schedules, maps, and ridematching capability	State of Commute Survey (use of kiosks)	Number of total commuters, percent of commuters that used kiosks, temporary vs, permanent placements, vehicle trip reduction factors, average trip distance, emission factors			
Commuter Operations Center	Marketing, outreach, and ridematching services to increase commuter awareness of alternative commute modes	Commuter Connections Placement Survey, interviews	Total number of commuters, placement rates from interviews, vehicle trip reduction factors, average trip distance, emission factors			
Bike-to-Work	Administered through employer outreach program to encourage bicycling to work	Bike-to-Work Day survey	Total number of riders, percent of biking before event, percent increase in riding days, average bike trip distance, emission factors			

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 tripmaking 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 CO₂ 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

The Atlanta Regional Commission (ARC) administers the region's TDM program. 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.¹² 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.

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.¹³

In addition, in December 2012, Georgia Governor Nathan Deal issued an Executive Order that initiated the CommuteSmart program, which requires all state agencies to provide flexible work options.

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

¹² ICF International for Atlanta Regional Commission, "Regional TDM Inventory Baseline Report", December 2012.

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) contracts 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 is statewide, CTE's efforts are largely focused within the Atlanta non-attainment area.

In 2001, CTE developed a Performance Measures Continuum to track TMD program progress on the behavior change spectrum. 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, in conversations with ARC staff, the agency stated it is not currently using the measurement system described because the program is being transitioned from state control by GDOT to management by ARC.

	Table 5.5 ARC Performance Measures Continuum, 2013				
Performance Category	Performance Measure	Population of Interest	Information Sources/Tools		
Awareness	 Media Messages Problems/Issues/Solutions Commute Alternatives Programs Offered Assistance Outlets 	Commuters and Employers	 Regional Awareness and Attitudes Survey Regional Business Leader Survey Employer Partner Employee Travel Survey Target Incentive Program Surveys 		
Attitudes	 Problems/Issues/Solutions SOV Use Commute Alternatives Programs Offered Assistance Outlets 	Commuters and Employers and Program Users	 Regional Awareness and Attitudes Survey Regional Business Leader Survey Target Incentive Program Surveys 		
Participation	 Commuter Contacts (e.g., web site hits, transportation fair contacts, rideshare applications, GRH registration) Employer Contacts (e.g., employer calls, employers assisted/employer partners, employers with TDM Programs) 	Commuters and Employers and Program Users	 Regional Awareness and Attitudes Survey Regional Business Leader Survey Regional Rideshare Database Employer Partner Employee Travel Survey Target Incentive Program Surveys Partner Performance Measure Reports 		
Satisfaction	 Satisfaction characteristics (e.g., time to obtain assistance, program convenience, accuracy and quality of information, usefulness of information) 	Commuters and Employers and Program Users	 Regional Business Leader Survey Regional Rideshare Database Placement Survey Transit Pass User Survey Vanpool Rider Survey Target Incentive Program Surveys 		
Utilization	 Program User Mode Split and Alternative Mode Placements Employer Partner Employee Mode Split and Alternative Mode Placement 	Program Users	 Employer Partner Employee Travel Survey Regional Rideshare Database Placement Survey Transit Pass User Survey Vanpool Rider Survey Target Incentive Program Surveys 		

Performance Category	Performance Measure	Population of Interest	Information Sources/Tools
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 TDM Program Annual VMT Reduction Comparison						
Region/MPO	VMT Reduction (millions)	Total VMT ^c (millions)	% VMT Reduced			
Washington, DC	643	43,000	1.52%			
Atlanta, GA	340	37,400	0.91%			
San Diego, CA	136	26,500	0.51%			
Twin Cities Region, MN	66	17,400	0.38%			
South Florida, FL	258	32,600	0.79%			
Houston-Galveston, TX	118	38,700	0.30%			
Birmingham, AL	14	8,000	0.18%			

a. Potential annual VMT reduction estimate range

b. 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, INTE-GRAL 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 <u>doing</u>: 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 <u>impact</u> 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 handson, 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 benefiting 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.

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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 depends strongly on not only how effectively the program is implemented, as well as whether or not there are employer mandates, but also 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."¹⁴ 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

¹⁴ Footnote

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. Not surprisingly, the largest group fall within the Sacramento TMA, which includes downtown Sacramento. However, this represents only about 2% of the total employees in the region, based on SACOG's regional employment figures.

Table 6.1					
Commuter Club Registration Data					
TMA	Number of People in Commuter Club Database	% Total			
50 Corridor TMA	2,768	12.2%			
City of Elk Grove	433	1.9%			
City of Roseville	1,495	6.6%			
EDCTC	319	1.4%			
McClellan Park TMA	332	1.5%			
North Natomas TMA	453	2.0%			
Northeast Sacramento	437	1.9%			
РСТРА	626	2.8%			
Point West	662	2.9%			
Power Inn Alliance	341	1.5%			
Sacramento TMA	11,055	48.6%			
South Natomas TMA	939	4.1%			
Yolo TMA	2,599	11.4%			
Yuba-Sutter TMA	280	1.2%			
Total	22,739	100%			

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		
Year First Registered	Number of New Registrants	
2011	3,818	
2012	1,962	
2013	2,608	
2014	7,599	
2015	6,534	

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		
Mode	Number of Registrants	% Total
Drive Alone	10,682	47%
Bicycle	4,184	18%
Carpool	2,853	13%
Transit Bus	2,295	10%
Light Rail	1,207	5%
Vanpool	607	3%
Walk	398	2%
Telecommute	213	1%
Amtrak	186	1%
Motorcycle/Scooter	106	0%
NA	8	0%
Total	22,739	100%

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 6.4 Emergency Ride Home Total Miles Calendar Year 2015	
TMA	Miles
50 Corridor TMA	1,368
City of Roseville	155
McClellan Park TMA	26
North Natomas TMA	259
Power Inn Alliance	21
Sacramento TMA	9,758
South Natomas TMA	58
Yolo TMA	78
Yuba-Sutter TMA	93
Total	11,816

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.¹⁵ 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 costeffectiveness 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, costeffectiveness 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.¹⁶ 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 Californiaapproved methodology for cost-effectiveness determination using Carl Moyer Program guidelines.¹⁷

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 etc.), 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.

¹⁵ Cambridge Systematics for American Association of State Highway and Transportation Officials, "Evaluate the Interactions between Transportation-Related Particulate Matter, Ozone, Air Toxics, Climate Change, and Other Air-Pollutant Control Strategies," NCHR Report 25-25, Task 59, July 2010.

¹⁶ CPI data is available at www.bls.gov/cpi/tables.htm.

¹⁷ http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm



Table 6.5TDM Strategy Cost-Effectiveness for Criteria Pollutants

For GHG emissions, it is also important to note that land-use strategies appear to be the most costeffective if only planning and administration costs are considered. According to the Moving Cooler report¹⁸, 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.

¹⁸ Moving Cooler: An Analysis of Transportation Strategies to Reducing Greenhouse Gas Emissions, available at http://www.movingcooler.info.



Table 6.6TDM Strategy Cost-Effectiveness for GHG Emissions

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 work in these areas.

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" 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.

Table 6.7			
	TDM Program Classification and Costs		
1 DM Category	IDM Projects – NCHKP	1DM Projects - Sacramento	
Employer-Based	Employer trip reduction	Education and training to Employee Transportation	
Programs	programs, employer outreach,	Coordinators; employer-based marketing (e.g.	
	employer-promoted bicycling	promoting all non-drive alone modes of transportation,	
	and ridesharing programs in the	promoting regional programs/services/campaigns,	
	context of trip reduction	encouraging employers to offer incentives, promoting	
	program, employer educational	local programs/services/campaigns)	
	programs. Does not include		
	telework/flexible schedules.	Total Funding: \$1,454,407	
Marketing/	"Other/Miscellaneous TDM" -	Promoting local TDM programs/services/campaigns to	
Promotion/	includes marketing, as well as	general public; coordinating events and campaigns	
Incentives	general educational and outreach	(e.g. October is Smart Commute Month); managing	
	strategies	website, events and marketing materials; conducting	
		prize drawings as incentives to commuters.	
		Total Funding: \$540,692	
Bicycle/Pedestrian	Bikeways, new	Bike and pedestrian projects such as bike parking	
Programs/Projects	bicycle/pedestrian facilities (e.g.,	facilities, lanes and trails; "May is Bike Month"	
	paths, lockers etc), bike	campaign including website management, events and	
	subsidies, bikeshare programs,	materials; bike and walk subsidies; Walk/Bike to	
	bike safety education.	School Education; Bike Education Courses & Program.	
		Total Funding: \$1,044,563	
Expanded Transit	Shuttle feeder service; increased	Shuttle services supported by North Natomas and	
Service	service frequency	McClellan Park TMAs.	
		Total Funding: \$469,609	
Ridesharing	Area-wide ride matching	Commuter Club Database/website, maintaining	
Programs	services, commuter services	Ridematching Tool, 511 Call Center; general regional	
	programs	rideshare program marketing; Emergency Ride Home	
		Program and carpool subsidies offered by TMOs.	
		Total Funding: \$243,900	
Land Use Planning	Land-use planning	Land-use and multi-modal planning and studies.	
		Total Funding: \$243,000	
Vanpool Program	Vanpool subsidies	Vanpool subsidies and Vanpool Incentive Program.	
		Total Funding: \$52,120	
Transit Pricing/	Transit fare subsidies	Transit Subsidies	
Fare Incentives		Total Funding: \$38,500	

Figure 6.1 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.

Table 6.8 Median Cost-Effectiveness of TDM Strategies (NCHRP, 2002) and Sacramento TDM Funding					
	Sacramento Cost Effectiveness, \$/ton Region Total				
TDM Category	Funding	НС	NOx	PM _{2.5} *	CO2**
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, NOx, PM_{2.5} (if available), and CO₂ 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 6.9 Estimated Emission Reductions from Sacramento TDM Program (tons/year)				
TDM Category	HC	NOx	PM _{2.5}	CO ₂
Land-Use	N/A	N/A	N/A	17,641
Employer-Based Programs	4.43	3.93	0.48	10,056
Bicycle/Pedestrian Projects and Programs	3.22	2.52	NA	7,583
Marketing (Other TDM)	3.00	3.36	NA	4,361
Ridesharing	0.66	0.73	0.03	2,213
Shuttles	0.49	0.53	0.02	160
Vanpool Incentive Program	0.22	0.28	0.01	473
Transit Pricing/Fare Incentives	0.0	0.05	NA	21
TOTAL TDM	12.1	11.4	0.5	42,509

As shown, it is estimated that the overall impact of Sacramento's TDM program is the annual reduction of approximately 8 tons for hydrocarbons, 11 tons for nitrogen oxides, 0.5 tons for fine particular matter, and nearly 25,000 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.

Vanpool Incer	Table 6.10 htive Program Emissic (tons/year)	ons Comparison
Pollutant	Data Approach	Cost-Effectiveness Approach
NOx	0.31	0.28
ROG	0.45	0.22
PM2.5	0.04	0.01
CO ₂	609	473

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 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:

- A. Activities: How much have SACOG and its partners done?
- B. Awareness: How knowledgeable is the target group of the rideshare services?
- C. Participation: How much is the target group using the services?
- D. Satisfaction: For those who tried the service, how satisfied were they?
- E. Willingness: How willing is the target audience to try the service and how willing are they to try carpooling or vanpooling?
- F. 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?
- G. Attitudes: How inclined is the target group to try alternative modes?
- H. 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.

Off 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 32,358.

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.

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.

etc).

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

\bigcirc	TMA Members Survey
0	CC Users Survey
Ĭ.	Roseville Survey
0	Miscellaneous (Surveys, Interviews,



Figure 6.1. Survey Results: Vanpool Incentive Program











Figure 6.3 Survey Results: 511 Website and Hotline










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"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

<u>What we heard</u>: 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.

<u>Recommendation</u>: 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

<u>What we heard:</u> 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.

¹⁹ Design thinking is ...

Recommendations:

- 1. Offer one regional site to host information geared to encouraging people to change to alternatives to driving alone.
- 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 \rightarrow Awareness \rightarrow Perception/Attitude \rightarrow Consideration/Willingness \rightarrow Trial/Participation \rightarrow Use/Customer \rightarrow Loyalty/Relationship \rightarrow Recommend

Emergency Ride Home

<u>What we heard</u>: 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:

- 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 commutes 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 emotional benefit 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.
- 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

<u>What we heard</u>: 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.

<u>CTAA Observations</u>: 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.

<u>Recommendation</u>: 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

<u>What we heard</u>: 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.

<u>Recommendation</u>: 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
- Telework Week (March)
- American Heart Association's National Walking Day

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 \rightarrow Awareness \rightarrow Perception/Attitude

\rightarrow Consideration/Willingness \rightarrow Trial/Participation \rightarrow Use/Customer \rightarrow Loyalty/Relationship \rightarrow 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."²² 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*²³ 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."

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", <u>citylab.com</u>, 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.

While some areas of the region do focus on residential areas (e.g., North Natomas TMA), we also 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."
- Work with real estate agencies, neighborhood associations, and apartment and condo concierges to share transportation information.
- Develop a regional rewards program for residential property owners, multi-family residences, and neighborhoods.

Self-Assessment

In addition to the information collected through the interview and workshop processes, SACOG staff and outreach partners are in the process of conducting evaluations of themselves and each other. This section will be provided once those evaluations are completed.

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.

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. 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 LyftLine) 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.

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 (i.e., 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:

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

Draft Strategies

- Update SACOG's rideshare database through coordination with TMA/TMO partners.
- 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 adhoc task forces or working groups for ongoing and opportunistic marketing and outreach efforts.
- 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.
- 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.
- 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.
- 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

- 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.
- 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.
- 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

- Strengthen internal coordination between SACOG staff teams working on TDM, Active Transportation, Transit, MTP/SCS Implementation, and Programming and Project Delivery.
- 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.
- Assess potential market segments for expanded TDM efforts, including seniors, youth, and young adults.
- 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 "triers" of alternative modes.
- 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.
- 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

- 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.
- 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.
- Incorporate performance-based planning, coordinated with regional performance measures, into SACOG's TDM decision-making, funding programs, and program management.
- 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.
- Provide funding support towards the Regional Household Travel Survey Project to ensure it addresses TDM considerations.
- 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

- Identify funding and grant opportunities from expanding the focus of the TDM Program beyond employers.
- 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.
- 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.
- Explore the potential benefits of any TMA/TMO sharing of "back-office" services, such as administrative support, bookkeeping/accounting, etc.
- Continue to explore the development of financial Incentives for more transit-oriented development (TOD), building on prior analytical work and examples from other areas.
- 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 setaside, SMAQMD's Infill Streamlining Program, Cap-and-Trade programs and the state Active Transportation Program, and federal programs.