

DEVELOPING A REGIONAL APPROACH TO TRANSPORTATION DEMAND MANAGEMENT AND NONMOTORIZED TRANSPORTATION: BEST PRACTICE CASE STUDIES

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14. ABSTRACT This report highlights four metropolitan planning organizations (MPOs) that embrace transportation demand management (TDM) and nonmotorized transportation in an ambitious, conscious, and holistic manner at both regional and local scales. These MPOs, which represent a diversity of sizes and geographic areas, can serve as models for other MPOs seeking to take a holistic approach to TDM and nonmotorized transportation to further advance their agencies' goals. The case studies in this report answer how and why regional scale approaches to TDM and nonmotorized transportation are embraced, and assesses how they contributed to meeting regional transportation goals.					
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Table of Contents

I.	Introduction.....	1
II.	Integrating Demand Management into the Regional Transportation Planning Process.....	4
III.	Research Methodology.....	6
IV.	Factors for Success in Developing an Integrated Approach to TDM.....	7
V.	Case Studies.....	12
	Denver Regional Council of Governments (Denver, CO).....	14
	Metropolitan Council of the Twin Cities (Minneapolis-St. Paul, MN)	24
	Pima Association of Governments (Tucson, AZ).....	33
	Sacramento Area Council of Governments (Sacramento, CA)	40
VI.	Conclusion	50
	Acronyms	51

I. Introduction

Transportation Demand Management (TDM) and nonmotorized transportation planning are broadly recognized as important components of surface transportation. This was recognized in the passage of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and reconfirmed in later reauthorizations of ISTEA, including Moving Ahead for Progress in the 21st Century (MAP-21) in 2012. These broad categories of transportation strategies and investments help combat congestion and provide viable alternatives to single-occupant vehicle (SOV) travel, including carpooling, walking, and bicycling. They provide travelers with access to a variety of modes to supplement or replace SOV travel. In addition to reducing congestion and expanding travel options, TDM and nonmotorized transportation are keys to improving air quality and contributing to community health through increased physical activity.

Historically, TDM has been defined in relatively narrow terms. Throughout the 1970s, 1980s, and 1990s, transportation agencies promoted strategies to reduce congestion during peak commuting times through ridesharing, vanpooling, flexible work schedules, and teleworking. These approaches to reducing SOV travel remain important components of TDM today, but they are joined by other strategies that provide an expanded set of choices for all travelers, not just peak-hour commuters, and consequently, expand the scale of these techniques and their impact on communities.

Today, TDM can encompass a broad set of strategies that distribute demand efficiently across all available modes, times, and routes throughout the regional transportation system. TDM strategies provide multiple attractive and reliable transportation options as alternatives to SOV travel that enable users to access work and non-work destinations in a flexible manner that is affordable, sustainable, and matches their preferred lifestyle. TDM often focuses on reducing or shifting demand for over-consumed transportation resources (e.g., highway capacity during peak periods) and on providing expanded opportunity for targeted groups with few existing travel options.

Transportation professionals are increasingly considering investments in TDM in a more integrated manner, as effective strategies to reduce congestion, curtail the effects of climate change, and improve livability. This is particularly the case in the current financial climate, where public sector financial resources are limited and uncertain, yet the problems of congestion and pollution persist or are worsening. TDM investments reduce congestion and shift trips from SOVs to other modes through projects that often cost significantly less than roadway or transit capital expansion projects. At the same time, TDM investments add transportation choices that improve the attractiveness and quality of life in communities, as places in which to live and work.

Despite the benefits that TDM and nonmotorized transportation provide, they have not typically been given the same emphasis at the regional level as highway and transit planning. Rather, TDM and nonmotorized transportation planning have often been left to city or county partners, or in some cases, pursued at the statewide level. TDM and nonmotorized travel are typically incorporated into regional transportation planning piecemeal, instead of systematically

at a regional scale as integrated components of the regional multimodal system. However, some Metropolitan Planning Organizations (MPOs) have comprehensively integrated TDM and nonmotorized transportation planning into their on-going planning processes. By considering regional connectivity of all modes, it becomes possible for TDM and nonmotorized transportation projects to make a larger-scale contribution to local, as well as regional, transportation goals – for the TDM program to become “greater than the sum of its parts.”

As part of a connected regional network, TDM and nonmotorized transportation become greater than the sum of their parts within a connected regional network.

This report highlights four MPOs that are working with their transportation partners to embrace TDM and nonmotorized transportation in an ambitious, conscious, and holistic manner at both regional and local scales. These MPOs, which represent a diversity of sizes and geographic areas, can serve as models for other MPOs seeking to take a holistic approach to TDM and nonmotorized transportation to further advance their agencies’ goals. The four highlighted MPOs are:

- Denver Regional Council of Governments (Denver, Colorado metropolitan area),
- Metropolitan Council of the Twin Cities (Minneapolis-St. Paul, Minnesota metropolitan area),
- Pima Association of Governments (Tucson, Arizona metropolitan area), and
- Sacramento Area Council of Governments (Sacramento, California metropolitan area).

This report serves as a companion to an earlier FHWA report, *Integrating Demand Management into the Transportation Planning Process: A Desk Reference*.¹ This report will answer the questions of by whom, how, and why regional scale approaches to TDM and nonmotorized transportation are embraced, and assesses how these approaches contribute to meeting regional transportation goals. The case studies highlight best practices to assist peer MPOs in further incorporating TDM and nonmotorized transportation planning into their activities at a regional scale. These MPOs have a philosophy that TDM or nonmotorized transportation can complement and influence other modes of transportation, and consider TDM and nonmotorized transportation as a means to achieve core regional transportation planning goals.

This report considers nonmotorized transportation as part of a holistic approach to TDM in the metropolitan transportation planning process². Walking and bicycling are viable alternatives to

¹ **Federal Highway Administration.** *Integrating Demand Management into the Transportation Planning Process: A Desk Reference*, FHWA-HOP-12-035, <http://www.ops.fhwa.dot.gov/publications/fhwahop12035/index.htm>

² For the remainder of this report, the term “TDM” will refer to both TDM and nonmotorized transportation strategies.

SOV travel for short- and mid-range trips and are also convenient complements to other modes; transit users can connect to more transit options by bicycling, and walking is a component of many auto- and transit-based trips. In some cases, MPOs that have a deep commitment to TDM complement those efforts with large investments in nonmotorized transportation programs and projects. Public transportation is also a critical component of the system, but, for the purposes of this report, public transportation is not considered a TDM strategy. It is, however, an important source of connectivity for nonmotorized and TDM strategies.

The remainder of this report is structured in five chapters. Chapter Two discusses ways that MPOs can integrate TDM into the regional transportation planning process. Chapter Three outlines the methodology used to identify the MPOs to highlight in the report and to research each MPO's TDM strategies. Chapter Four synthesizes the research conducted for the four case study MPOs, highlighting six success factors in developing an integrated approach to TDM. Chapter Five presents the four in-depth case studies. Chapter Six summarizes the research and provides suggestions on next steps for MPOs to consider as they integrate TDM throughout their overall planning processes.

II. Integrating Demand Management into the Regional Transportation Planning Process

MPOs across the country exhibit varying levels of involvement in TDM programs and projects. Some MPOs allocate Federal and State funds to TDM projects and programs without defining clear goals and objectives relating to TDM or without analyzing or explaining how TDM specifically helps the MPO and its partners achieve regional goals, such as congestion reduction, air quality improvement, or improved community health. In contrast, there are several examples of MPOs that take a comprehensive, holistic approach to TDM. These MPOs incorporate TDM throughout their planning programs, including it among the key strategies for achieving the MPOs' transportation visions for the metropolitan area.

Figure 1 illustrates at a high level how MPOs can fully integrate TDM into the metropolitan transportation planning process. MPOs can use a vision plan as their principle guiding or strategic document; the vision can lay out a future transportation system that provides alternatives to SOV travel to meet the needs of all users. The Long-Range Transportation Plan (LRTP) can lay out goals and objectives over a 20-25 year or longer horizon to support the vision and describe how different modal investments can best accomplish goals and meet the challenges facing the region. The Transportation Improvement Program (TIP) can implement the goals and objectives by funding TDM projects and programs, alongside other modal investments, within the limits of projected costs and revenues.

The Unified Planning Work Program (UPWP) identifies how the MPO and its partners will fund and conduct planning work, and can provide funding to support planning activities to support TDM, such as planning studies, data collection, analysis of multimodal alternatives, and administration of TDM programs. Through the Congestion Management Process (CMP), MPOs can identify, evaluate, and prioritize TDM solutions to congestion issues before or in place of adding roadway capacity. MPOs can develop stand-alone plans to expand on the higher-level TDM and nonmotorized transportation elements in the LRTP and to develop TDM-specific visions, goals, strategies, projects, and programs. Finally, and consistent with the priority in MAP-21 for performance based planning, MPOs can develop performance measures that apply to TDM and nonmotorized transportation as well as other modes to measure, track, and demonstrate results.

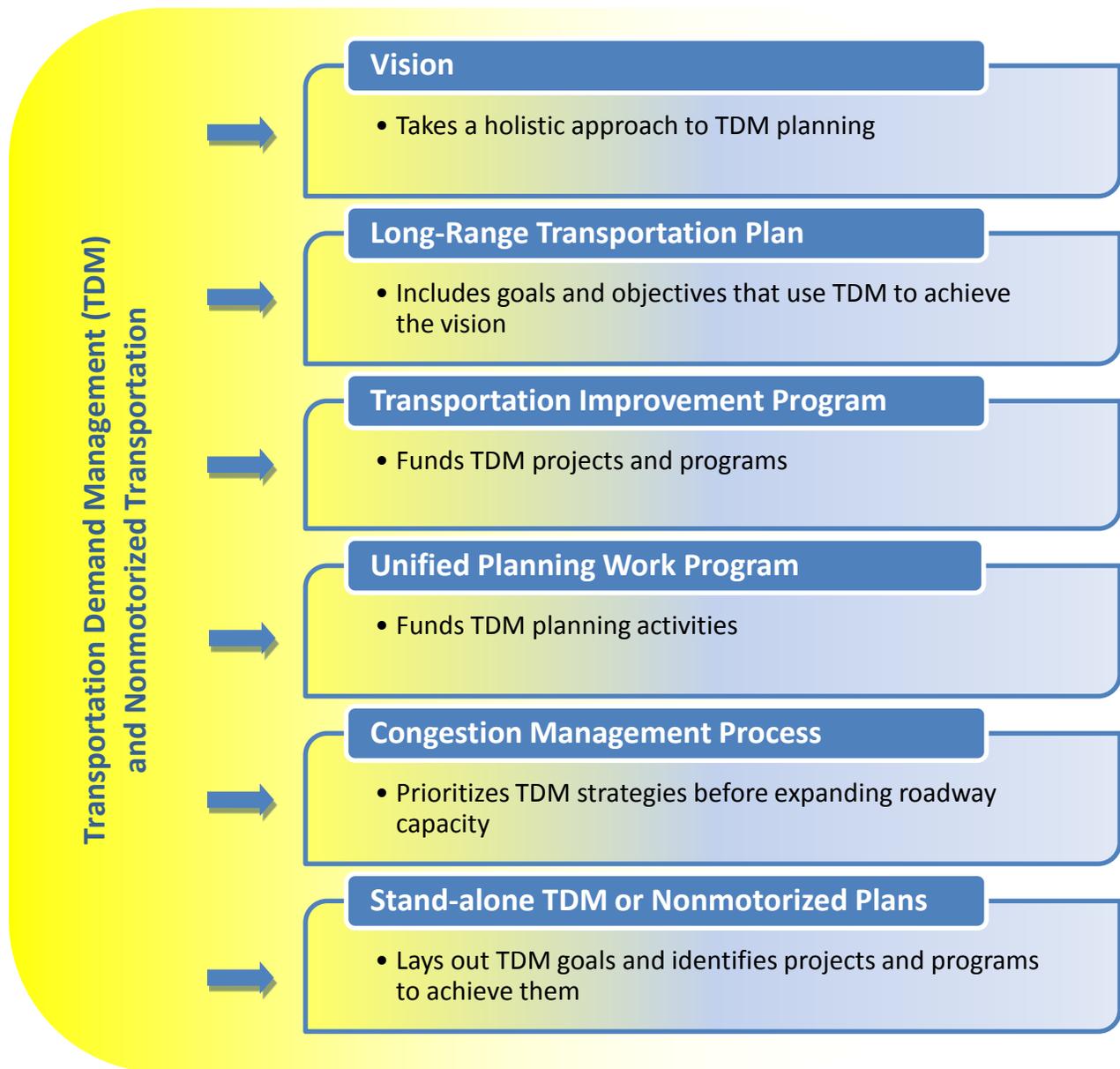


Figure 1: Integrating TDM into the Regional Transportation Planning Process

Chapter Four uses examples from each of the four case studies in this report to highlight specific initiatives or strategies that MPOs can undertake to fully integrate TDM into their transportation processes and programs.

III. Research Methodology

This report highlights four MPOs that are fully integrating TDM into their planning processes. The four highlighted MPOs are:

- Denver Regional Council of Governments (DRCOG) (Denver, CO),
- Metropolitan Council of the Twin Cities (Metropolitan Council) (Minneapolis-St. Paul, MN),
- Pima Association of Governments (PAG) (Tucson, AZ), and
- Sacramento Area Council of Governments (SACOG) (Sacramento, CA).

The Volpe research team worked with FHWA to select MPOs for highlighting in the four case studies through the following process:

1. The team reviewed the LRTPs of each of the 135 MPOs that are Transportation Management Areas (MPOs representing urban areas with populations greater than 200,000) for vision statements, goals, and objectives that specifically mention TDM as current or planned strategies to achieve the MPO’s vision. To receive further consideration, the LRTP must have demonstrated the following three conditions:
 - **Regional Scale** – TDM planning is incorporated at a regional scale by the MPO,
 - **Systems Approach** – The LRTP reflects a philosophy that TDM can influence other modes of transportation, and
 - **Holistic Approach** – The LRTP should include the consideration of all available strategies and modes (including TDM) as a means to achieve core regional transportation planning goals (ideally using performance-based metrics).
2. For those MPOs that passed the initial screening, the team examined related documents such as the TIP, UPWP, CMP, and stand-alone TDM or nonmotorized plans to determine the extent to which the MPO was involved in the region’s TDM planning, (beyond merely describing the work of State and local partners), and how and why the MPO implements TDM strategies. MPOs that exhibit a strong commitment to TDM and that had a holistic approach to integrating TDM were selected for interviews.
3. The team conducted phone interviews with staff at the four case study MPOs to understand the decisionmaking process that led to the inclusion of TDM planning in the regional transportation planning process.

IV. Factors for Success in Developing an Integrated Approach to TDM

The four MPOs highlighted in this report have integrated TDM into their regional transportation planning processes in diverse ways that meet the unique conditions of their regions. While each MPO's approach is different, the following case studies identify common factors for success that enable each MPO to develop an integrated approach to TDM, shown in Figure 2 below and following in more detail.

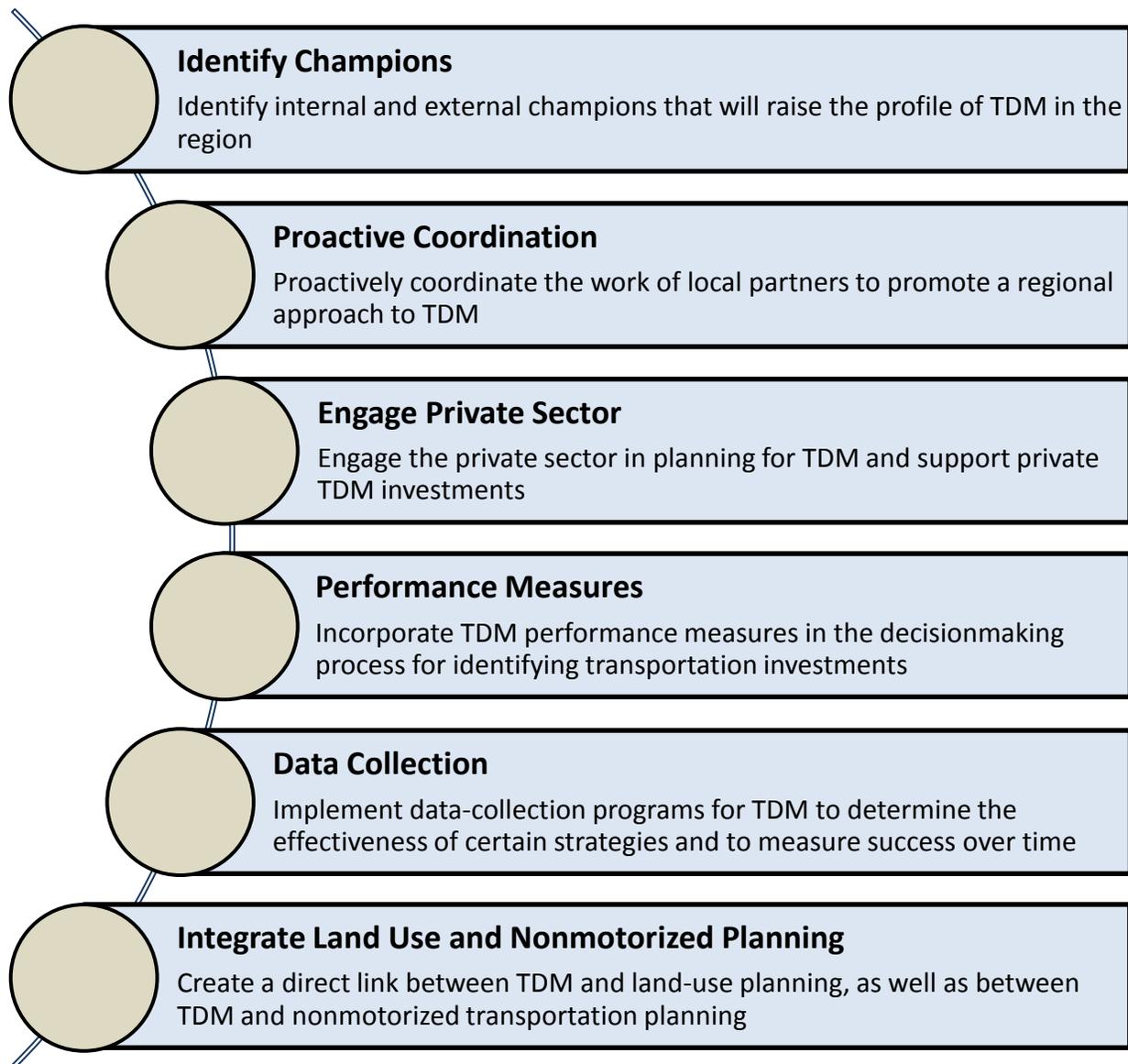


Figure 2: Success Factors for TDM in Metropolitan Transportation Planning

Identify internal and external champions that will raise the profile of TDM in the region.

Build upon the efforts of TDM champions in member communities. Metropolitan Council collaborates with local non-profit organization Transit for Livable Communities (TLC) and the FHWA Nonmotorized Transportation Pilot Program to advance walking and bicycling in the region. Similarly, PAG coordinates and supports the efforts of member communities to achieve a platinum-level Bicycle-Friendly Community rating from the League of American Bicyclists.

Support non-governmental keystone events and initiatives as ways to promote TDM. SACOG collaborates with member communities, locally-based transportation management organization (TMO) partners, bicycling advocacy groups and private businesses to support May is Bike Month, the signature annual campaign designed to promote bicycling in the Sacramento Region. Metropolitan Council is building on the initial success of Cyclopath, an innovative bike-route mapping tool developed by the University of Minnesota that allows community members to interact and contribute “crowd-sourced” information on the suitability of roadways for bicycling in the Twin Cities area.

Build MPO support for local efforts into the MPO’s vision and long-range transportation plan. DRCOG’s Metro Vision 2035 plan notes that the MPO offers direction for local implementation of transportation projects and programs, including TDM. PAG’s 2040 Regional Transportation Plan includes continued coordination and oversight of local employer-based TDM programs and nonmotorized transportation programs of member communities. SACOG’s long-range plan sets specific TDM goals for its locally-based TMO partners, employer-based TDM programs, and car-sharing programs of member communities.

Highlight TDM options in scenario planning efforts. SACOG’s Blueprint vision planning process included land-use and transportation scenarios that can support TDM nonmotorized transportation options.

Proactively coordinate the work of local partners to promote a regional approach to TDM.

Evaluate the coverage of TDM efforts and nonmotorized transportation infrastructure and promotion across the region that is provided or managed by TMOs and local governments to identify successes, gaps, and opportunities for expansion. DRCOG requires all project proponents that receive funds through its Regional TDM Pool to report the impacts of their projects, including estimated reductions in Vehicle-Miles Traveled (VMT), to inform future decisionmaking and determine the effectiveness of different TDM strategies. Metropolitan Council conducted a comprehensive study of the region’s approach to TDM, which included an analysis of the coverage and performance of local TMO partners, and best practice analysis of the TDM activities of national peers. SACOG includes goals to expand TMO coverage in its long-range plan.

Establish a consistent funding structure for communities and TMOs to apply for funding for TDM investments. DRCOG implemented a Regional TDM Pool to fund projects and programs relating to TDM. SACOG maintains four special funding programs that fund TDM and nonmotorized investments in member communities. Project selection criteria are aligned with the goals in the LRTP and are consistent with the region's focus on incentivizing and enabling more compact land-uses. As an outcome of its stand-alone TDM study, Metropolitan Council has introduced a shift in how proposed TDM projects are evaluated and selected, including a more performance-based approach and a greater emphasis on innovative projects.

Clearly document the roles and responsibilities of organizations providing TDM services in a regional context. SACOG developed a TDM Strategic Plan, which built upon the MPO's long-range plan, documenting the regional TDM program in detail. Similarly, DRCOG's Regional TDM Short Term Plan identified all of the TDM stakeholders in the region and documented the four-year program of TDM activities the various organizations will work to implement. Metropolitan Council also completed a study of the regional TDM landscape that provides recommendations on how the organizations can improve regional coordination of TDM services.

Engage the private sector in planning for TDM and support private TDM investments.

Identify innovative employer-based TDM programs and encourage other business to institute similar programs. Metropolitan Council seized upon the success of an early private employer-based carpooling program at 3M Corporation to start its first TDM initiatives in the 1970s. PAG coordinates and oversees the programs of large employers required to provide TDM services by local ordinance and promotes the benefits of TDM to smaller employers not required by the ordinance to provide TDM services.

Provide information about regional and local TDM initiatives to employer-based transportation benefit coordinators to promote and expand their use. DRCOG conducts employer outreach and other TDM activities in areas of the region that are not served by TMOs. DRCOG also serves as a central agency for encouraging collaboration among the region's TMOs. PAG regularly engages with transportation benefit coordinators responsible for TDM programs at large employers, providing training, tools and technical assistance. SACOG convenes a regional TDM Task Force which provides a forum for the regional coordination of TDM services and the sharing of best practices and concerns.

Incorporate TDM performance measures in the decisionmaking process for identifying transportation investments.

Modify TIP selection criteria for all transportation investments to reward TDM projects and roadway projects that provide TDM options. DRCOG implements TDM projects through its Regional TDM Pool, which is dedicated to investing in TDM projects and programs, as well as through other category funding programs like the Congestion Mitigation and Air Quality

Improvement Program (CMAQ). As a requirement of its CMP, PAG requires that project sponsors include an analysis of TDM alternatives and identify TDM elements in TIP project proposals. PAG assigns projects with TDM elements additional points in project selection scoring formulas.

Include trip-reduction performance measures in the selection criteria for all projects eligible for certain competitive funding programs. DRCOG requires project proponents to estimate the number of trips reduced by TDM projects and programs for consideration in the Regional TDM Pool. Metropolitan Council includes VMT-reduction and estimated project cost-per-mile of travel reduced, as scoring categories for CMAQ funding project selection. SACOG's Bicycle and Pedestrian Funding Program also includes the project's estimated VMT-reduction as a scoring criterion for project selection.

Develop competitive dedicated funding mechanisms for innovative TDM projects. DRCOG's Regional TDM Pool has funded innovative TDM projects, including car-sharing and bike sharing. Metropolitan Council and SACOG's TDM funding programs include either separate funding pools for innovative projects or assign additional points in project selection formulas to innovative projects.

Develop stand-alone TDM and nonmotorized transportation plans to guide investment decisions. MPOs can expand on the TDM and nonmotorized transportation policies, objectives, and programs by developing stand-alone plans for TDM or nonmotorized transportation. These plans often allocate dedicated funds to TDM or nonmotorized transportation projects and specify specific projects for implementation. The plans identify clear goals for MPOs to strive to achieve in developing and expanding their TDM and nonmotorized transportation programs and can support substantial consideration of TDM and nonmotorized transportation in the multimodal LRTP.

Implement data-collection programs for TDM to determine the effectiveness of certain strategies and to measure success over time.

Enhance and standardize data collection of performance measures for TDM to inform the MPO's process for selecting TDM projects to fund. As DRCOG's Regional TDM Pool funds more projects in the future, the MPO will analyze data from project sponsors to determine the effectiveness of various TDM strategies in different areas in the region to inform future decisionmaking. Metro Council requires all CMAQ funding proposals to include an analysis of expected trip-reduction and air quality improvements, according to pre-defined performance metrics that allow the MPO to better compare competing proposals and select projects that will result in the greatest benefits. PAG performs an annual bicycle traffic count at over 100 locations to assess changes in bicycle ridership over time and collects and analyzes data from all employer-based TDM service providers. SACOG has integrated TDM performance measures into its CMP which is the basis of analysis for all proposed projects in the long-range plan.

Evaluate existing TDM systems and services in the region to identify opportunities for improvement, and prioritize projects that address them for funding. Metropolitan Council and SACOG have both conducted comprehensive evaluations of their regions' TDM services, in stand-alone plans. PAG uses bicycle and pedestrian count data to assess the impact of new facilities on travel patterns in specific neighborhoods.

Create a direct link between TDM and land use planning, as well as between TDM and nonmotorized transportation planning.

Link land use and transportation options in long-term visioning exercises to illustrate the effect of land-use decisionmaking on the types of transportation options that are suitable for different development patterns. DRCOG's Metro Vision 2035 plan includes a discussion of designing new developments within communities to allow the efficient movement of pedestrians, bicyclists, buses and motor vehicles within, to and through the area. The SACOG Blueprint vision planning process engaged thousands of residents, business owners and decisionmakers in the Sacramento area and provided them with tools to help understand the interconnectedness of transportation and land-use decisions. When presented with several possible future scenarios, the region chose to emphasize compact development in growth areas, in-part to make transit and nonmotorized transportation more viable.

Provide tools, funding and technical assistance to member communities to support better land-use planning, streetscape design, and development regulations. To support local implementation of the Blueprint vision, SACOG provides member communities with guidelines, technical assistance and analysis tools to envision the impacts of future land-use and transportation decisions at the local level and support smart growth development and complete streets planning and design. SACOG also maintains dedicated funding programs for community design and streetscape improvements.

Recognize nonmotorized transportation as a trip-reducing, TDM strategy in the LRTP, CMP, and other key planning documents. SACOG's LRTP explicitly mentions nonmotorized transportation as a strategy that can help reduce the demand for automobile trips. Furthermore, SACOG's CMP includes both a decrease in VMT, and an increase in nonmotorized transportation travel, as key performance indicators.

V. Case Studies

This chapter includes four case studies that highlight MPOs that are successfully integrating TDM into their overall metropolitan area's transportation planning process. These MPOs take a holistic approach to promoting alternatives to SOV travel that are attractive and affordable by emphasizing system performance and institutionalizing the comprehensive consideration of all available alternatives. Their efforts represent a substantial commitment to TDM as a significant component of the multimodal transportation system. The case studies are intended to provide helpful examples for peer MPOs and their partners on how regional transportation planning can assess the contribution TDM projects can make to the multimodal transportation system, and how a regional perspective can strengthen local TDM projects.

Table 1 briefly summarizes several of the highlights from each of the case studies.

MPO Name	Innovative TDM Strategies				
DRCOG	RideArrangers program, which was formed in 1975, forms a strong basis for the extensive employer outreach and TMO coordination relating to TDM	Partnerships with the region's TMOs help to coordinate TDM activities and avoid duplication of efforts	Regional TDM Pool allocates funds specifically for TDM projects and programs	Standalone bicycle, pedestrian, and TDM plans outline goals and strategies to reduce SOV travel	Congestion Mitigation Toolkit provides information to local jurisdictions about appropriate solutions to congestion problems, including TDM
Metropolitan Council	Emphasis on moving people rather than vehicles through alternatives to highway expansion	Performance-based CMAQ project selection	Engaging partners to complete regional nonmotorized transportation network	Coordination of park-and-ride facilities with bus shoulders and managed highway lanes	Online bicycle planning tool uses “crowd sourced” information about the best, safest routes
PAG	Training of employer-based transportation coordinators	Prioritizes projects with TDM elements in TIP project selection	Goal to achieve platinum rating from League of American Bicyclists	Use of CMP to institutionalize TDM in roadway planning	Bicycle and pedestrian counting and performance monitoring
SACOG	Use of scenario planning to visualize impacts of compact land use alternatives on transportation	Smart growth as a long-term trip reduction strategy	Vanpool service targeted to agricultural workers	Goal to reduce overall vehicle miles traveled by 10 percent in 20 years supports TDM alternatives	Standalone plans and dedicated funding programs link TDM to regional goals in the vision and LRTP

Table 1: Examples of Innovative TDM Strategies from Case Studies

Denver Regional Council of Governments (Denver, CO)

MPO Name	Denver Regional Council of Governments (DRCOG)
Central City	Denver, Colorado
2010 Census MPA Population³	2,827,082
2010 MPA Employment (BLS)⁴	1,304,406
Innovative TDM Strategies	<ul style="list-style-type: none"> • RideArrangers program, which was formed in 1975, forms a strong basis for the extensive employer outreach and TMO coordination relating to TDM • Regional TDM Pool allocates funds specifically for TDM projects and programs • Partnership with the region's TMOs helps to coordinate TDM activities and avoid duplication of efforts • Standalone Bicycle and Pedestrian and TDM plans outline goals and strategies to reduce single-occupant vehicle travel • Congestion Mitigation Toolkit provides information to local jurisdictions about appropriate solutions to congestion problems, including TDM
Contacts	<ul style="list-style-type: none"> • Steve Cook, MPO Planning Program Manager (SCook@drcog.org)⁵

Introduction

DRCOG is the MPO for the Denver, Colorado metropolitan area, which also includes Boulder. In 2010, the Denver metropolitan area was home to over 2.8 million residents and was the largest

³ U.S. Census Bureau. *2010 Census Summary File 1 - Colorado*. <http://factfinder2.census.gov>

⁴ U.S. Bureau of Labor Statistics. *Quarterly Census of Employment and Wages*. <http://www.bls.gov/cew/data.htm>

⁵ Steve Rudy, who has since left DRCOG, also served as a contact for the development of this report.

metropolitan area in Colorado⁶. The region is growing rapidly; between 2000 and 2010, the area's population increased by nearly 16 percent.

Since 1975, DRCOG has been the lead agency in the Denver metropolitan area for implementing, funding, and promoting TDM programs and projects. The region's LRTP, Metro Vision, lays the framework for a robust and effective TDM program that aims to reduce SOV travel while promoting transportation choices. DRCOG's RideArrangers program is the largest carpool and vanpool program in the region. Furthermore, DRCOG promotes other organizations' TDM strategies through dedicated funding streams for TDM projects and programs. By playing the role of regional TDM coordinating agency, DRCOG brings together all of the region's TDM service providers to promote collaboration and minimize inefficiencies.

History of TDM in the Denver Region

DRCOG's role as lead TDM agency in the Denver region began in 1975 when it organized the region's first ridesharing program. At the time, residents turned to ridesharing to reduce their commuting costs during the oil crisis of the 1970s. Named RideArrangers in the 1980s, the program has evolved to become an umbrella program that provides centralized TDM services to the entire region. It also conducts direct employer outreach to the portions of the region not served by TMOs.

Starting in the 1990s, TMOs began forming in the Denver region to implement TDM programs at a more local level. In many cases, DRCOG provided funds to help the new TMOs get off the ground. Today, the Denver region has six TMOs with a seventh forming later in 2012. In July 2011, DRCOG's RideArrangers program, along with the six established TMOs in the region, formed a partnership to collaborate on a comprehensive and coordinated effort to reduce traffic congestion and improve air quality in the Denver region by promoting and implementing a suite of TDM services. Through the partnership, DRCOG and the TMOs will work closely together to coordinate TDM service throughout the region while improving the return on investments of projects funded by DRCOG.

To support the new partnership, DRCOG restructured the RideArrangers program in 2011. RideArrangers now does the following:

- Offers training, support, and professional development opportunities for partnering TMO staff,
- Oversees an advertising agency responsible for developing and implementing the program's marketing, branding and advertising,
- Surveys the full region to establish and report on the program's efficiency and effectiveness,
- Maintains iCarpool ridematching and other web-based services, and

⁶ U.S. Census Bureau. *2010 Census Summary File 1 - Colorado*. <http://factfinder2.census.gov>

- Coordinates Bike to Work Day, vanpool services, and Schoolpool services; administers Guaranteed Ride Home; and provides employer outreach in areas not serviced by TMOs.

A key element of the partnership is to create a unified and consistent brand for each regional TDM provider to adapt for local use. An advertising agency will develop a branding program to effectively and efficiently promote TDM throughout the region. A regional marketing campaign will educate commuters and employers alike on the suite of TDM services that are offered through the program. This partnership will strengthen the region's coordinated TDM program and will set it up for success in the future.

DRCOG's Approach to TDM

DRCOG's comprehensive approach to TDM is evident in each of its planning documents. DRCOG's long range plan repeatedly mentions TDM as encompassing priority strategies to combat congestion and worsening air pollution. The TIP funds the RideArrangers program and also includes a dedicated pool of funds specifically for TDM projects and programs. The UPWP provides funds for DRCOG to develop the TDM programs and manage the project selection process, and provide technical assistance to its TDM partners. Finally, the region's TDM short term plan articulates the steps to be taken over the next five years to enhance and expand the region's TDM program to achieve the region's planning goals.

Vision

DRCOG's Metro Vision Guiding Vision statement, adopted in 1992, has been the basis for each of the agency's subsequent RTPs. The vision addresses fostering urban centers, sharing resources throughout the region, using resources effectively and efficiently, and promoting physical and cultural diversity. While this statement does not specifically address TDM, these modes do support several of the vision's key elements.

DRCOG's Metro Vision 2035 Plan, adopted in 2011, expands upon the 1992 vision statement to identify six Key Metro Vision Principles. While these principles do not specifically mention TDM or nonmotorized transportation, they do lay a framework for investing time and resources into these modes. For example, the principles note that "Metro Vision offers direction for local implementation," which correlates to the role of municipalities in implementing TDM investments. Additionally, "Metro Vision encourages communities to work together," allowing communities to work across jurisdictional boundaries to coordinate TDM programs or fund bicycle and pedestrian improvements.

L RTP

The Metro Vision 2035 Plan⁷ focuses on several measurable goals that will help DRCOG achieve the key elements of the Metro Vision Guiding Vision⁸. Several of these goals can be achieved in part by TDM strategies and investments. These goals include:

- Reduced fossil fuel consumption,
- Reduced greenhouse gas and other vehicle emissions,
- Increased rate of construction of alternative transportation facilities,
- Reduced single-occupant vehicle mode share, and
- Reduced vehicle miles traveled per capita.

Additionally, the goal of “limited expansion of the urbanized area through increased region-wide density, infill, and redevelopment” supports residents’ use of TDM programs and nonmotorized transportation, further helping to achieve the goals listed above.

The Metro Vision 2035 Plan’s transportation chapter lays out a vision, goal, and policies specifically for the region’s transportation network. The vision foresees “a balanced sustainable multimodal transportation system [that] will include rapid transit, a regional bus system, a regional roadway system, local streets, bicycle and pedestrian facilities, and associated system and travel demand management services.” The transportation goal is to “provide safe, environmentally sensitive, efficient, and sustainable mobility choices for people and goods and integrate with and support the social, economic, and land use development of the region.” Several of the transportation policies in the Plan relate directly to TDM. They are:

- **Management and Operations:** make the best use of existing and future transportation facilities by implementing measures that actively manage and integrate systems to optimize system performance and safety, provide accurate real-time information and reduce per capita VMT;
- **Rights-of-Way Preservation:** reserve adequate rights-of-way in newly developing and redeveloping areas for pedestrian, bicycle, transit and roadway facilities;
- **Bicycle and Pedestrian:** provide robust bicycle and pedestrian accessibility throughout the region;
- **Transportation-Efficient Housing and Business Developments:** design new developments within communities to allow the efficient movement of pedestrians, bicyclists, buses and motor vehicles within, to and through the area; and

⁷ DRCOG. *Metro Vision 2035 Plan*. <http://www.drcog.org/index.cfm?page=MetroVision>

⁸ DRCOG. *Metro Vision Guiding Vision*. <http://www.drcog.org/documents/Metro%20Vision%20Guiding%20Vision.pdf>

- **Environmental Quality:** develop and maintain a sustainable transportation system that protects and enhances air quality, energy efficiency, and the overall environment.

The Metro Vision 2035 Plan's Pedestrian and Bicycle element goes into great detail about the benefits of investing in nonmotorized transportation infrastructure, the region's current network of nonmotorized transportation facilities, design considerations for new projects to encourage safe walking and bicycling, and the region's needs for nonmotorized transportation infrastructure and programming. The Plan encourages local governments and other implementing agencies to provide bicycle and pedestrian facilities such as continuous sidewalks, intersection treatments, multipurpose trails, and bicycle lanes to expand the region's walking and bicycling networks to promote nonmotorized travel for travel to work, personal trips, business, and shopping.

Additionally, the Metro Vision 2035 Plan states that DRCOG will promote TDM strategies that reduce the demand for single-occupant vehicle travel by eliminating trips, shortening trips, or changing the mode or time of day of travel. Such strategies include carpool and vanpool programs, teleworking and variable work schedules, and promotion of alternative transportation modes (including walking, bicycling, and transit).

CMP

DRCOG's CMP is made up of four programs that aim to alleviate, avoid, or adapt to congestion. Together, these programs help the region achieve the goal of using the existing transportation network efficiently and equitably. The four programs are: the TDM program, the DRCOG RideArrangers program, the Traffic Signal Program, and the ITS, Management, and Operations program. Together, these programs help DRCOG address congestion problems by implementing strategies through the TIP that keep the region moving without adding single-occupant vehicle capacity.

In addition to these programs, DRCOG has developed a Congestion Mitigation Toolkit⁹, which serves as a resource for transportation agencies and local jurisdictions to identify strategies to reduce traffic congestion. The Toolkit offers a wide sample of mitigation strategies that address various locations, situations and causes of congestion. The Toolkit identifies three categories of congestion mitigation strategies that local jurisdictions can implement. These include active roadway management, TDM and alternative mode strategies, and physical roadway capacity improvement projects.

The Toolkit identifies 12 strategies for TDM and alternative modes to address congestion. These include:

- New fixed guideway transit travelways,
- Transit service expansion (i.e., more vehicles, extended/new routes),

⁹DRCOG. *Congestion Mitigation Toolkit*.

<http://www.drcog.org/agendas/FINALToolkit%202.5.pdf>

- Transit vehicle travel information,
- Transit intersection queue-jump lanes and signal priority,
- Electronic fare collection,
- Parking facility management information signs,
- Telework and flexible work schedules,
- Ridesharing travel services (i.e., carpool, vanpool, schoolpool),
- Alternative travel mode events and assistance,
- Off-street multi-use trails (i.e., pedestrian and bicycle),
- On-street bicycle treatments, and
- Efficient land use and development practices.

For each TDM and alternative mode strategy, the Toolkit includes a description, information about the appropriate location or situation for the strategy, a relative cost to implement (moderate, high, etc.), a relative timeframe for implementation (medium-term, long-term, etc.), benefits of the strategy, related strategies, and other factors for consideration. Local jurisdictions can use the Toolkit to compare congestion mitigation strategies and implement the strategy that addresses the problem.

Regional TDM Short Term Plan

In June 2012, DRCOG released an updated TDM Plan titled the “DRCOG Regional TDM Short Range Plan (2012-2016).”¹⁰ The Plan encompasses all of the region’s TDM programs and strategies, including those spearheaded by organizations other than DRCOG. The Plan:

- Describes how TDM fits in the larger vision, goals, and strategies set forth in the DRCOG regional plans (see page 11 for information about how the Metro Vision Plan addresses TDM);
- Identifies other TDM stakeholders throughout the region;
- Describes the newly formed Regional TDM Partnership, a collaborative effort between DRCOG and the region’s TMOs;
- Defines the roles of DRCOG and its partner agencies pertaining to TDM;
- Identifies and expands upon the TDM strategies listed in the 2035 Metro Vision Plan; and
- Defines the short-range TDM policies to be followed and activities to be conducted over the next five years.

¹⁰ **DRCOG.** *DRCOG Regional TDM Short Range Plan (2012-2016).*

<http://www.drcog.org/agendas/TDM%20Plan%20MVIC%20Draft%20May%2029%202012.pdf>

The Plan lists the providers of TDM services in the Denver region. As was previously mentioned, DRCOG administers RideArrangers, the region's carpool and vanpool program. Six TMOs (a seventh has been awarded DRCOG TMO start-up funds for FY 2012 and 2013) support, promote, and advocate for improved transportation opportunities and efficiency in specific geographic areas. Also, several State, regional, and local agencies and organizations provide TDM services, including the Regional Transportation District (the region's largest transit provider), the Colorado Department of Transportation (CDOT), and local governments. DRCOG supports all of these organizations to promote coordination and expand TDM throughout the region.

The Plan also lays out roles and responsibilities for each type of TDM partner, including DRCOG, TMOs, and CDOT. The roles and responsibilities aim to help the agencies fulfill the goals of the TDM program while promoting collaboration and not duplicating efforts. Notably, project sponsors (agencies that receive funds to implement projects) are required to monitor TDM projects throughout their funding lifetimes and to conduct post-project evaluations. DRCOG will eventually incorporate this information into the project selection process for the Regional TDM Pool.

DRCOG coordinates the Regional TDM Pool, which allocates funds for local and regional TDM projects through a competitive process every two years. DRCOG initiates the call for projects; reviews, scores and ranks project submittals; and provides recommendations on projects to fund to the DRCOG Board of Directors. If selected for funding, project sponsors work with CDOT to begin the contracting process to implement the projects.

TDM Pool funds are generally directed towards activities and services that promote non-SOV travel mode choices or eliminate trips altogether. However, certain infrastructure projects, like the purchase of vehicles for car-sharing and bike-sharing, may be eligible as well. DRCOG requires that project sponsors provide a local funding match of at least 20 percent of the total project cost to be eligible for the TDM Pool funding. Examples of TDM Pool project types and activities include, but are not limited to:

- **Transit Passes** – Promotion, marketing and pass subsidies during ozone season,
- **Bicycling** – Marketing of bike-sharing, bike parking marketing and infrastructure, promotion and outreach for bicycling as a form of transportation,
- **Car-sharing** – Vehicle purchases and marketing,
- **Active Transportation** – Promotion and campaigns geared toward walking and bicycling;
- **TMO Startup** – Congested areas not yet served by an established TMO, and
- **TDM Services** – Marketing and promotion of a wide range of TDM services tailored to specific employment areas, populations, and neighborhoods.

In the 2012-2013 Fiscal Year (FY) cycle, DRCOG received 20 applications totaling \$4 million in requests. DRCOG allocated partial funds (less than the full requested amount) to 15 of the projects. DRCOG requires all project sponsors that receive Regional TDM Pool funds to provide results upon project completion, including estimates of the number of trips and VMT reduced.

The Plan identifies many TDM strategies that DRCOG and its TDM partners could implement. These strategies fall into five categories: promotion of alternatives to SOV travel, promotion of changes in work patterns, other incentives and pricing mechanisms to encourage the use of alternative travel modes, promotion of efficient land development designs, and emerging strategies and factors. The specific strategies are listed below:

- **Promotion of Alternatives to SOV Travel**
 - Rideshare programs and services: carpool, vanpool, schoolpool,
 - Transit service, products, programs, and amenities: transit service, transit pass products and support programs, transit amenities,
 - Active transportation programs and infrastructure: walking, bicycling, bike to work day, bike-sharing programs, bicycle and pedestrian facilities,
 - Other services and infrastructure supporting non-SOV travel: car-sharing, High-Occupancy Vehicle (HOV) and High-Occupancy/Toll (HOT) lanes, and
 - Promotional and marketing campaigns: regional campaigns, individualized marketing, social media.
- **Promotion of Changes in Work Patterns**
 - Telework, and
 - Compressed and flexible work schedules.
- **Other Incentives and Pricing Mechanisms to Encourage Use of Alternative Travel Modes**
 - Guaranteed ride home program,
 - Pay-as-you-drive insurance,
 - Parking management strategies, and
 - Other pricing mechanisms: VMT fees or mileage-based user fees, tolling, cordon pricing.
- **Promote Efficient Land Development Patterns**
 - Transit-oriented development, and
 - Pedestrian and bicycle connections.
- **Emerging Strategies and Factors**
 - Real-time information, and
 - Real-time ridesharing.

Most importantly, the Regional TDM Short Range Plan lays out the plan for implementing the Regional TDM program over the next five years. This plan includes estimated funding levels, a structure for providing TDM services throughout the region, agency roles and responsibilities, plans for monitoring outcomes and benefits of current TDM programs, the process for selecting projects to be funded in the FY 2014-2015 TDM Pool, research into new TDM methods and technologies, and a focus on specific areas in the region for expansion of TDM services. The

Regional TDM Short Range Plan feeds directly into the TIP for the funding and implementation of the region's TDM Program.

TIP

DRCOG's 2012-2017 TIP¹¹ includes the projects and programs funded through the Regional TDM Program and the Regional TDM Pool (see page 13 of the TIP for more information on the Regional TDM Program and Pool). In FY 2012, DRCOG allocated \$1.3 million to fund projects and programs through the Regional TDM Program to support a variety of TDM projects sponsored by TMOs, municipalities, and nonprofit organizations. In addition, \$1.8 million was allocated to fund DRCOG's TDM work, which primarily includes the operation of RideArrangers.

The TIP project selection process also encourages roadway projects to incorporate multimodal aspects by awarding points if the projects include bicycle, pedestrian, or transit elements.

UPWP

DRCOG's FY 2012-2013 UPWP reflects the agency's dedication to TDM through investment in related planning work. As this case study has demonstrated, DRCOG integrates TDM into its entire program – the UPWP reflects this. The UPWP describes the major programs and subtasks that enable DRCOG to perform its planning work to support TDM, in addition to the general programs, like the Metro Vision Plan, that also support TDM. These key planning programs and some of the notable subtasks in FY 2012 and FY 2013 include:

- **Pedestrian and Bicycle Element Planning**
 - Inventory of information and measures on pedestrian and bicycling access to transit stations and facilities in conjunction with Transit-Oriented Development walk-shed maps;
 - Report on pedestrian/bicycling crash and safety data; and
 - Update to the Regional Bicycle Corridor System Vision map of the Pedestrian and Bicycle Element of the 2035 Metro Vision Plan and “missing links” noted on the Bicycle Facility Inventory exhibits.
- **Regional TDM Planning**
 - Update to the Regional TDM Strategic Plan, making it consistent with the 2035 Metro Vision Plan, the TDM Benefits Study, and the new Regional TDM Program;
 - Conduct the project selection process for the Regional TDM Pool for FY14 and FY15; and
 - Summary report on progress, status, and outcomes of TDM Program and Pool.

¹¹ DRCOG. 2013-2017 TIP.

[http://www.drcog.org/index.cfm?page=TransportationImprovementProgram\(TIP\)](http://www.drcog.org/index.cfm?page=TransportationImprovementProgram(TIP))

Conclusion

Assessing the regional contribution of TDM and prioritizing the resulting projects among all of the region's projects are now ingrained in DRCOG's planning process. The Regional TDM Pool funds projects that help achieve the region's larger goals and objectives. The reporting requirements will ensure that funds are allocated to TDM projects that show that they can reduce SOV travel. Finally, the newly formed partnership between DRCOG and the region's TMOs will ensure that the region's TDM providers will continue to offer TDM programs that help the region achieve its vision.

DRCOG has successfully grown from being the lead agency for a ridesharing program to become a national leader in integrating TDM into the overall transportation planning process. By partnering with the region's TMOs to support their projects and programs while maintaining a regional approach to TDM, DRCOG serves as a model for other MPOs to emulate when taking a more holistic approach to regional TDM programs.

Metropolitan Council of the Twin Cities (Minneapolis-St. Paul, MN)

MPO Name:	Metropolitan Council
Central City:	Minneapolis/St. Paul, Minnesota
MPO Planning Area Population¹²:	2,849,557
MPO Planning Area Employment¹³:	1,532,576
Innovative TDM Strategies:	<ul style="list-style-type: none"> • Emphasis on moving people rather than vehicles through alternatives to highway expansion • Performance-based CMAQ project selection • Engaging partners to complete regional nonmotorized transportation network • Coordination of park-and-ride facilities with bus shoulders and managed highway lanes • Online bicycle planning tool
Contacts:	<ul style="list-style-type: none"> • Connie Kozlak, System Planning and Programming Manager (Connie.Kozlak@metc.state.mn.us)

Introduction

Metropolitan Council, the Federally-designated MPO for the Minneapolis-St. Paul metropolitan area is also the transit operator (as Metro Transit) for the Minneapolis/St. Paul – “Twin Cities” region. Metropolitan Council is a national leader in TDM through planning as well as regional coordination and implementation. Metropolitan Council serves a population of over 1.8 million people in the seven-county Twin Cities region¹⁴ which is the largest center of economic activity

¹² U.S. Census Bureau. *2010 Census Summary File 1 - Minnesota*. Washington, D.C.
<http://factfinder2.census.gov>

¹³ U.S. Bureau of Labor Statistics. *Quarterly Census of Employment and Wages*.
<http://www.bls.gov/cew/data.htm>

¹⁴ U.S. Census Bureau. *2010 Census Summary File 1 - Minnesota*. Washington, D.C.
<http://factfinder2.census.gov>

in Minnesota and home to over 1.5 million jobs.¹⁵ The Twin Cities region is growing, with population forecast to increase more than 25 percent over the next 20 years.¹⁶

Building upon a strong history of support for TDM, Metropolitan Council brings regional vision and management to the coordination of a diverse, interconnected set of TDM strategies, including nonmotorized transportation facilities. Metropolitan Council's approach to TDM includes planning and operating traditional ridesharing and vanpool services, integration of park-and-ride facilities with highway bus shoulders, managed lanes and high-capacity transit, marketing and promotion of alternative transportation, and an innovative online bicycle route mapping tool. Metropolitan Council supports and funds the activities of four TMOs that provide TDM services to local activity areas. The MPO is also encouraging its TMO partners to innovate with a new streamlined, competitive, performance-based project selection formula for allocation of CMAQ Program funds that will standardize reporting mechanisms and encourage novel, innovative TDM ideas and concepts.

Metropolitan Council's 2030 Transportation Policy Plan reflects a strong commitment to advancing alternative transportation in the region.¹⁷ In response to forecasts of ever-worsening congestion, the plan embraces TDM as a cost-effective means for maintaining regional mobility. It calls for a more efficient use of existing resources, requiring a paradigm shift away from policies aimed at moving *vehicles* to policies focused on moving *people*, regardless of which modes they utilize. The plan suggests a set of interconnected strategies to manage future demand, increase reliability and mitigate congestion, in large part through strategies that encourage transit ridership, nonmotorized transportation and ridesharing.

History of TDM in the Twin Cities

The Twin Cities region and Metropolitan Council have demonstrated a commitment to TDM programs for over 30 years. The region's first vanpooling program was started in the early 1970s by 3M Corporation, a major employer, as a way to reduce parking demand at its suburban headquarters. This early ridesharing initiative successfully formed several vanpools that provided an affordable alternative to driving alone for many 3M employees. The initiative also successfully reduced the demand for new parking facilities at the 3M headquarters and provided a model that was emulated by other employers and transportation agencies. The success of this program led Metropolitan Council to become involved with this and other early ridesharing efforts beginning in the early 1980s. By 1991, when ISTEA established a new

¹⁵ **U.S. Bureau of Labor Statistics.** *Quarterly Census of Employment and Wages.*
<http://www.bls.gov/cew/data.htm>

¹⁶ **Metropolitan Council.** *Community Profile for Twin Cities Region (7-County).*
<http://stats.metc.state.mn.us/profile/detail.aspx?c=R11000>

¹⁷ **Metropolitan Council.** *2030 Transportation Policy Plan.*
<http://www.metrocouncil.org/planning/transportation/TPP/2010/index.htm>.

congestion management emphasis for MPOs, Metropolitan Council was already a leader in regional TDM strategies. Since 1986, the agency has coordinated the work of local TMOs, beginning with the 494 Commuter Services TMO that formed to address congestion issues related to the widening of Interstate 494. Metropolitan Council's early experience with ridesharing and TMOs, when they were just emerging as national issues, provided the MPO with a somewhat unique context and base of public support from which to build TDM programs.

The Twin Cities region was also an early innovator in regional nonmotorized transportation. Minneapolis' extensive network of parkways was built in the late 19th Century and early 20th Century connecting downtown Minneapolis to several nearby lakes, urban parks, and the Mississippi National River and Recreation Area¹⁸. This system of parkways is now the Grand Rounds National Scenic Byway,¹⁹ consisting of over 50 miles of both low-speed motorized parkways and nonmotorized paths. The Grand Rounds parkway network provided a base from which to begin developing a comprehensive regional nonmotorized network. Strong community interest in bicycling and recreation led many communities in the Twin Cities region to acquire under-used railroad right-of-ways in the 1980's, which are now being used to develop nonmotorized paths. The success of these early efforts influenced later decisions to support nonmotorized transportation planning and innovations such as the Cedar Lake Trail in 1995, a rail trail built with separated lanes to safely support high volumes of bicycle traffic.²⁰

Metropolitan Council's Approach to TDM

Vision

Metropolitan Council's 2030 Transportation Policy Plan, adopted in November of 2010, reflects a change in thinking about how best to accommodate future travel demand in the region. The plan recognizes the limitations of the past approach that focused on maximizing the vehicle-carrying capacity of the roadway network:

In the past, the answer to meeting travel demand was to build additional highway lanes to meet projected 20-year needs. This was the vision that built the Interstate freeway system and guided subsequent highway development. But experience has shown that there are never enough highway lanes to meet the

¹⁸ **National Park Service.** *Mississippi National River & Recreation Area.*
<http://www.nps.gov/miss/index.htm>

¹⁹ **Minneapolis Park and Recreation Board.** *Grand Rounds National Scenic Byway.*
<http://www.minneapolisparcs.org/grandrounds/>

²⁰ **Three Rivers Park District.** *Cedar Lake LRT Regional Trail.*
<http://www.threeriversparcs.org/trails/cedar-lake-trail.aspx>

growing demand for peak-hour urban travel. Instead of preserving future capacity for decades, new highway lanes can fill up in a matter of months. (Metropolitan Council, 2010)²¹

The Council's new approach emphasizes planning that improves the people-moving capacity of the Twin Cities' highway system. This important paradigm shift away from analyses of roadway vehicle capacity provides a framework in which TDM strategies that reduce transportation demand can be seen as providing equal or greater benefits to roadway expansion, and at lower costs.

The five major objectives of the 2030 policy plan's highway vision reflect this change in strategy, prominently featuring demand management to:

1. Increase the people-moving throughput of the system;
2. Manage and optimize the existing system, to the greatest extent possible;
3. Manage future demand;
4. Increase trip reliability; and
5. Minimize travel time.

L RTP

The Metropolitan Council 2030 Transportation Policy Plan identifies TDM as a core strategy for improving regional mobility. The plan highlights the ability of TDM programs to reduce highway congestion, to be responsive to changing economic conditions and attitudes, and indicates that TDM strategies will focus on employment centers with existing multimodal investments, such as managed lanes. The plan also identifies parking policies and pricing as a significant component of an effective TDM strategy. More broadly, the 2030 plan promotes alternative transportation, including nonmotorized transportation, ridesharing, vanpooling and transit as effective ways for travelers to avoid and help manage congestion.

Metropolitan Council's approach to TDM includes an extensive network of park-and-ride facilities with more than 25,000 total parking spaces, which facilitate multimodal transfers for suburban drivers to high-speed buses, the light rail network, carpools or vanpools. Park-and-ride facilities are often enhanced by being located along highways with managed lanes, which provide significant time savings for transit and carpool or vanpool vehicles. The combination of these facilities incentivizes travelers to use transit and ridesharing in exchange for shorter travel times and/or lower transportation costs. For example, the Interstate 35 West corridor includes bus-only shoulders that allow express buses to bypass roadway congestion during peak periods. The Interstate 394 corridor includes HOT lanes that are free for carpools and vanpools, but are tolled for solo drivers at rates designed to achieve much higher speeds than the adjacent un-tolled lanes.

²¹ **Metropolitan Council.** *2030 Transportation Policy Plan.*
<http://www.metrocouncil.org/planning/transportation/TPP/2010/index.htm>.

The 2030 Transportation Policy Plan calls for a significant expansion of managed lanes throughout the region, including additional transitways and HOT lanes. In fact, Metropolitan Council recommends that all major highway expansions include the addition of managed lanes. Additional park-and-ride facilities are also planned to meet expected future demand and in coordination with planned transit expansions.²² Plans for new park-and-ride locations often include the provision of bicycle storage infrastructure and connections to transit as well as the nonmotorized trail network. Together, the provision of park-and-ride facilities with high-capacity transit and managed lanes represent the most significant trip-reducing element of the Metropolitan Council approach to TDM, which assumes that transit trips using managed lanes are direct replacements for SOV trips and the equivalent reduction in VMT.

Metropolitan Council's 2030 plan strongly encourages integration of nonmotorized transportation facilities into new and existing roadway facilities to support demand for short- and mid-range trips. The Council supports and collaborates with local communities and non-profits that plan nonmotorized transportation facilities in their areas.

Minneapolis, St. Paul and neighboring communities received over \$25 million to make significant investments in nonmotorized transportation through FHWA's Nonmotorized Transportation Pilot Program (NTPP)²³. NTPP was approved by Congress to demonstrate how significant investments in active transportation can support shifts from single occupant travel, and result in improvements in health and environmental quality. TLC, a Minneapolis non-profit organization, administers the program in the Twin Cities. This innovative program has funded community outreach and marketing efforts including the Bike Walk Twin Cities website²⁴, startup and expansion of a bicycle sharing program, and numerous bicycle and pedestrian infrastructure improvements. NTPP reported results to Congress in April, 2012²⁵. The working group that manages the NTPP, composed of TLC and three other pilots, FHWA, the Volpe Center, the Centers for Disease Control, and the Rails-to-Trails Conservancy, will continue to measure and report results through late 2013.

Metropolitan Council supports the pilot program, sits on the Bike Walk Advisory Board and has collaborated with TLC on several occasions. The Council contributes to the marketing of the program, administers a competitive funding program for projects of regional significance and collaborates on regional projects, such as one study that prioritized needed bicycle and

²² **Metropolitan Council.** *2030 Park-and-Ride Plan.*

<http://www.metrocouncil.org/planning/transportation/ParknRide/ParknRidePlan.htm>

²³ **FHWA Office of Planning, Environment and Realty.** *Bicycle & Pedestrian Program.*

<http://www.fhwa.dot.gov/environment/bikeped/ntpp.htm>

²⁴ <http://www.bikewalktwincities.org/>

²⁵ **FHWA.** *Report to the U.S. Congress on the Outcomes of the NTPP SAFETEA-LU Section 1807.*

http://www.fhwa.dot.gov/environment/bicycle_pedestrian/ntpp/2012_report/

pedestrian improvements to and from downtown Minneapolis. The Council plans to build on the success of the NTPP and will begin a regional bicycle planning effort as part of the next long-range plan update.

Also consistent with the MPO's vision of improving the people-moving capacity of the Twin Cities' transportation network are plans for new high-capacity transit services. Construction of a second light rail service has begun, and the 2030 Transportation Policy Plan includes a blueprint to complete a comprehensive network of transitways by 2030. These new transit services are anticipated to satisfy much of the forecasted growth in demand for long-range trips within the region. To further improve the trip-reducing impact of planned transit expansions, Metropolitan Council participates in nonmotorized transportation planning studies that identify opportunities to create or improve pedestrian and bicycle linkages to planned transit stops.

TDM Study and Performance-Based TDM Project Selection

In 2010, Metropolitan Council commissioned a comprehensive study of TDM in the Twin Cities region. The purpose of the study was to improve the regional coordination of TDM programs by the MPO, to increase transparency and introduce performance measures into the CMAQ project selection process.²⁶ The study examined the current structure of the Twin Cities TDM program, as well as case studies of other successful regional TDM programs nationwide. The study identified areas of the Twin Cities region that currently have significant job density that are not served by a local TMO and defined criteria for the funding of new TMOs.

The TDM study also recommended a shift in strategy for the CMAQ TDM project selection process. The study recommends that Metropolitan Council continue to fund regional TDM activities and to provide baseline funding for local TMOs, but to now reserve a portion of available CMAQ funds for projects that are competitively selected using a new transparent scoring methodology. The suggested methodology prioritizes innovative projects that are likely to have the most significant positive impacts on congestion, air quality and affordability, based on the project's expected reduction in VMT, links to multimodal transportation services, and proximity to major employment centers. The suggested scoring formula also provides extra points for new TDM ideas and concepts that have not yet been implemented in the region. Figure 3 below shows the project scoring criteria suggested by the TDM study.

²⁶ **Metropolitan Council.** *TDM Evaluation and Implementation Study* (publicaiton no. 35-10-039). <http://www.metrocouncil.org/planning/transportation/TDMStudy.pdf>

<i>Preliminary Scoring Criteria</i>	<i>Maximum Points</i>
<i>Quantification-based:</i>	
Estimated cost effectiveness (\$/mi reduced)	20
VMT reduced & air quality improvement	10
Location: 10 employees per acre density or greater and at least 25,000 employees in area	20
Presence of transportation alternatives (i.e., HOV lanes, frequent transit service, bicycle and pedestrian facilities)	20
Commitment by local partner(s) to continue funding if program is successful	10
<i>Subjective-based:</i>	
Evaluation methodology	10
Level of innovation (new ideas or concepts not yet implemented in the region)	10
Grand Total Maximum Points	100

Figure 3: Suggested CMAQ Scoring Criteria, from Metropolitan Council TDM Evaluation and Implementation Study (2010), p. 78, Fig. 13

This suggested approach standardizes the way proposals are assessed and incentivizes local TMO partners to perform detailed analyses of the impacts of the projects they propose. It also provides a mechanism through which innovative pilot projects can be funded. If successful, these pilot projects may warrant baseline funding in the future and could be promoted to other TMOs as best practices.

Metropolitan Council intends to work with the region’s TMOs and other TDM stakeholders to refine the suggested scoring criteria and intends to adopt revised scoring criteria for use in the next CMAQ funding solicitation.

Regional TDM Programing

Metropolitan Council actively promotes TDM strategies, providing technical assistance to member communities. The Council funds the work of its local TMO partners and also directly sponsors several regional TDM programs. The majority of TDM programs are funded with CMAQ funds. These programs and partnerships are a critical means for integrating TDM into

multimodal transportation systems and demonstrate Metropolitan Council's regional, holistic approach to TDM. Some examples of TDM programs sponsored by the MPO and its local TMO partners include:

- Regional ridesharing services provided through an online portal;
- Free or reduced parking for carpools and vanpools near downtown Minneapolis and St. Paul;
- A guaranteed ride home service open to all users of alternative transportation, including carpools, vanpools, transit, and nonmotorized transportation;
- Incentive programs that include prize drawings for individuals and awards for organizations;
- Specialized transit passes targeted to specific groups; and
- Targeted marketing of TDM services.

Metropolitan Council is also funding an expansion of Cyclopath²⁷ an online bike route mapping and collaboration tool developed by the University of Minnesota that allows cyclists to find safe and convenient paths for bicycling. The tool allows users to edit the ratings of specific roads and paths, thus constantly improving base maps to reflect the collective ratings of all participating users. Cyclopath is also available as an "app" for smartphones that run Google's Android operating system, allowing cyclist to access the maps from anywhere. In an innovative collaboration with the University of Minnesota team, Metropolitan Council seeks to expand the functionality of Cyclopath and promote it as a tool for community engagement, informing local nonmotorized transportation planning efforts.

Conclusion

Metropolitan Council has successfully integrated TDM throughout its transportation planning and programming activities. Direct activities such as ridesharing coordination, marketing, and transit expansion (through Metro Transit) provide viable mid- and long-range transportation alternatives for Twin City travelers. The Council's strong support for local nonmotorized transportation planning demonstrates its commitment to promoting safe, convenient short- and mid-range alternatives that enable Twin City area residents to reduce their reliance on personal vehicles. Furthermore, the integration of TDM into highway planning and operations, and transit operations, supports the viability of alternative transportation modes.

Some examples of innovative strategies employed by Metropolitan Council include:

- Emphasis on moving *people* rather than *vehicles* in the long-range plan prioritizes the most cost-effective strategies for mitigating congestion;

²⁷ <http://cyclopath.org/>

- Performance-based selection criteria for CMAQ-funded projects directs funds to the most significant regional investments, standardizes reporting and encourages innovation;
- Managed lanes, park-and-ride lots and bus-only shoulders on highways support transit use and ridesharing;
- High-capacity transit and nonmotorized transportation network expansions provide alternatives to SOV travel; and
- Use of interactive mapping tools to better inform and coordinate local nonmotorized planning.

TDM, in many forms, will continue to be an important aspect of transportation planning in the Twin Cities region. Expansions of high-capacity transit, coordinated with managed highway lanes and park-and-ride facilities will significantly expand transportation alternatives. Performance-based CMAQ project selection will standardize project impacts reporting and encourage innovation among local TMO partners. The nonmotorized transportation network will continue to develop, aided by innovative online tools, and lessons learned by local partners through the NTPP.

Moving forward, Metropolitan Council plans to improve its ability to measure and model the trip reduction and air quality impacts of existing and proposed TDM projects, including nonmotorized transportation projects using VMT and SOV trip reduction as quantitative performance measures, and by including qualitative performance measures related to the public's awareness of available transportation options in the region. The Council hopes that better information about project-specific impacts will enhance its performance-based approach to TDM project selection and enable TDM project elements to be more fully integrated into regional models.

Pima Association of Governments (Tucson, AZ)

MPO Name	Pima Association of Governments (PAG)
Central City	Tucson, Arizona
MPO Planning Area Population²⁸	980,263
MPO Planning Area Employment²⁹	343,093
Innovative TDM Strategies	<ul style="list-style-type: none"> • Training of employer-based transportation coordinators • Prioritizes projects with TDM/nonmotorized elements in TIP project selection • Goal to achieve platinum rating from League American Bicyclists • Use of CMP to institutionalize TDM in roadway planning • Bicycle and pedestrian counting and performance monitoring
Contacts	<ul style="list-style-type: none"> • Cherie Campbell, Planning Director (CCampbell@pagnet.org) • Ruth Reiman, TDM Manager (RReiman@pagnet.org)

Introduction

PAG is the MPO for Pima County, Arizona, home to the Tucson metropolitan area. In 2010, the Tucson area was home to nearly one million residents and is the second-largest metropolitan area in Arizona.³⁰ Like many cities in the southwestern U.S., Tucson experienced tremendous

²⁸ U.S. Census Bureau. 2010 Census Summary File 1 - Arizona. <http://factfinder2.census.gov>

²⁹ U.S. Bureau of Labor Statistics. Quarterly Census of Employment and Wages. <http://www.bls.gov/cew/data.htm>

³⁰ U.S. Census Bureau. 2010 Census Summary File 1 - Arizona. <http://factfinder2.census.gov>

population growth over the past several decades and the region's population is expected to continue to grow rapidly, with increases as high as 80% projected over the next 30 years.³¹

PAG has incorporated TDM throughout the MPO's planning processes and activities. TDM elements are evident in high-level planning goals, long-range plans, stand-alone nonmotorized transportation plans, and the CMP and TIP project selection criteria. The MPO is active in regional TDM promotions, trains and coordinates transportation benefit coordinators for large employers, and leads regional task forces dedicated to achieving TDM goals.

History of TDM in the Tucson Area

TDM has long been part of the transportation system in the Tucson area. The City of Tucson, Pima County, and the region's smaller jurisdictions adopted travel reduction ordinances in 1988, which mandate that employers with over 100 full-time equivalent employees appoint a full-time transportation coordinator, provide information on alternative travel modes to employees, maintain a travel reduction plan to achieve mandated levels of alternative mode commuting, and survey their employees to measure alternative mode usage.³² PAG administers and coordinates the travel reduction efforts of these large employers and recruits smaller employers to participate voluntarily. In recent years, PAG has focused on consolidating the individual programs of these partner employers into a coordinated regional system of TDM services.

PAG has coordinated regional bicycle planning in the Tucson/Pima County region for over 35 years, and the Tucson/Eastern Pima County Region is recognized by the League of American Bicyclists as a gold-level Bicycle Friendly Community.³³ PAG is currently coordinating a task force working towards obtaining a platinum-level designation. In part due to the region's flat terrain and warm, desert climate, the Tucson area is well-known as a road bicycling destination and has regularly been a popular winter training location for professional bicycling racing teams.³⁴

In 2006, Pima County voters approved a half-cent sales tax increase to fund a 20-year plan for regional transportation improvements, including significant expansions to the regional systems

³¹ **PAG.** Regional Data.

<http://www.pagnet.org/RegionalData/PAGRegion/tabid/352/Default.aspx>

³² **PAG.** *Travel Reduction Program.*

<http://www.pagnet.org/Programs/TransportationPlanning/TravelReductionProgram/tabid/220/Default.aspx>.

³³ **League of American Bicyclists.** *2011 Bicycle Freindly Communities Master List.*

http://www.bikeleague.org/programs/bicyclefriendlyamerica/pdfs/bfc_master_list_fall2011.pdf.

³⁴ **Downtown Tucson.** *Bicycling.* <http://www.downtowntucson.org/get-around/bicycling/>

of nonmotorized trails and new transit services. This plan is managed by the Regional Transportation Authority (RTA) charged with carrying out the voter-approved 20-year plan. The relationship between the MPO and the RTA is very close. The RTA plan was developed with support from PAG, the two organizations share an executive director, and projects in the RTA plan are included in PAG's 2040 Regional Transportation Plan (RTP).³⁵ Adopted in 2010, the 2040 RTP identified specific TDM programs and strategies and nearly tripled the amount of funding designated for nonmotorized transportation projects.

PAG's Approach to TDM

PAG takes a regional approach to the coordination of TDM programs at regional and local levels. TDM strategies and goals are featured as integral components of the region's ideal transportation system in PAG's key transportation planning documents. These documents demonstrate that TDM is considered at every step of the transportation planning process.

The MPO conducts planning, research, and programming functions while relying primarily on local governments to implement projects. PAG also leads regional task forces and develops promotional events aimed at encouraging travelers to consider TDM alternatives to solo driving. One such program, the Bike Fest Commuter Challenge, promotes bicycling as a form of transportation and asks bicycle commuters to track their use of bicycling to get to work, with the highest performers entered into a grand prize drawing for a new bicycle.

Vision

PAG's 2040 RTP's vision for the Tucson area's transportation system is "a premier, energy-efficient, and environmentally responsible regional transportation system that is interconnected, multi-modal, technologically advanced and integrated with sustainable land use patterns."

Although TDM is not specifically mentioned in PAG's regional vision statement, the 2040 Regional Transportation Plan identifies several TDM-supportive high-level goals, including:

- Provide a balanced network of alternative mobility choices to meet rail, highway, transit, roadway, bicycle and pedestrian mobility needs,
- Integrate transportation mode choices within the region, connect to facilities outside the region and optimize mobility for people and goods,
- Support vibrant, sustainable communities by linking transportation and land use,

³⁵ **PAG.** *2040 Regional Transportation Plan.*

<http://www.pagnet.org/Programs/TransportationPlanning/2040RegionalTransportationPlan/ta/bid/809/Default.aspx>

- Improve environmental stewardship, natural resource protection and energy efficiency in transportation planning, design, construction and management, and
- Improve transportation options and access for all users.

Connections between these high-level goals and TDM are highlighted throughout the 2040 Regional Transportation Plan.

L RTP

The 2040 RTP, updated in June 2012, places TDM at the center of many regional transportation planning objectives. The plan highlights TDM strategies as cost-effective ways to reduce congestion and to make more efficient use of existing transportation infrastructure. The plan stresses that the region cannot solve congestion problems solely through roadway and transit capacity expansions and highlights some of the many additional benefits of TDM, including: improved air quality, improved community health, improved options for disadvantaged persons, reduced fossil fuel dependency, and reduced greenhouse gas emissions.

The 2040 RTP indicates PAG's holistic approach to regional TDM planning through both stand-alone TDM programs and through the integration of TDM strategies into roadway projects and parking policies. In addition to continued coordination of regional ridesharing and vanpool services and employer-based TDM services, the plan calls for the use of commuter incentive programs to encourage alternatives to solo auto commuting, and HOV lanes that provide time-savings to carpools, vanpools and transit riders, as part of interstate highway capacity expansions. The plan also promotes the use of parking management and pricing as another incentive mechanism for controlling SOV travel demand. Strategies such as these seek to influence traveler behavior and build upon existing TDM programs.

The RTP specifically identifies nonmotorized transportation as an important part of the regional transportation system and highlights several benefits of nonmotorized transportation planning, including: reduced traffic congestion; reduced demand for roadway and parking capacity expansion; more affordable transportation options; reduced dependence on fossil fuels, and economic development. The June 2012 update to the plan continued the near tripling of funds for nonmotorized transportation projects that was initially adopted in 2010.

PAG's nonmotorized transportation program focuses on improvements to bicycle and pedestrian facilities, both on-road and in exclusive right-of-ways. The 2040 RTP and 2009 Regional Bicycle Plan³⁶ call for nearly 700 miles of new nonmotorized facilities, almost double the mileage existing in 2011. Planned nonmotorized facilities include sidewalks, bike lanes, bicycle boulevards, shared-use paths and residential bike routes. One significant regional nonmotorized project is the development of the Urban Loop bikeway. This project seeks to complete a 55-mile continuous separated bike and pedestrian path in the Tucson area. The

³⁶ **PAG.** *Regional Plan for Bicycling.*

<http://www.pagnet.org/documents/bicycle/RegionalBicyclePlan2009.pdf>

Urban Loop will connect to many of the region’s employers, parks, and cultural destinations. The completion of the Urban Loop project will significantly improve nonmotorized transportation accessibility in the region, as 38 percent of the metropolitan population lives within one mile of the Urban Loop.³⁷ The 2040 RTP also highlights several of PAG’s bicycle and pedestrian programs:

- Bicycle encouragement and safety outreach,
- Bicycle and pedestrian signage and stenciling,
- Adult bicycle safety education,
- Safe routes to school,
- Improving pedestrian and bike crossing signals,
- Filling gaps in the regional sidewalk network, and
- Enhancing roadway design to improve safety for pedestrians.

CMP and Performance Measures

PAG’s CMP helps establish a systematic mechanism for prioritizing TDM strategies within the TIP project selection process. The CMP requires that before projects that would add roadway capacity are funded, project sponsors must examine TDM strategies to determine if the project goals could be achieved by other means. This practice demonstrates how PAG is institutionalizing TDM planning as part of the standard transportation planning practice in the region.

The CMP objectives explicitly link TDM-supportive performance measures to the 2040 RTP system goals. Examples of TDM-supportive performance measures include³⁸:

- Alternative mode usage (total and per-capita),
- Percent of bicycle facility completeness,
- Percent of pedestrian facility completeness,
- Trends in traveler mode choice,
- Number of employees in travel reduction program, and
- Number of registered carpool, vanpool, and alternative mode commuters.

PAG collects statistics on the performance of TDM projects and programs in order to better assess their effectiveness at achieving regional transportation goals. For instance, PAG performs an annual bicycle traffic count at over 100 locations to assess changes in bicycle ridership over time. PAG also uses bicycle and pedestrian count data collected before-and-after the

³⁷ **Pima County.** *The Loop.* <http://www.pima.gov/theloop/>

³⁸ **PAG.** *2040 Regional Transportation Plan.* <http://www.pagnet.org/Programs/TransportationPlanning/2040RegionalTransportationPlan/tabid/809/Default.aspx>

construction of nonmotorized transportation facilities to assess the impact these new facilities had on travel patterns in specific neighborhoods. Count data has been used to identify neighborhoods that may benefit from targeted outreach and education on nonmotorized transportation and to assess the effectiveness of these activities at increasing nonmotorized transportation use. PAG also collects and analyzes statistics from the employers participating in the travel reduction program, publishing regular reports on employer's progress toward meeting the travel reduction goals of local ordinances.

TIP

The systematic evaluation of TDM strategies in the CMP feeds into PAG's TIP development process. Project sponsors are asked to identify the TDM elements integrated into all project proposals, and proposals that include TDM elements are assigned additional points during the selection process.

PAG's 2012-2016 TIP includes numerous bicycle and pedestrian projects, planned both as stand-alone projects or, more-commonly, integrated into roadway widening or rehabilitation projects.

UPWP

PAG's commitment to TDM planning can be seen in the MPO's 2011-2012 work program. The program identifies and guides the development of numerous TDM planning, promotion, and outreach activities including:

- Establishment of a regional alternative modes program,
- Coordination and training of employer-based transportation coordinators,
- Collection and analysis of TDM data from employers participating in the travel reduction program,
- Development of an enforcement policy for local travel reduction ordinances,
- Providing guaranteed-ride-home services for users of alternative transportation modes,
- Promoting ridesharing and nonmotorized transportation at regional events,
- Providing regional ridematching and vanpool services, including vanpool subsidies,
- Supporting and promoting the annual Bike Fest bicycling event,
- Leading the region's task force to achieve a platinum-level Bicycle-Friendly Community rating from the League of American Bicyclists,
- Promoting bicycling safety through media, improved traffic signals, and by providing bike helmets, and
- Supporting regional efforts to develop the Urban Loop bikeway and other nonmotorized transportation facilities.

Conclusion

PAG's holistic approach to TDM planning is evident through the consistency with which TDM is featured in regional planning documents and work plans. The 2040 RTP includes goals to develop more alternatives to driving alone, to provide more accessible transportation options for youth and elderly residents, and to support active, healthy lifestyles. Also, the voter-approved RTA plan, with its funding commitment, contains numerous nonmotorized transportation improvements which are incorporated into the 2040 Regional Transportation Plan and demonstrates high-level support for TDM in the planning process. Because the RTA plan was approved by voter-referendum, there is little doubt that the public supports TDM as an important part of the regional transportation system.

The RTA's contribution to the 2040 RTP has supported numerous expansions of TDM facilities. As of June 2012, the RTA component of PAG's 2040 RTP had resulted in the construction of 87 pedestrian safety and 71 bikeway/pathway improvements. Six park and ride centers were also constructed and transit services had been expanded to include weekend, evening, and rural services. Additionally, construction started on a modern streetcar linking the University of Arizona campus with downtown Tucson, and numerous other alternative mode projects were under development.

PAG has also integrated TDM considerations into the CMP and TIP project selection processes. By mandating that sponsors of capacity-adding projects study TDM alternatives, the MPO has institutionalized TDM in the planning process as a first-choice option for meeting roadway congestion challenges. Furthermore, by allocating additional points for proposals that include TDM elements, PAG provides a strong incentive for partners to include TDM elements in their projects.

PAG plans to continue moving toward a more comprehensive, regional system of TDM services. In 2012, PAG established a regional alternative modes program that will further consolidate the TDM activities of its member jurisdictions under one program. PAG is collaborating with the University of Arizona to plan for alternative transportation linkages between the campus and the surrounding areas of Tucson. PAG has also recently installed automated bicycle counting equipment to provide enhanced data on nonmotorized transportation travel patterns and PAG will continue to lead the regional effort to achieve platinum-level recognition from the League of American Bicyclists, which confirms its overall leadership on alternative transportation modes.

Sacramento Area Council of Governments (Sacramento, CA)

MPO Name	Sacramento Area Council of Governments (SACOG)
Central City	Sacramento, California
MPO Planning Area Population³⁹	2,274,557
MPO Planning Area Employment⁴⁰	870,286
Innovative TDM Strategies	<ul style="list-style-type: none"> • Use of scenario planning to visualize impacts of compact land use alternatives on transportation • Smart growth as a long-term trip reduction strategy • Start-up incentives for new vanpools and a vanpool service targeted to agricultural workers • Goal to reduce overall vehicle miles traveled by 10 percent in 20 years • Funding guidelines and incentives for TMOs to address regional goals
Contacts	<ul style="list-style-type: none"> • Matt Carpenter, Director of Transportation Planning (mcarpenter@sacog.org) • Gordon Garry, Director of Research & Analysis (ggarry@sacog.org)

Introduction

SACOG is the MPO for the six-county Sacramento, California metropolitan area, home to the State’s capital and over 2.2 million residents in 2010⁴¹. The region’s population is projected to grow significantly over the coming decades, with population estimated to reach 3.2 million in

³⁹ U.S. Census Bureau. 2010 Census Summary File 1 - California. <http://factfinder2.census.gov>

⁴⁰ U.S. Bureau of Labor Statistics. Quarterly Census of Employment and Wages. <http://www.bls.gov/cew/data.htm>

⁴¹ U.S. Census Bureau. 2010 Census Summary File 1 - California. <http://factfinder2.census.gov>

2030 (a nearly 45 percent increase from 2010), and nearly 4 million by 2050.⁴² Regional employment is also projected to grow rapidly, with a nearly 50 percent increase estimated from 2003 to 2030.⁴³

TDM principles are evident at the highest levels of SACOG's metropolitan planning process, beginning with a focus on compact land uses that support alternative transportation options in its scenario-planning-based Blueprint vision plan. SACOG's metropolitan transportation plan reflects this vision by including policies and goals that emphasize that TDM strategies make more efficient use of transportation investments by providing alternatives to driving alone. These foundational plans are bolstered by stand-alone plans that provide more detailed strategies and policies to support the region's goal of reducing annual VMT by 10 percent by 2035.

The region's vision of a future transportation network that provides greater options and is less damaging to the environment is reflected in the projects included in SACOG's 2011-2014 Metropolitan Transportation Improvement Program (MTIP) which includes substantial increases in funding for nonmotorized transportation, TDM, and transit, as compared with a decade prior. SACOG also provides direct TDM services through the regional 511 traveler information system, provides incentives to support vanpool startups, supports regional events promoting TDM and nonmotorized options, and coordinates the work of locally-based TMOs that provide TDM services, education, and marketing.

History of TDM in the Sacramento Area

The SACOG planning area is home to 13 TMOs that provide and support the use of alternative transportation options for workers and residents in their service areas. SACOG's regional TDM program is an outgrowth of the work of these local TMOs, and it reflects the strong partnerships forged through monthly meetings of the TDM Task Force. SACOG started the task force as a means to coordinate ridesharing efforts and to create a forum for sharing information across TMOs. Through the task force meetings, and with leadership from SACOG, TMO services have been expanded over time to cover the majority of the region's residents. In addition to traditional ridesharing and vanpooling, the TDM program now also includes support for users of nonmotorized transportation and transit.

In 2002, SACOG launched an integrated land use and transportation visioning process called the Blueprint⁴⁴, in response to growing population and travel congestion projections, which

⁴² **Levy, Stephen, and Doche-Boulos, Viviane.** *Projections of Employment, Population, Households, and Household Income in the SACOG Region for 2000 – 2050.*

<http://www.sacog.org/demographics/projections/files/SACOG%20Regional%20Projections%20Final%20Report%20Sept05.pdf>

⁴³ **ibid.**

⁴⁴ **SACOG.** *Blueprint Transportation/Land Use Plan.* <http://www.sacregionblueprint.org/>

indicated that unless land use patterns changed, air quality and roadway congestion would worsen regardless of how transportation funds were programmed. The outcome was a preferred scenario that emphasized greater balance between traditional suburban development and more compact, smart growth in designated areas. The Blueprint vision plan signaled a significant shift in direction for the region and led to a greater emphasis on transit, TDM, and nonmotorized transportation planning.

In 2008, the State of California passed the Sustainable Communities and Climate Protection Act (SB 375) requiring the California Air Resources Board (CARB) to set performance targets for passenger vehicle emissions in each of the State's metropolitan planning areas.⁴⁵ SB 375 also required that the Metropolitan Transportation Plans (MTP) of California MPOs include a Sustainable Communities Strategy (SCS) that integrates land-use and transportation planning. These policies supported the shift to integrated land-use and transportation planning that SACOG began with the Blueprint vision plan and added new greenhouse gas emission requirements to the regional transportation planning process.⁴⁶ These new State planning requirements place an increased emphasis on the need to reduce demand for SOV travel.

SACOG's Approach to TDM

SACOG's approach to TDM is linked to the Blueprint vision plan, which directs much of predicted future population and jobs growth to more compact and mixed-use development that can support alternative transportation modes. SACOG's 2035 MTP/SCS⁴⁷ builds upon the Blueprint vision by identifying reduction in VMT and increase in nonmotorized transportation as key performance measures in the CMP, highlighting TDM as cost effective way to make the most of transportation investments, and by including numerous TDM-related policies and goals.

SACOG's comprehensive approach to TDM is also evident in the programming and project selection process, which includes dedicated funding programs for TDM stand-alone plans, and builds on the TDM elements of the 2035 MTP/SCS, including a Bicycle, Pedestrian and Trails Master Plan⁴⁸, a TDM Strategic Plan⁴⁹, and a Complete Streets Toolkit.⁵⁰

⁴⁵ **CARB.** *Sustainable Communities.* <http://www.arb.ca.gov/cc/sb375/sb375.htm>

⁴⁶ **SACOG.** *Sacramento Region MTP/SCS 2035.* <http://www.sacog.org/2035/>

⁴⁷ **SACOG.** *Sacramento Region MTP/SCS 2035.* <http://www.sacog.org/2035/>

⁴⁸ **SACOG.** *SACOG Regional Bicycle, Pedestrian, and Trails Master Plan.* <http://www.sacog.org/publications/SACOG-08-008%20TDM%20Strategic%20Plan.pdf>

⁴⁹ **SACOG.** *TDM Strategic Plan.* <http://www.sacog.org/publications/SACOG-08-008%20TDM%20Strategic%20Plan.pdf>

⁵⁰ **SACOG.** *Complete Streets Toolkit.* <http://www.sacog.org/complete-streets/toolkit/start.html>

SACOG provides technical assistance and actively coordinates the work of member communities and local partners in the areas of TDM. SACOG also directly provides regional-scale trip planning, traveler information, vanpool services, ride matching, and marketing and promotion for TDM special events.

Vision

In 2004, SACOG adopted the Blueprint 50-year vision plan for the Sacramento region. SACOG worked collaboratively with 90 public and private organizations to engage the public and to develop the Blueprint. The project developed scenarios that illustrated multiple possible futures for the region, reflecting different combinations of land-use policies and transportation investments. With the region's population projected to grow by 1.7 million people by 2050, a nearly 75 percent increase, SACOG's use of scenario planning helped communicate that land-use policies have significant implications for future transportation demand and travel patterns. Residents and officials in the SACOG area selected a preferred scenario that emphasized more compact development, which can be supported by expanded transit and TDM options.

SACOG supports local communities in estimating the long-term transportation and air quality impacts of land-use decisions through direct outreach and training, and by providing technical tools. SACOG encourages local communities to make land-use decisions consistent with the Blueprint vision plan.

L RTP

SACOG's 2035 MTP/SCS supports the Blueprint vision plan and focuses on making the most efficient use of transportation funding resources. The plan emphasizes the high return on investment that TDM strategies, including bicycle and transit trip planning tools incorporated in the region's 511 traveler information system, provide. The plan also sets specific goals for the expansion of the region's TDM program by 2035 (see Table 2 for more information).

Table 2: TDM in the MTP/SCS

Policy or Program	2008 Baseline	MTP/SCS (by 2035)
Transportation Management Areas	About one dozen functioning TMAs in employment centers—focus on education, outreach & coordination	Regional coverage expands, with some TMAs offering direct incentive-program administration, plus management of support programs
Work-Based Incentives	Spotty transit, HOV & non-motorized work incentives; emphasis on public agencies	Additional funding support for work-based programs in order to reach a higher share of regional employers
Vanpool Support	Limited support on an employer-by-employer basis	Sizeable vanpool programs at about 10 major employment centers
Car-Sharing Programs	One market-based car share in downtown Sacramento	Additional market-based car shares in multiple job centers

SOURCE: Sacramento Region MTP/SCS 2035, Table 10.1, p. 242

The MTP/SCS includes a goal of reducing regional VMT by 10 percent by 2035 in order to reduce congestion, improve air quality, and comply with greenhouse gas reduction targets set by CARB as part of SB 375. SACOG estimates that increases in TDM usage, when planned to accompany changes in land use, transit expansion and enhanced roadway operations, will enable the region to maintain mobility while accommodating substantial population growth and reducing the impact of transportation systems on the environment. TDM is emphasized in numerous policies and strategies in the 2035 MTP/SCS through:

- Identifying TDM as a strategy to maintain clean air and improve public health while achieving a 10 percent reduction in VMT.
- Promoting the value of TDM in partnership with community and employer-based organizations is a policy of the 2035 MTP/SCS, which explicitly recognizes nonmotorized transportation as part of a comprehensive approach to TDM and highlights the essential role of local and employer-based partner organizations.
- Highlighting TDM as a cost-effective strategy for improving accessibility for low-income and minority communities.
- Parking and roadway pricing are identified as strategies to encourage the use of TDM travel options, support higher density land uses, and provide more effective mechanisms for generating additional transportation funding.
- Identifying bus and carpool lanes as strategies for reducing congestion in commuter corridors.

- Targeting suburban residents with TDM services before expanding fixed-route transit services.
- Including stand-alone programs to encourage and provide funding for local communities to design new developments with walking, bicycling and transit use as primary considerations, to invest in bicycle and pedestrian routes that connect to major destinations and transit routes, and to support the development of a regional nonmotorized transportation network are included.
- Providing dedicated funding programs for bicycle and pedestrian projects, community design, and TDM.
- Proposing \$2.8 billion for bicycle and pedestrian projects for 2011-2035 (8 percent of total). In addition, an estimated 20 to 30 percent of road and highway maintenance and rehabilitation projects include bicycle and pedestrian components.
- Including an estimated 33 percent of MTP/SCS projects for complete streets elements aimed at increasing the safety and use of nonmotorized transportation.
- Proposing that seventy-five percent of planned freeway lane-mile additions are carpool lanes, auxiliary lanes, or ramps.

CMP and Performance Measures

The 2035 MTP/SCS includes a CMP which was developed concurrently with the plan. The four primary performance measures used in the CMP reflect the 2035 MTP/SCS emphasis on reducing overall VMT and encouraging alternatives to SOV travel. They are:

1. VMT,
2. The level of congested VMT,
3. Transit ridership and transit modal split, and
4. Nonmotorized transportation travel and modal split.

SACOG uses land use scenario software and its regional activity based travel demand model to forecast and analyze the cumulative effects of changing regional demographics and planned transportation system investments on these key indicators of system performance. SACOG is also working to improve its regional transportation demand modeling capabilities to include more accurate methods of estimating speeds for cyclists and pedestrians based on the quality of service the network provides, and to improve the ability of the CMP to estimate the effects of nonmotorized transportation investments.

TIP Project Selection

SACOG's overall integration of TDM is evident in the project selection process for the MTP/SCS, and the MTIP. The MTIP projects consist primarily of projects selected through the regional funding programs SACOG manages. These funding programs, including the TDM Funding Program, are funded primarily from CMAQ, the Surface Transportation Program and State

sources. Projects range from large capital investments to TDM programs and non-motorized transportation.

The TDM Funding Program helps support the work of local TMOs and special TDM projects. The majority of TDM funding is distributed by formula to partner TMOs that provide TDM services, information, and incentives. SACOG requires that all TMO partners provide certain core TDM services, such as promoting ridesharing, producing an annual TDM Services Plan, providing a guaranteed ride home service, promoting regional TDM events, and regular participation in the SACOG TDM Task Force. SACOG specifies additional service categories that remaining regional TDM funds may be used to provide. SACOG reserves a portion of the TDM funding to support innovative new TDM programs through a competitive bid process.

SACOG also maintains a Bicycle & Pedestrian Funding Program for regional nonmotorized transportation projects. To be eligible for funding, member communities' applications must be for projects included in SACOG's Bicycle & Pedestrian Master Plan; SACOG gives applications special consideration if they support Blueprint and MTP/SCS principles, and projects competing for funding must demonstrate strong performance outcomes. Among the outcomes an applicant may focus on in their application are reducing VMT or increasing the share of nonmotorized transportation trips.

Additional funding programs that support TDM include the Community Design Funding Program⁵¹ and Regional/Local Funding Program⁵². These programs do not require projects to address TDM issues, but include several aspects that support integration of TDM in project applications. The Community Design program primarily supports efforts to develop more compact, mixed-use neighborhoods that are more suitable for alternative transportation modes, including TDM, nonmotorized transportation and transit alternatives. The Regional/Local program funds small to mid-size projects that address both local and regional needs. Examples of projects funded with these programs include complete streets design, local nonmotorized transportation planning, and transit shelter and station improvements.

Stand-Alone Plans

SACOG has developed several stand-alone plans related to TDM that detail the MPOs approach to specific aspects of TDM. These detailed plans and tools demonstrate the MPOs active and complementary planning activities for TDM and provide specific guidance on their integration throughout the regional transportation planning and programming process.

⁵¹ **SACOG.** *Community Design Funding Program.*

<http://www.sacog.org/regionalfunding/communitydesign.cfm>

⁵² **SACOG.** *Regional/Local Funding Program Guidelines and Application Instructions.*

<http://www.sacog.org/regionalfunding/fundingprograms/pdf/2011/06/22/2012%20Funding%20Program%20Regional%20Local%20Guidelines%20&%20Application.pdf>

SACOG's TDM Strategic Plan⁵³ provides an in-depth look at TDM providers and services in the Sacramento region. The TDM Strategic Plan feeds into and informs the MTP/SCS. The plan details current TDM service usage and TMO coverage areas, identifies the benefits of providing TDM services, sets goals for the regional TDM program, and provides guidance on how to assess TDM program performance. The plan emphasizes the need to expand TDM services to cover all residents of the region, to target non-work trips in addition to work-based trips, and the need to improve TDM performance monitoring. In order to implement the various TDM initiatives identified, the strategic plan also clarifies roles & responsibilities between the TMOs and SACOG. The objective is to encourage and support the TMOs in creating customized programs for local needs, while also recognizing the value of regional coordination from SACOG on efforts such as rideshare or 511 traveler information services.

The SACOG Regional Bicycle, Pedestrian, and Trails Master Plan⁵⁴ is a comprehensive plan for nonmotorized transportation in the Sacramento region. The 20-year master plan contains all regionally-significant nonmotorized transportation projects, and guides the Bicycle and Pedestrian Funding Program. The master plan contains a regional nonmotorized transportation vision, program goals, design guidelines, nonmotorized travel statistics, guidance on performance measurement, and a comprehensive list of projects. The master plan emphasizes the importance of providing nonmotorized transportation connections to transit, carpool, vanpool, and park-and ride facilities, improving nonmotorized transportation safety, filling gaps in the regional trail network, and including nonmotorized facilities in all street designs (i.e., complete streets). The plan was developed by an advisory committee consisting of SACOG staff, State and local stakeholders, air quality management districts, and advocacy groups.

As a resource for member communities, SACOG worked with a local complete streets advocacy group to develop the Complete Streets Resource Toolkit.⁵⁵ This online toolkit provides extensive guidance on how to integrate nonmotorized transportation in all roadways, including case studies, best practices and design guidelines.

Direct Programs

In addition to its regional TDM planning and programming roles, SACOG coordinates the work of local TMO partners, contributes to signature regional events and provides some direct regional services.

⁵³ SACOG. *TDM Strategic Plan*. <http://www.sacog.org/publications/SACOG-08-008%20TDM%20Strategic%20Plan.pdf>

⁵⁴ SACOG. *Regional Bicycle, Pedestrian, and Trails Master Plan*. http://www.sacog.org/bikeinfo/download_bike_ped_trails_mp.cfm

⁵⁵ SACOG. *Complete Streets Toolkit*. <http://www.sacog.org/complete-streets/toolkit/start.html>

In 2010, as part of its Rural-Urban Connections Strategy,⁵⁶ SACOG began an Agricultural Worker Transportation Program (AWTP) pilot program, which provides vanpool services specifically targeted to meet the specialized needs of the region's 10,000 seasonal agricultural workers. The AWTP seeks to provide affordable, reliable transportation to agricultural workers while helping reduce VMT, which tends to be significantly higher for rural workers than urban workers. SACOG produced a business plan to support the AWTP, which included market research and analysis of target customers. The analysis found that the vast majority of agricultural workers in the Sacramento region felt that public transit did not meet their work transportation needs, that few could afford personal vehicles, and that most would be very likely to use the vanpool program if it improved access to work sites.⁵⁷ Following a successful demonstration program period, SACOG is continuing the implementation of the AWTP and also is also increasing the subsidy for general purpose vanpools. A separate Volpe study for FHWA on innovative approaches by MPOs to planning for healthy communities includes a SACOG case study that highlights this program.⁵⁸

SACOG operates the 511 traveler information system for the Sacramento region. In addition to more common real-time roadway traffic information, the SACOG 511 system also includes bicycle and transit trip planning tools and the regional ridesharing system. SACOG directly operates the ridesharing system and an incentive program for vanpool commuters. The vanpool incentive provides up to \$1,800 (\$300/month for six months) to support new vanpool startups and a \$200 gas card to reward six months of vanpool operation.⁵⁹

SACOG convenes a regional TDM Task Force, which provides a forum for the regional coordination of TDM services. Local TMO partners participate in the task force, which meets monthly to share best practices, challenges and concerns. The task force members cooperate with each other and SACOG on signature regional events, including May is Bike Month.

May is Bike Month⁶⁰ is a signature campaign designed to promote bicycling in the Sacramento region. The campaign includes multiple bicycling events organized by SACOGs local partners such as bike to school/work days, popular bicycling festivals, organized group rides and social events. SACOG supports a website for May is Bike Month which includes the Million Mile Challenge, a contest for cyclists who pledge a commitment to bike a number of miles and record their actual bicycling behavior, including the purpose of the trip (e.g. commute, running

⁵⁶ **SACOG.** *Rural-Urban Connections Strategy.* <http://www.sacog.org/rucs/>

⁵⁷ **SACOG.** *Agricultural Workers Transportation Program Business Plan.* <http://www.sacog.org/rucs/pdf/AWTP%20Business%20Plan%202-3-10.pdf>

⁵⁸ **USDOT/Volpe Center.** *Metropolitan Area Transportation Planning for Healthy Communities.* http://www.planning.dot.gov/documents/Volpe_FHWA_MPOHealth_12122012.pdf

⁵⁹ **SACOG.** *Vanpool Incentive Program.* <http://www.sacregion511.org/rideshare/vanincentive.html>

⁶⁰ <http://www.mayisbikemonth.com/>

errands, recreation, work, or multi-purpose). Results are reported by individual or aggregated by employer, school, or other interest group, such as bike clubs. Participants are entered into random drawings to earn prizes. In 2012, over 1.7 million miles were logged by over 8,800 individual participants. May is Bike Month also involves private sector partners who help encourage bicycling by offering special promotions for cyclists during the month of May.

Conclusion

Beginning with the coordination of land use and transportation planning through scenario planning in the Blueprint vision, SACOG has successfully interwoven TDM principles throughout its transportation planning at key stages of the process, from scenario planning, to the long-range plan, MTIP project selection, and in numerous other planning functions. SACOG's emphasis both on more compact development and alternative transportation modes has enabled it to develop a plan for a future transportation network that can not only accommodate significant population growth, but do so while reducing overall VMT and associated harmful vehicle emissions. TDM is an integral part of SACOG's MTP/SCS, as a mechanism to make the most efficient use of limited transportation funding and as a means to maximize the trip-reduction potential of the more compact, mixed-use development envisioned in the Blueprint plan. The integration of TDM is continued in the CMP, through the use of performance measures that are focused on reducing SOV travel while increasing the use of alternative modes.

SACOG has developed multiple programs for funding and supporting the work of local partners to deliver TDM services, including complete streets, neighborhood design, and vanpool incentive programs. SACOG's emphasis on working with and coordinating local TMOs enables the MPO to have a broad reach, while its technical abilities and participation in signature events provide needed support for member communities and for major initiatives. SACOG also directly provides TDM services, such as the AWTP, the regional ridesharing service and nonmotorized trip planning tools.

In future years, SACOG plans to improve its ability to predict the performance of nonmotorized transportation through updates to its transportation demand modeling capabilities. SACOG is working to develop more accurate methods of estimating speeds for cyclists and pedestrians based on the quality of service the transportation network provides. SACOG also plans to expand and promote the vanpool program as a cost-effective way to fill fixed-route transit service gaps in suburban and rural areas. Additional planned activities include supporting expanded car sharing and bike sharing systems in member communities, and integrating measures of roadway condition and suitability into bicycle trip planning tools.

VI. Conclusion

MPOs are now beginning to incorporate a broad set of TDM strategies into all levels of regional transportation planning. In the past, MPOs may have viewed TDM programs as locally-initiated tools with a limited potential to mitigate some inefficiencies in system performance. However, today some MPOs have embraced TDM as an essential aspect of regional transportation planning by including TDM principles in their visions and long-range plans, by requiring that new construction and rehabilitation proposals incorporate or consider TDM alternatives, and by implementing regional TDM programs through standalone plans, special funding programs, and working groups.

The four MPOs highlighted in this report have embraced different TDM strategies, but all have incorporated TDM as an essential element of their regional transportation planning and programming processes. They recognize TDM strategies as cost-effective tools for making the more efficient use of existing regional transportation investments and for providing expanded choices to transportation system users. These MPOs are advancing TDM strategies by building on the efforts of champions in their member communities, through active coordination of TMOs, and by engaging the private sector as a key partner in providing TDM services. Many have institutionalized consideration of TDM in their CMPs and TIP project selection processes, have prioritized data-driven, performance-based evaluation of TDM alternatives into their funding programs, or have explored compact land development as a long-term travel demand reduction strategy. In some cases, these MPOs have identified TDM strategies as essential to accomplishing major planning goals, such as reducing VMT on the regional roadway network, managing congestion, and serving the needs of disadvantaged groups.

As budgets have become stretched ever tighter, and community attitudes about transportation have changed, MPOs have expanded upon the traditional aspects of TDM. Carpooling and vanpooling programs have become regional amenities, available to all, rather than the business primarily of large employers. As interest in nonmotorized transportation has grown, MPOs have successfully promoted bicycling and walking as an alternative to driving on a regional scale. On the horizon are attempts to more comprehensively include TDM in the design of infrastructure investments (e.g., HOV lanes, and complete streets), which supports TDM programs by making alternatives to solo driving faster, less expensive, and safer. However, perhaps most significantly, MPOs are now beginning to incorporate TDM principles throughout the transportation planning process, rather than as a separate or add-on activity. This reflects a more holistic approach to managing congestion and optimizing system performance that includes TDM as a key component, integrated at every level.

Acronyms

AWTP	Agricultural Worker Transportation Program
CARB	California Air Resources Board
CDOT	Colorado Department of Transportation
CMAQ	Congestion Mitigation and Air Quality Program
CMP	Congestion Management Process
DRCOG	Denver Regional Council of Governments
HOT	High-Occupancy/Toll
HOV	High-Occupancy Vehicle
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
FHWA	Federal Highway Administration
FY	Fiscal Year
L RTP	Long-Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21 st Century
MPO	Metropolitan Planning Organization
MTIP	Metropolitan Transportation Improvement Program
MTP	Metropolitan Transportation Plan
NTPP	Nonmotorized Transportation Pilot Program
PAG	Pima Association of Governments
RTA	Regional Transportation Authority
RTP	Regional Transportation Plan
SACOG	Sacramento Area Council of Governments
SB 375	State Bill 375
SCS	Sustainable Communities Strategy
SOV	Single-Occupant Vehicle
TDM	Transportation Demand Management
TIP	Transportation Improvement Program
TLC	Transit for Livable Communities
TMO	Transportation Management Organization
UPWP	Unified Planning Work Program
VMT	Vehicle-Miles Traveled