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## TECHNICAL MEMORANDUM

**TxDOT Project Transportation Operation, Management and Planning Support for the Austin District, Interagency Cooperation Contract 14-3XXIA002**

**Interagency Contract Task #13, Technical Support for Travel Options Planning and Strategic Investment Alternatives, Subtask B: Best Practices on TDM Applications for Regional Implementation**

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### **Introduction**

Travel demand management (TDM) has been defined as simply as “a set of strategies aimed at maximizing traveler choices”(1). The Capital Area Metropolitan Planning Organization (CAMPO) 2040 Regional Transportation Plan explains more of the characteristics of TDM (2):

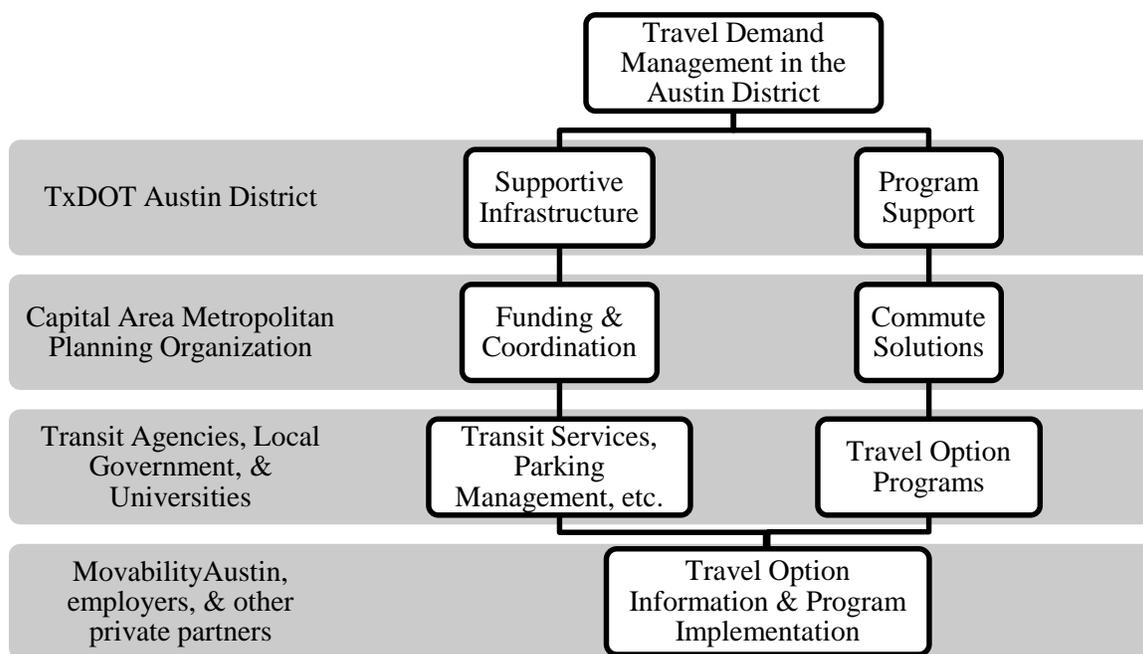
*Achieving greater transportation system efficiency by managing or decreasing the demand for auto-related travel. This typically includes alternatives to single occupant vehicles (transit, carpool, vanpool), incentives/disincentives (congestion pricing, HOV lanes), and alternative work environments (teleworking, flex scheduling).*

Put into economic terms, transportation systems function through delivery of supply (transportation infrastructure) to serve a demand for travel (passengers, freight, and other uses). This relationship implies two different approaches to the management of transportation— increasing supply of infrastructure as needed, and managing demand for that supply. These approaches can be symbiotic; demand management techniques can reduce or delay strains on infrastructure while providing flexibility and travel options for system users. Infrastructure investments can also facilitate management of roadway demand by supplying travel options. Though this perspective is not a new concept, it has been defined differently across the nation, with varying results.

This technical memorandum synthesizes approaches to managing demand to identify opportunities to improve the transportation system in the Texas Department of Transportation (TxDOT) Austin District. In particular, it provides a brief overview of TDM in the Austin District, a review of best practices focusing on planning techniques and tools that successfully integrate TDM measures into planning approaches and documents, effective characteristics of TDM elements included in long-range and land use plans, and reasonable goals established for TDM.

### Overview of Travel Demand Management in the Austin District

As in other regions, several organizations in Central Texas have an important role in TDM, which can be thought of as a loop of cooperation with transportation system management (Figure 1). However, each transportation agency and partner plays a part in both the infrastructure side (“hard” projects) and in program support and development (“soft” projects). Though TDM has traditionally been focused on the area of commute option information, research shows these efforts have limited success when not strongly coupled with infrastructure planning and decision making.



**Figure 1. Generalized Travel Demand Management as a Connected Loop of Roles.**

To briefly review the current key TDM programs, the TxDOT Austin District currently plays a major part by supporting the region with infrastructure such as tolled highway improvements serving transit, which limit use by passenger vehicles to some extent through pricing. TxDOT is also implementing a Peak-Time, Work-Trip Reduction Initiative that tests employees’ contributions to reducing demand on the region’s roadways (3). TxDOT partners with Movability Austin on this initiative to “support Austin area employee peak-hour, drive-alone trip reduction by 20 percent by 2020” (2). The Central Texas Regional Mobility Authority is working with TxDOT to implement priced, managed lanes that provide free access for transit vehicles, and studying the use of ridesharing systems with toll discounts (4). The Austin District also coordinates with CAMPO through regional funding of Commute Solutions, the regional program

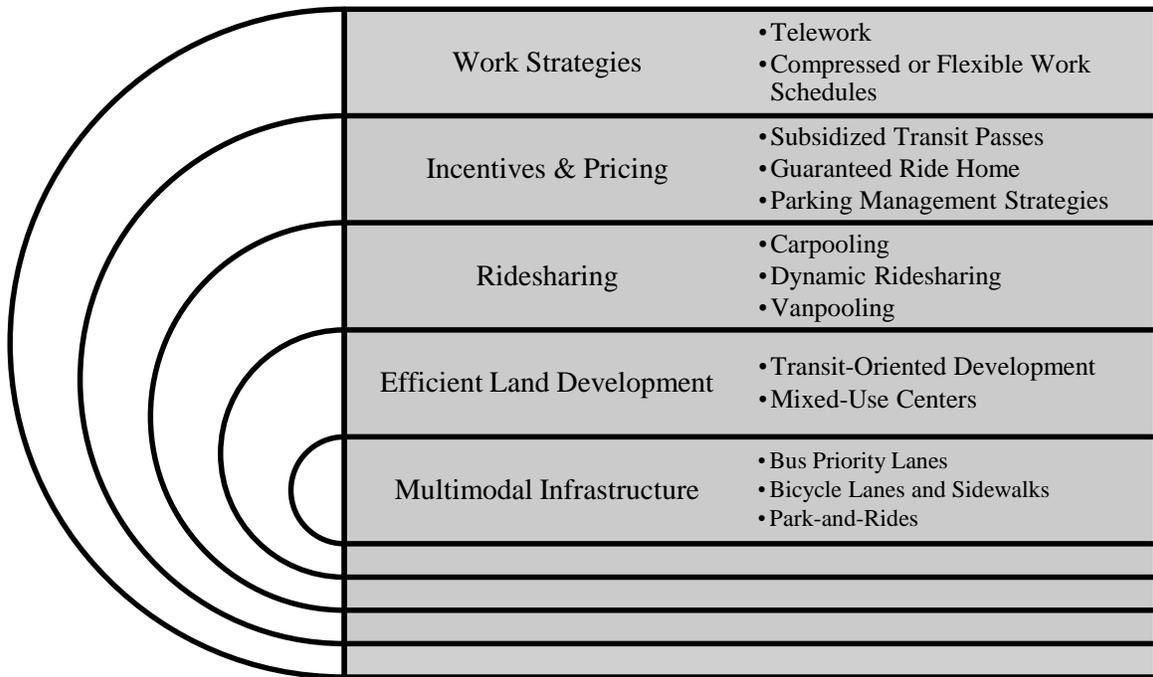
for travel options and ridesharing database. Commute Solutions works directly with local jurisdictions in the region, in addition to 23 other partners, such as the Capital Metropolitan Transportation Authority (Capital Metro), the Capital Area Rural Transportation System, Movability Austin, and the TxDOT Austin District, to name a few (2). Local cities, transit agencies, and universities are also partnering with CAMPO and others to implement their own TDM strategies. The University of Texas at Austin has its own carpooling program that is supported by priority parking spots (Figure 2).



**Figure 2. The University of Texas at Austin Priority Parking for Carpools**  
(<http://www.utexas.edu/parking/transportation/carpool/>).

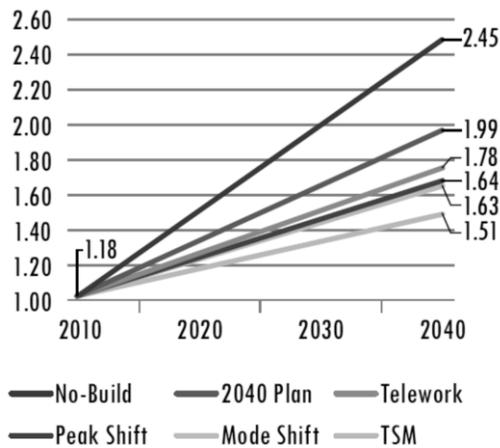
Local employers work with organizations like the downtown transportation management association, Movability Austin, to develop programs to reduce employees' single-occupant vehicle trips. Employers benefit through reduced costs such as less vehicle parking needed, and employees gain services they value, such as subsidized transit passes through Capital Metro's MetroWorks program (5) or teleworking one or more days a week. Judson Moore, facilities site manager for Mutual Mobile, reported that by partnering with Capital Metro to support employee transit use, "Our company saves nearly \$10,500 on parking expenses annually" (5). Individualized travel planning helps connect agency-level direction on TDM changing behaviors with information and support. At least two organizations offer this service within the Austin District—visiting people on an individual basis with information on travel options, and offering to answer questions. Movability Austin's Travel Advisors and the City of Austin's new Smart Trips pilot program (currently supported by a federal grant through the American Planning Association) give people information to help them get around "by foot, bus, train, bike, and shared car" (6). Each of these programs, and many not mentioned, increase the effective capacity of the transportation system by helping maximize the multimodal investments the region has made. However, several of these programs are nascent in comparison to some programs implemented elsewhere.

TDM strategies can incorporate a wide variety of travel modes and methods. Figure 3 provides a partial overview of the ways that TDM helps address mobility needs.



**Figure 3. Overview of TDM Strategies.**

CAMPO’s 2040 Regional Transportation Plan explicitly models five TDM and transportation system management strategies (Figure 4), finding they “could dramatically improve the Travel Time Index, lowering it from 1.99 to 1.51” (2).



**Figure 4. CAMPO 2040 Plan Scenario Descriptions for the TDM and Transportation System Management (TSM) Analysis (2).**

CAMPO reported that (2):

*“TDM and TSM projects are often less expensive than traditional added capacity projects (e.g., adding lanes to a road) and offer cost effective additional strategies with which to mitigate congestion. The CAMPO region should plan, implement, and maintain a strategic, coordinated program of TDM and TSM strategies to maximize the effectiveness of the existing and planned transportation system.”*

Supporting TDM initiatives is a key action described in the plan.

The next section focuses on some of the best practices for regional planning and implementation of TDM strategies that could be of use to the Austin District.

### **Best Practices for TDM in Regional Planning**

To fully leverage the benefits of TDM in the Austin District, regional and local partners should plan for changes in a coordinated fashion—not just for the region’s long-range transportation plan but for investments at every level. This section reviews some of the best practices gathered from current literature, including specific case studies to consider for application in the Austin District. Recent guidance on integrating TDM strategies into planning emphasizes planning at the statewide, regional, and local levels. The Austin District’s growing population and sheer size place it in the ranks of small states, yet it also contains its own metropolitan region served by CAMPO. Therefore, the TxDOT Austin District has to plan at both scales—planning at the statewide level but also thinking and implementing projects like a regional entity by working closely with local officials. The following best practices seek to connect these roles.

#### *Develop Multidisciplinary Teams and Initiatives*

No single agency can plan and implement a regional vision for TDM on its own. As Figure 1 suggests, each partner plays an important role in determining the success of TDM strategies, and agencies should seek to coordinate closely enough to act as a single team while accomplishing agency goals. Successful multidisciplinary work in TDM includes traffic engineers, elected officials, travel behavior specialists, and local stakeholders working together. One of the main ways that multidisciplinary teams and initiatives form and begin to thrive is through developing and revising regional visions and goals. Collaborative TDM teams and initiatives share the following features:

- Individual agency projects support each other’s through funding and in-kind assistance.
- Group and individual work performance assessments include collaboration components with regional partners.
- Major policy decisions at agency board meetings reflect more consensus than contention.

The following are best practices for multidisciplinary collaboration:

- 1. Reach out to TDM partners to develop mutual strategies.** Rather than just participating in interagency meetings such as Technical Advisory Committees, take the time to follow up by asking questions and discussing shared challenges outside designated meetings.
- 2. Integrate collaboration through business practices, such as including multidisciplinary and interagency collaboration in work performance assessments.** In some cases, workers carry memories and reports of previous agency relationships that may no longer be a challenge. Break down old barriers to collaboration by making it the agency’s business to work together.
- 3. Seek funding opportunities that support your and TDM partners’ missions.** Multi-organizational funding applications demonstrate a higher level of idea vetting and strategy than individual applications.

- 4. Coordinate next steps with policy makers with other agencies.** Demonstrate commitments to regional partnerships by working with elected officials and other agencies together so that the policy makers do not have to deliberate on issues such as project funding without access to the people that know the most about how to improve transportation through demand management.

#### *Coordinate TDM Strategies across Plans and Funding Programs*

Strategic planning of any sort starts with a vision, ideally one that an entire planning community can support, working collaboratively to develop goals and objectives that can be tracked with quantifiable performance measures. The Austin District works closely with CAMPO as the regional transportation planning organization, but other regional entities such as the Central Texas Regional Mobility Authority and Capital Metro play a large role in determining and implementing TDM policies. Regional TDM planning is more than agreeing on one set of policies that are adopted in the metropolitan planning organization's (MPO's) regional plan—it involves coordinating horizontally to ensure each group supports each other, whether through direct funding of mutually desired objectives or coordinated policy making.

In addition to long- and short-range plans, large MPOs develop a congestion management process. TDM strategies can have an impact on congestion at all of the planning horizons and immediate efforts.

Funding for regional TDM strategies does not have to be limited to the federal Surface Transportation Program, available through CAMPO. Though Congestion Mitigation Air Quality is not available to the region as of this writing because of its attainment status, the San Diego Association of Governments has supported its TDM program's bicycle outreach program through federal Job Access Reverse Commute funding (7). Local sources can also be helpful, such as local sales taxes dedicated to transportation, parking revenue, excess toll revenue, or special transportation district funding.

Optimal TDM planning integrates strategies with the following characteristics (7):

- TDM strategy decisions reflect the region's broad vision for TDM.
- TDM is integral to most of the projects in the MPO plan.
- Large capital projects incorporate strategic TDM components.
- Funding is dedicated and ongoing for TDM programs.
- TDM projects have matured from pilots to mainstream activities.

### **Coordinated TDM Planning Example: Denver Regional Council of Governments**

The Denver region developed a short-range plan for TDM that focuses on specific policies to implement within a five-year window. In addition to specifying a TDM pool of funding, it spells out the role and responsibilities of the Denver Regional Council of Governments in working with the Colorado Department of Transportation and other TDM stakeholders, in addition to the process for selection of FY 2015 and 2015 TDM Pool Projects through the Transportation Improvement Program.



<https://drcog.org/programs/transportation-planning/other-transportation-planning-activities/travel-demand-management>

The following are best practices for TDM planning and funding (numbering continued from previous best practices):

- 5. Develop a shared TDM vision with agency stakeholders and public involvement.** Successful vision development begins with the foundations of collaboration, and extends through effective communication with the media to get the word out and invite the public.
- 6. Draft goals that dovetail with those of partner agencies.** By coordinating, each organization can avoid overlap in services while supporting each other's roles and outcomes.
- 7. Ensure objectives and associated performance measures are SMART (specific, measurable, achievable, realistic, and time bound).** More goals are developed than are actually tracked. Ensuring SMART objectives and performance measures sets up agencies for reporting successes and knowing how to address problems.

#### *Monitor Performance to Achieve TDM Objectives*

Analyses of some TDM activities can realize very good cost-benefit ratios, but others may be wasting resources that could be better spent elsewhere. TDM technologies (such as ridesharing software) and programs (such as individualized marketing) may vary by the community's interest as much as an organization's application of them. Annual tracking of key performance

measures helps assure decision makers that the agency is using resources efficiently, and corrects the path if needed to avoid long-term losses.

Forecasting tools can be used to develop estimates of a TDM strategy's expected impact, and actual data can be gathered before and after implementation to measure change. Four widely available forecasting tools were developed to estimate the benefits of TDM programs (7):

- The Environmental Protection Agency's COMMUTER model was developed to estimate the value of incentives to avoid driving alone.
- The TDM Effectiveness Evaluation Model (TEEM) was developed for the Washington State Department of Transportation to predict the impact of TDM measures and land use policies on activity centers for planned highway construction.
- The Worksite Trip Reduction Model can incorporate over 100 individual measures and is tailored to developing trip reduction plans for individual worksites.
- The Trip Reduction Impacts of Mobility Management Strategies (TRIMMS) combines features of the TEEM and the Worksite Trip Reduction Model to enable estimation of TDM impacts for a single employer or a regional subarea.

Actual data useful for monitoring TDM program performance can be categorized into measures targeted for vehicle miles traveled (VMT) reduction and mode share, multimodal levels of service, customer focus, and others. VMT and mode share are most easily tracked at the county level—TxDOT's county statistics provide annual VMT estimates, and the U.S. Census Bureau provides data on commuter mode. Multimodal level of service can be harder to track, requiring a great deal of information at the street segment level. However, multimodal level of service is a direct outcome that TxDOT can evaluate on a roadway level. Customer-focused measures involve surveying the public for satisfaction regarding mobility options. One method is to use an importance-performance metric system borrowed from the field of marketing, to help identify priority areas to address in planning. Forecasted and actual performance data can then be used to compare the cost-effectiveness of TDM programs, leading to efficient use of program funding.

Optimal TDM performance monitoring efforts accomplish the following (7):

- Metrics focus on outcomes, rather than outputs (reducing VMT as opposed to the number of people reached through advertising).
- Formal methods specify both qualitative and quantitative methods.
- Cost-effectiveness is compared with other capital and operating strategies.

### **Performance Measurement Example: Georgia Department of Transportation**

“Since 1999, CTE [the Center for Transportation and the Environment] has led the Georgia Department of Transportation’s (GDOT) measurement and evaluation of Transportation and Demand Management (TDM) programs in the Atlanta region” (8). The effort supports GDOT’s work to prioritize funding and focus programs to maximize effectiveness.



The following are best practices for TDM performance monitoring (numbering continued from previous best practices):

- 8. Forecast expected benefits of TDM projects.** Implementing some models does not require large datasets to develop reasonably accurate estimates of benefits.
- 9. Dedicate adequate time and resources for annual monitoring.** Chosen well, the information for regular performance monitoring is established and ready for schedule performance monitoring. Developing in-house or external expertise in performance monitoring ensures the agency can answer whether a given TDM practice has been effective.
- 10. Communicate the impacts of TDM programs annually.** Even a simple memo and presentation to the regional transportation policy board helps develop a shared understanding of the value of TDM programs and which ones need to be re-visited.

### **Summary**

Regional transportation planning has not traditionally incorporated travel demand strategies as a core principal for efficient planning, but progressive regions are implementing TDM through regional plans and across funding sources and project implementation. A study by Cambridge Systematics of national evidence on TDM program impacts in 2010 found that in regions with low transit levels and free parking, combined TDM strategies can reduce vehicle trips by 3–7 percent. In areas of moderate transit with free parking, the rate jumps to 10 percent, or as high as 20 percent trip reductions in areas with paid parking. TDM programs can have a major effect on regional traffic, but the availability of transit as a travel option and paid vehicle parking as a disincentive for driving are a powerful combination for the traveling public. Regional planning partnerships, implementation of strong goals and objectives, and ongoing performance monitoring will help the TxDOT Austin District position the next set of improvements in the region’s transportation system.

Each of the best practices (Table 1) for TDM in regional planning is implementable but not without coordination across agencies and dedication of basic resources to get them done. The 10 best practices are not necessarily in sequential order—the most appropriate next steps in regional planning depend on when the region’s planning documents are updated. For instance, the CAMPO 2040 Regional Transportation Plan was adopted in May 2015, so it might be most appropriate to begin performance monitoring steps in fall 2015.

**Table 1. Summary of Best Practices for Regional TDM Planning and Next Steps.**

<b>Best Practice</b>	<b>Next Step</b>
<b>Multidisciplinary Collaboration</b>	
1. Reach out to TDM partners to develop mutual strategies.	Convene meetings with TDM partners.
2. Integrate collaboration through business practices, such as including multidisciplinary and interagency collaboration in work performance assessments.	Draft model language that could be incorporated into work assessments.
3. Seek funding opportunities that support your and TDM partners’ missions.	Create a timeline of anticipated funding opportunities.
4. Coordinate next steps with policy makers with other agencies.	Meet with partners again to discuss potential strategies.
<b>TDM Planning and Funding</b>	
5. Develop a shared TDM vision with agency stakeholders and public involvement.	Discuss existing plans’ visions and goals with regional stakeholders.
6. Draft goals that dovetail with those of partner agencies.	Coordinate goal development with meetings dedicated to goal coordination with partner agencies.
7. Ensure objectives and associated performance measures are SMART.	Vet draft objectives and performance measures with staff responsible for assembling data and reporting performance.
<b>Performance Monitoring</b>	
8. Forecast expected benefits of TDM projects.	Partner with experienced forecasters to estimate TDM benefits.
9. Dedicate adequate time and resources for annual monitoring.	Include the time for staff or funding for external monitoring and evaluation processes.
10. Communicate the impacts of TDM programs annually.	Schedule when and how the annual report will be communicated.

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