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## Status of Travel Demand Management Efforts

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### Introduction

Travel demand management (TDM) is an important tool in improving the efficiency of demand on the transportation system by promoting and facilitating alternative modes of travel and trip reduction strategies. TDM programs focus on communicating strategies for reducing single-occupancy vehicle (SOV) travel, educating travelers about mode alternatives, and illustrating the benefits of traveling more efficiently through combining trips (also known as trip chaining). Most TDM programs today focus on the commute trip, with a goal of reducing peak-hour congestion through the promotion of alternatives, although a few programs take a more holistic approach.

Demographic trends combined with the rapid emergence of technology are beginning to influence changes in travel behavior. TDM research is ongoing to take a fresh look at long-time TDM strategies, as well as identify newer ideas in response to changes, resulting in the identification of neo-traditional methods to more efficiently manage demand on the transportation system. The purpose of this brief is to provide an overview of current TDM efforts (as of spring 2014). Contents include a review of TDM strategies championed by the public sector and recent initiatives undertaken by the private sector.

### Public-Sector based TDM Programs

Public-sector-based travel demand management (TDM) programs include a combination of strategies and education. Trip reduction programs provide drivers with choices of location, route, time, and mode, and also provide incentives to reduce their vehicle trips. These programs can include a variety of TDM strategies, including ride-share programs and services, transit programs, bicycle and pedestrian amenities, changes in work patterns, parking management, and marketing and promotions. The following are best-practice examples of activities designed to better manage commuter demand on the transportation system.

#### *Commute Solutions Programs*

Commute Solutions programs exist in both Austin and Houston where metropolitan planning organization (MPO) staff promote alternative work schedules, flextime, and teleworking, as well as help plan transit trips, map bicycle routes, and form carpools. These programs are operated by the air quality programs of the Houston-Galveston Area Council (H-GAC) and Capital Area Metropolitan Planning Organization (CAMPO). A unique feature on the CAMPO Commute Solutions website is a commute cost calculator that allows the public to better understand the costs associated with their travel choices.<sup>1</sup> At H-GAC, the following goals are stated:

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- Move more people in fewer vehicles.
- Use transportation that does not contribute to congestion and pollution.
- Reduce the number of people commuting during rush hours.
- Reduce the number of single occupant vehicles.
- Eliminate the need to commute to work.<sup>2</sup>

### *Park-and-Ride Programs*

Another program that exists in most of the large urban areas is park-and-ride programs, which provide commuters with a connection point to transit. El Paso, Dallas, Fort Worth, Houston, Austin, San Antonio, and Corpus Christi have park-and-ride lots inviting commuters to use transit. Bicycle parking is provided at all of the Capital Metro park-and-ride lots, train stations, two of the new MetroRapid stations, and many bus stops.<sup>3</sup> The combined bike-train trip is well publicized as a way to more comfortably travel: using a bike the first and/or last mile of the trip combined with the train for the main portion of travel.

### *Vanpool Programs*

All of the transit agencies in the five major metro areas (Dallas-Ft. Worth, Houston, Austin, San Antonio, and El Paso) offer vanpools. Typically consisting of 7–15 individuals who share a similar commute trip, vanpools are a formal arrangement facilitated by a governmental authority. Many vanpools pay for themselves, while others receive a subsidy. Most vanpool programs provide emergency rides home, the ability to use high-occupancy vehicle (HOV) lanes, reduced driving and parking costs, and a pre-tax employee benefit.

As an example, the El Paso County Vámonos Vanpool Program is operated by VPSI, Inc. The Vámonos Vanpool Program receives Congestion Mitigation and Air Quality (CMAQ) funds to pay monthly vehicle expenses such as insurance, maintenance, and washes, while the users pay the gas and parking costs on a monthly basis. Interested commuters can visit the vanpool ride website to look at all the available vans/routes in the region. The 2013 contract consisted of 52 vans with an average capacity of eight users per van to provide a total of 416 available seats.



### *Shared-Use Mobility Programs*

Several transportation systems in Texas now include HOV/high-occupancy toll (HOT) lanes, managed lanes, and toll facilities. In Texas and across the United States, many innovative solutions have emerged to counteract the cost of travel along these facilities:

- In Houston, the opportunity for travel

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time and cost savings to carpoolers has resulted in the formation of *casual carpooling*. To catch a ride, casual carpool passengers typically meet in a public area with ample available parking in close proximity to the HOV facility and transit options at the destinations. Drivers arrive and pick up enough passengers to meet the HOV lane eligibility requirements, thereby avoiding a toll. Drivers then travel along the HOV lane and drop off passengers at an agreed-upon location.<sup>4</sup>

- Another shared-use mobility program began in Austin in 2013 with Carma, a real-time ride-sharing program that matches drivers with riders. Interested travelers download the app, find nearby matches, and form carpools.<sup>5</sup> The Central Texas Regional Mobility Authority (CTRMA) partnered with Carma on this Federal Transit Administration (FTA) funded project. The idea is to reduce the number of single-occupancy vehicles commuting in the Austin area by providing financial incentives such as toll rebates.<sup>6</sup>
- The El Paso's Economic Development and Sustainability Division launched iCarpool<sup>7</sup> in 2013 for the purpose of reducing vehicle emissions and oil consumption through a rewards system.<sup>8</sup> iCarpool software provides web-based incentives and subsidies to users by tracking saved carbon dioxide (CO<sub>2</sub>) emissions, reduced vehicle miles traveled (VMT), and associated fuel savings. To support ride-sharing decisions, iCarpool identifies route information, time agreements, pick-up and drop-off locations, and an emergency ride home program.

Similar technology-based programs are proving successful across the United States:

- In the Seattle region, RideshareOnline.com is an online tool that provides regional and statewide ride-matching services for nine Puget Sound area counties. The system offers carpool and vanpool ride matching, as well as other tools that promote trip reduction, participant recruitment and motivation, and result tracking. RideshareOnline.com can be used by individuals or tailored to specific company needs by limiting searches to a certain work site and adding employer promotions and incentives, for example.
- Way to Go is a regional ride-matching program for employers, students, commuters, local governments, and other service providers in the Denver, Colorado, area. Way to Go provides the following services and programs: carpool matching, school-pool matching, vanpool services, telework assistance, employer assistance, car sharing, guaranteed ride home, and transit options.

### *Telework*

*Telework* refers to arrangements that allow employees to work from home or an alternative location on a regular basis. According to the Georgia Department of Human Services, “both telework and scheduling options have been shown to result in better job performance, improved job satisfaction and employee morale, and a reduction in absenteeism and sick leave usage.”<sup>9</sup> The acceptance of telework has grown in tandem with technological advances that allow for

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seamless work environments, regardless of where the employees are located. Telework is becoming a major recruitment and retention strategy for companies and agencies such as the state agencies in the Texas Health and Human Services system. In a compensation survey by Robert Half International, 46 percent of chief financial officers surveyed said teleworking is second only to salary as the most effective way to attract top talent.<sup>10</sup> Examples of state agency telework programs include the following:

- Telework Arizona is a telework program focused on Arizona state employees in the Phoenix metropolitan area. The program began in the fall of 1989 as a pilot program with the State of Arizona and AT&T. An evaluation of the program revealed that more than 75 percent of supervisors approved of the program, and the program resulted in a 13 percent increase in employee productivity and morale. As a result of the pilot, the Arizona governor issued Executive Order 93-16 in 1993 to create the State of Arizona Telework Program and authorize every state agency to implement telework programs in Maricopa County. Since that time, the program has evolved into a key strategy for reducing congestion and improving air quality.<sup>11</sup>

In 2002, the governor strengthened the state's commitment by requiring 20 percent of the state workforce in Maricopa County to actively telework. By 2007, state agencies, boards, and commissions reported that more than 20 percent of state employees in Maricopa County telework. Telework Arizona estimates that these workers saved 5,250,000 miles of vehicle travel and 181,000 hours of personal commute time in 2008.<sup>12</sup>

- Work Away is a statewide initiative that encourages telework and work-scheduling options for eligible Georgia state employees. Initially, this program began as a six-month pilot project with four agencies but has since grown into a mandate encouraging all state agencies and departments to implement telework initiatives. Work Away options also help retain valued employees and recruit top-quality people while improving quality of life. As of 2012, 5 percent of Georgia's 80,000 state employees participate in the Work Away telework program. If state employees telework at least once a week, 416,000 trips are saved per year, which equates to an estimated VMT savings of 5,470,400 miles annually.<sup>13</sup>

### *Expanded Outreach and Education Programs*

Over time, changes in technology and demographics have led to significant changes in travel patterns. Most significantly, what was once a stand-alone trip to and from work has evolved into a multi-purpose trip that includes stops for household and personal errands in an effort to achieve a better work-life balance. In response, new outreach and education programs that consider the entire travel pattern of the households are emerging in the United States. Even further reaching is a comprehensive effort piloted in several regions of Australia that considers the travelers, employers, local and regional governments, business owners, and developers.<sup>14</sup>

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Here in the United States, these new holistic programs target neighborhoods or sub-regions and focus on raising awareness of alternative transportation options and TDM programs. Households are educated on options such as transit routes, HOV lanes, flexible schedules, parking management, bicycle accommodations, and maps tailored to the home location. The information is communicated using both a general marketing approach and targeted neighborhood efforts. Pre- and post-campaign evaluations are conducted to document resulting changes in travel behavior. Examples include the following:

- The Portland SmartTrips program was initiated to promote the use of alternative transportation.<sup>15</sup> The program focused on specific areas within Portland, Oregon. For each identified area, individualized marketing and outreach informed area residents and employees of non-auto alternatives. In 2006, the program targeted the Northeast Hub area, resulting in a 13 percent reduction in drive-alone trips from the 7,400 participating households (31 percent of households in the targeted region).<sup>16</sup> A similar program targeting an area near the Interstate MAX light-rail line resulted in a 14 percent decrease in VMT.<sup>17</sup>
- King County Metro in Washington targeted three neighborhoods within its service area for a social marketing pilot project. This project used new branding and marketing materials to promote transit, including posters, events, incentives, focus groups, and direct mail. Metro conducted before and after surveys of participants and tracked bus ridership counts. The annualized results of the pilot program were estimated by comparing the before and after data and showed 2,564 trips shifted from cars to alternative modes, with an associated decrease of 31,522 VMT.<sup>18</sup>

### *Trip Reduction Ordinances<sup>19</sup>*

Trip reduction ordinances (TROs) are local, regional, or state government requirements designed to encourage the use of transportation alternatives such as ride sharing, transit, bicycling, walking, and telecommunications substitutes. The use of TROs and related requirements imposed via regulation or administrative guidelines began in 1987, when the U.S. Environmental Protection Agency listed TROs as one of 10 transportation control strategies that urban areas unable to



attain national ambient air quality standards might consider implementing. The 1990 Clean Air Act Amendments include TROs as a transportation control measure, along with employer-based transportation management plans and local programs and ordinances to facilitate non-automobile travel (Section 108[f] as amended).<sup>20</sup>

Most TROs focus on work trips, but a few extend also to shopping, personal business, and other non-work trip purposes. Some TROs also set forth local government commitments to develop and implement supportive TDM activities such as park-and-ride lots, HOV lanes, and shuttle services. When peak-period travel is the major concern, programs such as flextime and staggered work hours, off-peak scheduling of deliveries, and other peak-reducing methods may be encouraged in addition to strategies to facilitate trip reduction. The University of South Florida has compiled a list of approximately 40 TROs or similar TDM regulations with links to the actual ordinance or legislation (where available) at <http://www.nctr.usf.edu/clearinghouse/tro/trolist.htm>.

## Industry Initiatives

In the past 20 years, there has been an ever-broadening identification of methods to reduce congestion through better management of demand on the system. The use of emerging technology and other innovations to reduce single occupant vehicles has become more prevalent alongside the more traditional program approaches. More and more large employers are recognizing their role in addressing congestion. As shown in Table 1, the impact of such strategies on employee vehicle trip reduction varies. In most cases, combined strategies are more effective than individual approaches.

**Table 1: Impact of Selected Employer-Based Demand Management Strategies<sup>21</sup>**

Strategy	Details	Employee Vehicle Trip Reduction Impact
Parking Charges	Previously Free Parking	20%–30%
Information Alone	Information on Available SOV Alternatives	1.4%
Services Alone	Ride Matching, Shuttles, Guaranteed Ride Home	8.5%
Monetary Incentives Alone	Subsidies for Carpool, Vanpool, Transit	8%–18%
Services and Monetary Incentives	Example: Transit Vouchers and Guaranteed Ride Home	25%
Cash-Out	Cash Benefit Offered in Lieu of Accepting Free Parking	17%

In this section, efforts of employers in four main industries are presented: high-tech industry, medical complexes, university campuses, and military bases.

### *High-Tech Industry*

High-tech companies are perhaps the most innovative in terms of implementing TDM programs and receive high recognition for their efforts. As one example, when it was realized that public transportation was not adequately addressing the needs of the employees, Microsoft, Yahoo!, Apple, and Google began to offer free shuttles to transport their employees from across their

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respective regions to headquarters. These shuttles are equipped with state-of-the-art equipment to facilitate productive work sessions while in transit to the offices. The high-tech employers also offer storage for bicycles and guaranteed rides home, car-share and bike-share programs, intercampus shuttles, numerous on-site services, transit subsidies of up to \$100 per month for riding public transit two or more days per week, and bike subsidies of up to \$20 per month. Examples include the following:



- Apple’s Commute Program offers a host of services to encourage employees to consider alternatives to driving alone. A study in July 2011 by Fehr and Peers indicated that the Apple Headquarters campus has an estimated 72 percent SOV daily commute trip rate.<sup>22</sup> In October 2013, the Cupertino City Council approved a series of permits to create a 3.7-million-square-foot campus where about 12,000 people will work.
- At Yahoo!, employees who commute by means other than driving alone receive commuter bucks rewards, which can be redeemed for free lunches, movie tickets, and massages.

### *Medical Complexes*

A priority for most medical complexes is to ensure that convenient and ample parking remains available for patients and patient visitors. At the same time, advances in demand management for medical complexes encourage the use of alternative modes for the employees in the medical field:

- The Mayo Clinic in Rochester, Minnesota, earned the Gold Level award from EPA’s Best Work Places for Commuters in 2012.<sup>23</sup> The Mayo Clinic partnered with the City of Rochester and the University of Minnesota Rochester in undertaking a joint master plan. The partnership developed a downtown Transportation Management Association, coordinated remote parking and shuttle investments, and developed a parking cash-out program. In addition, the partnership implemented a Just Try It program to encourage bus and bike ridership by giving gifts and entering participants into drawings as incentives. The partnership has an extensive commuter bus system from outlying areas.<sup>24</sup> As a result, the partnership increased bus/bike ridership by 9 percent with an average of almost 2,000 participants daily.
- The Buffalo Niagara Medical Campus (BNMC) is a 120-acre urban campus with nine major institutions and more than 12,000 employees. Forecasted growth for the campus is

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expected to exceed 17,000 employees by 2017.<sup>25</sup> Given that free or cheap parking is promoted as a way to recruit talent from outside of the area, the campus experienced 88 percent of employees driving alone to work in 2012. Recognizing that these levels were not sustainable, BNMC received a grant from the New York State Energy Research and Development Authority totaling \$121,000 for the purpose of advancing TDM strategies. BNMC implemented awareness campaigns encouraging alternative transportation options, parking pricing (\$89 per month for employees who drive alone), parking cash-out, carpool-reserved spaces and online carpool matching, transit pre-tax passes, access to CarShare, BikeShare stations, and guaranteed ride home. As of April 2013, BNMC was able to reduce the single-occupancy vehicle level to 83 percent.

### *University Campuses*

As a major destination for students, faculty, and staff, university campuses are major traffic generators with many challenges. As such, they offer a unique opportunity to implement TDM innovations. Many universities have transportation plans, but few have TDM plans or sustainability plans. Where these plans are in place, the campuses are noted as adding car-sharing options. For example:

- Zipcar, the world's leading car-sharing network, exists on more than 300 North American colleges and universities. Reportedly, Zipcar estimates they can replace up to 15 personally owned vehicles while also increasing the use of public transit, walking, and biking.<sup>26</sup>
- Stanford University is among those campuses setting a high bar.<sup>27</sup> Through its programs, the university has reduced the employee drive-alone mode split from 72 percent in 2002 to 48 percent in 2010. Among the more traditional TDM offerings are no cars for freshmen, pre-tax transit passes, and ride-share matching; Stanford has a program called the Commute Club where members receive Clean Air Cash (\$282 per year), reserved spaces for carpools and vanpools, 12 hours of free car rental, entries into regular prize drawings, transit and vanpool subsidies, and rewards for recruiting members. The Commute Club membership has more than doubled between 2002 and 2010, from 3,673 to 7,730 members, representing about a quarter of the daily population of 32,000.
- Cornell University has a sustainability campaign with the message "Think Big, Live Green" to encourage thoughtful decisions about resources. One focus area is transportation, where the campaign claims that 89 percent of the students and 47 percent of the staff participate in sustainable commuting options.<sup>28</sup> The university has policies that strongly discourage automobile use and encourage other means of transport. One program, Zimride Cornell, gives students a way to share the seats in their car or catch a ride with friends, classmates, and coworkers for commutes, road trips, and popular events.<sup>29</sup>



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## Military Bases

At Fort Meade in Maryland, leaders have established partnerships to enable a variety of travel options.<sup>30</sup> With the influx of thousands of new workers and residents, Fort Meade needed to mitigate traffic congestion. Several programs were implemented in 2011, including an internal shuttle for anyone, a shuttle to Maryland Area Regional Commuter (MARC) trains, guaranteed ride home emergency transportation for no cost, a mass transportation benefit program that offsets commute costs up to \$245 per month (parking fees not included), and subscription buses, cars, and vanpools.<sup>31</sup>

In another example of successful demand management efforts, Hampton Roads in Virginia is home to many U.S. military and supporting sites. The total military population—including active duty, reserve, retirees, and family members—totals approximately 300,000, or almost 20 percent of the area’s total population of 1.6 million.<sup>32</sup> The Hampton Roads Transportation Planning Organization (HRTPO) has an active TDM program that is operated by TRAFFIX, a cooperative public service designed to promote and implement transportation alternatives. Funded with regional CMAQ funding, TRAFFIX has a military outreach consultant who has direct contact with military commands encouraging SOV reduction. In 2007, the outreach coordinator visited 10 commands; in 2012, the outreach coordinator visited 100 commands. TRAFFIX established the GoPass365 program in Norfolk where employers pay for the pass, and the employees ride for free. More than 75,000 riders have been given free rides.<sup>33</sup> TRAFFIX uses several programs to encourage alternative modes, including NuRide, Telework!VA, vanpools, and guaranteed ride home. The Telework!VA program provides financial incentives to encourage non-military businesses to begin teleworking programs.

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