

Chapter 7 - Transportation Demand Management

Transportation Demand Management

Transportation Demand Management (TDM) is a set of planning processes, strategies, and policy decisions that are aimed at relieving congestion and improving efficiencies of the transportation infrastructure. TDM strategies result in more efficient use of transportation resources and provides a variety of economic, social, and environmental benefits.

The variety of TDM options has quadrupled in the last ten years because of federal legislation such as the Clean Air Act (CAA), the Intermodal Surface Transportation Efficiency Act (ISTEA), and the Transportation Equity Act for the 21st Century (TEA-21), as well as state and local trip reduction ordinances.

This section will focus on each of the potential TDM strategies that could be used in the Richmond region. It will define each strategy, discuss the many variations of each strategy, and then assess their current use in the Richmond region.

Carpool Programs

Carpooling is the sharing of rides in a private vehicle among two or more individuals and is the most prevalent type of TDM alternative to driving alone. In 1990, the share of carpools among work trips in the Los Angeles regions was 14 percent, and in Richmond about 12 percent. The process of grouping commuters into carpool arrangements, or carpool matching, occurs in one of three ways:

- Area-wide Programs: Public agencies and non-profit organizations allow employees and commuters to go on-line or phone the agency to complete a carpool registration form and be sent a “match list” with the names of others that have similar commute patterns. These organizations maintain computerized databases with the names of potential carpools and this is used to make matches.
- Employer and Developer Programs: The 1979 oil crisis prompted the Federal sponsors of rideshare programs to modify carpooling efforts in urban areas to focus on employers as the means to promote carpooling. In the mid-1980s, carpool programs sponsored by commercial and residential developers for tenants and homeowners were initiated, in response to traffic mitigation requirements.
- Informal Arrangements: The majority of commuters form carpools through more informal arrangements. According to a 1991 survey of commuters in Southern California, 53 percent of carpoolers in the region share a ride with household members, six percent with other relatives, 15 percent with friends and neighbors, and less than a third with co-workers.
- Currently, RideFinders, the Central Virginia regional rideshare agency, maintains a database of 5,000 potential carpoolers. RideFinders has implemented employer-based marketing to encourage carpool programs within regional businesses and will continue

to support the *Emergency Ride Home* program which is designed to allow those who carpool to get home when an emergency or unscheduled overtime forces them to miss their pool.

- With a flexible database that can be sorted by origination, destination, and work schedule, RideFinders matching system provides many of the characteristics of a successful matching system. RideFinders' FY04 Clean Air Campaign focuses on challenging commuters and businesses to carpool at least once a week and on Code Red Ozone Action Days.

Vanpool Programs

Vanpools represent an important alternative to driving alone, falling midway between transit and carpools in terms of carrying capacity and flexibility, economics, and convenience to the user. Vanpools usually involve groups of seven to fifteen people – mainly commuters – traveling together in a passenger van on a routine basis. Normally, one member of the group serves as the driver, and a coordinator assumes the responsibility for the organizational and maintenance details of the operation. Riders typically pay a monthly fee.

RideFinders currently supports thirty-three (33) vanpools which commute through various jurisdictions (see Figure 7-1). To increase safety of passengers in vanpools, RideFinders has implemented a vanpool driver training program, “Route to Excellence”- that is mandatory for operators of registered vanpools.

For simplicity, the three fundamental methods of vanpool organization are described below:

- Owner-Operator Vans: The van is owned or leased directly by an individual. The owner has complete responsibility for organizing the vanpool and assumption of all financial arrangements and risks. Vanpools formed under this type of arrangement have provided the basis for the more formal and institutional programs described below.
- Employer-Sponsored Vanpools: Many employers purchase or lease vans for use by their employees. Riders are then charged a fare which represents their share of the operating and capital cost of the vehicle. In many cases, the driver is either not charged a fee or is allowed personal use of the vehicle. This arrangement allows employers a mechanism to subsidize or support the vanpool in direct or indirect ways. An example of an employer-sponsored vanpool was illustrated by the previous Orange County vanpool sponsored by PharMerica in Ashland, Virginia.
- Third-Party Vanpools: A third party organization, such as non-profit corporation, private vendor, or transit agency acquires the vans and makes them available to employers or individual users. The vans are leased to the users at rates which are based on the costs of the vehicle, maintenance, fuel and insurance. The third-party administration costs may or may not be rolled into the fares. Rather than directly leasing vans, some public agencies restrict their third party role to forming vanpools only, referring their riders to private leasing companies for the equipment as is demonstrated in the relationship between RideFinders and VPSI, Inc. VPSI provides

full-service van acquisition and operating and administrative assistance to employers and individuals nationwide.

RideFinders has been working to mitigate barriers to vanpool formation. It may prove cost effective to rely on vanpools to serve various transit markets that are not easily served by transit. Vanpool market penetration need not be limited to trips of 20 miles or more if favorable economics and commensurate time-savings are made available. This can be achieved through subsidy programs, single-occupant vehicle (SOV) parking disincentives and development of such time saving measures as preferential high-occupancy vehicle (HOV) lanes, access and parking.

Figure 7-1 RideFinders Supported Vanpools

ORIGIN	DESTINATION	WORK HOURS
Amelia	Richmond	7:30 – 4:15
Brandermill	Richmond	7:30 – 4:15
Charlottesville	Richmond	7:30 – 4:15
Chester	Ft. Pickett	7:00 – 5:30 (M-Th)
Chester	Richmond	7:45 – 4:30
Chester	Richmond	7:00 – 4:30
Chesterfield	Ft. Pickett	7:00 – 5:30 (T-F)
Chesterfield	Richmond	7:30 – 4:15
Fredericksburg	Richmond	7:30 – 5:00
Gloucester	Richmond	8:00 – 4:45
Gloucester	Richmond	7:30 – 5:00
Hampton	Richmond	7:30 – 4:00
Hampton	Richmond	7:30 – 5:00
Hampton	Richmond	8:00 – 5:00
Hampton	Defense Supply Center Richmond	8:00 – 4:30
Hampton	Defense Supply Center Richmond	7:00 – 4:30 (M-Th)
Hampton	Defense Supply Center Richmond	7:00 – 3:30
Hampton	Defense Supply Center Richmond	7:00 – 3:30
Hampton	Defense Supply Center Richmond	7:00 – 3:30 (M-Th)
Hampton	Defense Supply Center Richmond	7:30 – 3:30 (M-Th)
Midlothian	Richmond	7:45 – 4:30
Newport News	Richmond	7:30 – 5:00
Newport News	Richmond	7:30 – 4:45
Petersburg	Ft. Pickett	7:00 – 4:30 (T-F)
Petersburg	Ft. Pickett	7:00 – 5:30 (T-F)
Richmond	Washington, D.C.	7:00 – 3:30
Richmond	Washington, D.C.	8:00 – 5:00
Richmond	Washington, D.C.	7:00 – 3:30
Richmond	Washington, D.C.	8:00 – 4:00
Richmond	Washington, D.C.	7:00 – 4:00
Richmond	Ft. Pickett	8:45 – 5:15 (T-F)
Williamsburg	Richmond	8:00 – 4:55
Williamsburg	Richmond	8:00 – 4:30

Employer Complementary Support Measures

Driving alone is such a long-standing habit for most commuters that few even think of trying an alternative without encouragement and assistance. Providing complementary programs and services that increase commuters’ awareness of their alternatives, enhance the convenience of

using an alternative, or reduce the need for a personal automobile during the workday are important support measures that employers can offer.

Complementary programs and services fall into three categories: TDM program marketing, site amenities and design, and supporting activities.

TDM Marketing

As a complementary measure, program marketing features dissemination of information on available TDM services and incentives to the public at large or targeted to specific travel markets. Program marketing often also includes personalized trip planning assistance and special promotional activities such as transportation fairs or Commuter Information Days that can increase commuters' interest in ridesharing.

Marketing of TDM can be directed to commuters at several geographic levels: regional, local area, and individual employers. Regional marketing typically is sponsored by regional ridesharing agencies, transit operators, local governments, and metropolitan planning organizations. These agencies often promote the use of TDM generally, but some regional programs target the use of specific regional strategies or services such as public transit. Regional commute groups increasingly focus on employer-based TDM marketing activities because of their greater effectiveness in promoting TDM to employees.

TDM marketing can also be targeted to a smaller audience in a defined local area, for example, an employment, shopping, or residential complex. Developers and property managers are often the sponsors of these programs generally as a condition placed on the development project by a local planning board. TDM marketing in a local area can also be sponsored by groups of employers and/or developers (e.g., transportation management associations). To these groups, joint marketing could result in cost savings over individual promotion. At employment sites, local area marketing is often targeted to new tenants by the leasing agent or building manager. Residential-based programs often target new residents through realtors and property managers.

The third geographic level of program marketing is at an individual employment site. Here, marketing is done by employers who promote use of TDM options to their employees. Employer marketing efforts do sometimes include general promotion of TDM, but most often market the specific TDM services and incentives provided by the employer or options available only to employees at that site.

There are three components of TDM marketing that warrant attention: information dissemination, transportation coordinators, and special promotions.

- Information Dissemination – Regional distribution methods might include mass mailings, newspaper, radio and television advertising, and roadside signs. At individual employment sites, information dissemination typically relies on posters, bulletin boards, flyers distributed desk-to-desk, in-house newsletters, broadcast e-mails, new employee orientation, and periodic promotional events such as transportation fairs. Local area information dissemination utilizes mass mailings to

new tenants or new homeowners, information distributed through realtors and building managers, posted notices, newsletters, website links, and promotional events.

The most basic level of information dissemination is passive postings, such as carpool ridematch boards, information “take one” displays, mass mailings, and roadside signs that inform commuters of assistance available from a remote source such as a regional ridesharing agency. At this level, the commuter must make the effort to follow-up with a call or mailback card to receive more information.

The highest level of information assistance is provided by a commute information center, centrally located within an employment area, at a transit station, or at an individual employment site. At this level, the commuter still makes an effort to use the center’s resources, but receives immediate, personalized assistance. These centers are staffed, generally full-time, and provide both information on available services and personalized commute planning. RideFinders’ Commuter Store, located in downtown Richmond, serves as an outlet for distribution of transit fare media, personalized ridematching assistance, and other commute products and services.

- Transportation Coordinators – Transportation professional liaisons a.k.a. Transportation Coordinators or Employee Transportation Coordinators (ETCs), offer individual trip planning assistance at employment sites, as well as performing more general marketing and information functions. At employment sites, the ETC is generally the focus of the company’s commute program and manages the program’s development, implementation, marketing, administration, and evaluation.
- Special Promotions – TDM marketing often includes special promotions such as periodic prize drawings, contests, awards for ridesharing, commuter or bicycle clubs, and other activities to attract the attention of commuters, generate excitement about the use of commute alternatives, and reward ridesharers. They are often sponsored in conjunction with area-wide commuter promotions such as annual *Try Transit* ridesharing week, *Clean Commute Day*, or *Code Red Ozone Action Days*. Special promotions are widely used, especially at employment sites, in part due to their low cost and high publicity value.

While RideFinders provides all three of these methods for use by employers, a role still remains for local jurisdictions and the MPO to encourage the use of these available resources by more businesses within the Central Virginia region.

Site Amenities and Design

Many employment sites, especially those in suburban areas, were designed with the expectation that employees would primarily arrive by private automobile. The goal of the second group of complementary programs, site amenities and design, is to change the work site to make it more “friendly” to commute alternatives.

- “Rideshare Friendly” Work Site Design – This refers to work sites that: accommodate the space and maneuvering needs of transit and vanpool vehicles; provide safe, attractive rideshare loading areas and preferential parking areas; and minimize the

walking distance for high-occupancy-vehicle (HOV) commuters. Some sites also target the special needs of bicycle and pedestrian commuters. They include bicycle parking protected from theft and from weather, showers and personal storage lockers, and bicycle maintenance facilities.

- On-Site Services – On-site services include cafeterias and restaurants, dry cleaners, ATMs, convenience shopping, video rental stores, printers and copy shops, and other personal or business-related service establishments commuters need to perform workday errands. Availability of service establishments on-site or within walking distance can minimize both the true and perceived need for a personal auto.

Again, RideFinders has an interest in working with local developers on site design issues. However, this activity is best left to local jurisdictions during the design review and negotiation phase rather than attempting to retrofit existing developments.

Supporting Services

Supporting services are program elements that address two concerns that commuters often have about use of commute alternatives: the fear of being stranded without transportation in the event of an emergency and the fear that use of ridesharing will hinder their advancement in the company.

- Emergency Ride Home (ERH) Programs – These programs, also called guaranteed return trip, are “commuter insurance.” ERH programs offer free or subsidized emergency transportation, generally by taxicab or rental car, to commuters who use alternative commute modes to address concerns about being stranded without transportation, responding to personal emergencies, or working late unexpectedly. RideFinders has an ERH program for registered carpool or vanpool commuters, cyclists and pedestrians, and bus riders. When registering, they must certify that they are committed to this alternative mode at least three days a week.
- Corporate Commitment – Corporate commitment reflects a willingness of upper level corporate management to devote resources to the TDM program, provide tangible incentives, establish a corporate “culture” that supports employees’ use of commute alternatives, and to participate in local and regional transportation-related programs. It is typically demonstrated by an extensive package of incentives offered to commuters, but also includes supportive work environment policies. Strong corporate commitment is sometimes manifested by ridesharing among corporate executives.

Preferential HOV Treatments

HOV facilities are designed and operated to give rideshare commuters priority treatment. Preferential HOV facilities is an effective way to encourage travelers to use higher-occupancy modes of travel by allowing rideshare commuters exclusive use of HOV lanes. The resulting reduction in travel time serves as an incentive to encourage use of HOVs.

HOV lanes are introduced two ways:

- Add a Lane: The HOV lane(s) are introduced as entirely new capacity.
- Take a Lane: The HOV lane(s) are introduced by reallocating current facilities, thereby taking capacity away from existing traffic.

While adding a lane has been successful nationally, taking a lane has not been embraced by citizens.

Programming HOV facilities relies significantly on available resources and the ability to dedicate those resources toward an HOV project. Increasingly, federal and state funding programs and regulations (such as the federal Clean Air Act, Congestion Management System requirements, and local traffic mitigation ordinances) may place higher priority on the inclusion of HOV facilities in state and regional transportation system plans. Currently, the Richmond area has no HOV facilities nor does it have any planned.

Economic Incentives

Two key factors in the decision to use one mode over another are the relative time and costs. Financial incentives, termed user subsidies, offered directly to commuters by employers or public agencies, have been effective. Recent studies have concluded that subsidies are a frequently present component of effective employer trip reduction programs. Most commonly, subsidies are provided by employers who need to reduce parking demand or to alleviate access problems. Alternatively, public agencies may offer subsidies to commuters to achieve localized or area-wide trip reduction goals. Commuter Choice is an excellent transportation benefit that promotes vanpooling and transit ridership.

Some of the more common subsidy programs include:

Employer/Developer-Provided Incentives

- Transit Pass Subsidies: An agency purchases transit passes, tickets or tokens for employee use. The agency can either cover the full cost, share-the-fare with the employee, or pre-tax the fare cost. In other cases, the employer agrees to reimburse employees for their purchases. In the Central Virginia region, approximately 45 private, federal, and state organizations have registered with RideFinders' transit pass program. Currently 13 organizations are enrolled in the GRTC Transit System electronic farecard program.
- Vanpool Operating Subsidies: Vanpool subsidies can take many forms. Employers that provide the vehicles, underwrite insurance and capital costs, or help employee groups arrange vanpool leases are providing an "in-kind" form of financial incentive. Commuter Choice allows employers to subsidize up to \$100 per month per employee vanpool participant to help defray the out-of-pocket costs.
- Rideshare Subsidies: Rideshare subsidies represent a means to more equitably implement a financial incentive by allowing employees to choose the alternative that best suits their travel needs, and then apply the rideshare subsidy to that mode.

- Other Financial Incentives: Other financial incentives that provide a real, monetary incentive to using alternative travel modes do not involve direct subsidy payments to users. These include:
 - use of fleet vehicles for ridesharing
 - free or discounted fuel for pooling vehicles
 - free or discounted maintenance and repair for pooling vehicles
 - extra vacation for commute alternative users
 - free or discounted equipment (shoes, bicycle helmets)

Public Agency-Provided Incentives

- Transit Fare Discounts: Fare discounts targeted to commuters are fairly rare, because commuters represent "choice" riders (i.e., having a choice of commute options). Service is generally the most costly to operate during the peak periods, and premium express-type commuter service most often commands a fare surcharge, not a decrease. However, transit operators have experimented with free fares to increase ridership.
- Transit Subsidies: While "user-side subsidies" are prevalent in elderly and handicapped services, some limited examples exist of public sector agencies offering commuters direct subsidies for using transit. In some cases, cities or counties match employer transit subsidies. In other cases, transit operators sell passes to employers at a discounted rate if the employer provides a subsidy match. Finally, some public agencies have provided free transit tickets to commuters to use transit on a trial basis.
- Vanpool Start-up Subsidies: Some public agencies have subsidized the start-up costs of vanpools. This is accomplished by either providing a one-time start-up incentive to new vanpools or subsidizing all or part of an individual's vanpool fare for the first few months of operation. RideFinders' VanStart program, as well as the VanSave program, subsidizes the cost of empty seats based on the passenger capacity.

Perhaps another effective method for providing user subsidies and transit discounts is to provide financial incentives to employers rather than directly to travelers, so as to reinforce in-house trip reduction programs and assist in compliance with requirements. Revenue for public subsidies can come from a variety of sources. User fees, such as parking revenue or taxes, can be utilized. Business taxes and developer fees can also be utilized. In addition, municipalities can secure federal grants for pilot programs. The City of Richmond Employee Trip Reduction Program implemented in January 2004 is an excellent example, with approximately 15 percent employee participation.

The ability of subsidies, when combined with parking charges, to produce the most effective programs examined to date, suggests that the inclusion of financial incentives in TDM programs as a primary strategy be a top consideration when developing an effective program. Current efforts in the Richmond area are beginning to increase. The Commuter Choice Initiative, sparked by RideFinders assistance in program development and implementation, has resulted in the growth from 3 to 45 employer participants.

Parking Supply and Pricing Management

Local Parking Policy

The development and management of parking supply involves many public and private sector groups. The public sector plays several roles in parking:

- Localities set "parking requirements" in codes. Requirements in zoning codes usually vary with the type of land use.
- Some localities build and manage off-street parking supply
- Localities control supply and regulation of on-street parking
- Localities influence rates charged by private providers of parking

The federal government also influences parking policy. The IRS exempts from taxes free or subsidized parking offered by employers to employees up to \$185 per month.

The private sector also has an important role in parking. Where the market allows, commercial parking operators provide and price surface lots and garages available to commuters and shoppers.

Policy changes influencing parking supply, price, and location raise equity issues across affected parties. For example, supply or pricing changes at an activity center, whether downtown or suburban, may favor or disadvantage activity center growth and the economy relative to other centers in a region.

Parking and Demand Management

Parking is a vital element of any Transportation Demand Management program. In fact, one recent study found parking pricing alone was as effective in reducing trips as a combination of several demand management strategies implemented without parking pricing. Therefore, the MPO and area local governments may wish to examine parking policy as part of their demand management programs.

Localities can integrate parking into their demand management efforts through two broad approaches: pricing and supply management. Note that several of these measures require approval at the state level before they can be considered.

Pricing

Parking pricing serves the objective of trip reduction. Whether by way of increased rates or surcharges at public and private facilities, removal of parking subsidies, implementation of regulations and agreements encouraging parking pricing as a demand management measure, changes in commercial parking rate schedules, parking taxes or other means, pricing can reduce vehicle trips significantly.

Objectives will determine what strategies and policy instruments should apply. For lessening localized traffic problems, parking pricing or subsidy removal or changes in public parking rates at employment centers will be effective. However, to achieve regional objectives of

improved air quality or trip reduction on routes traversing several jurisdictions, multi-jurisdictional pricing efforts are necessary.

It is important to appreciate that pricing can also bring results opposite to those desired. For example, pricing can divert some parkers to alternative parking facilities or shorten their parking stay. Planners need to anticipate these possible results along with mode shifts.

Governments may take several approaches to pricing parking. They may:

- Impose or increase fees and surcharges for solo drivers or long-term parkers in public parking facilities.
- Give price preference to carpools and vanpools.
- Tax the providers of parking
- Impose parking pricing through regional regulations
- Tie funding allocations for road improvements to requirements for local trip reduction plans incorporating parking pricing
- Employers also can play a role in pricing. One or more of these entities can:
 - Remove, reduce or cash out employer-provided parking subsidies.
 - Reverse "early bird" or monthly discounts favoring long-term commuter parking.
 - Impose parking pricing and discount parking for carpools where free parking prevails, or where carpools enjoy no price breaks.
- Develop parking regulations and pricing for commercial and retail mixed-use areas and manage and enforce parking.

Supply Management

Parking supply measures support the objective of trip reduction. Revising minimum or maximum rates, allowing below minimum rates in proximity to transit or for demand management programs, and providing shared parking at mixed-use developments are important considerations in a trip reduction program.

As with pricing, program objectives will determine what strategies and policy instruments should apply. For new developments in proximity to transit, maximum rates and controls on street parking will provide the maximum incentive for transit use. Maximums are especially important to consider in proximity to suburban rail stations, in light of findings previously discussed about excess parking supplies in many suburban developments. Adding carpool stalls where supply is limited will provide an incentive for pooling, especially where stalls can be located to shorten walks to building entrances. Also worthwhile are flexible requirements allowing for reductions in normal on-site minimum parking requirements in return for support of ridesharing and transit encouragements, peripheral parking and transit facilities.

Localities influence the supply of parking at and around developments through:

- Parking code measures.
- On-street controls (meters, timed zones)
- Controls on the amount of parking built and operated by the public sector.

- Localities can exert the most direct control over parking supplies through the zoning code. Parking codes establishing the amount of parking developers must provide can be set with low minimums and/or maximums to insure overly ample supplies are not provided. Or, localities can allow reductions in minimum requirements in return for traffic mitigation.

Variable Work Hours and Compressed Work Weeks

Work hour management is an important component of travel demand management because work hour policies contribute heavily to peak hour congestion. There are three types of variable work hours with potential application as demand management tools:

- Staggered work hours - Staggered hours are staged start work times set by employers.
- Compressed work weeks - Compressed work weeks allow employees to work more hours in fewer days than the usual eight-hour per day schedule.
- Flextime - Flextime allows employees to set their own arrival and departure time within a band of time.

Employees and employers may find alternative work hours improve quality of life issues, traffic congestion, and employee performance. Variable work hour programs in settings where workers need and want more flexibility in their schedules may reduce absenteeism, tardiness, and turnover.

RideFinders routinely introduces flexible work arrangements when promoting TDM strategies to local employers. Many organizations throughout the Richmond region have begun their own programs with or without the assistance of RideFinders. This TDM strategy is the second most utilized in the Richmond area.

Teleworking

Teleworking is an approach for reducing home-to-work trips by allowing employees to work-at-home. Employees may be linked to the work place by computer and modem or may simply take work home requiring no computer. Teleworking employees usually work at home one to several days per week, but generally report to a central office location on the remaining days. Telework centers allow employees to work at a satellite work center (run by single employers) or neighborhood work centers (run by multiple employers). The centers usually are equipped with computers and modems and connected to a main office.

There are about 4.4 million teleworkers in the United States, a figure that has grown about 20 percent per year since 1988. The growth trend is spurred by the nature of the economy and by technology advances. The 1990 Census revealed that approximately 62 percent of the work force held jobs that could be candidates for teleworking. With proper equipment, many functions associated with these positions can be done from the home or remote locations. For teleworkers geographically dispersed, companies can arrange to provide dial-up or virtual services. For teleworkers concentrated in a single locale, companies can lease a dedicated line to a central neighborhood center.

Not only can the strategy reduce the number of work trips for those working at home and/or their length for those working at satellite centers, it may dovetail with other employer objectives including improved morale and productivity. Teleworking is a demand management strategy likely to be attractive to employees and managers. For example, in a pilot project at AT&T and state agencies in Phoenix, Arizona, 80 percent of supervisors of teleworkers said teleworking increased employee productivity, 76 percent said teleworking improved employee morale, and 90 percent said the teleworking program should be expanded.

It is difficult to estimate potential benefits. Much depends on future growth of teleworking, the mix of industries in the future, and unforeseen technology advances. One forecast estimates \$23 billion could be saved annually in transportation, environmental, and energy costs if there is a 10 to 20 percent increase in activities done through teleworking instead of through physical transportation improvements.

RideFinders will serve on a committee to design and evaluate the development of a telework incentive program similar to the northern Virginia based TeleworkVa!