

## APPENDIX G. MENU OF TDM MEASURES

Table G-1. Alameda County TDM Program: City and Public Agency Measures

TDM Program	Description	Primary Agency Responsible	City Implementation mechanism	Recommended Application/Context	% Trip Reduction	Factors	Source
<b>Trip Reduction Requirements</b>							
Set trip reduction requirements for multifamily residential or commercial development	Require as a condition of approval for developments (either commercial, multifamily residential, or both) that certain TDM measures are implemented on an ongoing basis, or that specified vehicle trip reduction requirements are met.	Cities	Planning code or other municipal ordinance	Any urban area with good transit service; suburban downtowns, commercial and mixed use areas; transit stations. (particularly in high-growth areas)	5%-15%; Enables other strategies	Effects of this strategy depend on the location/accessibility of the development site(s), demographics of the project's residential/commercial occupants/tenants and the type of measures required. The US EPA notes that "reasonable initial targets for the programs established under a trip reduction ordinance (TRO), might be a 5-10 percent reduction in single occupant vehicle (SOV) trips, with somewhat larger reductions (perhaps 15 percent) if substantial fees for parking are imposed."	<a href="http://www.epa.gov/otaq/stateresources/policy/transp/tcms/trip_reduction.pdf">http://www.epa.gov/otaq/stateresources/policy/transp/tcms/trip_reduction.pdf</a>
Establish a Transportation Management Association	Establish an organization to assist businesses in reducing vehicle trips, either by administering programs, providing services (such as shuttle service), or providing technical assistance to businesses. Often implemented together with a trip reduction requirement.	Cities or business associations	Planning code or other municipal ordinance; or voluntary action by business association	Commercial area or other major business or employment districts	6%-7%	The TDM Resource Center (1996) estimated that just by improving coordination, and providing information on travel alternatives, establishment of a TMA can reduce commute-related vehicle trips by 6%-7%, with greater impact when implemented in concert with other trip reduction, TDM and parking management programs and services.	TDM Resource Center (1996), Transportation Demand Management: A Guide to Including TDM Strategies in Major Investment Studies and in Planning for Other Transportation Projects, Office of Urban Mobility, WSDOT ( <a href="http://www.wsdot.wa.gov">www.wsdot.wa.gov</a> ), as cited in the Victoria Transportation Policy Institute's TDM Encyclopedia ( <a href="http://www.vtppi.org/tdm/tdm44.htm">http://www.vtppi.org/tdm/tdm44.htm</a> ).
Implement an employee-trip reduction program for municipal employees.	Appoint an employee commute coordinator, and implement incentive programs to reduce single-occupant vehicle commuting among municipal employees. Elements may include: Subsidized transit passes; employee parking and/or parking cash-out programs; commuter checks; Direct financial incentives to bike, walk, carpool or take transit; Ride sharing; Shuttles; Vanpools	Cities	Modify agency procedures	Any	4-20%	Management support and the presence of an on-site employee transportation corridor are important factors in the success of a program. Mandatory employee/commute trip reduction (CTR) ordinances often require employers with more than 50 or 100 employees at a given employment site to implement a CTR program. This reduces the costs of administering TDM programs and compliance with survey and reporting requirements, but prevents such programs from reaching the majority of employees in a given city/region who work for small to mid-sized firms and organizations with less than 50 employees.	Marlon G. Boarnet, Hsin-Ping Hsu and Susan Handy (2010), Draft Policy Brief on the Impacts of Employer-Based Trip Reduction Based on a Review of the Empirical Literature, for Research on Impacts of Transportation and Land Use-Related Policies, California Air Resources Board <a href="http://arb.ca.gov/cc/sb375/policies/policies.htm">http://arb.ca.gov/cc/sb375/policies/policies.htm</a> ; Philip Winters and Daniel Rudge (1995), Commute Alternatives Educational Outreach, National Urban Transit Institute, Center for Urban Transportation Research, University of South Florida; Tom Rye (2002), "Travel Plans: Do They Work?," Transport Policy, Vol. 9, No. 4 ( <a href="http://www.elsevier.com/locate/tranpol">www.elsevier.com/locate/tranpol</a> ), Oct. 2002, pp. 287-298.
<b>Safety Net</b>							
Guaranteed/Emergency Ride Home program	Provide a guaranteed ride home for people who do not drive to work alone to ensure they are not stranded if they need to go home in the middle of the day due to an emergency, or stay late for work unexpectedly.	GRH in Alameda County is provided by Alameda CTC		Any	9%-38%	Coupled with active program marketing by employers, including marketing of other TDM programs and financial incentives, such as parking pricing, the Alameda County Guaranteed Ride Home program has been shown to reduce drive alone vehicle trips to participating employment sites by as much as 38% (Draft Alameda County Guaranteed Ride Home Program Evaluation (NelsonNygard 2012).	Draft Alameda County Guaranteed Ride Home Program Evaluation (NelsonNygard 2012)

Appendix G | Menu of TDM Measures

TDM Program	Description	Primary Agency Responsible	City Implementation mechanism	Recommended Application/Context	% Trip Reduction	Factors	Source
<b>Parking Management</b>							
Demand-responsive pricing of on-street spaces	Set on-street parking prices based on parking demand in area to achieve parking availability targets.	Cities	Municipal code; capital project	Urban or suburban downtowns, commercial and mixed use areas; transit stations.	4%-18%	One of the most significant factors affecting motorists' choice of whether to drive or travel by another mode is the price of parking at the destination. Moreover, up to 28% of traffic in mixed-use districts is attributable to cruising for parking. By encouraging use of alternative modes and reducing parking search related delays for transit, demand responsive pricing can significantly reduce vehicle trips to major destinations/districts. The impact of parking pricing depends on the overall supply and availability of both on-street and off-street parking and the extent to which employers subsidize such parking.	Low-end estimate per Harvey and Deakin (1997), who estimated that parking pricing for work and non-work trips would reduce regional vehicle trips by 2.8% (Greig Harvey and Elizabeth Deakin (1997), "The STEP Analysis Package: Description and Application Examples," Appendix B, in Apogee Research, Guidance on the Use of Market Mechanisms to Reduce Transportation Emissions, USEPA (Washington DC; www.epa.gov/omswww/market.htm)). High end estimated based on the Victoria Transportation Policy Institute, Trip Reduction Tables ( <a href="http://www.vtpi.org/tdm/tdm41.htm">http://www.vtpi.org/tdm/tdm41.htm</a> ). Additional resource: <a href="http://www.spur.org/publications/library/report/critical_cooling/option27">http://www.spur.org/publications/library/report/critical_cooling/option27</a>
Use of new meter technologies to allow multiple forms of payment and dynamic pricing	Install parking meters that allow payment by credit card or phone, and that connect to a central system in real-time, allowing for remote programming and management of parking prices.	Cities	Capital project	Urban or suburban downtowns, commercial and mixed use areas; transit stations.	Enables demand responsive parking pricing	Installation of new parking management technologies, including new meters and infrastructure to support payment by cell phone and real-time monitoring of parking space utilization and turnover enable implementation of demand responsive parking pricing, which in turn reduces vehicle travel (see Demand Responsive Parking Pricing).	San Francisco Planning and Urban Research (2009). "Critical Cooling," The Urbanist, Issue 482, May, 2009 ( <a href="http://www.spur.org/publications/library/report/critical_cooling/option27">http://www.spur.org/publications/library/report/critical_cooling/option27</a> )
Use of parking revenue to support other mobility/neighborhood programs	Dedicate meter revenue from designated area to uses such as mobility improvements, neighborhood or business improvement programs, potentially through the creation of a parking benefit district.	Cities	Form dedicated Transportation Management District to receive funds	Any area with paid parking	Enables investment in Multimodal Infrastructure and TDM Programs.	Creation of parking benefit district can directly support vehicle trip reduction by providing funding for investments in other multimodal access programs and services that increase opportunities for access by non-auto modes. The establishment of such districts and provisions requiring meter and permit revenues to be spent within the district can also indirectly support vehicle trip reduction by increasing local political support for demand responsive, market-based pricing of on-street and off-street parking.	
Require "Unbundling" of parking costs from rents and leases	Separate the charge for leasing or buying a unit or square footage in multifamily residential or commercial buildings from charges for parking spaces.	Cities	Modify planning code	Any	6%-16%	For residential development, unbundled parking may prompt some residents to dispense with one of their cars and to make more of their trips by other modes. The elasticity of vehicle ownership with respect to price is typically -0.4 to -1.0. Assuming total annual vehicle spending of \$7,788 (BLS Consumer Expenditure Survey, 2011), unbundling of an average of \$100/month in parking costs would increase perceived transportation costs/vehicle by 15%/year for the typical hh, which in turn is expected to result in a decline in vehicle ownership of 6% (at a price elasticity of -0.4) to 16% (at -0.10), with corresponding declines in vehicle trips.	Victoria Transport Policy Institute (2009), Transportation Elasticities, <a href="http://www.vtpi.org/tdm/tdm11.htm">http://www.vtpi.org/tdm/tdm11.htm</a> ; Bureau of Labor Statistics (2012), Consumer Expenditure Survey, 2011, www.bls.gov.

Appendix G | Menu of TDM Measures

TDM Program	Description	Primary Agency Responsible	City Implementation mechanism	Recommended Application/Context	% Trip Reduction	Factors	Source
Reduced or eliminated minimum parking requirements	In areas that are well-served by transit and other alternatives to driving, allow developers to build residential and commercial buildings with fewer parking spaces or no parking.	Cities	Modify planning code	Any area with quality transit service	9%-16%	This policy reform does not directly influence vehicle travel demand associated with existing development, although elimination of minimum off-street parking requirements does remove a barrier to changes of use, and/or the lease or sale of underutilized private off-street parking constructed in accordance with previous requirements, supporting the development of market-based parking pricing that in turn reduces vehicle travel.	Range of vehicle trip reduction impact of eliminating minimum parking requirements on Los Angeles' Westside, as incorporated in the vehicle trip reduction impact analysis conducted for the Los Angeles Westside Mobility Plan ( <a href="http://www.westsidemobilityplan.com/transportation-demand-model/">http://www.westsidemobilityplan.com/transportation-demand-model/</a> )
District-based parking management	Manage parking supply in a defined area as a unified whole in order to better manage parking demand between different facilities to eliminate cruising for parking and improve the customer experience.	Cities	Modify city agency procedures;	Urban or suburban downtowns, commercial and mixed use areas; transit stations.	Enables compact development	As with shared parking facilities, the coordinated provision and management of a shared, publicly accessible supply of on-street and off-street parking at a district-scale can reduce vehicle trips by facilitating dense/compact, clustered, and mixed-use development and by reducing expenditure of land and financial resources on off-street parking, thereby reducing an effective subsidy for auto access and mobility.	
Incentivize shared parking.	Facilitate the sharing of parking among multiple land uses that have complementary schedules (e.g. an office with greater demand during the day and restaurant with greater demand at night).	Enabled by cities, brokered by private businesses or developments	Modify planning code	Urban or suburban downtowns, commercial and mixed use areas.	Enables compact development	Shared parking facilities can reduce vehicle trips by reducing the need for construction of dedicated off-street parking facilities for each land use/activity commensurate with the peak parking demand for that use. By so doing, shared parking facilities can enable dense, clustered development that facilitates a greater share of trips by walking, cycling and public transit..	Shared Parking does not directly reduce vehicle travel if it substitutes for increased parking supply. To the degree that it increases the available supply of parking and reduces parking prices it can encourage automobile travel. To the degree that Shared Parking allows more Clustered Development it can encourage use of alternative modes.
Improved parking wayfinding signage	Install wayfinding signage to make parking easier to find. This can help to shift parking demand away from overfull spaces to underutilized areas and can help reduce local traffic impacts caused by searching for parking.	Cities	Capital project	Urban or suburban downtowns, commercial and mixed use areas; transit stations.	Not available.	Enhanced wayfinding, signage and provision of real-time information about parking supply and availability can reduce Vehicle Miles Traveled (VMT), and traffic congestion by reducing parking search time, but impacts on total vehicle trips are unclear.	
<b>Urban Form and Land Use</b>							
Compact, mixed use development and "park once" districts	Encourage development of districts that allow people to park just once if they drive to reach the district, and walk to destinations within the area once they are there.	Cities are responsible for zoning, land use planning, and development permissions	Amending general plans and zoning codes to plan for and facilitate compact, mixed-use development in appropriate areas. Support implementation of compact, mixed-use development by establishment of public development commissions and other mechanisms to support public investment.	Urban; suburb and downtown; transit station	20%-40%	Recent literature indicates that compact development can reduce VMT per capita by 20%-40% compared to conventional "sprawl type" development characterized by low density and segregation of land uses and activities (vehicle trips are assumed to be reduced by a corresponding 20%-40%). Cumulative effects depend on the pace of new development in the County relative to the base of existing development (at a more rapid pace and extensive geographic scale, compact/mixed-use development/redevelopment can lead to greater reduction in vehicle trips.	Ewing, R, K. Bartholomew, S. Winkelman, J. Walters, and D. Chen (2008). Growing Cooler: The Evidence on Urban Development and Climate Change. Washington, DC: Urban Land Institute (ULI), p. 33.

Appendix G | Menu of TDM Measures

TDM Program	Description	Primary Agency Responsible	City Implementation mechanism	Recommended Application/Context	% Trip Reduction	Factors	Source
<b>Multi-Modal Infrastructure</b>							
Bicycle sharing services	Bicycles are available to members for short-term rental and can be returned at any bike share station. Bike share may be offered in city neighborhoods, near transit hubs, or at major employment centers.	Cities or private bicycle sharing companies (usually at invitation of a city)		Urban; suburban downtown; transit station	2% to 8%	The impact depends on the larger bike network and bicycling conditions. This research does not state if the shift from automobile trips to bicycle trips is for commute or non-commute trips, nor does the research state at what time of day these trips occur, i.e. peak or non peak trips.	Victoria Transport Policy Institute (2008), Public Bike Systems: Automated Bike Rentals for Short Utilitarian Trips, <a href="http://www.vtpi.org/tm/tm126.htm">www.vtpi.org/tm/tm126.htm</a> .
Enhanced transit service	Improve transit service to better serve potential riders and shift travel from driving trips.	Transit agencies, funded by cities, counties, TMAs, BIDs, regional agencies		Any	5% to 30%	Impacts depend on the level and quality of improvements. The elasticity of transit use with respect to transit service frequency is about 0.5, which means that a 1.0% increase in service (measured by transit vehicle mileage or operating hours) increases average ridership by 0.5%. Not all persons will be shifting from auto to transit so the relationship is not one to one.	Richard Pratt (2000) Traveler Response to Transportation System Changes, Interim Handbook, TCRP Web Document 12. <a href="http://onlinepubs.trb.org/Onlinepubs/tcrp/tcrp_webdoc_12.pdf">http://onlinepubs.trb.org/Onlinepubs/tcrp/tcrp_webdoc_12.pdf</a> .
High Occupancy Vehicle/Toll (HOV/HOT) lanes	Implement a system of express lanes for high-occupancy vehicles, transit, and/or people who pay a toll. This provides a time savings to people who commute by modes other than driving alone.	Highway districts, often led by counties or regional agencies		Freeways, any context	2% to 30%	Comsis (1993) and Turnbull, Levinson and Pratt (2006) find that HOV facilities can reduce vehicle trips on a particular roadway by 4-30%. Ewing (1993) estimates that HOV facilities can reduce peak-period vehicle trips on individual facilities by 2-10%, and up to 30% on very congested highways if HOV lanes are separated from general-purpose lanes by a barrier. (Turnbull, Levinson and Pratt, 2006) suggests that HOV highway lanes are most effective at reducing automobile use on congested highways to large employment centers in large urban areas with 25 or more buses per hour during peak periods, where transit provides time savings of at least 5 to 10 minutes per trip.	Comsis Corporation (1993), <i>Implementing Effective Travel Demand Management Measures: Inventory of Measures and Synthesis of Experience</i> , USDOT and Institute of Transportation Engineers ( <a href="http://www.ite.org">www.ite.org</a> ); available at <a href="http://www.bts.gov/nl/DOCS/474.html">www.bts.gov/nl/DOCS/474.html</a> . Katherine F. Turnbull, Herbert S. Levinson and Richard H. Pratt (2006), HOV Facilities – Traveler Response to Transportation System Changes, TCRB Report 95, Transportation Research Board ( <a href="http://www.trb.org">www.trb.org</a> ); available at <a href="http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c2.pdf">http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_95c2.pdf</a> .
<b>Financial Incentives</b>							
Transit "fare free" zones	Transit agency provides free rides in designated zone.	Transit agencies, can be initiated/funded by cities, transportation management associations (TMAs), Business Districts	Can be implemented directly by transit agency, or another organization can form a funding partnership with the transit agency	Urban or suburban downtowns	Not available	Impact of transit fare-free zones is highly context specific. Some cities have seen very large increases in transit ridership within free-fare zones.	<a href="http://www.theatlanticcities.com/jobs-and-economy/2012/10/what-really-happens-when-city-makes-its-transit-system-free/3708/">http://www.theatlanticcities.com/jobs-and-economy/2012/10/what-really-happens-when-city-makes-its-transit-system-free/3708/</a>

Table G-2. Alameda County TDM Program: Public or Private Organization Measures

TDM Program	Description	Organization Responsible	Implementation mechanism	Recommended Contexts	% Trip Reduction	Factors	Source
<b>Multi-Modal Infrastructure</b>							
Car sharing services	Private companies offer shared vehicles that are available for short-term rental. These services reduce the need for car ownership for people who only need a vehicle occasionally.	Private car sharing companies (non-profit and for-profit)		Urban; subband downtown; transit station	Not available	Studies have focused on vehicle ownership rates not trips. According to the Transportation Research Board, each car-sharing vehicle takes nearly 15 private cars off the road – a net reduction of almost 14 vehicles. and the average reduction in vehicle ownership in North American cities with carsharing programs was 20%.	Transportation Research Board (2005), Car-Sharing: Where and How it Succeeds, Transit Cooperative Research Program Report 108. <a href="http://onlinepubs.trb.org/Onlinepubs/tcrp/tcrp_rpt_108.pdf">http://onlinepubs.trb.org/Onlinepubs/tcrp/tcrp_rpt_108.pdf</a> .
Secure bicycle parking	Offer secure bike parking to encourage travel by bicycle, especially at major transit hubs and employment centers and other areas where there is demand for long-term bike parking.	Cities, employers, housing developments, TMAs, transit agencies depending on ownership of right of way; counties and regional agencies can also purchase and facilitate installation of bicycle parking		Urban; subband downtown; transit station	Not available	Bicycle parking has limited impact as a standalone strategy: in combination with improved networks and other strategies to accommodate bicycles into development, it can promote cycling as a viable alternative to driving for shorter trips. As a rule of thumb, the Center for Clean Air Policy (CCAP) guidebook attributes a 1% to 5% reduction in VMT to the use of bicycles	California Air Pollution Control Officers Association (CAPCOA) Quantifying Greenhouse Gas Mitigation Measures. August, 2010 <a href="http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf">http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf</a> ; CCAP Transportation Emissions Guidebook <a href="http://www.ccap.org/guidebook/downloads/CCAP%20Transportation%20Guidebook%20(1).pdf">http://www.ccap.org/guidebook/downloads/CCAP%20Transportation%20Guidebook%20(1).pdf</a>
Preferential parking for carpools	Provide dedicated parking spaces for carpool users. These spaces should be the most desirable spaces.	Cities, transit agencies, employers, or any entity that owns a parking lot		Any	Not available	Impact of this strategy depends upon existing parking availability, among other factors. Most effective if implemented as part of a comprehensive TDM strategy.	
On-site bike/ped amenities (lockers, showers, etc.)	Employers offer on-site amenities that make it easier for people to bike or walk to work, by offering a place to store extra clothes and/or bicycles, shower, etc.	Employers, housing developments		Urban; subband downtown; transit station	Not available	This strategy has limited impact if implemented alone. Most effective if implemented as part of a comprehensive TDM strategy.	
<b>Financial Incentives</b>							
Subsidized transit passes	Employers/developers provide discounted or free transit passes to employees/residents; transit agencies sell passes at reduced rates based on purchase of passes for all employees/residents regardless of transit use (e.g., universal pass programs).	Employers, housing developments or TMAs/Business Improvement Districts are the most common distributors of discounted transit passes; agreements are made with transit agencies. Cities sometimes include distribution of transit passes as a part of a development's conditions for approval or in zoning requirements.	Direct grant to workers or residents	Urban or suburban areas with high quality transit	4% to 20%	Depends on level of transit service	Alameda CTC Issue Paper: Transportation Demand Management (TDM) and Parking Management

Appendix G | Menu of TDM Measures

TDM Program	Description	Organization Responsible	Implementation mechanism	Recommended Contexts	% Trip Reduction	Factors	Source
Pricing employee parking and/or parking cash-out programs	Charge employees for parking or, if parking is free, pay employees who do not drive the cash value of the parking space.	Employers are responsible, but parking cash-out can be mandated by cities, regions or states	Direct grant to workers or residents	Any	5% to 30%	Depends on the rate of parking pricing and location as it is more effective in denser locations with more transportation options	Victoria Transport Policy Institute (2008), <i>Land Use Impacts on Transport</i> , <a href="http://www.vtppi.org/landtravel.pdf">http://www.vtppi.org/landtravel.pdf</a>
Commuter checks	Provide direct payment or pre-tax discounts to employees who commute to work by transit, biking, walking, carpool, or vanpool.	Employers	Direct grant to employees	Any	Not available	Impact of transit subsidies depend upon robustness of existing transit network. Tax subsidies alone provide a moderate incentive for transit use.	
Direct financial incentives to bike, walk, carpool or take transit	Provide a direct financial incentive to people who commute by bike, walk, carpool, vanpool, or take transit. Commute benefit programs that result in tax savings for employers and employees are the most typical.	Any organization, public or private;	Direct grant to or other stakeholders	Any	5% to 40%	Depends on the amount of the subsidy, location (suburban, urban), transit options, and if there is a fee for parking and if so what that fee is	<a href="http://www.vtppi.org/tdm/tdm41.htm">http://www.vtppi.org/tdm/tdm41.htm</a>
<b>Shared Vehicle Services</b>							
Encourage ride sharing	Encourage workers to carpool to work instead of driving alone. Public agencies may encourage this by providing rideshare matching websites.	Any organization, public or private	Provide ridematching web site (public agencies or employers); Provide preferential parking (employers)	Any	5% to 30%	5-15% if they consist solely of educational efforts, and up to 30% if combined with cash incentives such as parking cash out or vanpool subsidies	Reid Ewing (1993), TDM, Growth Management, and the Other Four Out of Five Trips Bryon York and David Fabricatore (2001), Puget Sound Vanpool Market Assessment, Office of Urban Mobility, WSDOT ( <a href="http://www.wsdot.wa.gov">www.wsdot.wa.gov</a> ).
Facilitate Vanpools	Commute to work in a shared van with 7-15 people. Public agencies may facilitate vanpooling by providing rideshare matching websites and the van or other subsidies or incentives.	Any organization, public or private	Provide ridematching web site (public agencies or employers); Subsidize vans or provide preferential parking (employers)	Any	5% to 30%	5-15% if they consist solely of educational efforts, and up to 30% if combined with cash incentives such as parking cash out or vanpool subsidies	Reid Ewing (1993), TDM, Growth Management, and the Other Four Out of Five Trips Bryon York and David Fabricatore (2001), Puget Sound Vanpool Market Assessment, Office of Urban Mobility, WSDOT ( <a href="http://www.wsdot.wa.gov">www.wsdot.wa.gov</a> ).
Provide Shuttles	Operate a free or subsidized shuttle service to major employment centers or schools to reduce demand for driving and parking. Often financed wholly or in part by contributions from businesses along route.	Any organization, public or private	Provide or contract service	Any	Not available	The design of a shuttle services varies greatly, from last mile/first mile connections to and from transit centers, to long distance employer shuttle, to local circulator services. As a general proxy the elasticity of transit use with respect to transit service frequency can be used	
<b>Alternative Commute Scheduling</b>							
Telecommuting	Employers allow employees to work one or more days from home in order to reduce the number of automobile trips to work.	Employers		Any	2% to 10%	The range is large depending on the study examined. Also one study found that telecommuting and compressed work weeks together generate larger trip reductions	Reid Ewing (1993), TDM, Growth Management, and the Other Four Out of Five Trips. Center for Urban Transportation Research (1998), A Market-Based Approach to Cost-Effective Trip Reduction Program Design, <a href="http://ntl.bts.gov/lib/3000/3600/3633/cashdoc.pdf">http://ntl.bts.gov/lib/3000/3600/3633/cashdoc.pdf</a> . Apogee (1994), Costs and Cost Effectiveness of Transportation Control Measures: A Review and Analysis of the Literature, National Association of Regional Councils, <a href="http://www.narc.org">www.narc.org</a> . Amy Ho and Jakki Stewart (1992), "Case Study on Impact of 4/40 Compressed Workweek Program on Trip Reduction," Transportation Research Record 1346, TRB, <a href="http://www.trb.org">www.trb.org</a> , pp. 25-32. Genevieve Giuliano (1995), "The Weakening Transportation-Land Use Connection, ACCESS, Vol. 6, University of California Transportation Center, <a href="http://www.uctc.net">www.uctc.net</a> , Spring 1995, pp. 3-11.

Appendix G | Menu of TDM Measures

TDM Program	Description	Organization Responsible	Implementation mechanism	Recommended Contexts	% Trip Reduction	Factors	Source
Compressed work weeks	Employers allow employees to compress their work week by working fewer but longer days. For example, instead of working 5, 8-hour days, an employee may work 4, 10-hour days.	Employers		Any	2% to 10%	The range is large depending on the study examined. Also one study found that telecommuting and compressed work weeks together generate larger trip reductions	Reid Ewing (1993), TDM, Growth Management, and the Other Four Out of Five Trips. Center for Urban Transportation Research (1998), A Market-Based Approach to Cost-Effective Trip Reduction Program Design, <a href="http://ntl.bts.gov/lib/3000/3600/3633/cashdoc.pdf">http://ntl.bts.gov/lib/3000/3600/3633/cashdoc.pdf</a> . Apogee (1994), Costs and Cost Effectiveness of Transportation Control Measures: A Review and Analysis of the Literature, National Association of Regional Councils, <a href="http://www.narc.org">www.narc.org</a> . Amy Ho and Jakki Stewart (1992), "Case Study on Impact of 4/40 Compressed Workweek Program on Trip Reduction," Transportation Research Record 1346, TRB, <a href="http://www.trb.org">www.trb.org</a> , pp. 25-32 Genevieve Giuliano (1995), "The Weakening Transportation-Land Use Connection, ACCESS, Vol. 6, University of California Transportation Center, <a href="http://www.uctc.net">www.uctc.net</a> , Spring 1995, pp. 3-11.
<b>Promotional Activities</b>							
Travel marketing programs	Promote awareness of alternative travel modes through campaigns.	Any organization, public or private		Urban or suburban areas with high quality transit	5% to 8%	There is often a greater increase alternative mode share than reduction in vehicle trips given that some individuals switch between alternative modes or shift from driving alone to ridesharing. One study estimates that marketing increases the effectiveness of other TDM strategies by up to 3% (Shadoff, 1996)	Steven Spears, Marlon G. Boarnet and Susan Handy (2011), Draft Policy Brief on the Impacts of Voluntary Travel Behavior Change Programs Based on a Review of the Empirical Literature, for Research on Impacts of Transportation and Land Use-Related Policies, California Air Resources Board ( <a href="http://arb.ca.gov/cc/sb375/policies/policies.htm">http://arb.ca.gov/cc/sb375/policies/policies.htm</a> ). John Shadoff (1996), Transportation Demand Management: A Guide for Including TDM Strategies in Major Investment Studies and in Planning for Other Transportation Projects, Office of Urban Mobility, WSDOT ( <a href="http://www.wsdot.wa.gov/Mobility">www.wsdot.wa.gov/Mobility</a> ).
Personalized Travel Planning	Promote awareness of alternative travel modes through personalized travel planning.	Any organization, public or private		Urban or suburban areas with high quality transit	5% to 15%	Effectiveness depends upon the travel options available and the level of investment into personalized marketing. Ongoing investment may be required to maintain effectiveness over time.	Transport Today, Issue 334, pg 10 (2002) <a href="http://www.vtpi.org/tm/tm23.htm">http://www.vtpi.org/tm/tm23.htm</a>
On-site transportation coordinators	Employers hire dedicated staff member to oversee TDM programs and/or provide one-on-one employee travel education/training.	Employers, housing developments		Any	Not available	The presence of a transportation coordinator can help increase the effectiveness of other TDM programs	
Bike/ped maps, education, and promotion	Maps of safe biking/walking routes, educational classes on safe biking/walking, and promotional activities such as Bike to Work Day; usually provided by public agencies or non-profit organizations.	Any organization, public or private		Any		This strategy has limited impact if implemented alone. Most effective if implemented as part of a comprehensive TDM strategy.	