Ten Cities' Strategies for Transportation Demand Management

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This paper documents research into the strategies used by several cities to accomplish transportation demand management (TDM) objectives. Distinct categories of TDM strategies (regionwide rideshare agencies, developer requirements, transportation fees, incentive ordinances, transportation management organizations (TMOs), rideshare ordinances, and comprehensive TDM ordinances) are documented. The paper is comprised of a set of case studies organized by community. For each case study, the strategy (or strategies) used is identified; background information on the community and its transportation problems is presented; along with descriptive information including land use, population, number of employees, land-use intensity, recent growth, spread of peak period, and availability of public transit; the TDM strategy is described at length, including its institutional location; and the community's experience to date is assessed. The 10 cities included in the inquiry are Irvine; Pleasanton; Los Angeles; and Sacramento (all in California); Bellevue and Seattle, Washington; Portland, Oregon; Dallas, Texas; Orlando, Florida; and Montgomery County, Maryland. Regionwide rideshare agencies, developer requirements, TMOs, and employer and developer rideshare ordinances were used most often with success.

Transportation Demand Management (TDM) activity can be organized along a spectrum from "actions" on one extreme to "strategies" on the other. A TDM action is a measure that affects commuters directly. These include, for example, carpool matching, vanpool programs, subsidized transit passes, flextime policies, ridesharing coordinators, information centers, bicycle facilities, shuttle services, and others. TDM actions are usually implemented directly by employers or by areawide ridesharing agencies, such as San Diego Commuter Computer. At the other end of the TDM spectrum are "strategies." A TDM strategy refers to a higher-level government policy or program consisting of ways to encourage or require intermediaries—such as employers, developers, transportation management organizations (TMOs), or governmental entities—to carry out TDM actions. This paper describes the TDM strategies used in 10 U.S. cities or counties: Irvine, Pleasanton, Los Angeles, and Sacramento (all in California); Bellevue and Seattle, Washington; Portland, Oregon; Dallas, Texas; Orlando, Florida; and Montgomery County, Maryland. The approaches used by these jurisdictions vary widely, ranging from an emphasis on voluntary participation in established areawide ridesharing programs to strict requirements on developers and employers. The strategies can be classified into seven distinct strategies, with many communities using several of these approaches:

- *Regionwide rideshare agencies*—voluntary rideshare programs that are instituted for entire regions, without a supporting ordinance requiring developer or employer cooperation.
- *Developer requirements*—conditions placed in the use permit of a development (or sometimes expansion of an existing development) that require specified TDM actions or results.
- *Transportation fees*—fees exacted from developers, usually X dollars per square foot of space, to cover the costs of transportation improvements or services.
- *Incentive ordinances*—policies wherein developers are offered reduced on-site parking requirements in return for agreement to adopt specified traffic-mitigation actions.
- *TMOs*—groups of employers or developers who form nonprofit corporations or other structures to promote joint efforts to reduce traffic and provide ridesharing services.
- *Employer rideshare ordinances*—local regulations requiring employers to attempt/achieve reduction in vehicular use by employees (commuters).
- *Comprehensive TDM ordinances*—comprehensive regulations requiring TDM efforts by employers, developers, and property managers, which include technical assistance, penalties for noncompliance, and monitoring and reporting procedures to ensure compliance.

The highest-level city policy decisions are made at the strategy level, not the action level. We have therefore organized the case studies to highlight examples of the different TDM strategies that have been used. Each case includes a description of the strategy used, descriptive information on the area (i.e., population or land-use intensity), the institutional location of the program, and experience to date. The research was conducted by assembling written reports and published literature, conducting 12 in-depth interviews with appropriate staff, and acquiring up-to-date documents from the interviewees.

CASE STUDIES

Case Study 1: SEATTLE, WASHINGTON

STRATEGY: Developer requirements.
STRATEGY DESCRIPTION: The city of Seattle uses authority from the State Environmental Protection Agency (SEPA) and the Seattle Municipal Code to put forth uniform TDM requirements for all new development (including residential).

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Requirements vary depending on the size and type of development.

BACKGROUND: The city of Seattle has experienced rapid growth in the past decade, with 1 million sq ft of office space added in 1986 and 3.5 million more planned for 1988. Traffic problems, both in the downtown and suburban employment centers has become "terrible . . . the biggest issue in the city," according to one city planner. The process of having many buildings under construction at once also contributes to congestion. The city responded by implementing a policy, beginning 6 years ago, to require developers to offer extensive TDM programs.

DESCRIPTIVE INFORMATION:

Land use: The Seattle downtown area has densely developed office and retail. The suburban employment centers have light industrial, office, and retail uses.

Land-use intensity: In downtown, the tallest building is 76 stories, and the average number of stories is 50.

Population: 500,000 residents.

Number of employees: 193,000 in downtown.

Growth environment: 5.2 million sq ft of office space has been built or approved since 1986; 422,000 sq ft of retail has been built or approved since 1986.

Spread of peak period: 6:00 to 9:00 a.m., and 3:00 to 6:00 p.m. (subjective evaluation of planner).

PROGRAM INSTITUTIONAL LOCATION: Developer requirements are negotiated by METRO, the areawide transportation agency, and the Seattle Planning Department. When a developer files, a notice is sent to METRO planners, who comment on the transportation strategy. METRO then works with the city to prepare necessary environmental documents and to negotiate a memorandum of understanding or the Transportation Management Plan (TMP) with the developer. The METRO staff person with responsibility for the city of Seattle has 4 years of TDM experience. METRO also has a commuter services representative for each district of the city, who helps developers and employers with TDM programs. These representatives' experience ranges from 1½ years to over 10 years.

DESCRIPTION OF TDM STRATEGY: The city began developer requirements 6 years ago and in the past 2 to 3 years has established a set of requirements that were recently written up in a Director's Rule, describing code interpretation. It is hoped that the Director's Rule will lay out the requirements for each commercial or office developer to include in his or her TMP. This TMP would take the place of a single memorandum of agreement. Regardless of the planned development size, the TMP is required to contain the following elements: (a) a building transportation coordinator, (b) periodic promotional events, (c) a commuter information center, (d) required building tenant participation (put in the lease agreement), (e) rideshare matching, (f) a guaranteed ride home program, (g) biennial employee or tenant surveys, (h) quarterly reports, and (i) ridesharing incentives. All projects with over 25 employees are to conduct surveys. Adverse traffic or parking impacts associated either with a single development or cumulatively with prior, simultaneous, or planned future development are identified by city staff in the course of environmental review of a new developmental proposal. Depending on this review the city may also require one or more of the following ridesharing incentives: higher parking fees for single occupant vehicles, parking management techniques, high occupancy vehicle (HOV) cost subsidies, carpool bonuses, transit pass subsidies, vanpool sponsorship, reduced parking costs for HOVs, street and site improvements, subscription bus service, and flextime work schedules. In addition, larger projects may be required to dedicate land for transit facility, to build a bus shelter, to provide a paved pedestrian walkway connecting bus stop and facility, or to construct a bus pullout, if required for safety or layover reasons.

EXPERIENCE TO DATE: The city of Seattle and METRO were the key players in creating the developer requirements program. Planners report that developers complained at first, but with consistent application of the requirements over several years they have now become used to the process. Since 1986 or so, the program has become standardized, with developers knowing what to expect. METRO believes that the developer requirements program is working well. There is 44 percent transit ridership in downtown Seattle and a lot of developer activity in preparing and implementing TMPs. The city is currently reviewing the program, although the results of the review are not yet available to the public.

Case Study 2: PORTLAND, OREGON

STRATEGY: Regionwide rideshare agency.

STRATEGY DESCRIPTION: Rideshare, Portland's regionwide rideshare agency, is operated within a department of Tri-Met, the regional public transportation agency serving three counties in the Portland area. The agency encourages use of alternatives to the single occupant vehicle, including carpooling, vanpooling, and taking the bus. The purpose of the program is to decrease the number of vehicles on the streets and highways, thereby decreasing air pollution, traffic congestion, road repairs, and the need for new streets and highways.

BACKGROUND: Rideshare became the region's ridesharing agency in 1975. The genesis of Tri-Met's efforts to promote voluntary ridesharing efforts was the gas crisis of the 1970s. The city of Portland participated with several counties in the effort to establish Rideshare. This agency is the focal point of TDM program efforts in the Portland region, with commitment ebbing and flowing with changing demand factors, such as gas prices and employment levels. The commitment level is slowly increasing after a low as a result of a recession in the early 1980s. There are growing concerns over traffic congestion; whereas most of the existing congestion is on radial freeways to downtown Portland, recent modeling efforts have indicated pervasive suburban congestion throughout the region by the year 2005.

REGIONWIDE DESCRIPTIVE INFORMATION:

Population: The combined population of the three counties in the Portland region is 1,050,000 residents.

Land-use intensity: Density ranges from 9.8 persons per acre

in downtown Portland to 1.3 in the southern portion of the Portland metropolitan area. Average population density is 2.5 persons per acre throughout the region.

Growth environment: The region's population grew rapidly during the 1970s, but recession conditions abruptly altered population growth trends, with the population for the entire region increasing by only 30,000 persons in the past 6 years.

Data on traffic congestion: Employee work trips are projected to increase by 25 percent between 1983 and 1992. The market with the largest growth will be the intrasuburban work trips, with a 34 percent growth rate.

PROGRAM INSTITUTIONAL LOCATION: Rideshare is housed in the Paratransit Department of Tri-Met. The Paratransit Department is responsible for both specialized transportation for the elderly and handicapped and for ridesharing. The staff of three includes a program manager, an employer outreach assistant, and a carpool matcher. Before the creation of the Paratransit Department 1 year ago, the Rideshare program was housed in several other Tri-Met departments including Service Planning, Transportation Development, and Marketing.

DESCRIPTION OF TDM STRATEGY: Rideshare provides a computerized matching service for members of the public who request help finding carpool members. At present, there are 850 ridesharing applicants in the data base. Rideshare is currently working with a software programmer to enable private employers to link directly with Tri-Met's data base. This software will also enable employers to provide their own in-house matching program.

Tri-Met's discounted carpool parking program provides incentives to rideshare. The agency administers approximately 800 parking spaces in parking garages, surface lots, and long-term meters. All spaces require at least three members per carpool. Their innovative long-term-meter discount-carpool-parking program allows 580 carpools to park for $25/month and exempts the carpools from paying the normal meter rate.

Employer outreach is also an important component of Rideshare. Recently, staff received approximately 250 employer responses for some level of ridesharing assistance from a mailing to 700 employers. Rideshare staff will provide technical assistance to these employers for such things as surveys, but the employers themselves are responsible for ongoing duties such as in-house carpool matching or selling transit passes.

A $15 transit pass coupon program is currently being planned. The program would enable employers to purchase blocks of $15 coupons for their employees. With these coupons, employees can purchase a transit pass for $25/month compared to the regular price of $40/month. Rideshare staff are also responsible for administering 7 Tri-Met and 60 park-and-ride lots in the region to encourage vanpools and transit use. The private lots, usually belonging to churches or shopping centers, are located on transit lines and cost Tri-Met little to use.

EXPERIENCE TO DATE: Rideshare has been particularly successful in providing incentives such as discounted carpool parking and park-and-ride lots. Although they have been successful in promoting carpools and facilitating transit use, efforts to promote vanpools have not produced results. The Rideshare program received an excellent response from employers for assistance. At present, most of the employers who have sustained employer-based TDM programs have been local hospitals. Located in residential areas with constrained parking limits, these employers have been most active and successful with a comprehensive TDM effort.

Case Study 3: MONTGOMERY COUNTY, MARYLAND

STRATEGIES: Developer requirements, transportation fees, incentive ordinance, TMO, and comprehensive TDM ordinance.

STRATEGY DESCRIPTION: Montgomery County's primary approach is to require new developers (both commercial and residential) to provide extensive on- and off-site TDM programs. The county has also recently enacted a measure creating a special Transportation Management District where all existing and new employers are required to file TDM plans with the goal to meet an average auto occupancy of 1.3 persons per vehicle and 25 to 30 percent transit ridership.

BACKGROUND: Montgomery County is a large suburban area bordering Washington, D.C. The county has experienced rapid growth in both commercial and residential development in the past decade. It has a low unemployment rate (approximately 2 to 3 percent). Although growth has been concentrated in two suburban employment centers, planners note that there has been significant building throughout the county. Traffic has become the "number one" problem in the county, and there are moratoriums on residential or commercial building, or both, in many county subareas. In this context, TDM is seen as an important strategy to allow the area to accommodate growth and maintain acceptable traffic levels.

DESCRIPTIVE INFORMATION:

Land use: Montgomery County land uses include office, commercial, industrial parks, low-density residential, and townhouses. The employment centers have higher-density office (primarily 20-story buildings) and small-business retail.

Population: 700,000 residents.

Number of employees: 400,000.

Spread of peak period: 7 to 9 a.m. and 4 to 6 p.m. (subjective evaluation).

Data on traffic congestion: Data are collected for major roadways and used to monitor growth and TDM impacts. When traffic has reached too high a level in a county subarea, building moratoriums are imposed.

Transit availability: Montgomery County is served by the extensive Washington, D.C., METRO subway, Metrobus regional bus service, Ride-On neighborhood bus service, and MARC commuter rail service.

PROGRAM INSTITUTIONAL LOCATION: The county's TDM programs are provided by the Maryland National Capital Park and Planning Commission (M-NCPPC), a bicounty areawide planning agency. The transportation coordinator, with 10 years of TDM experience, has responsibility for TDM activities.

DESCRIPTION OF TDM STRATEGIES:

Developer Requirements: Requirements are negotiated under the Adequate Public Facilities Act (APFA), a 1973 ordinance requiring that new development be approved only when adequate public facilities have been established to accommodate it. This act was interpreted to include transportation demand management in 1982, and for the past 6 years the county has been requiring developers to implement certain TDM programs. The M-NCPPC typically requires that a 10-year plan for a TDM program be prepared and that the developer achieve certain trip reduction goals and give the county an irrevocable letter of credit equal to the cost of implementing the program for 10 years. Each year the TDM program is successfully implemented, the value of the letter of credit is reduced by 10 percent.

Transportation Fees: The Montgomery County Council enacted impact fee legislation in 1986. The fee is meant to defray a portion of the road construction costs necessitated by the additional traffic generated by the development. The amount of the fees varies to account for the relative trip impacts of different land uses and the relative needs and costs of supporting roads.

Incentive Ordinance: Developers are allowed a 15 percent reduction in required parking if they participate in the county's Share-A-Ride program and also submit a written agreement with the following conditions: (a) the owner or lessees (employers) with more than 25 employees will designate a transportation coordinator to promote TDM activities at the site, (b) the owner or lessees will provide preferential parking for carpools and vanpools, (c) the owner will make an annual payment to a public fund that provides Share-A-Ride services, (d) the owner will report semiannually on progress and, (e) the owner will pay a penalty in the event of noncompliance. Smaller reductions are available for private incentives such as in-house carpool matching, private shuttles, and so on. However, if the developer does this instead of participating in the county's Share-A-Ride program, he or she must set aside a land bank sufficient to provide additional parking spaces equal in number to the reduction granted.

Transportation Management Organization: The county has recently embarked on an effort to establish TMOs in certain county subareas with dense development. A major emphasis is to reduce the demand for trips and to produce enough trip reductions to allow additional land development. The county's first TMO was incorporated in February 1989 in the North Bethesda area. Its goals are to (a) serve as a public forum for the discussion of transportation issues, (b) generate measures to reduce traffic and facilitate orderly growth, (c) coordinate an areawide program, (d) organize and manage a bus or van transit service, (e) develop common parking policies, (f) aid members in developing TDM programs, and (g) initiate a cooperative planning process between public and private sectors. County government has taken the lead role in forming the organization. Most of the interest from the private sector has come from those developers who cannot get their projects approved unless something is done to ease the traffic situation.

Comprehensive TDM Ordinance: A recently enacted 1987 ordinance established a Transportation Management District in one of Montgomery County's busiest employment centers, Silver Spring. Within this district, all existing and new employers are required to implement TDM programs. Requirements for new employers include executing a traffic mitigation agreement, achieving a 1.3 vehicle occupancy for all employees, and achieving a level of transit use equal to 30 percent for all employees. These requirements will be strictly monitored and penalties will be exacted if goals are not met. Existing employers are also required to achieve an average vehicle occupancy of 1.3, with a requirement that transit use equal 25 percent of employees. Enforcement for existing employers will not be as strict as for new developments: fees will be exacted for failing to file a TDM plan but not for failing to meet the goals.

EXPERIENCE TO DATE:

Developer Requirements: The transportation coordinator notes that the APFA has been a successful tool. Over 20 developers have used the program to implement TDM actions as a result of their development agreements. The requirements are generally accepted by developers as a "necessary evil" and important for the county to be able to accommodate more growth. The incentive ordinance and the transportation fees work well in tandem with the case-by-case developer requirements.

Transportation Management Organization: The TMO in North Bethesda was adopted too recently to have any significant experience yet.

Comprehensive TDM Ordinance: No experience yet. The county has sent out notices to affected employers, who will be filing plans over the next several months.

Case Study 4: SACRAMENTO, CALIFORNIA

STRATEGIES: Developer requirements, incentive ordinance, and rideshare ordinance.

STRATEGY DESCRIPTION: Sacramento's primary strategy has been to adopt ordinances to standardize TDM requirements for both developers and employers. The city also passed an incentive ordinance, whereby parking reductions are offered as an incentive to the developer to carry out TDM actions.

BACKGROUND: Sacramento, like other California cities, has undergone rapid growth in the past decade. Projections for future growth suggest that the population is likely to increase from 275,000 residents in 1980 to 403,000 in 1995. Recognizing that financial constraints made it impossible to match this growth with additional freeways and roadways, the city decided to aggressively adopt TDM for new growth. The city wanted to mitigate air quality impacts of new development as well.

DESCRIPTIVE INFORMATION:

Land use: Sacramento's downtown land use is primarily high-rise office and retail.

Population: 325,000 residents.

Number of employers: There are 200 employers with more than 100 employees.

Growth environment: The population is expected to increase to 403,000 residents by 1995.

Data on traffic congestion: Auto use is projected to increase 48 percent between 1980 and 1995, from 740,000 trips per day to 1.1 million trips per day.

Transit availability: Sacramento has an adequate bus transit system, with a new light-rail system. There are plans to expand both to accommodate new growth.

PROGRAM INSTITUTIONAL LOCATION: The developer requirements are carried out within the Sacramento Department of Public Works. Three staff members, including the associate engineer and the senior engineer, have responsibilities for TDM. A team of engineers and planners has the responsibility to review employer and developer plans.

DESCRIPTION OF TDM STRATEGIES:

Developer Requirements: In December 1988 the city of Sacramento revised its 1983 developer requirements ordinance. The 1983 ordinance required that developers and employers include in a transportation management plan between 2 and 5 of 14 designated "trip reduction measures." Each of these measures was assigned an associated "trip reduction percentage." The goal was for each developer to include in his or her plan sufficient measures to effect a 15 percent reduction in total single occupant vehicle trips to be generated by the development. The vague definition of "trip reduction" and the associated trip reduction percentages made monitoring difficult and resulted in what was essentially an activity requirements ordinance with no true performance measure. Therefore, the city revised the performance measure to be percent of employees ridesharing.

The new ordinance establishes the goal that 35 percent of employees who commute during the peak periods to the site be encouraged to travel by some means other than single occupant vehicles. Requirements for "minor projects" (primary place of business for 25 to 99 employees) are simply that the owner provide facilities to post rideshare and transit information. Requirements for "major projects" (primary place of business for 100 or more employees) are that they obtain an annual Transportation Management Certificate from the city engineer by (a) providing facilities to post rideshare and transit information, (b) designating a transportation coordinator for the project, and (c) agreeing to file an annual TMP. The plan must document the commute modes of all employees currently occupying the project, progress toward attainment of the 35 percent goal, and, if the goal has not been met, the implementation of additional TDM measures. TDM measures that developers may use include participation in a transportation management association (TMA), preferential parking, parking fees, transit passenger shelter, bus or light-rail transit station subsidy (if located within 1,320 ft of an existing or proposed transit center), transit operating subsidy (if located within 1,320 ft of an existing or designated bus route or light rail transit station), transit pass subsidy, buspool or shuttle bus program, vanpool program, bicycle lockers and showers, land dedication for transit facilities (if need is determined), and subsidy for transportation systems management (TSM) capital improvements (if need is determined).

Rideshare Ordinance: In December 1988 the city also passed a rideshare ordinance to require employees to establish TDM policies so that "35 percent of their employees who commute during the peak periods are encouraged to arrive at their work site by means other than single occupant vehicles." The rideshare ordinance requirements are similar to those in the developer ordinance. Minor employers (employing 25 to 99 persons) are required to post rideshare and transit information, to designate a transportation coordinator who will coordinate with local transit agencies on the distribution of information, and to provide newly hired employees with alternate commute mode information. Major employers (employing over 100 persons) are required to obtain an annual Transportation Management Certificate by filing a TMP, with the goal of implementing TDM measures that will meet the 35 percent participation goal. At a minimum, the plan must document compliance with all requirements on minor employers, provide a status report on the current commute modes of employees, document TDM measures planned to increase alternative mode use, and provide an implementation plan. Annual plan updates must provide current data on employee commute modes and a summary of the previous year's TSM program. Employers who meet the 35 percent alternative mode trip goal for two consecutive years can apply for a Transportation Management Certificate valid for 2 years.

Incentive Ordinance: A parking reduction ordinance was also adopted in 1983. It allows substitution of required off-street parking spaces for the provision of incentives to use alternative transportation rather than single occupant vehicles. The substitute measures are assigned a particular "parking reduction level"; for example, offering employees a 50 percent transit bus pass subsidy allows for a 5 percent reduction or 20 spaces, whichever is less.

EXPERIENCE TO DATE:

Developer Requirements and Rideshare Ordinance: No experience yet. The city is currently preparing developer and employer TSM handbooks.

Incentive Ordinance: City staff report that the parking incentive ordinance has been used only once, and they plan to revise the ordinance. The primary problem is that the ordinance is complicated, and developers are reluctant to build below traditional levels of parking.

Case Study 5: BELLEVUE, WASHINGTON

STRATEGIES: Developer requirements and TMO.
STRATEGY DESCRIPTION: The basic approach used by the city of Bellevue has been to (a) pass an ordinance requiring new developers to provide TDM programs and (b) provide TDM services to existing employers through a TMA in the downtown area and an aggressive city-funded ridesharing program called EASY RIDE in two employment centers outside downtown (defined as noncentral business district, or non-CBD).

BACKGROUND: In 1980 the city of Bellevue adopted the Central Business District Sub-Area Plan, an ambitious rezoning effort aimed at focusing development in a strictly defined 90-acre new "downtown." Development outside this area was

limited to a floor-to-area ratio (FAR) of 0.5, whereas inside the line it could go as high as 10.1. Since the plan went into effect, downtown Bellevue has "shot skyward." Although overbuilding during the early 1980s gave Bellevue one of the country's highest office vacancy rates, rapid growth is fast eating into the surplus. Many Bellevue buildings now command higher rents than their Seattle counterparts (10 mi to the west). This intensive growth has led to a strong citizens' effort to slow growth, including collecting 8,000 petitions to find traffic solutions to citywide congestion. Planners say growth, with its resulting transportation problems, is the single most important issue in Bellevue. The city of Bellevue has committed to a strong TDM policy to maintain acceptable traffic levels.

DESCRIPTIVE INFORMATION:

Land use: Within the Bellevue CBD, there are approximately six office buildings with over 20 stories, mixed with predominantly one-story retail and smaller office uses. Outside the CBD, land use is primarily low-density residential. There are two suburban employment centers with mixed-use office parks of light industrial and office space.

Population: 85,000 residents.

Number of employees: 65,000.

Land-use intensity: There are 50 employees per acre in the CBD.

Growth environment: The CBD now has 5.5 million sq ft of office space, half of which has been built since 1980. All office buildings over 15 stories were built in a 3-year period.

Pressure for future growth: Projections to the year 2000 are to double the 5.5 million sq ft of downtown office space and to increase the current 3 million sq ft of retail to 4 million with a major (1 million sq ft) shopping center in downtown.

Spread of peak period: Surveys show that 60 percent of employees fall into 1-hour peaks: 7:30–8:30 a.m. and 4:30–5:30 p.m.

PROGRAM INSTITUTIONAL LOCATION: The city of Bellevue locates its TDM planning within the Department of Planning. One full-time associate planner has responsibility for TDM activities, particularly the EASY RIDE program funded by the city for suburban employment centers. The Bellevue TMA is a formalized public-private partnership between the Bellevue Downtown Association; the city of Bellevue; and METRO, the regional transit agency. The TMA itself, however, is privately implemented by the Bellevue Downtown Association. There are six staff members and a policy board that manages the association.

DESCRIPTION OF TDM STRATEGIES:

Developer Requirements: In the CBD, recent revisions to developer requirements include a new performance standard based on maximum p.m. exiting trips from the building. For the non-CBD, an ordinance requiring developers to provide a TDM program was adopted in the Land Use Code in early 1987. Depending on the size and type of the development, developers are required to post rideshare and transit information; distribute information; and provide a transportation coordinator, preferential parking, financial employee incentives, and a guaranteed ride home. The code requires that property owners submit a report 6 months after Certificate of Occupancy and every year thereafter. The report must describe each of the required TDM components that were in effect for the previous year, the total number of employees, the expenditures for financial incentives and guaranteed ride home, the number of bus passes sold, and the number of registered carpools and vanpools. A reporting form is provided by the city. It should be noted that this is perhaps the only example in the country of guaranteed ride home program requirements being codified in a city's land-use code.

Transportation Management Association: The Bellevue TMA provides TDM services within downtown Bellevue. The services are available to employers whether or not they are members of the TMA or the Bellevue Downtown Association. The TMA contracts with METRO (the regional transit and ridesharing agency) to provide carpool and vanpool matching. It provides parking and transportation management services to developers, employers, and employees; provides personalized assistance from a transportation coordinator; and promotes ridesharing in downtown with marketing brochures. In order to provide parking management services, the TMA enters into service contracts with property owners whereby the TMA is given, without cost, employee parking spaces that are currently provided free. The TMA then charges for the parking and uses the revenues to provide parking enforcement and other transportation services. The TMA also manages adopted transportation management programs for various building owners.

EASY RIDE: As a follow-up to passing the developer requirements ordinance, the Bellevue City Council funded a 2-year demonstration project for the city to provide aggressive ridesharing promotion and services for existing employers in two employment districts outside the CBD. This direct service provision approach was explicitly chosen over requiring existing employers to implement TDM actions. The new program is called EASY RIDE. It is administered by the Bellevue Department of Planning, which contracts with METRO to provide specific service. EASY RIDE has two transportation coordinators to assist commuters, discounted vanpool fares, and a guaranteed ride home program (by taxi) for pooler or bus riders who miss their ride home because of overtime or home emergency. Performance is monitored by annual employee surveys and driveway counts of auto occupancy.

EXPERIENCE TO DATE: Planners report that there is a reasonable level of employer and developer support for the downtown TMA, particularly because it is administered by the downtown business association. Developer response to the recent developer requirement ordinance, so far, is limited, although planners report that a good deal of developer input was solicited during the 1½ year approval process and that developers are supportive of the final product. EASY RIDE has met with significant employer involvement, with employers forming 10 vanpools in the first year and reporting that the guaranteed ride home program is a successful and important ingredient.

Case Study 6: ORLANDO, FLORIDA

STRATEGIES: Incentive ordinance and transportation fees.
STRATEGY DESCRIPTION: Orlando passed a 1982 ordinance that lowered off-street parking requirements for office (and retail in conjunction with office) development in exchange for contributions to a transportation management trust fund. When no developers took advantage of the ordinance, the city passed an impact fee ordinance, which required new developments to pay for road and related infrastructure capacity needs. These fees are targeted primarily toward continuing to build roads and widen freeways, and there is little focus on TDM.
BACKGROUND: Orlando is located in east central Florida and is experiencing rapid growth. Most growth is taking place in suburban regions, with the major work sites being Disney World, Martin Marietta, and several industrial parks. Downtown employment is primarily city and county government, lawyers, and banks. Projections for even more growth led the city, which, along with the state, does not collect income taxes, to search for ways to fund infrastructure improvements to support new development.

DESCRIPTIVE INFORMATION:

Land use: Land uses in Orlando include low-density office, light industrial, and residential.

Population: There are 159,000 residents in the city of Orlando, and 1 million residents in the Orlando urbanized area.

Growth environment: The city grew from 99,000 to 159,000 residents between 1970 and 1988.

Transit availability: Bus service is provided by Tri-County Authority, and there are only 72 peak-hour buses for the entire Orlando metropolitan area. There is general recognition of the need to expand transit service, and current plans call for an increase in bus service. There was a well-publicized move in 1987 to build private-sector-funded light rail, but the project did not succeed.

PROGRAM INSTITUTIONAL LOCATION: The impact fee ordinance is administered by the city of Orlando Transportation Planning Bureau. One transportation planner has primary responsibility.

DESCRIPTION OF TDM STRATEGIES:

Incentive Ordinance: Under the 1982 Downtown Parking District Overlay Ordinance, a developer could avoid the construction of up to 20 percent of required parking in exchange for contributions to a transportation management trust fund. Contributions would be based on 80 percent of construction cost for each space avoided, with the "cost" of a space set periodically by the city council. For example, the cost of a space in 1986 was set at $5,600, resulting in a proposed contribution per space avoided of $4,480 (at 80 percent).

Transportation Fee: The recently enacted 1986 Impact Fee Ordinance requires new developments to pay for the road and related infrastructure capacity needed to accommodate the vehicular trips to be generated. Capacity needs would be calculated based on trip generation rates from the Institute of Transportation Engineers, and fees would be derived from cost projections of improvements needed annually for the city's transportation system. Some downtown developments can receive "discounts" for land uses that offer the potential of shared parking among different uses during the day and evening or on weekends. In this sense, this strategy is similar to an incentive ordinance strategy.

EXPERIENCE TO DATE:

Incentive Ordinance: Between 1982 and 1986, the city received no payments for the trust fund because project lenders were leery of proposals to design less than "adequate" parking into office and mixed buildings. In suburban markets, planners point out that developers and lenders believe that below-standard parking facilities detract from a project's appeal to office employers. Additionally, although parking facilities are an expensive investment both in terms of construction costs and the valuable land consumed, they are also considered to be a permanent fixture to the property that represents an asset with a quantifiable value under traditional appraisal methods.

Case Study 7: IRVINE, CALIFORNIA

STRATEGY: TMO.
STRATEGY DESCRIPTION: The major TDM effort in Irvine is the Irvine Spectrum TMA ("Spectrumotion"), with mandatory membership for new companies moving into the Irvine Spectrum development.
BACKGROUND: The City of Irvine is a master-planned community in Orange County, California, which has made TDM a planning priority. Irvine Spectrum is one of the city's main developments—a 2,600 acre premier master-planned center for research, technology, and business. Irvine Spectrum has developed quickly; a company a week moved into the center in FY 1986–1987. The city of Irvine placed trip restrictions on certain land segments through the entitlement and zoning process to ensure that traffic would not become a problem. Partly because of these restrictions, the developer of this center began the planning and implementation of a transportation management organization in 1985.

DESCRIPTIVE INFORMATION:

Land use: Land uses in the Irvine development include office and light industrial.

Number of employees: There were 14,000 employees in 1987, with approximately 50,000 expected at build-out.

Number of employers: There are 340 employers in Irvine Spectrum.

Transit availability: There is minimal bus service at present because the area is still developing; but bus service may be increased in the future.

PROGRAM INSTITUTIONAL LOCATION: The TMA was formed as a nonprofit corporation with a formal board of directors in July 1986. Membership is mandatory for all com-

panies moving into Irvine Spectrum, and companies previously located there are offered associate membership for a nominal fee. The mechanism for required membership and collection of assessments is the "Codes, Covenants, and Restrictions," a document which must be signed as part of any land sale or agreement.

DESCRIPTION OF TDM STRATEGY: The TMA offers a wide variety of services to the employers and employees of Irvine Spectrum. The TMA surveys employees of new companies moving into the development for matching purposes on the in-house poolmatch computer. The data base is updated annually during Share-A-Ride week in October. There are approximately 3,700 employees in the data base. The information is used to develop carpools and vanpools and to assess work shifts and major new public transit routes for the area. Bicycle commuting is encouraged through Spectrumotion Wheelers Club. Regular newsletters and flyers keep employees informed and at least two major promotions are held annually to encourage participation.

EXPERIENCE TO DATE: The association won two awards from the Orange County Transportation Commission along with several other companies in Irvine Spectrum participating in association programs. The TMA had formed 13 vanpools within the first year and had 1,000 employees participating in carpools. 160 Irvine Spectrum employees signed up as members of the bicycle club. Further data are being collected for evaluation.

Case Study 8: DALLAS, TEXAS

STRATEGIES: TMO and developer requirements.

STRATEGY DESCRIPTION: The major TDM effort in Dallas is the Parkway Center TMA, developed partly because of conditions of development of the Parkway Center, as well as city council actions providing monetary support for a TMA and, in some cases, mandatory membership in the TMA for new developers. Dallas also has an aggressive bicycle program.

BACKGROUND: Parkway Center, encompassing approximately 2,000 acres, is situated about 10 mi north of downtown Dallas. Between 1981 and 1986, the area was the scene of intense development, with 12.8 million sq ft of office, 14 hotels, and 3 major shopping malls built. A consultant study of land use and transportation in the area indicated that the development (with over 50 million sq ft of office space projected at build-out) would require a coordinated program of infrastructure improvements, increased transit use and other traffic mitigation measures, including formation of a TMA. Although initial planning for the TMA was aggressive, a severe economic downturn in Dallas has slowed the association's development indefinitely. A core group continues to stay active and interested.

DESCRIPTIVE INFORMATION:

Land use: Land uses in Dallas include prestige high-rise office buildings, 14 hotels, and major shopping centers.

Size of area: 2,000 acres.

Number of employees: 125,000 employees expected at build-out.

Data on traffic congestion: Parkway Center will generate an estimated 75,000 automobile trips in the afternoon peak.

Growth environment: There were 12.8 million sq ft added to Parkway Center between 1981 and 1986. Future development would exceed 50 million sq ft of office space.

Transit availability: The bus system in Dallas currently has a significant number of empty buses; the Dallas Area Rapid Transit has decided to cut 13 percent of its route structure.

PROGRAM INSTITUTIONAL LOCATION: Although officials of the city of Dallas and two suburban jurisdictions negotiated the creation of the TMA with property owners and are full members of the TMA, the organization itself is a private one. The association has a 12-member board of directors (both private and public representatives) and is to operate under an executive director, with one urban and transportation planner on staff, with clerical support.

The bicycle program is operated out of the city's Department of Transportation and is the primary responsibility of one transportation planner.

DESCRIPTION OF TDM STRATEGIES:

Developer Requirements: The city of Dallas and two suburban jurisdictions negotiated a series of transportation-related commitments from Parkway Center property owners, including dedicated rights-of-way for public use; financing of off-site road improvements through a 50-cent-per-square-foot development impact fee; reduced maximum parking limits; special provisions for transit (such as easements for a bus transfer station and erection of bus shelters) in return for FAR bonuses; and participation in a TMA, including paying 5 cents per square foot toward its operating costs.

Transportation Management Association: The TMA will work with major employers to encourage ridesharing and coordinate employee arrival and departure times to ease peak-hour congestion. It will conduct transportation surveys for its members and evaluate trip patterns and parking availability at employment sites. Based on these data, the TMA will help employers decide which commuter services best suit their employees' needs. The TMA will also monitor local traffic conditions, assist employers with parking management strategies, organize an internal shuttle bus service, and work with public and private transportation providers to provide commute alternatives.

Bicycle Program: The city of Dallas has an aggressive bicycle program, stressing bicycle safety, parking, and adequate bicycle routes within the city. The planner responsible for the program is working on a bicycle program ordinance, which would require new developments to install bicycle parking based on a percentage of parking requirements. Large employment centers would also be required to install safe and secure bicycle lockers, and retail developments would be required to install bicycle racks. The ordinance is now being reviewed by employers and developers and will probably be adopted in 4 to 5 months.

EXPERIENCE TO DATE: Planners with the Dallas Department of Transportation report that urgency for the TMA has completely dissolved with the economic downturn. A core group is still active and in 1987 negotiated a new shuttle service

with Dallas Area Rapid Transit connecting office concentration with restaurants to reduce lunch time congestion. However, an executive director was never hired and there has been very little activity in the past year. Planners point out that developers are having trouble leasing space.

Case Study 9: PLEASANTON, CALIFORNIA

STRATEGY: Comprehensive TDM ordinance.
STRATEGY DESCRIPTION: Pleasanton has adopted a comprehensive TDM ordinance, covering both developers and existing employers, aimed at reducing peak-hour commuting to 55 percent of what would occur if all employees drove alone during the peak hour.
BACKGROUND: Pleasanton is a small but rapidly developing community located at the eastern fringe of the San Francisco Bay Area. In the past decade, the city started to pursue commercial development. By the early 1980s, millions of square feet had been approved, and still more millions had been announced. When it became clear that the new commercial development would transform Pleasanton into a major employment center, with resulting traffic congestion and difficulties, citizens, employers, and developers all became involved in an effort to alleviate future problems. The TMO was organized beginning in 1982, and the subsequent TDM ordinance was adopted in October 1984.

DESCRIPTIVE INFORMATION:

Land use: Land uses in Pleasanton include office, commercial, industrial parks, and low-density residential.

Population: 46,800 residents are projected by 1990.

Number of employees: 17,500 (1980).

Growth environment: Population grew from 18,300 in 1970 to 35,000 in 1980. The number of jobs in Pleasanton is expected to increase 305 percent from 1980 to 2,000, and 14 million sq ft in new commercial development has been proposed for Pleasanton.

Spread of peak period: The ordinance defines the peak period as 7:30 to 8:30 a.m. and 4:30 to 5:30 p.m.

Data on traffic congestion: Pleasanton has an ongoing system to monitor traffic congestion at major intersections. The ordinance calls for stricter TDM measures if traffic congestion goes below level of service (LOS) D.

Transit availability: There is a sparsity of bus service in the area.

PROGRAM INSTITUTIONAL LOCATION: The ordinance created a transportation systems manager position in the city's Department of Planning and Community Development. This coordinator collects intersection performance data, assists employers, reviews survey reports, and reviews and evaluates all employers' and complexes' TDM programs. Annual reports on results to date are made to the city council. Major responsibility for oversight, however, rests with a TSM task force, composed of executive level representatives of each large employer and complex, plus a coordinator appointed by the downtown businesses, the Pleasanton transportation systems manager, and representatives from transit operators.

DESCRIPTION OF TDM STRATEGY: The goal of the ordinance is to reduce peak-hour commuting traffic volume to 55 percent of what it would be if all commuters drove alone in their vehicles during the peak hour. The ordinance provides that any reasonable combination of TDM measures, including transit-related programs, ridesharing, nonvehicular commute modes, and alternative-work-hour programs can be used to achieve the trip reduction goal. The ordinance requires all employers to conduct an annual survey of employee commute patterns. For employers of 50 or more employees, or employers within multitenant complexes, a work place or complex ridesharing coordinator must be appointed. The 55 percent goal can be phased in over a period of years: 15 percent reduction in the first year and an additional 10 percent in each of the next 3 years.

For the first 2 years, fines could be collected from any employer or complex for failing to provide the required survey data, but not for failing to reach the specified ridesharing goals. After 2 years, the coordinator could recommend to the city council that ordinance provisions on mandatory TDM actions be activated. Under these provisions, the coordinator can reject a TDM plan and require additions or revisions. The success of the ordinance will be monitored through strict traffic monitoring of major roads and intersections. The ordinance goal is to maintain an LOS C or better on city streets and intersections for as long as possible; to exceed LOS D only after TDM measures have achieved the 45 percent reduction goal; and to preclude street operations from reaching LOS E. The TSM task force has the authority to mandate additional TDM elements if a particular employer or complex is found to be the primary contributor to traffic at a congested city street or intersection.

EXPERIENCE TO DATE: Experience in Pleasanton has been positive so far. The Pleasanton transportation system manager was hired in the first year and baseline data on employee travel patterns were collected. Formats for TDM plans were developed, along with guidelines for monitoring procedures and the design of preferential parking. All but one employer initially complied with the ordinance; the remaining employer was fined and subsequently did comply. All but two employers were able to meet the first-year goal of 15 percent commuting by some means other than drive alone during the peak period. By the second year, all large employers and complexes had implemented TSM programs. Twelve companies even exceeded the fourth year goal of 45 percent of employees commuting by some means other than drive alone during peak period in the second year, and only three failed to meet the second-year goal of 25 percent. The annual surveys have had high response rates: 75 percent in 1985 and 77 percent in 1986.

Much of this success is because employers and developers were deeply involved in the development of the ordinance, which has been called a grass-roots effort. A task force representing all major employers shares responsibility for compliance with the city's transportation coordinator.

Case Study 10: LOS ANGELES, CALIFORNIA

STRATEGIES: Incentive ordinance, transportation fees, and rideshare ordinance.
STRATEGIES DESCRIPTION: The city of Los Angeles has used three TDM strategies. In 1983, the city adopted an incen-

tive ordinance, offering developers reduced parking requirements in exchange for successful encouragement of commute alternatives. The Coastal Transportation Corridor Specific Plan was passed in 1985. It requires developers in the Venice and Marina areas to pay transportation fees for road and traffic mitigation improvements. And in 1987, the city passed an employer ridesharing ordinance, requiring that all large employers and large multitenant buildings prepare and implement TMPs to encourage their employees to reduce their driving. The rideshare ordinance was subsequently rescinded in light of the South Coast Air Quality Management District's (AQMD's) Regulation XV (see next case study).

BACKGROUND: Los Angeles has led the country in experiencing a tremendous growth in suburban employment centers. Along with new jobs and economic prosperity have also come extreme traffic congestion and concerns over environmental quality. Citizen pressure to curb growth and alleviate transportation problems and public concern over maintaining quality of life in Los Angeles have led the city to adopt a variety of TDM-related measures to reduce the number of single occupant commuters.

DESCRIPTIVE INFORMATION:

Size of area: 470 sq mi.

Land use: Los Angeles' huge land area encompasses varied land uses, including several high-rise office districts and increasing amounts of suburban employment to the north in the San Fernando Valley, to the southwest in the Venice/Marina coastal area, and to the south in the city's industrial sections, as well as to the east.

Population: 3.3 million city residents.

Transit availability: Bus service varies within the city. Areas such as downtown Los Angeles and some suburban employment and residential areas are well served. Other suburban areas have limited service.

PROGRAM INSTITUTIONAL LOCATION: Most TDM activities within the city of Los Angeles are implemented by the Transportation Planning Division of the city's Department of Transportation, although several other city agencies and departments, including Planning, Zoning, and the Community Redevelopment Agency, also have significant input. Several planning associates have various responsibilities for different rideshare ordinances, actions, and developer negotiations.

DESCRIPTION OF STRATEGIES:

Incentive Ordinance: The Los Angeles parking management ordinance grants developers reduced parking requirements in exchange for successful encouragement of commute alternatives that would lessen parking demand on site. Reductions in parking requirements of up to 40 percent for on-site or 25 percent for remote parking are authorized if supported by a parking management plan submitted with the application for a conditional use permit. To protect against the possibility that projected reductions in parking demand at the site are not achieved, the land owner must either set aside a land bank or enough open space to accommodate the full amount of parking required by the code, or he or she must gain approval from the zoning administrator of an alternative plan. The owner must also record a covenant running with the land that if specified levels of compliance are not achieved, the owner at that time will develop the additional parking spaces or other measures required by the zoning administrator.

Transportation Fees: Within the area specified under the Coastal Transportation Corridor Specific Plan (parts of Venice, Mar Vista, Westchester, Marina del Rey, and Playa del Rey), developers of land uses that will generate over 100 peak-hour p.m. trips are required to develop and implement a TDM program that will reduce peak-hour trip generation by at least 15 percent. Developers are also required to pay a transportation impact assessment fee of $2,010 per peak-hour p.m. trip projected using Institute of Transportation Engineers trip generation rates. The funds from the fee are to be paid into the Coastal Transportation Corridor Trust Fund and used for a variety of purposes including the development of a city-sponsored TDM program, traffic signal improvements, transit improvements, construction of new streets, and the widening of existing streets and intersections.

Developers may reduce their assessed fees by prescribing measures and programs that will reduce the number of vehicle trips to be generated by the proposed development. A reduction of up to 25 percent of their assessed fee is allowed. Developers may also receive a reduction in their transportation fee for any improvements that they make or propose to make to the regional or subregional transportation system. Developers can obtain an additional 25 percent reduction on the assessed fee by transferring credit for trip reduction achieved through a mitigation program for another employer within the same employment center. Developers who do not follow through with their TDM programs and subsequently fail to achieve targets will be assessed a nonconformance fee of up to $6,030 per trip.

Rideshare Ordinance: Before it was rescinded, the rideshare ordinance covered all employers with over 700 employees at one work site and all multitenant buildings with more than 700 employers and more than 550,000 sq ft of floor space. The objective was for each employer to achieve an average vehicle employer ridership (AVER) of 1.5 persons per vehicle (1.75 in downtown Los Angeles). The AVER was calculated as the number of commuters arriving at work between 6:00 and 10:00 a.m., divided by the number of vehicles arriving at the work site between 7:00 and 9:00 a.m. The two different time periods gave credit for shifting commuter travel outside the peak period. There was also a "reasonable efforts" clause for those who could not achieve the 1.5 (or 1.75) for good reasons.

EXPERIENCE TO DATE:

Incentive Ordinance: Since its adoption in 1983, the parking management ordinance has been used by only one developer, who was allowed to build at a rate of one space per 1,000 sq ft after developing an aggressive TDM and parking management plan. Planners at the Los Angeles Department of Transportation stress that the agreement was strongly influenced by the fact that the new subway will be near the downtown site. Primary reasons for the ordinance's lack of use are

(a) the low level of minimum parking currently required by city code; (b) the lack of specified evaluation criteria for permit approval; (c) the fear of local lenders that overreducing parking will lessen marketability; and (d) restrictive provisions of the ordinance protecting the city, specifically the requirements for land set-asides and a covenant running with the land to bind future property owners. Other reasons for lack of use relate more to implementation than to the ordinance itself: (a) most developers do not know that the ordinance exists because of a lack of any city budget, staff, or materials set aside for publicizing the ordinance; (b) unwillingness of developers to tolerate the delay of 3 to 9 months typically required for approval; and (c) confusion from the diffusion of responsibility for the ordinance among three city departments concerned with transportation, planning, and zoning.

Transportation Fees: Four developments, including the large Howard Hughes Center, have been fully or partially completed to date under the transportation fee requirements of the Los Angeles Coastal Transportation Corridor Specific Plan. Five more projects are currently planned for the area. Analysts have raised several problems with the ordinance: (a) trip reduction goals are based on nationwide Institute of Transportation Engineers (ITE) trip generation rates, which have a high degree of variance depending on local conditions; (b) developers are asked to submit yearly reports including monitoring the extent to which they have achieved their own goals; and (c) lack of clarity in definition of "reasonable progress" toward TDM goals, which can be used to waive penalties for nonachievement of goals. Since most of the new developments covered by the Coastal Transportation Corridor Specific Plan are still under way or only recently completed, it is still too early to judge the impact of this ordinance on local traffic conditions.

Rideshare Ordinance: The ordinance was officially rescinded in June 1988, to be subsumed under AQMD's Regulation XV. The key differences between the two are that the Los Angeles rideshare ordinance gave credit for flex-time and covered multitenant property owners, neither of which are included in AQMD's Regulation XV.

Case Study 11: LOS ANGELES REGION: SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (LOS ANGELES AQMD)

STRATEGY: Rideshare ordinance.

STRATEGY DESCRIPTION: AQMD's Regulation XV requires that all existing employers of 100 or more people develop and implement a plan that encourages employees who report to work between 6:00 a.m. and 10 a.m. to reduce their driving.

BACKGROUND: The AQMD points out that the Los Angeles area remains among the worst in the country in terms of air quality. Mobile sources are responsible for most of the pollution that helps form smog. In order to deal with current traffic and air quality concerns and to prepare for future growth, the AQMD took strong action to require all large employers to create programs encouraging their employees to rideshare.

DESCRIPTIVE INFORMATION:

Land use: The AQMD covers a four-county area: Los Angeles, Orange and Riverside Counties, plus the nondesert portion of San Bernardino County. Land uses encompass downtown Los Angeles and all suburban employment growth centers surrounding it.

Population: 11 million (South Coast Basin) residents.

Spread of peak period: 6:00 to 10:00 a.m. (according to Regulation XV).

Growth environment: Population expected to grow by almost 50 percent by the year 2010.

Data on traffic congestion: 7 million work trips made per day, expected to increase by 42 percent by the year 2010.

Transit availability: Bus service varies significantly throughout the region, with downtown Los Angeles and certain suburban employment centers well served and other areas receiving limited service.

PROGRAM INSTITUTIONAL LOCATION: The AQMD was created by state health laws. The district monitors air quality 24 hours a day and sets maximum emission levels for commercial and industrial sources of pollution.

DESCRIPTION OF TDM STRATEGY:

Employers of 100 or more people at a single site within the AQMD must develop and implement a plan that encourages employees who report to work between 6:00 and 10:00 a.m. to reduce their driving. The plan must include (a) a verifiable estimate of the current average vehicle ridership (AVR) among employees, (b) a current list of measures being taken to increase the AVR, (c) commitment to offer specific incentives that could reasonably be expected to reach AQMD's specified goal (1.5 for most areas in the district, 1.75 for downtown Los Angeles, and 1.3 for extreme outlying areas), and (d) the name of a trained transportation coordinator who will develop and manage the trip reduction plan. The role of the transportation coordinator need not be full-time; however, the coordinator must complete a district-approved training program. Employers are required to renew their plan annually and to conduct annual vehicle counts or employee surveys to track their AVR.

EXPERIENCE TO DATE: Regulation XV was approved in the Fall of 1987, with plans to phase employers into the program over a period of 30 months, depending on the number of people they employ. The district began sending official Regulation XV notices to employers of 500 or more people beginning July 1, 1988. Employers of 200 to 499 people will begin receiving official notices after January 1, 1989. Finally, employers of 100 to 199 people will begin to receive official notices after January 1, 1990.

SUMMARY AND ANALYSIS OF TDM STRATEGIES

Figure 1 reflects city staff evaluations of the success of various TDM strategies. Regionwide rideshare agencies and devel-

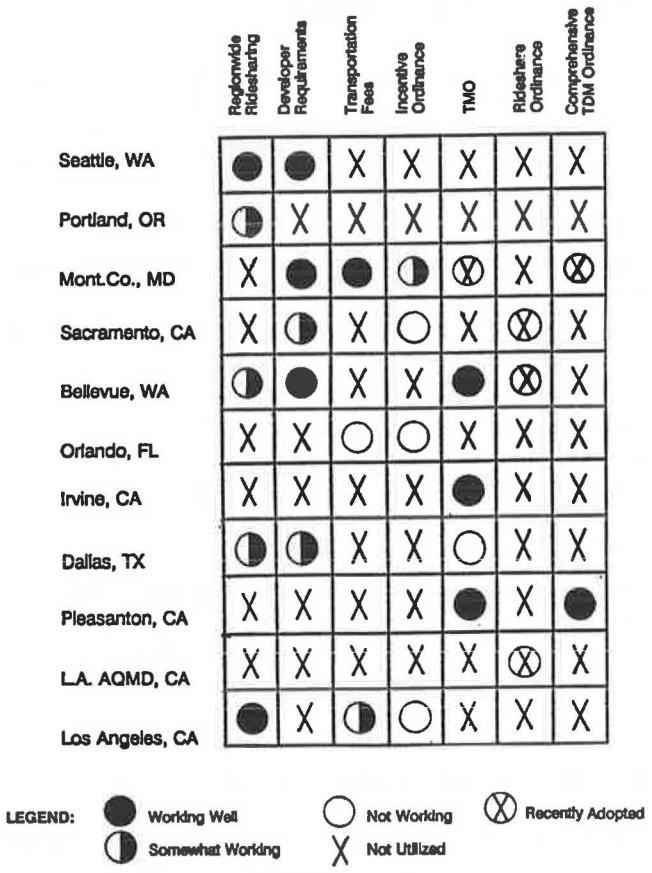

FIGURE 1 Summary of TDM case studies.

oper requirements are the most commonly used strategies. Only one of the case-study cities, Portland, relies on a regionwide rideshare agency as its primary TDM strategy. Such agencies exist in virtually every large metropolitan area and are usually reported to be successful, with the recognition that they are limited in that the use of their services is voluntary. A rideshare agency combined with a regulatory environment can be most effective.

Developer requirements—conditions placed in the use permit of a development that require specified TDM activity—are used by 5 of the 10 case study cities and in all instances were reported to be working well or somewhat working. Difficulties with case-by-case developer requirements were reported to be in their ad hoc nature. Developers want to know what the city will require in advance. Most cities have developed some way to codify or standardize the requirements through an ordinance or handbook, in the interests of equity and to lessen uncertainty.

Transportation fees, which are exacted from developers to cover the costs of transportation improvements or services, are used by three case study cities (Orlando, Los Angeles, and Montgomery County). Los Angeles found that its initial fees were set too low. In general, transportation fees are justified by the need to build new transportation capacity to accommodate additional traffic, not to develop TDM actions. However, these fees are increasingly being used for demand management.

Incentive ordinances, in which developers are offered reduced on-site parking requirements in return for agreement to adopt TDM actions, were used by four cities (Sacramento, Orlando, Montgomery County, and Los Angeles). In most cases incentive ordinances did not work because developers did not take advantage of them. Developers reportedly perceive building below traditional parking levels as a threat to the marketability of the development. In cities where parking code requirements are perceived to be above market requirements, such ordinances can be effective.

TMOs—groups of employers or developers who form an organization to implement TDM measures in a specific geographic area—are used in 5 of the 10 case study cities. They were reported by city staff in most cases to be working well. There is often close coordination between city staff and the TMO. For example, in Bellevue, the Downtown Bellevue Association acts as the TMO and is responsible for providing ridesharing services in the downtown area to members and nonmembers. The city then provides services in outlying areas where there are no TMOs. TMOs generally work best when members of the private sector identify a problem that they are committed to working together to solve.

One interviewee commented on potential problems when the public sector is too closely involved in the planning and formation of TMOs. He pointed out that citizens and community groups concerned with growth may perceive the TMO to be an alliance between government and developers meant to facilitate more development. In addition, many citizens view TMOs as experimental in nature. They argue that the county should require that the TMO implement trip reduction measures—and provide proof that they work—before allowing additional development in the TMO area.

Employer rideshare ordinances—local regulations that require existing employers to attempt to achieve reduction in vehicular use by employees—have much potential to be effective at increasing ridesharing and flextime. However, the two examples of this strategy in these case studies (Sacramento and Los Angeles-AQMD) were adopted too recently to predict their eventual success.

Comprehensive rideshare ordinances are comprehensive regulations requiring TDM efforts by employers, developers, and property managers, which by definition include employer rideshare ordinances. Two of the case study communities had adopted such ordinances, Montgomery County and Pleasanton, and although the former was adopted too recently to evaluate, we have much information on the latter. The Pleasanton ordinance experience is well known; it is reported to be quite successful, with high acceptance among employers who must meet increasing annual participation rate goals.

One issue that the cities with ordinances have faced is whether to require the developer or employer to implement specific TDM actions (i.e., an on-site TDM coordinator or carpool matching) or to require that they meet specified performance measures (i.e., 25 percent of all employees ridesharing, accomplished with whatever TDM actions the employer or developer deems appropriate). The four cities with either an employer rideshare ordinance or a comprehensive TDM ordinance appear to be moving toward a reliance on verifiable performance requirements, either "percent ridesharing" or "commuter vehicle occupancy." In addition, all four require three specific activities: annual reports, annual surveys (or

counts), and the designation of transportation coordinators to implement ridesharing programs at the development or employment site.

Specific activity requirements have been used extensively. Most programs include and sometimes require particular types of ridesharing actions. Company-supported vanpools were encouraged by policies or programs in 7 of the 10 cities and, in cases where there was experience, were reported to be working well or moderately well. Ridesharing coordinators were encouraged or required by six communities and, in most cases, were working well. Transit and ridesharing information centers were encouraged by six cities, again with good success. Eight of the 10 cities used some TDM strategy to encourage employers to provide employee ridesharing incentives such as preferential parking for rideshare or carpool and vanpool subsidies. This worked well or was somewhat working in all cases except one (Los Angeles-AQMD), where it is too early to tell.

Three cities encourage bicycle use through specific programs or ordinances (Irvine, Sacramento, and Montgomery County), which worked well or moderately well. Four cities tended through their programs or policies to encourage work-hour modifications, which were also judged to be working well or moderately well. Fringe parking with shuttle services was offered by one city (Portland), with good success. Annual transportation surveys were required by six of the cities. These were working well in all cases where there had been enough experience to judge.

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