

Status of Traffic Mitigation Ordinances

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Traffic mitigation ordinances have emerged as a compelling new strategy for reducing automobile congestion related to commuting. Development of the ordinance approach is rooted in a range of transportation policies and activities that have sought to achieve relief from congestion through programs and facilities intended to change the demand on the transportation system. Major activities and programs led to the traffic mitigation ordinance approach. The current status of the use of traffic mitigation ordinances to reduce traffic congestion is reported. Findings are based on a review of 24 traffic mitigation ordinances, which have been adopted or are in some stage of development in 20 jurisdictions throughout the United States. Although the state of California appears to lead the way in development and adoption of traffic mitigation ordinances, a review is also included of ordinances in Arizona, Maryland, New Jersey, Virginia, and Washington. Major components of traffic mitigation ordinances are identified and discussed and the jurisdictions' approaches for each component are compared. Traffic mitigation ordinances hold promise as a widely applicable tool for managing traffic congestion. Limited empirical evidence exists to date on the actual effectiveness of ordinances because of the limited time of their application. Some areas, such as Pleasanton, California, have demonstrated that the ordinance has been effective in maintaining reasonable traffic conditions in spite of increased development and employment. The ordinance concept appears appropriate for increased emphasis, promotion, and study.

Traffic mitigation ordinances, also referred to as transportation demand management (TDM) ordinances, have emerged as a compelling new strategy for reducing automobile congestion related to commuting. The approach is an outgrowth of a range of initiatives, pressures, and precedents affecting urban transportation over the past 15 years.

EMERGENCE OF TRAFFIC MITIGATION ORDINANCES

The concept of transportation system management (TSM) can be traced to a joint UMTA and FHWA policy promulgated in September 1975. This initiative changed the metropolitan transportation planning process by requiring development of a short-range, low-capital, management-oriented strategy as a companion to traditional long-range planning products. An annual TSM element was required in the metropolitan area's transportation improvement plan.

UMTA and FHWA initiated substantial new demonstration and technical assistance programs. TSM-related demonstrations included measures to (a) improve the capacity of the existing transportation system through modifications, such as preferential freeway and arterial lanes for high-occupancy vehicles (HOVs) and traffic signaling improvements, and (b) change demand on the existing transportation system through measures, such as ridesharing programs, transportation brokerage, and other management strategies. Employers were found to significantly influence the success of alternative commute programs through measures such as providing free parking or comparable incentives for people who use transit or ridesharing, offering flextime, and appointing employee transportation coordinators.

Defined as a public sector planning requirement, TSM became a management approach for pursuing near-term action on persistent traffic congestion. It stressed coordination and interagency activities and, by emphasizing alternate commute and work hour strategies, involved the business community.

The role of the private sector in transportation began to expand as the Reagan administration's policies were implemented. Greater appreciation of transit's economic constraints supported both increased use of private operators and recognition that continued pursuit of the peak-hour commuter market was not a cost-effective strategy for transit. It became clear that reducing demand would be far more cost-effective than increasing supply.

Transportation brokerage, another federally created transportation concept, stimulated interest in TDM. Brokerage was hoped to generate a new model for a more market-based transit organization that stressed the idea of market niches and multiple services and tended to champion paratransit and ridesharing. Brokerages took advantage of interests and opportunities to reduce traffic by working with employers and developers.

As interest in ridesharing stabilized or diminished in the 1980s, many brokerages have shifted their attention to attempting more directly to influence traffic demand. Maturing of the brokerage concept and ridesharing profession has spawned the Association for Commuter Transportation (ACT), an active national organization working to build support for TDM strategies.

By the mid-1980s, the concept of the transportation management association (TMA) emerged as a new mechanism for increasing corporate involvement in urban transportation issues, specifically urban traffic congestion. TMAs pursue a cooperative, consensus-based strategy to gain a common view

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of the causes of traffic congestion and to arrive at joint solutions. Benefits of traffic congestion relief are generally shared among the entire community and only become appreciable when a critical mass of employers are involved.

TDM ordinances in some cases have emerged as a way to pursue the same ends as a TMA—widespread congestion relief—without dependence on leadership and with a regulatory structure that affirms the continuation of the process. Many ordinances can be traced to a task force or other TMA-type endeavor that generated common understanding of the problems and thereby successfully garnered business community support for the ordinance strategy.

Transportation strategies put in place during the 1984 Los Angeles Olympics had a notable effect on the emergence of the area-wide Regulation XV adopted by the South Coast Air Quality Management District (SCAQMD) and now being introduced in the four-county Los Angeles region. Although the city feared regional gridlock from the major increase in traffic that the Olympics would bring, the mitigation measures introduced cooperatively with the business community, with emphasis on short-term ridesharing and flextime, made the traffic conditions experienced better than normal. The need and means for sustaining these achievements in transportation efficiency received substantial attention by the city of Los Angeles and other parties.

TRAFFIC MITIGATION ORDINANCE APPROACH AND APPLICATION

Major components of traffic mitigation ordinances and issues in the development and application of ordinances as a means of reducing traffic congestion are discussed on the basis of a review of adopted or drafted ordinances in the following jurisdictions:

- Alexandria, Virginia, adopted May 1987;
- Bellevue, Washington, non-central business district (non-CBD) ordinance, adopted May 1987; Interim Traffic Ordinance (CBD), adopted September 1988;
- Berkeley, California, in draft;
- Concord, California, adopted October 1985, revised 1987;
- Contra Costa County, California, Pleasant Hill BART Station Area ordinance, adopted June 1986; county-wide ordinance, adopted October 1987;
- El Segundo, California, adopted November 1985;
- Golden Triangle area, Santa Clara County, California, model ordinance in draft;
- Maricopa County, Arizona, effective December 31, 1988;
- Montgomery County, Maryland, adopted November 1987;
- North Brunswick, New Jersey, adopted October 1987;
- Oxnard, California, in draft;
- Pasadena, California, adopted June 1986;
- Pima County, Arizona, adopted in five jurisdictions in April and May 1988;
- Placer County, California, adopted May 1982;
- Pleasanton, California, adopted October 1984;
- Sacramento, California, employer and developer ordinances in draft;
- San Buenaventura, California, adopted July 1988;
- San Rafael, California, adopted July 1983;

- Seattle, Washington, Major Institutions Ordinance adopted 1983. Land Use Code revised in 1985; and
- SCAQMD, Los Angeles, California, Regulation XV, adopted December 1987 and implemented July 1988.

Traffic Management Strategies

Historically, there have been three general strategies for dealing with traffic congestion problems:

- Transportation Facility and Development (TFD)—developing new highway systems, transit services, or equipment, such as freeway on and off ramps.
- Transportation System Management (TSM)—adjustments to the existing transportation system to improve its capacity and allow traffic to flow better, such as improved signalization, change in direction of traffic flow, and establishment of HOV lanes.
- Transportation Demand Management (TDM)—development of programs and construction of facilities to change demand on the system by changing user behavior. TDM programs include information and incentives to encourage employees to travel by means other than the single-occupant vehicle (SOV) during peak travel periods. TDM measures include flexible work hours, ridesharing, and preferential vanpool parking. TDM facilities include vanpool staging areas, transit shelters, and bicycle lockers.

No single approach can solve a jurisdiction's traffic congestion problems. Each strategy should be considered within a broader transportation and land use strategy including growth management policies and zoning to provide development patterns that will reduce overall automobile use.

TDM Approaches

A number of approaches are currently being used to reduce traffic congestion by changing user behavior, including

- Voluntary. Employers or developers start a TDM program voluntarily, frequently in the form of a TMA.
- Incentive. A local ordinance is adopted that offers benefits (such as reduced parking) to developers to encourage TDM program implementation.
- Voluntary-Mandatory. An ordinance is adopted initiating a voluntary TDM program that becomes mandatory if specified rates of progress in traffic reduction do not take place. An example is the model ordinance being developed by the Golden Triangle Task Force in Santa Clara County.
- Mandatory. A TDM program is required by local ordinance or administrative guidelines. The program may involve the following:
 - Developer conditions of specific demand management strategies required as conditions for approval of development permits (e.g., Bellevue and Contra Costa County), which may be recorded as conditions, covenants, and restrictions on use of the property and included in leases.
 - Employer requirements for employers that meet specified criteria for implementing TDM programs to achieve

desired levels of use of commute alternatives (e.g., Placer and Contra Costa counties) or to reduce vehicle trips by a certain percentage (e.g., city of Pleasanton).

This study focuses on local ordinances requiring TDM measures to reduce traffic congestion. However, many of the ordinances reviewed contain voluntary components for certain sizes of employers and development categories.

Goals

TDM ordinances typically set a goal or standard that employers or developers must achieve to mitigate traffic congestion and improve air quality.

Participation Rate

This goal is measured as the percentage of an employer's workforce expected to commute to and from work by non-SOV mode and may be expressed as a decrease in the percentage of SOV commute trips. Emphasis is on mode change rather than change in travel time or peak shift.

Achievement of participation rate goals can be easily calculated from employer surveys. Jurisdictions using this goal must compile data on preprogram non-SOV driving rate.

Jurisdictions with participation rate goals include Contra Costa County (maximum, 65 percent SOV), Pima County (25 percent non-SOV by the third year), Sacramento (35 percent non-SOV), San Buenaventura (55 percent non-SOV), Alexandria (30 percent non-SOV), and Bellevue (18 percent for specified land use districts outside the CBD). The model ordinance being developed by the Golden Triangle Task Force in Santa Clara County uses a participation rate goal of 24 percent non-SOV by 1992 and 35 percent non-SOV by 2000.

Vehicle Trip Reduction

Vehicle trip reduction is expressed as the percentage reduction in vehicle trips, generally as a result of decreasing SOV commute trips. Program results can be easily translated into effect on traffic conditions (i.e., percentage change in traffic volume) by using vehicle trip reduction figures.

A baseline must be established against which reduction in vehicle trips can be measured. The baseline can be (a) the number of vehicle trips that would occur if all commuters drove alone, or (b) the number of vehicle trips before the program was implemented. Most jurisdictions use the number of trips that would occur if all commuters drove alone as the baseline because this number is simpler to determine.

The wide range in vehicle trip reduction rates required in various ordinances can be attributed to how the baseline is computed. The goal for a city, such as Seattle (50 percent in the major institutions ordinance), in which the baseline is calculated as the number of trips that would occur if all commuters drove alone, will be higher than the goal established in a jurisdiction using the actual trip rate as the baseline, such as Maricopa County with a vehicle trip reduction goal of 5 percent in each of the first two program years. El Segundo also uses the trip reduction goal (20 percent) in its ordinance.

Peak-Hour Vehicle Trip Reduction

Jurisdictions may focus on a reduction in vehicle trips during specified peak hours, which can result from (a) increases in use of commute alternatives (ridesharing or transit), or (b) shifts to off-peak-hour travel (staggered work hours).

Ordinances adopted by the city of Pleasanton and Placer County require reductions in peak-period employee commute trips of 45 and 25 percent, respectively.

Level of Service (LOS)

Another strategy focuses on the desired traffic conditions on specified road facilities and may specify maintenance of existing LOS ratings or prevention of deterioration of traffic conditions.

Measuring LOS goal attainment requires a traffic monitoring program. However, the measured results may not accurately reflect the program's effects because the program could result in a large change in SOVs while traffic remains high because of pass-through and noncommuter traffic.

Bellevue's CBD interim traffic ordinance has two LOS goals: (a) to maintain p.m. peak-hour LOS D on any portion of the street system affected by proposed new development, and (b) to permit no further degradation of traffic conditions on portions of a street system affected by proposed development that is currently at LOS E or worse. Oxnard established a goal to maintain LOS C at city intersections. Berkeley's ordinance includes maintaining LOS D on downtown streets and achieving a participation rate of 40 percent non-SOV.

The city of San Rafael established maximum p.m. peak-period trip allowances for various land uses, such as 0.7 trips per small residential unit, 2.6 trips per 1,000 ft² of general office space, 1 trip per 1,000 ft² of industrial space, and 3.3 trips per 1,000 ft² of retail space.

Montgomery County uses participation rates of 25 percent transit for existing employers, 30 percent transit for new employers, and 5 percent walk and average automobile occupancy rates of 1.3 for all employers.

North Brunswick uses goals based on peak-period trips as a percentage of workforce (maximum 60 percent overall and maximum 40 percent within any 15-min interval of peak period).

Regulation XV, adopted by SCAQMD, established goals of 1.3, 1.5, or 1.75 average vehicle ridership (employees per vehicle trip), depending on area.

Ordinance goals are frequently staged over several years. This practice reflects an understanding that programs require start-up time and time to change employee commute habits. The ordinance adopted by the city of Pleasanton has an overall goal of 45 percent reduction in peak-period employee commute trips. Required progress toward the overall goal is staged over a 4-year period (15 percent in Year 1, 25 percent in Year 2, 35 percent in Year 3, and 45 percent by Year 4). The model ordinance being developed by the Golden Triangle Task Force has a short-term goal of 24 percent nonsolo driving by 1992 and a long-term goal of 35 percent by 2000. Ordinances in Pima and Contra Costa counties also include staged goals.

The ordinance adopted in 1986 by Contra Costa County for the Pleasant Hill Bay Area Rapid Transit (BART) station area established a primary goal of no more than 65 percent of all employees commuting in SOVs, with an alternative goal,

for employers demonstrating that the primary goal is not feasible, of no more than 55 percent of all employees commuting during peak periods in SOVs. Montgomery County established a less stringent goal for existing employers (25 percent of employees commute non-SOV) than for new developments (30 percent commute non-SOV). The ordinance adopted in San Rafael in 1983 established peak-period trip allowances for various types of development.

Goals sometimes vary for geographic areas within a jurisdiction. For example, in Contra Costa County, higher goals are specified for the I-80, I-680, and State Route 24 corridors than for the rest of the county. Additionally, a separate ordinance was developed for the Pleasant Hill BART station area.

The ordinance adopted in Pasadena in 1986 does not specify measurable goals. General goals are to encourage use of alternate modes and work hours. However, this ordinance requires developers to take specific TDM measures rather than providing a menu of TDM options.

Scope

TDM ordinances may apply to employers (existing or new), developers and property owners, office or industrial complexes, retail developments, and residential developments.

An equity issue arises in determining the groups held responsible for reducing congestion through the traffic mitigation ordinance. Existing employers may argue that new developers and employers should be more responsible or solely responsible for mitigating traffic congestion because the new development causes the traffic conditions to move from acceptable to unacceptable. New developers or employers may argue that existing employers should be equally responsible because they contribute to the overall congestion problem.

The landmark Pleasanton area-wide employer TDM ordinance adopted in 1984 can be directly traced to municipal deliberations with the developers of a major new suburban business park. Faced with traffic mitigation approval conditions, the developers argued successfully that for the process to succeed, standards and requirements should be imposed on all employers, not just the developer or the employers residing in the new development.

The ordinances reviewed can be categorized in terms of scope as follows:

- Ordinances applicable to new and existing employers and new developments—Concord, Contra Costa County, El Segundo, Golden Triangle area, Montgomery County, North Brunswick, Oxnard, and Placer County;
- Ordinances applicable only to employers (new and existing)—Maricopa County, Pima County, Pleasanton, Sacramento (draft employer ordinance), and SCAQMD; and
- Ordinances applicable only to new developments and substantial expansions of existing structures—Alexandria, Bellevue, Berkeley, Contra Costa County (Pleasant Hill BART station area), Pasadena, Sacramento (draft developer ordinance), San Buenaventura, and San Rafael.

Seattle's developer ordinance applies to new and existing developments.

Most jurisdictions exclude residential developments because generally it is easier to initiate transit and ride share incentive programs at the destination rather than origin of commuter trips. Exceptions are as follows:

- Bellevue's non-CBD ordinance includes requirements for new development of residential or multiple-family dwellings with at least 16 units,
- Contra Costa County's county-wide ordinance includes requirements for residential projects with at least 13 dwelling units,
- North Brunswick's ordinance includes requirements for new residential developments with at least 20 units,
- Concord's ordinance includes requirements for new residential developments with at least 100 units, and
- Alexandria's ordinance includes requirements for new residential developments with at least 250 units.

In general, retail developments are also excluded from traffic mitigation ordinances. San Rafael's and Alexandria's ordinances are exceptions.

Decisions regarding which groups will be subject to ordinance requirements are determined, in part, by the objectives of the ordinance. If the objective is to reduce the traffic impacts of new development, only new developers and new employers may be affected. If the objective is to maintain existing traffic conditions, additional traffic from the new development will have to be offset by a reduction of vehicle trips from existing development. Similarly, if the objective is to improve traffic conditions, the ordinance must apply both to new and to existing employers.

Ordinance requirements typically vary by the size of the employer or developer with thresholds based on gross square feet or number of employees. Small employers, above the minimum threshold, may be subject only to informational requirements, such as providing information regarding the number and commute habits of their employees and providing their employees with information on alternative commute modes and alternative work hour programs. Larger developers and employers may be required to develop and implement programs with specific TDM measures or to select TDM measures from a menu of options.

Some ordinances phase employers or developers into the program over time. The requirements of the county-wide ordinance adopted in Contra Costa County were applied to new employers and project sponsors as of the effective date of the ordinance (November 27, 1987). Existing employers and project sponsors were not subject to the ordinance requirements until 1 year later.

SCAQMD's Regulation XV provides for phasing in of requirements—July 1, 1988, for employers with at least 500 employees; January 1, 1989, for employers with 200 to 499 employees; and January 1, 1990, for employers with 100 to 199 employees.

Maricopa County will phase employers into ordinance requirements on the basis of the number of employees between December 31, 1988, and December 31, 1989.

Geographic Coverage

Traffic mitigation ordinances can apply throughout a jurisdiction or to selected areas, depending on the ordinance's

goals. Perceived equity is a potential advantage of applying the ordinance requirements jurisdiction-wide. The objective of Montgomery County's ordinance is to permit greater development in the Silver Spring CBD and therefore it only applies to that portion of Montgomery County. Other ordinances, such as the one adopted city-wide in Alexandria, are intended to reduce traffic in the entire city.

Jurisdiction-wide application may have greater impact on commuters' travel between areas than would application to selected areas. Applying ordinance requirements to critical growth and traffic congestion areas only may allow stricter TDM. To obtain political support for programs that focus on highly visible traffic congestion problems may also be easier.

The majority of ordinances reviewed have been adopted jurisdiction-wide. Jurisdictions with ordinances covering selected areas only include

- El Segundo—applicable to the city's commercial and manufacturing zones,
- Montgomery County—applicable to Silver Spring CBD,
- Placer County—applicable to the unincorporated portion of South Placer implementation area,
- San Buenaventura—applicable to Arundel office, commercial and retail areas, and
- San Rafael—applicable to Northgate activity center overlay district.

Bellevue adopted two ordinances, one for the CBD and one for specified land use districts outside the CBD. Contra Costa County adopted an ordinance applicable to the redevelopment area covered by the Pleasant Hill BART station area specific plan and another ordinance applicable to the rest of the county.

Ordinance Requirements

Ordinances typically contain four types of requirements:

- Data collection, survey, and report requirements;
- Information dissemination;
- Designation of transportation coordinator; and
- Development of traffic mitigation program.

Many ordinances establish requirement thresholds. Requirements are generally more stringent for larger employers and developers. Small employers may be subject only to data collection, survey, and information dissemination requirements.

In Pleasanton, all employers must annually submit survey information to the city to establish commute pattern data and to provide carpool and vanpool matching information. Employers with at least 10 employees are also required to develop and implement an employee information program. Employers of at least 50 employees must appoint a workplace coordinator and develop and implement a TDM program to achieve target reductions in peak-period traffic.

Data Collection, Survey, and Report Requirements

Most ordinances require employers to annually collect and submit information to the jurisdiction regarding employee

commute characteristics, including the numbers of employees beginning and ending work during designated peak periods, employees commuting by various means, and employees participating in alternative work hour programs. Pleasanton and North Brunswick established minimum response rates for the employee surveys.

Some jurisdictions develop and distribute standardized survey and report forms to employers to increase participation and aid in survey tabulation and analysis. Ideally, employers conduct an initial survey before implementing the program to establish a baseline for measuring progress in achievement of ordinance objectives. The annual survey is then used to assess progress.

Information Dissemination

Most ordinances also require employers to provide information on alternative commute mode options, alternative work hour programs, and travel reduction measures to employees. Typically, employers are required to provide written information on an annual basis to all existing employees and to all new employees on the date of hire. Some ordinances require employers or property owners to display alternate commute mode information in common areas such as the lobby or cafeteria. Information (brochures) is typically provided by the jurisdiction, local rideshare matching agency, or local transit agency.

Seattle's ordinance requires property owners to construct permanent commuter information centers and to conduct semiannual promotions of the TDM program (2-hr to full-day commuter fairs, depending on the size of the development). City and METRO staff assist in conducting these promotions.

Designation of Transportation Coordinator

Many ordinances require large employers and developers to designate a transportation coordinator to take responsibility for implementing, monitoring, and reporting on the progress of the travel reduction program. The transportation coordinator may also represent the employer or complex on a transportation management task force. Property owners of large complexes may be required to appoint a complex coordinator who will be responsible for this function for all small employers within the complex.

Development of Traffic Mitigation Program

Requirements to develop, submit, and implement a TDM program designed to achieve the ordinance objectives are typically applicable only for large employers or developers. Employers are generally allowed to select a specified number of activities from a menu of options, including

- Instituting flextime or compressed work weeks,
- Establishing shuttle services,
- Developing ridesharing programs,
- Subsidizing transit,
- Subsidizing ridesharing,
- Providing preferential parking for rideshare vehicles,

- Providing loading and unloading areas for rideshare and transit vehicles,
- Providing amenities for commuters walking or bicycling to work,
- Permitting employees to work at home or to telecommute.

Menu options for an ordinance establishing developer conditions of approval may be more capital-related (i.e., involving construction of shelters, loading and unloading areas for car and vanpools, bicycle racks, showers, and lockers), whereas the menu options for employer ordinances tend to be more program-related (i.e., involving alternate hours of work, rideshare matching, and subsidies).

Some ordinances also provide options for financing transportation service improvements and operations to meet the ordinance requirements. The draft Sacramento developer ordinance includes the following options for developments within 1,320 ft of an existing or designated bus route or light rail station: (a) agreement to pay all or part of the cost of land, construction, and maintenance of transit center or station; and (b) agreement to pay a one-time transit operating subsidy to the Sacramento Rapid Transit District.

Bellevue dictates specific TDM measures for specific developments, such as (a) preferential parking during peak periods for registered car and vanpools; (b) financial incentives for employees commuting by car, vanpool, and transit; and (c) a taxi-script system of low-cost rides home for employees who miss their bus, car, or vanpool because of employer requirements or emergencies.

Pasadena's ordinance mandates specific TDM measures for new developments, including preferential carpool parking (10 percent), commuter matching services, bicycle parking, and car and vanpool loading areas.

The menu approach is more defensible politically than is the requirement of any one specific action. An individual action may not be appropriate to all employers, for reasons such as business type, size, location, or corporate culture and may only be associated with a nominal reduction in trips. The menu approach is more compelling, as few can object to the principle that employers should promote traffic reduction or deny that at least some actions on a comprehensive list are appropriate. Most ordinances require affected employers to submit an annual summary report describing the transportation management measures implemented and the program's progress.

Parking Reduction Options

Some ordinances reduce parking requirements for developments that achieve a specified level of trip reduction through implementation of TDM strategies. This option is seen as an incentive or reward for compliance. Sacramento and Pasadena ordinances include a parking reduction option for developers.

Program Management

Three groups are generally involved in implementation and management of TDM ordinances:

- Public-private task force,
- Jurisdiction, and
- Employer or developer.

Public-Private Task Force

Many jurisdictions have established a public-private task force to provide policy guidance and to assist jurisdiction staff in managing the program. Typically, task forces are composed of local jurisdiction management and representatives from large employers or developers, local transit authorities, and regional agencies and associations. Task force responsibilities may include one or more of the following:

- Serving as advisory body to local jurisdiction staff,
- Establishing guidelines for program implementation,
- Reviewing employer or developer TDM programs,
- Mandating revisions to TDM programs when results are not being achieved,
- Monitoring program performance and recommending changes,
- Serving as a hearing board for appeals.

In Pima County, a regional task force has been formed, consisting of one representative of each participating jurisdiction; 10 members elected by major employers; two business park, office building, or shopping center owners; and two public interest group representatives. A technical advisory committee consisting of staff from the participating jurisdictions will support the regional task force in survey design, data collection, and analysis.

Jurisdiction Management

Local jurisdictions typically hire a program manager to implement and oversee the traffic mitigation program. The manager may be supported by staff depending on responsibilities, scope of the ordinance, and financial resources of the jurisdiction. Many jurisdictions, in fact, have one-person operations (e.g., Contra Costa County, Oxnard, El Segundo, and Berkeley). San Buenaventura and Alexandria have only one part-time position responsible for the TDM program. SCAQMD, which will be responsible for annually reviewing 8,000 TDM plans when the program is fully implemented in January 1990, has a staff of approximately 15.

Ordinances to be adopted in the Golden Triangle area will be managed by a central implementation agency. However, participating cities may elect to provide employee outreach services.

The regional program in Pima County is being implemented by the Pima Association of Governments with a staff of five. As noted previously, a regional task force has been formed to oversee implementation of the ordinances and a technical advisory committee consisting of technical staff from each of the participating jurisdictions will support the regional task force.

Responsibilities of the local jurisdiction management staff may include

- Developing employee outreach programs;

- Providing technical assistance to employers and developers;
- Training employee coordinators;
- Producing marketing materials;
- Developing guidelines, procedures, and forms for submittal of annual surveys and TDM reports;
- Monitoring and reporting on program performance;
- Reviewing and approving TDM programs;
- Reporting to an advisory committee, task force, city counsel, or county board of supervisors;
- Monitoring compliance and initiating or recommending enforcement action; and
- Recommending changes to ordinance provisions.

Effective implementation of an ordinance requires that the jurisdiction provide services to assist employers in complying. Pleasanton has a full-time TSM coordinator who provides support and assistance to employers and tracks compliance. This person serves as staff to the employer task force that has a de facto management role for the ordinance. Pleasanton also provides data processing services for the employee surveys that each firm must submit. Providing these and other services is vital to achieving compliance with a new ordinance. North Brunswick's experience supports this view. The town had no plans or resources to support implementation of the ordinance when it was adopted, but quickly realized this need.

Dedication of a staff person to this function may be significantly beyond the financial and administrative abilities of small jurisdictions. Moreover, the technical staff skills required are not likely to be available to many small communities. This limitation suggests that a multijurisdictional approach, at least for support services, will be needed for small communities.

Employers/Developers

Most ordinances require employers and developers of a certain size to designate a program coordinator for implementing the ordinance requirements, with the following responsibilities:

- Disseminating information to employees on commuting alternatives and alternate work hour programs,
- Coordinating data collection activities for annual surveys,
- Developing and submitting TDM programs,
- Implementing approved TDM programs,
- Serving as liaison to city staff, and
- Participating in public-private task forces.

In order to meet requirements for industrial or office complexes, a complex coordinator may be designated with the responsibility for these activities for employers within the complex.

Ordinances adopted in Montgomery County and El Segundo do not require appointment of a transportation coordinator; however, most large employers have appointed a transportation coordinator to implement the TDM programs.

The Contra Costa Center Association, a nonprofit organization composed of individual developers within the Pleasant Hill BART station area, was formed in 1985 to implement and manage shared commitments, which include the TDM

program. All but one property owner has voluntarily joined this association.

Other Management Groups

Maricopa County will contract with the Regional Public Transportation Authority (RPTA) for advertising, public information work, and training and technical assistance to employers. Before the state legislation mandating a TDM program, the RPTA sponsored several voluntary TDM programs.

Funding

Most ordinances are supported by the jurisdictions' general funds. Fees and grants are also used to support traffic mitigation ordinances.

SCAQMD established plan submission and revision fees designed to cover program costs (\$125 for initial plan and \$50 for annual update). Sacramento's draft employer ordinance provides for fees to be assessed for the issuance and renewal of transportation management certificates. These fees will be used to defray the costs of administration, monitoring, and enforcement. The city's draft developer ordinance establishes a filing fee for the transportation management permit required of all new developments. The El Segundo ordinance provides for the establishment of filing fees by council resolution.

Maricopa County received a grant from the Air Quality Fund of Arizona's Department of Environmental Quality that will support the county-wide TDM program from October 1988 through June 1990. Beyond 1990, the probable funding source will be user fees, which are planned for 1990.

The TDM program in Pima County was initially totally locally funded, but the county anticipates receiving state funding in the future because the 1988 Air Quality bill passed, mandating TDM programs in counties of a certain size.

TDM programs in Seattle are funded through the city's general fund and FHWA's Federal Aid to Urban Systems.

Several jurisdictions also rely on parking fees to finance their TDM programs. Parking fees from the county lots in Silver Spring are used in part to fund the Montgomery County TDM program. Concord's TDM program is funded from a fund consisting of interest accrued on in-lieu parking funds and the net income derived from city-operated parking facilities and parking meters.

Lack of secure funding has been noted as a problem in TDM ordinance implementation. Many small jurisdictions do not have sufficient financial resources to hire adequate TDM staff and provide services, such as technical assistance and training, which are instrumental in TDM program success.

Enforcement

Ordinance compliance is generally determined by meeting program requirements rather than achieving specific goals. Jurisdictions typically identify as ordinance violations failure to conduct the survey; to provide ridesharing and transit information to employees; or to develop, submit, and implement

an approved travel reduction plan. Violations are subject to increasing fines for each day of violation. SCAQMD and Contra Costa County ordinances include a fine and jail term for violation of their requirements.

Failure to achieve a specified goal is generally not considered a violation provided the employer or developer has made a good faith effort. Businesses or developers that fail to achieve a specified goal may be required to amend their plans and implement additional measures. Pleasanton may require employers who have failed to achieve the targeted reduction in vehicle trips to submit a revised program or the TSM task force may require the employer to implement specific measures. Failure to revise the plan or implement additional measures would be a violation subject to a civil penalty of \$250 per day.

San Buenaventura's ordinance requires property owners failing to achieve the goal to provide stronger alternative mode incentives by levying in-lieu fees if the target participation rate is not met after a 6-month grace period. Bellevue's CBD ordinance requires financial contributions from property owners who fail to achieve the standard. In Concord, if a project sponsor fails to implement the TDM plan, the city may assume responsibility for implementing the plan directly with the costs borne by the sponsor.

Enforcement of ordinances placing conditions on developers typically involves denial of the building or occupancy permit for developers who fail to develop or implement an appropriate travel reduction plan in accordance with ordinance requirements. In Pasadena, the city zoning administrator can revoke the use permit for noncompliance with ordinance requirements. Similar provisions are contained in the ordinances adopted by the cities of Alexandria and Seattle.

Bellevue's ordinance includes a requirement for property owners to annually provide an assurance bond as a guarantee that required financial incentives will be provided. Forfeiture of the bond would occur for noncompliance.

Although most ordinances include specification of what constitutes a violation and the jurisdictions' recourse, to date there have been no reported cases of fines actually being levied for failure to comply with an ordinance.

Results

Most traffic mitigation ordinances are still in the development, adoption, or early implementation stages and are too new to draw conclusions regarding effectiveness.

Pleasanton, which adopted its landmark employer-based ordinance in 1984, has collected 4 years of performance data. The city experienced an overall reduction in peak-hour vehicle travel of 43 percent in 1988 (the target for employers in the 4th year is 45 percent). This figure may be low because it assumes that 20 percent of employees who did not respond to the survey drove alone. In 1988, 75 percent of the large employers reached their target. Of the 17 (25 percent) who did not reach their goal, 7 improved their performance over the prior year. Most of Pleasanton's trip reduction appears to result from changes in the timing of the trip rather than increases in nonsolo driving. Pleasanton has experienced an additional 10 percent shift to off-peak-hour commuting since the program's inception.

The San Rafael ordinance, adopted in 1983, requires developers, as a condition of permit approval, to maintain peak-period trip allowances. To date, 11 developments have been conditioned on trip allowances. All have met their goals except two that the city explains are unique land uses.

A key factor affecting the success of an ordinance is the area's stage of development. Newly developing areas may experience limited success in achieving participation goals. Lack of services and amenities has been noted as a problem in the Pleasant Hill BART station area, which is currently at approximately 10 percent of anticipated build-out. The ordinance is likely to be more successful when development is denser, providing more opportunity for ridesharing, and when sufficient services and amenities are provided.

Although it is too soon to know whether ordinances will be effective in achieving specific goals related to decreased traffic congestion, it is clear that the use of traffic mitigation ordinances is increasing. The public and private sectors are becoming more aware of the traffic problem and the positive effects that ridesharing, transit, alternative commute modes (other than SOV), and flexible working hours can have on congestion. Many developers, as a result of ordinances, are building infrastructure to accommodate SOV alternatives. This action is important for the long-term success of TDM programs. Many employers are educating their employees about potential solutions to the traffic congestion problem and are making alternative commute modes more readily available, more amenable, and less expensive. Some jurisdictions have noted that developers, recognizing the benefits of traffic reduction programs, are incorporating TDM measures in their marketing efforts to attract tenants.

Ordinance Development

Many ordinances have been developed through a joint effort of the jurisdiction and business community, typically represented by a task force. Other jurisdictions have involved developers and employers in the process through informal discussions. This public-private approach has been noted as a major contributor to the successful passage of several ordinances.

Obtaining support from developers is frequently easier than from employers. Jurisdictions have leverage over developers because many have the authority to establish conditions of development even without adoption of an ordinance. However, employers may not immediately understand how they will benefit from an ordinance or why they should support one. Jurisdictions considering TDM ordinances may need to spend considerable time educating employers to gain their support.

Development of the Pleasanton ordinance is noteworthy. A citizens' general plan review committee noted in 1984 that the county's transportation engineers assumed significant use of commute alternatives and flexible work hours in their studies. The committee reviewed the concept and recommended that a trip reduction ordinance be developed. City staff and employer and developer representatives subsequently developed a draft ordinance. From the beginning, developers supported the ordinance; however, employers were slow to accept and support the concept. A number of meetings were held to

explain the ordinance's requirements and city staff talked to many employers individually. In response to employer concerns, the city agreed to hire a full-time program coordinator to assist employers in complying. The city agreed to assign enforcement responsibility to a TSM task force composed, in part, of representatives of the business community. After 6 months of cooperative effort, the ordinance was adopted on October 2, 1984, with no opposition.

SCAQMD passed Regulation XV on December 11, 1987, following a cooperative 7-month effort between SCAQMD and a 12-member trip reduction advisory committee composed of SCAQMD board members, Los Angeles Chamber of Commerce, Automobile Club of Southern California, Los Angeles Central City Association, University of California at Los Angeles' urban planning department, Atlantic Richfield Co., Disneyland, and the Irvine Co.

Similarly, the North Brunswick ordinance, adopted October 5, 1987, is the result of a 7-month study conducted by a task force comprising representatives of the local and county government, employers, and developers.

Regional Approach

The ordinance concept may be most viable as a regional strategy because it reduces fear of shifting the employment and tax base from one municipality to another. Several jurisdictions and government associations have taken the regional approach to traffic mitigation. Pima County and four cities within the county entered into an interjurisdictional agreement on April 18, 1988, to adopt consistent TDM ordinances. Each jurisdiction subsequently adopted an ordinance (with comparable provisions). The effort was spearheaded by the Pima Association of Governments, which continues to manage the travel reduction program in conjunction with a regional task force.

SCAQMD, a quasi-governmental agency with authority over four counties, adopted Regulation XV, which affects the entire region, in mid-1988. In the Seattle area, METRO and Puget Sound Council of Governments developed a model TDM ordinance in 1986 and are advocating that all jurisdictions in King County adopt similar ordinances to achieve regional consistency. To date, only Bellevue and Seattle have adopted TDM ordinances. Bellevue modeled its ordinance after the one developed by METRO, whereas Seattle took a different approach. The city of Kent drafted an ordinance, patterned after Bellevue's non-CBD ordinance. Other cities within King County are applying TDM conditions to developments through State Environmental Policy Act (SEPA) authority.

The Golden Triangle Task Force, a regional transportation planning effort, is drafting a model ordinance for use by the cities of Milpitas, Mountain View, Palo Alto, San Jose, and Sunnyvale, and the county of Santa Clara.

State Role

In the state of Washington, SEPA authorizes local governments to require development applicants to implement measures to mitigate the development's adverse environmental

impacts. Developer conditions must be related directly to transportation goals documented in comprehensive plans or other previously adopted policies. The SEPA process allows for case-by-case negotiation with developers in all local jurisdictions. SEPA authorizes, but does not dictate, specific policies for placing conditions on developers.

Seattle uses SEPA authority to augment its land use code for mitigation of traffic impacts for downtown development and to condition developments on a case-by-case basis outside of downtown. Some jurisdictions, such as the city of Redmond, have adopted administrative procedures to formalize the policies and procedures for placing conditions on developers authorized by SEPA. Administrative guidelines provide staff with policy backing and help ensure consistency in case-by-case negotiations with developers. Local administrative guidelines are relatively easy to implement because they are developed within a department and do not require council approval.

In 1987, the Arizona state legislature passed Air Quality Bill 2206 that mandated travel reduction ordinances for counties of a certain size, with the state providing funding for travel reduction programs. Maricopa County is currently developing its program, which will become effective December 31, 1988. Maricopa County is not adopting an ordinance per se, but is operating from the state statute. Jurisdictions within Pima County adopted travel reduction ordinances prior to passage of the Air Quality Bill.

TRAFFIC MITIGATION ORDINANCES: DIRECTIONS AND PROSPECTS

Traffic mitigation ordinances provide substantial promise as a widely applicable tool for managing congestion. Limited empirical evidence exists on the effectiveness of ordinances because of the limited time of their application.

The ordinance concept clearly can apply to cities facing new traffic congestion problems, but its application to older cities with long-standing problems is less clear. In Los Angeles, where traffic congestion has long been severe, the ordinance quickly expanded from a small initiative by the mayor to a massive area-wide program involving all major employers in four counties. Los Angeles has a relatively low transit modal split and its problems are somewhat unique. Flexibility of the ordinance concept increases its applicability to a wide range of development environments.

State Role

The role of state governments in supporting the ordinance strategy is emerging. Sponsoring TMAs is a supportive action that can lead to ordinances. For example, the Connecticut Department of Transportation is developing a program to provide support services to municipalities desiring to develop a TMA. This program will prevent localities from duplicating their efforts.

States can develop model ordinances so that each jurisdiction does not have to start from scratch. This ordinance would also increase consistency between local jurisdictions. In some cases, enabling legislation may be necessary.

States can also provide other support services for jurisdictions or affected employers by sponsoring conferences, workshops, and training courses, and providing centralized data processing services. States can enact tax credit legislation that rewards employers for expenditures made supporting traffic reduction. Politically, tax credits can be vital in offsetting opposition to the ordinance strategy by business community members who may not accept the private sector's role in traffic reduction efforts. California, Connecticut, Massachusetts, and New York have initiated employer tax credit efforts.

Supply Side and Financing

The TDM ordinance concept focuses primarily on the demand side of the urban transportation problem. Most actions prompted by ordinances are designed to influence demand for existing services, such as subsidizing transit and providing preferential parking for car and van pools. However, some actions enhance the supply of services, such as the provision of employer-supported shuttles.

Although some shifting of demand to existing services can be achieved, peak-hour transit services may already be at capacity, or acceptable services may be unavailable. Enhancing the demand for transit and ridesharing, the primary effect of ordinances (other than shifting demand to less congested times), is not adequate to address these problems. Improved services will also be required.

Fee-in-lieu-of ordinances can provide financial resources to meet service expansion needs. A new development ordinance being developed in Stamford, Connecticut, allows less-than-code stipulated amounts of parking if compensating payments are made to the city, which have been used to support new shuttle bus service. A proposed employer ordinance could allow firms to opt out of meeting the required traffic reduction level by choosing to pay an annual fee-in-lieu-of for each peak-hour trip by which the standard is exceeded.

Linkage to Other Planning and Land Use Issues

Clear but unexploited linkages exist between the ordinance concept and other transportation planning and land use issues. For example, it makes little sense to adopt a traffic reduction ordinance if the development code still promotes or requires provision of excessive amounts of parking spaces. Floor area ratios and site design requirements should be considered before trip reduction measures. Development requirements for provision of on-site services, such as employee cafeterias, could also be adopted. TDM ordinances are not a panacea. Their institution should stimulate consideration of other available, supportive actions to reduce traffic generation even before it materializes.

Innovative Program Development

Simpler programs for employer use in reducing traffic are needed for successful implementation. For example, SCAQMD's Regulation XV may actually place a significant burden on the Southern California Rapid Transit District for provision of bus passes for employer-discounted sales. Substantial administrative expenses for the employer will be incurred for selling monthly bus passes to employees, collecting the nondiscounted share, and interfacing with transit operators. This burden increases dramatically when multiple private bus operators are involved rather than a single public agency.

The recent success in New York with the TransitChek multi-operator transit voucher, which doesn't change monthly and is simply given rather than sold to employees, would thus be well applied in Los Angeles or other communities with employer ordinances.

Provision of transit information services needs to be streamlined before widespread employer support can honestly be expected or required.

RECOMMENDATIONS

Given the demonstrated acceptability and apparent effectiveness of the ordinances, the strategy appears appropriate for increased emphasis and promotion. This action is already happening, as evidenced by new state and regional level activities in California, Arizona, Connecticut, and elsewhere. In addition, UMTA's recent suburban mobility seminars have also spread the word about traffic mitigation ordinances.

An ongoing cataloging of developments in the field should be maintained. Evaluating the effectiveness of the ordinances that now exist is also necessary. Pleasanton is the only ordinance on which much can be concluded at this point, from an actual impact point-of-view. A thorough report on the Pleasanton experience could be beneficial to other areas considering the traffic mitigation ordinance strategy.

It may be possible to evaluate other ordinances from a process perspective. The likely importance of SCAQMD's Regulation XV suggests that substantial efforts be commissioned quickly to document the process through which it emerged and to ensure that data are available to assist the formal tracking of its impacts.

Networking among the localities interested in pursuing TSM ordinance ideas should also be beneficial. This approach could help localities take advantage of past experience to anticipate requirements and avoid pitfalls, and would help maximize the number of successful programs implemented.

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