

# Pleasanton TSM Ordinance: a New Approach to Traffic Mitigation

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## ABSTRACT

A transportation system management (TSM) ordinance adopted by the city of Pleasanton, California, in October 1984 requires all employers of 50 or more persons, and all employers in complexes, to implement a TSM program designed to achieve a 45 percent reduction in the number of peak-period commute trips that would occur if all such trips were made by solo drivers. The reduction can take place over several years. The ordinance includes requirements for annual surveys of employee commute modes and assigns most monitoring and enforcement responsibilities to a task force drawn from large employers and complexes plus the Downtown Merchant's Association. The task force feature was important in obtaining employer support for adoption of the ordinance because it provides for specification of remedial TSM measures by peers, instead of by city staff, in case of need. The Pleasanton TSM ordinance avoids many of the problems with other types of traffic mitigation ordinances, particularly failure to reach all employers and predetermination (by guesswork) of the effectiveness of given TSM measures. Other cities will find much to emulate in Pleasanton's approach, although several precautions are offered on the transfer of Pleasanton's experience to other cities.

Continued reliance on single-occupant automobiles by the majority of U.S. commuters--about 75 percent, with about 20 percent ridesharing and 5 percent transit users on the average--contributes significantly to the traffic congestion burden in most urban areas. How much it contributes is impossible to say without defining a practical upper limit to ridesharing and transit use.

If it is agreed that ridesharing and transit use could be doubled, on the average, from 25 to 50 percent, there could be a reduction of about 20 percent in the number of automobiles on the road (assuming an additional 5 percent for transit, bicycling, or walking and an average of 2.5 persons per vehicle in the 20 percent additional shift to carpooling or vanpooling, which leaves 66 automobiles where before there were 83 to carry 100 commuters). This would significantly reduce present and future commute period congestion levels in most urban and suburban areas. Alternative working hours could shift additional commuter traffic from the peak congestion periods.

The principal immediate causes of congestion in urban areas are aggregations of employment known variously as major activity or employment centers or complexes--anything from central business districts to major airports to business or industrial parks. Major activity centers bring about concentrations of employment and commuter automobile traffic that often tax or overload adjacent streets and access roads. This is especially true in suburban environments where the majority of intensive development now takes place--areas typically not well served by public transit and with their road systems largely in place. At the same time, the concentrations present opportunities for more intensive transit service, for extensive promotion of ridesharing (carpooling and vanpooling), and for other traffic mitigation measures.

In the opinion of the authors, such measures could reduce the use of single-occupant automobiles

in peak periods to between 40 and 50 percent of commuters. However, to realize such reductions requires at least these critical conditions or steps:

- An understanding of the traffic problem and a firm commitment to its solution by developers and employers;
- Development of activity center transportation system management (TSM) plans with specific traffic mitigation targets;
- Support for the TSM plan by the activity center employers, which usually leads to their participation in a transportation management organization or association (TMO or TMA) and appointment of a transportation manager; and
- Finally, of course, implementation of the plan and monitoring to assure that its traffic mitigation objectives are met.

The issue that is addressed in this paper is how a community can best encourage or require that these conditions be met by existing employers and by prospective activity center developers. For this purpose, the recent experience of Pleasanton, a California city of 36,000 persons 32 miles southeast of San Francisco, in coping with a massive prospective influx of development by means of a comprehensive piece of traffic legislation called the "TSM ordinance" is drawn on. Among other provisions, the ordinance sets specific traffic mitigation goals for all employers of 50 or more persons in the city.

## ORIGINS AND APPROVAL OF ORDINANCE

An ordinance of this scope and novelty is not developed and accepted overnight or without broad community support. Some actions that made passage of the TSM ordinance possible were firm city council commitment to the concept, early backing by key developers, bringing employers and developers together

to discuss the ordinance, incorporating their comments in subsequent drafts, and city staff efforts to explain the ordinance to employers on an individual basis when necessary.

Consideration of a TSM ordinance for Pleasanton began in a citizen's General Plan Review Committee early in 1984. Development proposals were expanding rapidly, totaling about half of the 31 million square feet of space permitted by the general plan on the 1,500 acres of commercial and industrial land at the north end of the city. In looking at transportation studies for that area, committee members discovered that significant use of flextime and commute alternatives was assumed by the transportation engineers. Through discussions with the city's planning consultant, they learned that other jurisdictions were using TSM to mitigate traffic. They were particularly interested in the transportation ordinance established by Placer County, California.

The citizens also reviewed the covenants, conditions, and restrictions (CC&Rs) that set forth the planned unit development guidelines for Hacienda Business Park, the largest development approved in Pleasanton. Hacienda's CC&Rs establish a parkwide commuter transportation program in which all owners, lessees, or other occupants are required to participate. With this background, the citizens suggested that the city establish a transportation systems management ordinance.

It took 6 months thereafter to bring the TSM ordinance through several drafts, numerous meetings, and innumerable discussions. The city staff met initially with a small group of developers and employers to gather their input before drafting the ordinance. At these early meetings it was decided that both new and existing employers of all sizes should be required to participate in the TSM program established by the ordinance.

From the beginning developers supported the concept because they knew their building permits could be delayed if traffic became a problem. In contrast, the majority of employers ignored the invitations to attend meetings to learn about the ordinance. The city gained employers' attention when a draft of the ordinance with severe fines for non-compliance was made public.

When the employers became involved several meetings were held where traffic engineers, planners, Hacienda Business Park's transportation manager, and the city attorney explained why an ordinance was necessary. A slide show and several case studies were presented to demonstrate that the goals of the ordinance were achievable. At those meetings employers revealed strong objections to having mandatory TSM elements prescribed by the city of Pleasanton, out of fear that the prescribed elements might not be feasible or cost-effective.

After employers' comments were heard, it became clear that the TSM program should be a joint effort of the business community and the city. The city was asked to commit itself to developing a local transit service. Employers also requested that a full-time city transportation coordinator be hired to assist them in complying with the ordinance requirements. The local businesses maintained that these measures were necessary to support them as they developed their TSM programs and promoted commute alternatives. Finally, local businesses suggested assigning enforcement responsibilities to a TSM task force with predominately employer representation. They preferred "a group of peers" instead of the city telling them how their program measured up and what could be done to improve it.

Most of the suggested clarifications and changes were incorporated in the ordinance. The city found that many of the employers just needed reassurance

that the city would help them develop their programs. In addition, city staff and Hacienda Business Park's transportation manager talked to many employers individually. This personal approach responded successfully to their concerns and comments.

The Pleasanton City Council adopted the ordinance on October 2, 1984, with no opposition. One employer who had protested the ordinance when it was first introduced told the city council that his organization now fully supported the ordinance. This rather vividly demonstrates the importance of having employers involved in drafting the ordinance, responding to their needs, and spending the time to deal with them one on one.

#### OBJECTIVES AND PROVISIONS OF ORDINANCE

The twin aims of Pleasanton's TSM ordinance are to minimize the traffic effects of rapid commercial and industrial development of the city and to transfer most of the burden for success of traffic mitigation efforts from the public to the private sector. Provisions of the ordinance are summarized as follows:

- \* All employers are required to conduct annual surveys of employee commute modes, work schedules, and residential distribution by June 30 and to submit an annual report by August 1 with any survey results specified by the Pleasanton coordinator. Illustrative contents of the survey report as listed in the ordinance include (a) commute mode, typical arrival and departure time, and residential zip code of each employee and (b) maximum number of employees on each shift.

- \* All employers of 10 or more persons on a single shift not located in complexes are required to design and implement a TSM information program for posting and to distribute materials on ridesharing, transit, and nonvehicular commute modes to employees.

- \* All employers of 50 or more persons on a single shift, and all employers in complexes, are required to implement a TSM program designed to achieve a 45 percent reduction in the vehicle commute trips during peak periods that would occur if all were made by solo drivers. In the first year, a 15 percent reduction is required, increasing by 10 percent each year until 45 percent reduction is achieved in the fourth year. The peak periods are defined as 7:30 a.m. to 8:30 a.m. and 4:30 p.m. to 5:30 p.m. In cases where the shift ends of one non-retail employee coincide with the peak periods and those of another nonretail employer fall outside the peak periods, the two employers may be treated as one for counting reductions in peak-period traffic.

- \* Prescribed elements for the TSM programs of employers are (a) appointment of a workplace coordinator for TSM program implementation, (b) dissemination and posting of information, and (c) any reasonable combination of TSM measures that will achieve a 45 percent reduction in vehicular trips during peak periods compared with the trips required for 100 percent solo driving. TSM programs required for complexes are similar but must include a complex coordinator who will provide for coordinating, monitoring, and assisting the TSM programs of employers within the complex--including direct responsibility for employers in the complex with fewer than 50 workers if requested to do so by the employer. Each employer and complex that is required to have TSM programs must report to the city annually by August 1 on (a) its TSM program and results through June 30 and (b) the program it intends to implement in the ensuing year.

\* References to requirements of the TSM ordinance must be made in the recorded conditions and covenants governing each complex and in every business lease entered into after the effective date of the ordinance.

\* A TSM task force is assigned responsibility for coordinating, implementing, and monitoring the ordinance through various activities specified in the ordinance. Membership in the task force includes someone from each complex and from employers of more than 100 persons who is empowered to commit the organization to TSM measures; a downtown coordinator appointed by the Downtown Merchant's Association; representatives from each transit authority serving Pleasanton; and the Pleasanton coordinator, who will be the director of planning and community development or his representative.

\* The Pleasanton coordinator will participate in the TSM task force, monitor intersection traffic, provide support to employers outside complexes, and review and evaluate employers' TSM programs and reports. If substantial traffic reductions are not being made by an employer or complex after 2 years, the coordinator will recommend implementation of the mandatory provisions of the ordinance to the city council.

\* If the city council after a hearing determines to implement the mandatory provisions of the ordinance, the Pleasanton coordinator may reject an employer's or complex's TSM program and require its resubmittal within 2 months with revisions or additions to achieve the required reduction in peak traffic within 1 year of resubmittal.

\* The task force may then require additional TSM program elements of employers or complexes to meet their staged TSM goals. The task force may also increase the commute trip reduction goals for particular employers or complexes where warranted by traffic conditions and may specify the type of measures that may be used to achieve acceptably modified TSM programs at such sites.

\* Failure to provide information required by the ordinance is subject to fines of up to \$50, \$100, and \$250, respectively, for the first, second, and third infraction in a calendar year. Failure to comply with a task force requirement for TSM program revisions deemed necessary to achieve specified peak-period traffic reductions is subject to fines of \$250 per day after city council review and finding of noncompliance.

The analytical burden of processing many thousands of employee survey forms annually will be handled centrally by the Pleasanton coordinator, both for the sake of efficiency and for summary information that can then be prepared from the central file. The summary information is expected to be of use in planning bus routes and determining the potential for ridesharing from particular areas because it will include employee origin and destination information. The Pleasanton survey was developed in cooperation with RIDES for Bay Area Commuters, the

regional ridesharing agency. Responding employees can request that their commute information be submitted to the RIDES data base, increasing their chance of locating a pool.

The 45 percent peak-period vehicle trip reduction goal of the ordinance requires some explanation. This goal can be achieved either by increased use of alternative (non-solo-driving) commute modes or by use of alternative work hours--flexible or staggered work hours or compressed work weeks--or by a combination of both means. The trip reduction goal was set in this way because the city's traffic consultant had relied on both means to reduce both peak-period intersection congestion and carbon monoxide levels predicted by the transportation plan for intensive development of Pleasanton to acceptable levels.

Total reliance on use of alternative commute modes to achieve the 45 percent commute trip reduction would imply high levels of those modes. For example, the two distributions of 100 commuters by mode given in Table 1 would permit all employees of a given firm to arrive in the peak period. Mix A is transit intensive and Mix B is carpool and vanpool intensive, with some increase in bicycling and walking.

The transit use assumed in Mix A is probably unattainable with prospective levels of bus service in Pleasanton. Mix B represents unusually high levels of carpooling and vanpooling, but these approximate levels have been achieved by one large suburban employer in neighboring Livermore, the Lawrence Livermore Laboratories of the University of California, through an outstanding ridesharing program. Single-occupant trips can be reduced through alternative commute modes, but, because that route alone is more difficult, most employers will probably rely in part on alternative work hours to achieve their goals. In addition, it is believed that employers will be motivated to promote carpool, vanpool, transit, and nonvehicular modes strongly in order to simplify reaching their trip reduction goals.

Results of the city's TSM program will be monitored by the TSM task force and the Pleasanton coordinator. Any changes deemed desirable in the ordinance itself will be recommended to the city council. This is an important device for making the ordinance flexible and responsive. For example, if it is found that employers are relying too heavily on alternative work hours to reach the peak-period trip reduction goals, with the result that the actual peak period in the city grows to 2 hours of heavy congestion, there are at least two possible ways of amending the ordinance:

\* A certain proportion of the total trip reduction could be prescribed for attainment through employee use of commute alternatives instead of through alternative work hours.

\* The length of the peak period defined in the ordinance could be increased--for example, to 2 hours morning and evening--which would have the

TABLE 1 Distributions of 100 Commuters by Mode

Mode	Mix A		Mix B	
	Commuters	Vehicles	Commuters	Vehicles
Carpooling, 2.5 persons each	25.0	10.0	35.0	15.0
Vanpooling, 12 persons each	6.0	0.5	11.0	0.9
Transit or buspools, 42 persons each	20.0	0.5	6.0	0.1
Bicycling and walking	5.0	0	8.0	0
Solo (single-occupant) driving	44.0	44.0	40.0	40.0
Total	100.0	55.0	100.0	55.0

effect of further spreading the traffic and probably also increasing the reliance on commute alternatives to achieve the trip reduction goals.

#### FIRST IMPLEMENTATION STEPS

A transportation coordinator was hired by Pleasanton shortly after passage of the ordinance. She has prepared a checklist for use by employers of 50 or more persons on a single shift in submitting their TSM plans. The TSM program elements on that checklist, edited by the authors for the context of this paper, are found in the Appendix. TSM program elements are listed within each category either in order of increasing cost or in their logical sequence of implementation. Employers are asked to note the applicable elements for the quarter of the year in which they intend to implement each element, to add their own ideas if they are not found on the checklist, and to return a copy of the completed checklist to the city.

The Appendix illustrates the relative simplicity of preparing employer TSM plans. A similar list covering only the type of information dissemination activities listed in Section C of the Appendix has been prepared by the Pleasanton coordinator for employers of 10 to 50 persons.

Procedures for monitoring actual commute trip reductions during peak periods will be worked out by the Pleasanton coordinator and the TSM task force. Tentatively, it appears that the task force has two alternatives:

- \* Summation of the arrival and departure times listed on the annual survey of commute modes. This will be cheap and easy to do, but listed and actual arrival and departure times may not always correspond, and significant sampling bias may be introduced when there is much less than 100 percent response to the survey.

- \* Traffic counts at parking lot access points during the peak period, in relation to the total number of employees and vehicles showing up that day. This is an objective but labor-intensive and probably costly method of monitoring. However, traffic counts might be made as random checks to verify the results reported on the annual surveys.

If the traffic reduction goal were restated in whole or in part as a total daily trip reduction goal (see discussion at end of previous section), then employee parking utilization counts could be used to verify achievement of that part of the goal. Parking counts are an easily done and objective measure of commute trip reduction. They can also be used to estimate the commute mode distribution on a monthly or quarterly basis in order to check on the progress of a ridesharing program. [Parking counts should usually be carried out at 10:00 a.m. or 2:00 p.m. for the day shift on a Tuesday, Wednesday, or Thursday. To derive modal estimates, vanpoolers and bicycles should first be counted independently. Transit riders can be estimated if transit passes are sold by the employer (or counts can be made of employees arriving on buses). Walkers are usually few in number and can be estimated from the previous commuter survey. This leaves only the number of carpoolers to be inferred from the parking utilization counts compared with the number of employees present on each shift the day of the counts.] However, the price of restating the traffic reduction goal in this way is some loss of flexibility for employers because alternative work hours would be less available to meet the goal, and some employers, by the nature of their work, could find it difficult

or impossible to meet peak-period traffic reduction goals through commute alternatives alone. A middle course would be to add parking utilization counts to the suggested or prescribed monitoring methods so that there would be some periodic objective check on commute modes besides the annual survey.

#### APPRAISAL

The latest published accounts of TSM and parking management ordinances in the United States (1,2) list more than a dozen approaches that are being attempted in various cities and counties. However, most of the approaches deal only with traffic mitigation at new developments or have other serious limitations. For example, some ordinances prescribe definite TSM measures for employers to use but set no goals for their quality or effectiveness, and other ordinances assume predetermined levels of effectiveness for specified measures.

Experience to date with most of these ordinances has been disappointing. For example, the Los Angeles parking management ordinance is still unused nearly 2 years after its passage, and the rate of ordinance utilization in most cities is low. In some cases, such as the ordinances for Placer County and Sacramento County in California, their implementation is still too recent to show definite results.

Pleasanton's landmark TSM ordinance appears to be well conceived and overcomes many of the problems with other TSM ordinances:

- \* It reaches all employers, not only new developments.

- \* It avoids predetermination of the effectiveness of given TSM measures and leaves the choice of program measures to reach the specified trip reduction goals up to the employer.

- \* It uses annual employee surveys to determine commute mode, which will be both a frequent reminder to solo drivers and a good source of detailed planning and performance data.

- \* It leaves determination of minimum parking requirements as a separate issue instead of using reductions in parking requirements as an incentive for employer TSM programs.

- \* It provides for a series of escalating interventions by the task force and the city, culminating in stiff daily fines, in cases where commute trip reduction goals are not met by an employer. This process, together with the common wish of employers and the city to minimize commute traffic problems, is more likely to be effective than the usual ordinance penalties of either providing more parking or losing the right to occupy a building.

It is believed that the Pleasanton TSM ordinance has a high likelihood of success and will be widely emulated by other cities. It is therefore worth offering some transferability suggestions:

1. The way in which the traffic reduction goals are stated and the level of reduction targeted should be tailored to local conditions. For example, some cities may wish to state the traffic reduction goal partly or wholly in terms of vehicle trips instead of in terms of vehicle trips in the peak period. Vehicle occupancy rates, defined as the total number of employees present on a given day divided by the number of vehicles they parked, are also a plausible target.

2. The minimum size of employment for membership on the task force should be set to keep the group within reasonable size yet adequately representative. Area or zone coordinators, representing all

the employers in a particular area, may also have a place.

3. Parking utilization counts (see discussion under "First Implementation Steps") could be specified either in place of some of the annual commute mode surveys or in addition to the surveys in order to reduce the cost or increase the frequency and verifiability of monitoring.

4. It is worthwhile for a city to review its total traffic mitigation efforts at the time it considers the need for a TSM ordinance. Many cities already are using other types of traffic mitigation measures (2). Some of these are complementary to a TSM ordinance, and others are partial substitutes.

5. The longer a city waits to implement its own TSM ordinance, the more evidence will be available from Pleasanton on how well theirs works and on what refinements may have been conceived to make it work better in Pleasanton. On the other hand, the sooner a city gets its own ordinance, the sooner it will learn the game itself--and the rules of the game may need modification for new players.

6. Although there may be initial resistance from the private sector, full participation and support of employers is essential to both passage and successful implementation of such an ordinance.

One of the conditions in Pleasanton that favored adoption of the TSM ordinance was the rapid prospective development of major employment centers in the city. Both developers and city officials recognized the risk of traffic inundation. They had the nearby example of Silicon Valley at the southern end of San Francisco Bay for how bad traffic congestion could get, and how fast. In contrast, many cities experience more gradual traffic increases from year to year. The slow strangulation that results may not sufficiently galvanize the needed understanding and cooperation between public and private sectors.

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#### APPENDIX--TSM Program Elements

##### A. Information Collection

1. Read the Commute Alternatives Handbook, developed for transportation coordinators by the Metropolitan Transportation Commission (MTC).
2. Meet with city of Pleasanton coordinator.
3. Attend commute alternatives class offered by MTC.
4. Evaluate company resources and style to prepare a TSM plan.
5. Document annual TSM plan for submission to city.
6. Organize a commuter advisory committee among employees.
7. Plot all employees on zip code map.
8. Analyze zip code data to determine promotion strategies.
9. Distribute transportation surveys.
10. Ask new employees to complete the survey.
11. Evaluate survey results.

##### B. Management Support

Adopt company policies supporting commute alternatives, such as

1. Letter of support from CEO to employees.
2. Show executive role models using commute alternatives in information materials.
3. Transportation policy statement in employment information.
4. Scheduling courtesy (avoiding overtime meetings).

##### C. Information Dissemination

1. Post commute alternatives information on bulletin board and have transit schedules on hand.
2. Post, distribute, or publish "rides wanted" and "rides offered" information.
3. Publish company newsletter articles on transit fares and schedules, on car- and vanpool cost savings, on sources or ride-sharing information, on other benefits reported by ridesharers, and on annual employee survey results.
4. Respond to employee telephone inquiries about commute alternatives (e.g., designate a "transportation hotline").
5. Maintain a file of current match lists as well as an active register of carpools and vanpools.
6. Distribute commute alternatives information as part of employee orientation.
7. Prepare talk or slide show on commute alternatives for use during employee orientation.
8. Set up a transportation table in lunch room.
9. Conduct an annual transportation fair with displays by ridesharing and transit agencies (and possibly prize drawings and refreshments).

##### D. Facilitation of Carpooling and Vanpooling

1. Survey employees about willingness to carpool or vanpool.
2. Distribute RIDES car and vanpool applications.
3. Prepare zip code maps summarizing locations of potential carpoolers and vanpoolers.
4. Set up coffee meetings for people who want to carpool or vanpool.
5. Provide personal matching service.
6. Provide preferential parking.
7. Allow flextime (e.g., up to 1/2 hr) for poolers.
8. Provide guaranteed ride home to ridesharers (for family emergencies or after unscheduled overtime) via taxi or company car.
9. Offer company cars and bikes to ridesharers for personal business purposes during the day.
10. Facilitate owner-operated vans, including guarantee of 100 percent bank or credit union loans.
11. Start company-owned vanpool service or authorize use of company vehicles for ridesharing at cost.
12. Provide carpool and vanpool loading zones.
13. Provide lanes for priority vehicle ingress and egress, especially for evening departure from large employment centers.
14. Subsidize either a trial period in vanpools or their continued use.
15. Provide lunchtime shuttle to shopping and restaurants.

- E. Facilitation of Transit Use
1. Coordinate with local transit agency on stops, schedules, and routes serving the company.
  2. Provide transit amenities, such as bus shelters, benches, and turnouts on-site.
  3. Sell transit passes on-site either at or below cost.
  4. Sponsor buspools or subscription bus service either at cost or subsidized.
  5. Provide a shuttle bus to transit stops or park-and-ride lots.
- F. Facilitation of Bicycling and Walking
1. Provide information on bicycle and pedestrian routes.
  2. Provide bike racks.
  3. Offer bicycle repair facilities or "tool library."
  4. Form a company bicycle club.
  5. Install showers and lockers.
  6. Organize a "bike to work day" or a bike race.
  7. Allow employees to dress casually one day a week (or relax the whole dress code).
- G. Alternative Work Hours and Flexitime
1. Offer flexitime.
  2. Offer staggered work hours.
  3. Allow employees to work at home as appropriate.
  4. Allow four 10-hr workdays per week.
  5. Establish regular work hours outside the norm.
- H. Other Marketing Programs
1. Conduct drawing for prizes among respondents to TSM surveys.
  2. Recognize users of commute alternatives in company newspaper.
  3. Give awards to commuter of the month (e.g., savings bond, company dinner, added vacation time, free tune-up, diagnostic testing of vehicle).
  4. Negotiate discounts at local stores.
5. Combine a monthly parking fee with a transportation cost allowance for all employees (which can be used for the parking fee or for transit passes, and can be pocketed by bicyclists, walkers, and poolers).
  6. Provide child care facilities at work site.
- I. Program Monitoring
1. Determine number of employees in each shift commuting by different means, by methods such as
    - a. Tabulations from employee survey results.
    - b. Tabulations from carpool and vanpool register augmented by information about transit pass sales and bicycle counts.
    - c. Gate counts of arrival mode and vehicle occupancy.
    - d. Employee parking lot utilization counts by shift in relation to the number of employees present each shift.
  2. Record the number of employees participating in an alternative work hours program.

#### REFERENCES

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2. Traffic Mitigation Reference Guide. Metropolitan Transportation Commission, Oakland, Calif., Dec. 1984.

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