

Silver Spring, Maryland.

5. Hooper, Kevin and JHK & Associates. January, 1990. Travel Characteristics of Large Scale Suburban Activity Centers. National Cooperative Highway Research Program (NCHRP) Report #323.
6. JHK & Associates. 1984. Trip Generation Study for Prince George's County Summary Report. Prepared for Maryland National Capital Park and Planning Commission, Upper Marlboro, Maryland.
7. Gordon, P., A. Kumar and H.W. Richardson. 1989. "Congestion, Changing Metropolitan Structure and City Size in the United States." International Regional Science Review, Vol. 12, No. 1, PP. 45-56.
8. Slade, Louis J. and Frederick E. Gorove. January, 1981. "Reductions in Estimates of Traffic Impacts of Regional Shopping Centers." ITE Journal, Vol. 51, No. 1, PP. 16-18.

SUBURBAN TRAFFIC CONGESTION
LAND USE AND TRANSPORTATION PLANNING ISSUES:
PUBLIC POLICY OPTIONS

by

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INTRODUCTION

Traffic congestion has reemerged in the 1980's as a leading public concern. In metropolitan areas throughout the United States, reports about mounting traffic levels and daily tie-ups appear on a regular basis. Highway agencies and transit operators are castigated for failing to provide the facilities and services needed to assure a convenient commute. The agencies, in turn, point to funding cutbacks and escalating costs as barriers to action. Urbanists and demographers note that long-term trends toward decentralized development and increased participation in the work force have both contributed to congestion. Increasingly, angry citizens are blaming new development for the traffic problems and are pressuring local officials to either slow growth or find some other way to relieve the traffic loads.

Congestion problems are not, of course, a new phenomenon. For many decades, heavy traffic has been a fact of life in central business districts and on routes leading downtown. Today, however, in an increasing number of communities, the rush hour has become a two or three hour peak period, and congestion recurs mornings, midday, midevening, and on weekends as well. Heavy congestion is occurring in the suburbs as well as the city, both on local streets and on the circumferential highways that a decade ago provided for high speed travel.

The development of congestion in once-untroubled suburban locations has helped

foster a renewed search for transportation and land use strategies that might offer congestion relief or at least avoid a worsening of conditions. Numerous proposals for alleviating suburban traffic congestion have been put forward, including construction of new highways, deployment, of transit and paratransit services, trip reduction strategies, and land development caps. However, there has been little agreement among either planning professionals or political leaders on what actions should be taken or, indeed, whether special initiatives are warranted.

This paper discusses transportation and land use planning issues raised by suburban congestion and assesses the public policy directions that might be pursued. In the section that follows, the wide range of contexts in which traffic congestion arises and the diverse set of issues raised by traffic growth in these different contexts are considered. It is argued that the lack of consensus on policy is due in part to the presence of many different suburban environments, each posing different traffic congestion problems and suggesting different courses of action. Partly as a result, and partly because different interests focus on different issues in formulating responses, diagnoses and prescriptions for suburban congestion problems are numerous; seven such views are outlined. Then, the various options are assessed, considering their feasibility, acceptability, susceptibility, and cost-effectiveness. The paper concludes with a brief discussion of future directions.

WHAT IS THE SUBURBAN TRAFFIC CONGESTION PROBLEM?

Traffic congestion in the suburbs reflects the increased importance of the suburbs as places for work, shopping, an recreation as well as residential activity. The rapid growth in suburban employment, while by no means the only factor in suburban traffic increases, is of particular note because of commute trips' role in peak period congestion. While suburbs have been increasing their share of metropolitan employment for many decades, recent data have served to focus attention to this trend. The 1980 Census revealed, for example, that over 40 percent of all commute trips took place wholly within the suburbs, and another 7 percent were reverse, city-to-suburbs commutes. In comparison, 33 percent of city trips were made wholly within central cities; only 20 percent were from suburb to the central city (Bureau of the Census, 1984.)

Evidence from more recent studies, particularly in the fast growing sunbelt, indicates that the share of trips destined for suburban places is increasing (Cervero, 1986). Suburban development of new office enters has outstripped downtown office growth, and the ratio of suburban to downtown retail development is even greater. By 1990, it is likely that suburban-destined work trips for both office and retail employment will exceed central city destined trips in many areas of the U.S.

Data on trip patterns provide little information about traffic conditions. Few would disagree that traffic in the suburbs is worse than it used to be, because capacity expansions have not kept pace with travel increases. Information that would support an assessment of the severity and ubiquity of the congestion problem - data on average speeds, volume-to-capacity, ratios, delays and stops - is not readily available, however.

Evidence from traffic studies clearly shows that some suburban locations face poor travel conditions during peak periods, as illustrated levels of service of "D" or worse at many signalized intersections and on freeway segments. Nevertheless, most analyses suggest that average speeds in the suburbs remain higher than in central city locations, and that the percentage of time spent travelling in congested conditions is lower for suburbanites than for their city counterparts (Bureau of the Census, 1982; California Department of Transportation, various years.)

If suburban congestion is arguably less severe than urban congestion, we might reasonably ask whether it merits special attention. Are there issues surrounding suburban congestion that make it more onerous, in effect, than downtown congestion problems? Are the opportunities to alleviate suburban congestion greater than those in the city? More detailed investigation of these questions is complicated by the wide range of suburban environments and the substantively different problems they pose.

First, the term "suburb" is a loose one, encompassing a diversity of development patterns, land use mixes, and densities. Suburbs include communities which grew up around streetcar lines in the pre-auto era, with dense housing and neighborhood commercial districts, as well as one distinct towns swallowed up by metropolitan expansion, often containing a small downtown and perhaps an industrial district along with older neighborhoods, to which housing tracts have been added on adjacent parcels. The housing subdivision-plus-shopping center development of the post war decades is another common suburban type. Many of these suburbs were originally built on farm land (and in many states, in unincorporated areas) to serve as residential communities for the central city but have since become towns in their own right and are adding office and industrial development to prove their tax bases and provide jobs closer to home. In addition, there is the occasional planned community, or "new town", that was designed from the start to include a mix of housing and employment opportunities; and there are the recent "activity center" developments--office and retail complexes in which housing is often a relatively minor component.

Some of these suburbs, particularly the older ones, are actually denser than certain central cities. In general, however, the term suburb is associated with low density, auto-oriented development. Indeed, many developments squarely within the boundaries of such auto-oriented cities as Houston or Los Angeles, and a few in outlying districts of older cities like San Francisco, are "suburban" in this sense.

Among these many varieties of suburban development, suburban traffic problems also vary. In older suburbs developed on a grid street pattern before off-street parking requirements were the norm, a common complaint is that traffic and parking from commercial districts spills over into residential neighborhoods. In suburban downtowns which are becoming major employment modes, peak period traffic backs up at intersections. In expanding residential developments, increasing traffic volumes on residential streets irritate homeowners. Where communities have grown to have contiguous development, through traffic on a multi-jurisdictional arterial may at issue. Near office parks at the metropolitan fringe, bumper-to-traffic on the freeway and lack of alternative

routes is the trouble.

Complaints about suburban traffic, in short, are due to a number of problems. The particulars tend to reflect the development pattern of the suburban environment, as well as its density and mix of uses. For some areas, one issue or another may dominate; an accumulation of problems feeds complaints in other cases. In addition, traffic congestion serves in many communities as an indicator of a wider range of urbanization problems, from loss of open space and views to a more general sense of loss of a desired small-town ambience. The ability to count cars and to quantify deteriorating service levels makes traffic an easy focus for displeasure over growth:

With such a wide range of circumstances and problems, it is little wonder that views of traffic congestion have been described as "kaleidoscopic"--changing at every turn and somewhat out of focus (Gakenheimer, 1987.) It also should not be surprising that those who have attempted to look for the root causes of suburban congestion have come up with widely varying diagnoses and prescriptions. It is to these views of the problem and possible solutions that we turn next.

CAUSES AND CURES FOR CONGESTION: SEVEN VIEWS

Many would argue that the numerous "problems" reflected in complaints about suburban congestion are, in fact, symptoms of a more basic problem in land use and transportation planning and finance. Diagnoses of the basic problem differ widely, however, reflecting the training, experiences, and inclinations of the analyst; some emphasize money problems, others institutional shortcomings; some focus on the planning process, others on the substance of what is being planned. Each view suggests a different thrust for public policy, although there is some overlap and the views are not strictly alternatives.

One view is that there is, in fact, no problem, or at least not one that demands special attention. Proponents of this view point out that the complaints now being reported in the suburbs, particularly those of the post-world War II decades, have plagued many urban parts of the metropolitan area for many years. It is the deterioration in travel conditions, rather than the magnitude of the problem in comparison to that faced by others, that is the source of the suburban complaint, the argument goes. Over time, it is claimed, suburbanites will adjust to the higher levels of traffic. Doing nothing--or business as usual--is seen as the most prudent and expedient course of action.

A second view is that the problem is simply one of inadequate financing: that the plans and programs to alleviate congestion are available and could be implemented expeditiously if only there were enough money. Supporters of this position note that the costs of delivering additional transportation services have far out-stripped the increases in available transportation dollars, with the result that projects have been delayed and programs have been underfunded. Their emphasis, then, is on finding new funding sources--increases in fuel taxes and other user fees, revenue bonds, private sector cost-sharing voter-approved sales taxes and property taxes, and benefit assessment districts which can put transportation financing back on a sound footing and assure the timely delivery of projects.

A third diagnosis of the problem focuses on institutions. Federal and state transportation agencies are not providing leadership, this argument goes; they are unable to break out of old ideas. As a result, they are seen as unable or unwilling to redirect their efforts to today's problems and opportunities. Furthermore, this reasoning continues, neither local nor regional agencies can fill the leadership gap; local agencies are understaffed, underfunded, and in most cases cover too small an area to address transportation problems effectively, whereas regional agencies lack political support and authority to act. The result is that transportation agencies no longer inspire public confidence. Offered only more of the same options that have not worked well, voters and their elected representatives are reluctant to approve higher taxes and fees. New ideas, a redefinition of missions, and a realignment of responsibilities are seen as prerequisites to obtaining the necessary commitments to proceed with actions to alleviate congestion.

A fourth view is that the central problem is one of improper pricing of transportation facilities and services. Because transportation facilities and services are not priced to reflect their full costs, the wrong signals are given to transportation consumers; excess consumption is the consequence. In this view, increasing the funds for transportation would only perpetuate an inefficient and inequitable situation. New pricing strategies, in contrast, could simultaneously discipline transportation demand and generate needed transportation financing efficiently and fairly.

Other diagnoses emphasize failures of current planning practices. One such diagnosis is that government officials, civic leaders, and regional planners and engineers have failed to acknowledge the shifts in land development away from a central city orientation, and to respond with plans for facilities--principally roads--designed to serve suburban realities. One result has been a continued emphasis on radial facilities serving the central city, at a time when development patterns were increasingly decentralizing (Webber, 1985.) Another result is that transportation agencies have underinvested in local arterials and collectors to serve their population growth and economic development; they have used mainline freeway capacity as suburban "Main Streets". Consequently, there are few alternative routes an over-concentration of very short trips on facilities designed to serve regional through-traffic. In this view, the need is for a major effort to plan and implement suburban-oriented roadways--both freeway mileage and local collectors and arterials.

Another view is that transportation planners have failed to devise realistic, effective commuting alternatives for the suburbs. It is argued that increased emphasis on transit services, carpooling and vanpooling programs, alternative work hours, work-at-home options, and the like would encourage travel choices that are more energy efficient and less destructive of the environment, resulting in more efficient use of available capacity and reducing the need for increases. In the longer run, the argument continues, new technologies may become available to handle work travel needs, so that initiatives to significantly expand facilities along current technological lines could prove to be misdirected.

Finally, there is the argument that the failure to control land uses in the suburbs has produced the current congestion problems. This view emphasizes sizing development to reflect transportation capacity, matching employment growth

with housing development, providing a mix of uses in new development so that needs can be accommodated with shorter trips, and increasing densities so that transit and other shared-ride transportation modes can attract adequate ridership. In this view, it is hopeless to expect transportation providers to build their way out of the congestion problem; coordinating land development with transportation capacity is seen as a necessity.

CRITERIA FOR EVALUATION

How can these different views of suburban congestion's causes and cures be sorted out? While sweeping conclusions about what will work clearly need to be avoided, in view of the array of contexts and issues involved, it nevertheless is possible to set forth some criteria with which proposed courses of action can be assessed.

One such criterion is feasibility, both in a technological sense and from a legal and institutional perspective. Is the proposed course of action ready to be implemented, or would additional research and development be needed? Would its application amount to experimentation, or has it been used in enough cases that its costs and impacts can be predicted with confidence? Are current organizations and institutions authorized to implement it, or would additional legislation or a redefinition of missions be necessary?

Acceptability is a second criterion that might be applied. Would decision-makers, providers, operators, and users consider the action clear-cut and desirable, or would it be viewed as complicated and risky? Would it require changes in attitude or approach, and would such changes be welcomed or resisted? Would it create clear winners and losers, with possibilities of inequity, or offer a win-win situation in which all would benefit?

A third criterion is sustainability of desired effects. Would the course of action produce lasting benefits, or simply improve conditions temporarily? Would continuing efforts be necessary to maintain the desired effects, or would the option permanently change the situation? Might secondary impacts offset the benefits or cancel them out?

The cost-effectiveness of the options is a fourth criterion. Are the expected benefits sufficient to justify the effort necessary to plan, implement, and sustain the course of action? Might short-run benefits and costs be outweighed by longer run consequences? Alternatively, could implementation now, even if not fully effective, open up opportunities for future gains of significant magnitude?

Additional criteria would include the flexibility of the option (will it become outmoded if development patterns change, or new technologies become available?), its effects on the environment, and the opportunities it may offer for economic development. In addition, there is the question of compatibility with existing transportation facilities and programs--whatever the new course of action, could it be added to what exists now, or would it require major changes to what is already in place?

With these criteria in mind, we turn next to assessment.

ASSESSING THE OPTIONS

Each of the seven views sketched out earlier has both pros and cons. The following discussion touches on some of the issues that the various options might raise.

(1)The do nothing or business-as-usual option clearly has some merit, if for no other reason that it requires little change. To the extent that people and businesses adjust to traffic congestion (whether by getting used to it or changing locations), congestion may be a self-limiting problem anyway; with time, the issue of suburban traffic congestion may wane even if no special actions are taken.

On the other hand, the option would not rate well on the acceptability criterion. Inaction is not very palatable to elected officials, who are under heavy pressure from well-organized suburbanites clamoring for relief. Nor is inaction attractive to planners and engineers, who are well aware of the adverse impacts of congestion and feel a professional responsibility to respond. Not addressing suburban congestion also could have serious consequences. Undesired effects of congestion range from air pollution and heavy energy use, to potential adverse effects on local and regional economies. In addition, there is the risk of backlash--citizens might feel forced to take matters into their own hands, with the danger that an unworkable, overly simplistic "solution" might be imposed.

(2)Increasing available funding so that projects can be delivered faster also has both advantages and disadvantages. Clearly the lack of money limits options and slows delivery of projects. On the other hand, tight funding also can provide much-needed discipline in expenditures, helping make sure projects are really cost-effective and wanted. Additional funds will produce benefits only if the projects they support are wisely chosen.

In addition, there is concern over the impacts of some of the financing mechanisms being proposed. Sales taxes for transportation, for example, can raise considerable sums of money but may also undermine the notion that transportation facilities (or at least, streets and highways) are largely user-financed. Developer exactions and contributions may only work in affluent areas, raising questions about how financing can be accomplished in less favored communities. Finally, most of the funding mechanisms being discussed are for capital improvements and for highways. Operating and maintenance costs are also a financing problem, however, and financing for transit is once again nearing crisis levels. Including these matters in the debate is sure to complicate it considerably.

(3)Creating new institutional arrangement and assignments of responsibility could, along with new missions, reinvigorate transportation and land use planning and lead to improved decision making. In particular mechanisms which could increase state-local coordination, reduce "beggar thy neighbor" actions by local governments, foster the development of regional and sub-regional transportation facilities matched to land development patterns, address area-wide impacts, and support private sector participation in transportation financing and delivery all seem deserving of attention.

But there are very real barriers to these proposals. Many of them would require existing levels of government to give up some of their current autonomy and power, a change that would be hard for elected officials and government agencies to accept. Acceptability is made even more difficult by the lack of certainty that new arrangements could in fact deliver greater benefits; there are few experiences to point to as "success stories". For some of the proposals, public-private partnerships for example, there are concerns that interests are not always sufficiently aligned to make new arrangements workable. For other proposals, such as increased use of private contracting to speed delivery of projects, experience has been mixed and there are questions about cost effectiveness. Finally, it often is unclear exactly how the proposed new arrangements would function or what they are intended to accomplish; beliefs that coordination and cooperation will improve outcomes do not always easily translate into work programs.

(4) Just as new institutional arrangements are favored by students of government, improved pricing is favored by economists. Changing the economic signals given to transportation users clearly could temper demand and improve revenue flows, and in so doing improve the efficiency of the transportation stem. However, the mechanisms for implementing such changes would be likely to face considerable resistance. For streets and highways, the mechanism most compatible with existing procedures would be a fuel tax increase; the problems likely to be encountered with this proposal have already been considered. Fuel taxes would not fully respond to the desire to align prices with costs, however; road pricing, especially congestion pricing, is the preferred strategy in this regard. But in addition to the general concerns about raising taxes and fees, road pricing raises issues of its own. While toll booths could be used to collect fees, for example, they might well create bottlenecks that would worsen operating conditions. Electronic technology which would permit billing for road use is available, but has yet to be tested in a large-scale application. Procedures for collecting amounts due, handling scofflaws, and the like remain to be developed. Equity concerns would be raised, since low income travellers might be priced off facilities during peak periods. Perhaps more importantly, the concept of congestion pricing is not yet a comfortable one for many elected officials and citizens. Early opposition could well prevent the experimentation needed to develop the concept more fully.

(5) A new round of planning for increased suburban street and highway capacity seems meritorious in view of the sparse networks currently available. This option may well become bogged down over its specifics, however. For example, there is a proposal to build new beltways at or beyond the current metropolitan fringe, in recognition that the beltways of the '50s, '60s, and '70s are no longer "belts". Such a beltway might offer an alternative route to those close enough to the new facility to use it, and would likely open up new opportunities for development of relatively inexpensive land. Many of those now suffering from congestion view the option as abandonment, however, since it does not offer them much hope of relief. In addition, the costs of this option would be substantial and would almost certainly require new funding sources; environmental issues and policy questions about encouraging further sprawl would be acute; and effectiveness over the long term would be uncertain.

A second proposal is to develop a denser network of local arterials and collectors in suburban areas. Such a proposal would address the concern that too many local trips are now forced to use limited freeway capacity, as well as the concern that with few alternative routes, any disruption of flow can cause a system breakdown. Again, however, this option would require major investments and new sources of funding. In addition, while new arterials and collectors might be designed into as yet undeveloped areas, in the areas already facing congestion it could prove difficult to identify suitable corridors that would not involve major taking of developed property. Environmental impact concerns could well be strong and could lead to protracted conflict.

A third proposal would stress operations improvements and upgrading of existing facilities--coordinated signal timing, selective lane additions or parking removals, corridor management, and so on. While this approach to increasing suburban road capacity would be less demanding financially and less likely to raise serious environmental concerns, there are questions about how much benefit would result. Some operations improvements have already been widely implemented, and additional gains would be small. For other operations strategies, the number of suitable locations for implementation is limited.

(6)An emphasis on the provision of commute alternatives might be more palatable to those with strong concerns about the impacts of more highway building. Transit, however, needs to be differentiated from "softer" options such as ridesharing in assessing the options. Costs of providing transit can be very high, especially when fixed guideway transit is proposed for a low density area. And while many advocate rail transit on the grounds that it will shape development patterns, there is little evidence that this occurs in the absence of strongly supportive land use controls.

In broader terms, commute alternatives can be helpful in reducing or managing congestion only if they are well subscribed. In most places, however, transit incentives, ridesharing programs, alternative work scheduling, and the like have been only modestly effective in attracting commuters away from single occupancy auto use or out of the peak periods; strenuous efforts have been needed to produce a mode shift on the order of 5 percent or a reduction in peak travel of 10 percent (Deakin, 1987). It also has been necessary to undertake continuing efforts to maintain these improvements; they have not been self-sustaining. While there have been proposals to use parking pricing and regulatory requirements to force greater use of commute alternatives, the acceptability of such actions is low, and few have attempted to impose such policies.

Finally, congestion deters some travellers from auto use; relief may be short-lived if improved conditions lead to shifts back to peak period auto commuting. Thus, both the significance and the cost-effectiveness of commute alternatives, even in the short run, have come into question.

Whether in the longer run new technologies will reduce congestion is an open question. Telecommunications substitutes for commute travel have been postulated, for example, but substitution has been slow to be accepted by either management or workers. A more important effect of telecommunications maybe the reorganization of the workplace and the loosening of location requirements for firms and residences (Garrison and Deakin, 1987.) Other new technologies,

including automated roadways and "smart vehicles," may increase effective capacity and capacity utilization, as well as have both substitution and reorganization effects. But these technologies are still far from ready for application. Thus, while these options may eventually offer possibilities for congestion reduction, placing reliance on them seems highly risky.

(7) Improved coordination of land use and transportation planning might well reduce the incidence of developments that overwhelm available transportation facilities and might result in the provision of transportation facilities that better serve suburban development patterns. In addition, it might be possible to encourage land use patterns that support the use of commute alternatives and reduce the length of some trips. However, such a land use planning approach is largely future-oriented; it offers little in the way of short-term congestion relief for those who already face a serious problem. Nevertheless, because many suburban areas are not yet near build-out, congestion problems might be avoided if workable land use and transportation plans were developed.

Local officials are not necessarily willing to increase controls over land use, despite the concerns about congestion. Indeed, many local governments' own land use and transportation plans are inconsistent with each other; making them consistent often would mean either downzoning or developing considerably more transportation facilities and services. But downzoning could lead to conflicts with property owners over development rights, or be unattractive from an economic development/tax-base perspective. Transportation expansions would raise the financial and environmental issues noted earlier.

Furthermore, there often would be a need to coordinate not only at the local level but across political boundaries and levels of government, an even more complicated and difficult undertaking. As discussed earlier, the willingness of local officials to support such an effort is uncertain. There also is disagreement about what land use strategies would be effective. Some advocate increasing densities so that transit and walking will be feasible; others recommend restraining development to levels that permit free-flow auto use. Whether either policy would work is subject to considerable debate. Jobs-housing balance proposals illustrate the kinds of arguments that arise. Citing the lack of affordable housing as a cause of lengthy auto commuting, jobs-housing balance has been proposed as a way to shorten trips. But others question its effectiveness, noting that many factors in addition to commute distance influence housing location decisions.

These brief comments on policy options for addressing congestion provide no clear answers on what should be done. They suggest that congestion might be reduced or avoided, at least for a time; but a price would have to be paid. That price might take the form of higher costs for transportation, greater regulation of mode choice, tighter restrictions on land development, or reduction of local control. The price might be institutional restructuring, or acceptance of the environmental impact of new road construction. Whether congestion relief is worth the price is a question deserving further debate.

FUTURE DIRECTIONS

This paper has argued that the suburban congestion problem is, in fact, many

different problems, which in turn are symptomatic of deeper ills in transportation and land use planning policy and practice. There is little agreement, however, on the specific nature of those ills, or on what should be done to alleviate them.

In examining seven diagnoses and prescriptions, a number of themes recur. One is that competition among local governments for tax dollars and economic growth works against proposals to rationalize both transportation and land use planning. Another is that many strategies for congestion relief are costly, but public willingness to pay these costs is in doubt. A third is that public confidence in current institutions and their proposals for action is weak. These matters are interrelated, and attention to all of them probably will be required if stalemate is to be avoided.

Under these circumstances, what advice might be given on what to do? Six points see appropriate:

- o Continue to implement relatively easy, inexpensive transportation strategies such as operations improvements and commute alternatives incentives, and do so more systematically; but avoid exaggerating the congestion relief potential of these strategies.
- o Emphasize strategies that are consistent with consumer behavior and emerging economic and social trends; be skeptical of proposals that are at odds with these matters and that have not worked elsewhere.
- o Encourage planning and financing that is consistent with sound economic principles, and avoid relying too heavily on funding sources that in the longer run could be problematic.
- o Encourage local governments to take greater responsibility for planning and implementing the transportation facilities that are needed to serve the development they approve, and support efforts to look beyond local boundaries at area wide impacts and opportunities.
- o Look for opportunities to test new land use and transportation strategies, monitor the results, and document them, so that learning can take place.
- o Recognize that if land developments are approved until and beyond the point when available transportation capacities are exhausted, congestion will be inevitable.

Unless new technologies emerge or economic conditions take a sharp turn for the worse, reducing congestion will likely prove difficult, even with well-conceived and extensive strategies. Congestion avoidance seems more feasible, but it too will require major changes. Concerted efforts to develop new policies and plans that can win public support will be needed, along with the financing to implement them. Planners and engineers can support such efforts by helping to clarify the issues and identify promising trajectories.

REFERENCES

1. Bureau of the Census (1982). The Journey to Work in the United States.
2. Bureau of the Census (1984). 1980 Census of Population: Journey To Work.
Cervero, Robert (1986). Suburban Gridlock, Ch. 2. New Brunswick: Center for Urban Policy Research, Rutgers University.
3. Deakin, Elizabeth (1987). "Transportation and Land Development: Planning, Politics, and Policy." University of California, Berkeley.
4. Garrison, William L., and Elizabeth Deakin (1987.) "Travel, Work, and Telecommunications: A Long View of the Electronics Revolution and Its Potential Impacts". Transportation Research A:
5. Webber, Melvin (1985). "The Emerging Metropolis: Trends and Trepidations". In Mobility for Major Metropolitan Growth Centers: A New Challenge for Public-Private Cooperation. U.S. Dept. of Transportation, Urban Mass Transportation Administration.

MAPPING TRAFFIC MITIGATION ACTIONS TO OBJECTIVE

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One of the difficulties we often have in discussing traffic congestion and strategies to overcome it is that we start with different assumptions about our objectives. Traffic management objectives range from desires to make better utilization of existing infrastructure, whether or not congestion is reduced, to aspirations to reduce the absolute number of vehicles on the road. Recognizing these differences in objectives is critical if we are to have a useful discussion of traffic management and its potential.

OBJECTIVES FOR TRAFFIC MANAGEMENT

Four different objectives are commonly set for traffic management. They are:

- o to make better use of existing investments, whether or not traffic is reduced.
- o to manage the rate at which congestion increases.
- o to prevent congestion from worsening.
- o to reduce traffic from current levels, while permitting growth to continue.