

A GUIDE FOR THE DECISIONMAKER

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Transportation Planning for Your Community

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

1980



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A good transportation system can be a reality with thoughtful planning for your specific needs, and it need not be overly expensive. Construction of islands and smoother alignment, installation of signals and lights, pavement markings for left and right turns and crosswalks, and channelization for turning traffic all improve traffic flow and safety and may be accomplished in stages within funding constraints or only certain items may be needed for your particular problems.

Introduction

Transportation is a vital part of the everyday life of every urban citizen. Even the very young, the very old, the sick and the shut-ins are beneficiaries of a good transportation system or victims of a poor one.

Efficient transportation stimulates the economy of an urban area; inadequate or deteriorating transportation will hamper the economy. The condition of transportation services and facilities improves or detracts from living and working conditions, enhances or harms the environment of the area, and heavily influences the general desirability of the community.

Keeping the transportation system in the best possible condition with the resources available is one of your many responsibilities as an elected or appointed official.

To help judge the adequacy of your community's transportation system and the adequacy of the planning program necessary to maintain a good transportation system, the following questions are posed for your consideration.

- What does the public think about the operation of the street and highway system?
- Do you receive numerous complaints about congestion and accidents caused by a poor transportation system?

- Are industry and commerce concerned about delays in their shipments caused by inadequate transportation facilities?
- Are industry and commerce rejecting your community because of a poor transportation system?
- Is enough being done to take care of transportation problems in your community?
- Is traffic a consideration in comprehensive urban planning?
- Is your community effectively using available Federal and State Transportation improvement and planning funds?
- And finally, are timely improvements being made?

If satisfactory answers to these questions are not available to you, perhaps your urban transportation planning program is in need of change. The material in this Guide is designed to help you redirect your transportation planning program.

The Guide discusses the importance of transportation and the role of transportation planning in helping to define existing problems and to predict future ones, how to proceed toward solutions, and where to find the resources needed for planning improvements. It also discusses the need for coordination among the many government entities involved and the residents of the community in establishing transportation improvement programs.

The Importance of Transportation

As a decisionmaker, you share with your neighbors a daily interest in the pattern and pace of life in your community. If your community is like most of the smaller urban areas around the country, you have probably noticed a steady increase in motor-vehicle traffic over the past few years.

A major reason for this growth in travel is that the less densely populated urban areas are getting the major share of population increases, while the more densely populated cities are losing population.

During this period of growth, your community must be able to move freight in and out of the area and from point to point within the area. Mail must be delivered. Service vehicles have to move throughout the area to keep communication, heat and lighting systems and other equipment of industry, business, and homes in operation. Emergency service vehicles, such as police cars, fire trucks, and ambulances, must move efficiently for public safety.



Perhaps your community is experiencing increasing congestion while retaining angle parking. You can provide a safer and more efficient arrangement by enacting new ordinances for parallel parking, providing new pavement markings and signs, and creating an additional lane for turning movements, all at a relatively low cost.

At the same time, you are faced with the challenge of improving—or at least maintaining—the environmental quality of the community and conserving the limited energy resources, both of which are heavily influenced by the efficiency of the transportation system. Traffic congestion is a major cause of air pollution and energy consumption. Potholes and broken pavement cause braking and acceleration, resulting in more air pollution and energy consumption than steady driving on smooth pavement. Poor traffic control techniques also harm the environment through increased pollution and result in increased energy consumption.

These are among the reasons why transportation and transportation planning are vitally important to you, the decisionmaker.

The National Picture

The following statistics on the importance of transportation nationwide may help you put your community into perspective:

- Approximately 85 percent of urban area households own one or more automobiles. On the average, each household makes four automobile trips and travels 30 vehicle-miles each day, with about 35 percent of these trips made for the purpose of earning a living; 35 percent for family business purposes, including shopping; 10 percent for educational or religious purposes; and 20 percent for social and recreational purposes.
- Buses and taxis that make up the public transportation systems in small urban areas provide a vital means of mobility for the 15 percent of the households that do not own

an automobile and for those who own vehicles but choose to ride public transportation.

- The U.S. economy is closely related to motor-vehicle transportation. Total transportation expenditures in the United States, including freight and personal transportation by all modes, are 18 percent of the Nation's gross national product. Fourteen million persons, or 22 percent of employed persons, are employed in transportation and related industries.
- In 1977, about 11 percent of all personal consumption expenditures was for the purchase

of new and used automobiles, parts, gasoline and oil. In terms of the consumer dollar, more than 14 cents was spent on transportation of all kinds.

- In 1977, \$10.0 billion was spent on streets and highways in all municipalities. The largest expenditure of \$4.9 billion was for construction, with \$3.0 billion going for maintenance, \$1.0 billion on law enforcement and safety and \$1.0 billion for other items, such as street and highway administration and debt service.

The Role of Transportation Planning

As a community leader, you rely on accurate and timely information upon which to base decisions that will improve the quality of life in your community. This information must be systematically gathered and organized, analyzed and evaluated before a decision can be made. In the area of transportation, that's where transportation planning comes in.

The transportation planning program determines how effectively the urban transportation systems are performing their roles; what problems in system performance exist or are likely to develop; and what affordable solutions are deemed necessary to correct or prevent the problems. Such a planning program is essential to properly address transportation problems and issues.

Detecting Problems

Many problems are obvious. For example, the traffic back-up at a particular intersection may be a constant cause of frustration to motorists as well as to homeowners and businesses along the route. The number and severity of traffic accidents at another point in the urban area may be well known to police, rescue squads and community leaders. Or certain narrow arterial streets, without curbs, gutters and sidewalks, may cause problems for school bus drivers and pedestrians, as well as for the general driving public.

Other problems may not be so well known because they are more difficult to appraise. For example, efficient crosstown travel may be impossible because no direct route exists, thereby forcing circuitous and uneconomical travel. Average travel time along an arterial route may be unnecessarily

long due to substandard traffic control devices. An important bridge may be unsafe due to physical deterioration. Some citizens without automobiles may have great difficulty in getting to and from their homes and shops, banks, medical facilities and other important destinations. Or a prospective industry might have rejected the community due to the lack of an adequate suburban arterial street system, inadequate downtown parking or other transportation deficiencies.

Other problems that do not yet exist may be developing. For example, rapid growth in population and employment may create intolerable traffic conditions on some urban arterial streets and highways. Or a new shopping center may shift the traffic pattern and, therefore, substantially reduce travel speed and increase accident levels on arterial streets and highways.

A good transportation planning program will monitor the urban area transportation system and its performance; determine the existing and potential problems and possible improvements; and develop and annually update improvement programs.

Establishing Objectives

Transportation goals and objectives should help you to pinpoint problems and deficiencies and to judge the adequacy of transportation system performance. While it is your responsibility to establish transportation goals and objectives, you need technical help in setting realistic, affordable goals against which the transportation system can be compared. Safety and efficiency are key objectives in transportation planning.

Safety goals are usually stated in terms of accident and fatality reduction per intersection or per segment of roadway in measurements of length, such as blocks or miles. Safety goals may also be expressed in terms of reducing accidents and fatalities in relation to traffic volumes or vehicle miles of travel.

Average speed is one way to establish efficiency goals for arterial streets and highways. Because of the difficulty in measuring actual average speeds, planners and traffic engineers often compare the actual traffic flow through an intersection or along a roadway during a given period of time to what the flow should be for the desired efficiency.

Some objectives are identified in technical terminology such as: minimum roadway width and minimum pavement type for the various classes of urban streets and highways; bus route coverage; and number of parking spaces per unit of commercial space. Other important objectives, such as esthetics, neighborhood integrity, growth control and mobility for those without automobiles,

should be considered in your judgments about the transportation system. Feasibility of achievement is an important consideration in establishing any goal or objective.

Transportation goals and objectives should also be compatible with communitywide goals and objectives. As an example, a communitywide goal calling for increased downtown economic vitality might influence the priorities of transportation improvements.

Specifying Solutions

Because of the many options available, the determination of affordable, effective, solutions to both existing and potential transportation problems is a highly technical matter. Qualified technicians should present solutions, but *you* must make the decision.

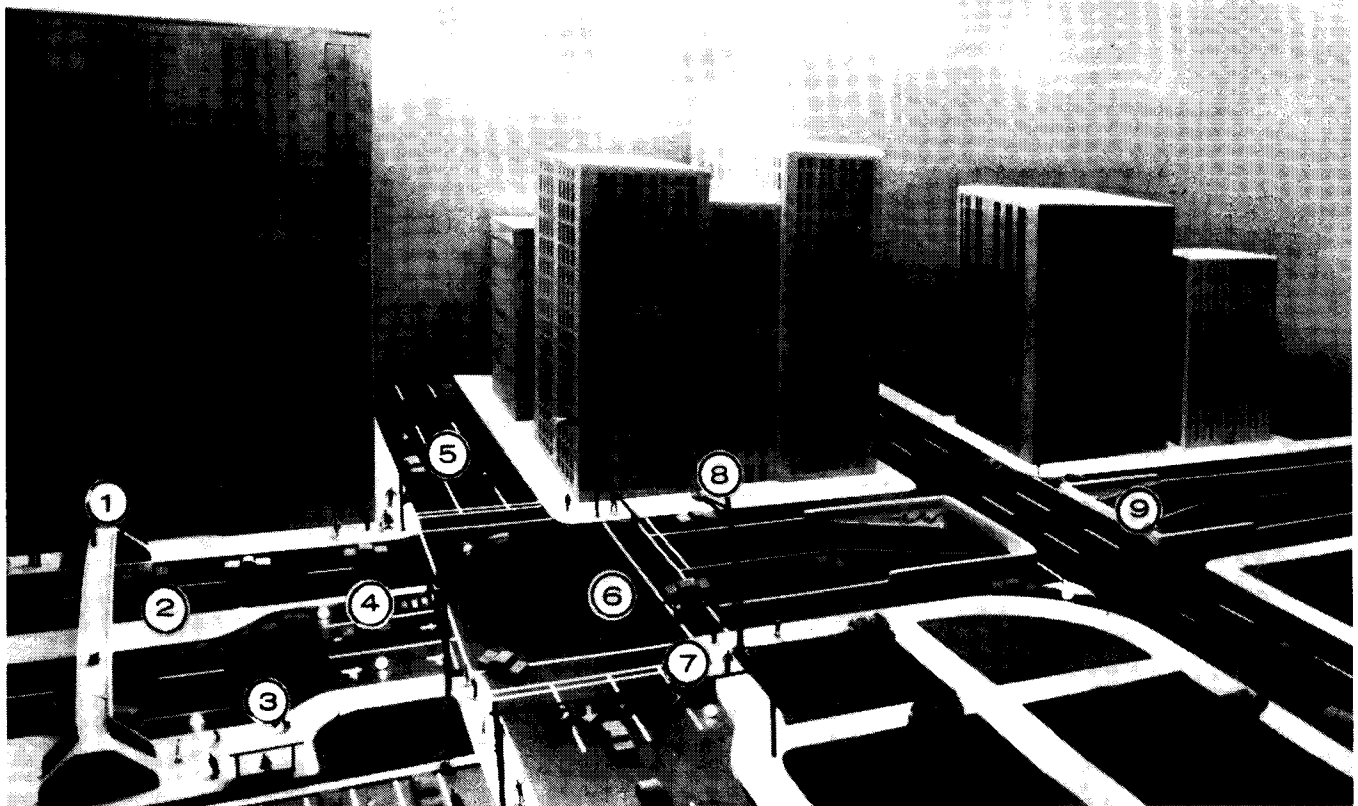
Congestion problems, for example, may be effectively resolved by relatively low-cost traffic engineering solutions or may require expensive construction solutions. And each of these types of solutions must be carefully weighed, in terms of cost, effectiveness, community disruption and other factors, before an improvement is recommended.

Traffic engineering improvements may be a solution to some problems. Connecting traffic signal controls along a route or within a defined area may be the correct improvement. Removal of on-street parking is another possibility, as is establishment of a one-way street system. At intersections, left turn controls may be desirable or perhaps left turns should be eliminated, depending on the situation.

Of the construction options available to alleviate congestion, adding lanes through widening the existing street is usually a possibility. Construction of a new route in the corridor, or a bypass route, are other possibilities.

Physical deterioration of roads and streets requires a study of options, because a variety of solutions may be possible. In the case of rutted and cracked pavement, patching and other maintenance procedures may be the answer. Or resurfacing may be the best solution. Or, in extreme cases, it may be necessary to reconstruct the road by removing the old pavement and its base and providing new.

The problems and solution options mentioned are merely illustrations, for there are many other types of problems and a host of other improvement possibilities. But the planning function is where these studies and determinations are made.



Your community may need some or all of these improvements, depending on growth potential or financial constraints: (1) pedestrian overpass, (2) channelization, (3) bus passenger pickup lanes and shelters, (4) right and left turning lanes, (5) improved markings, (6) computerized traffic signals, (7) reversible traffic lanes and signals, (8) improved lighting, and (9) vehicle underpasses.

Impact Analysis

To assist urban elected and appointed officials with decisions on transportation improvements, the analysis of impacts and benefits is an important function of urban transportation planning.

Some improvements will benefit most urban citizens, while others will only benefit a limited number of citizens. By the same token some improvements will have little adverse impact, while others will have severe adverse impact.

Unfortunately it is not always possible to resolve deficiencies without adversely affecting some people. However, a complete analysis of impacts and benefits will enable you to make judgments with a full array of facts.



A fixed-route or dial-a-ride van service may work well in your particular community for those without other means of transportation.

Programming Improvements

The urban transportation improvement program or programs—depending on whether there is to be one areawide program or individual city, county and town programs, or both—is developed by placing the possible improvements in perspective with money and time constraints and the priority or urgency of each improvement. The result is a listing or listings of projects to be implemented during each year of the desired program period, together with cost estimates of each improvement and estimates of the type of funds available to implement each.

Included in transportation planning is the determination of the type and amount of local, State and Federal *funds available* to finance improvement projects. With multiple funding sources, and multiple special categories of usage within each source, and with varying local, State and Federal matching ratio requirements, the determination of available funds and the pairing of these funds with the improvement projects is an increasingly complex task.

While knowledge of available funds is vital to the development of transportation improvement programs, the date that each project could be implemented is also *constrained by the time* required to accomplish preimplementation activities, such as design, right-of-way purchase, environmental impact assessment, and reviews by citizens and representatives of each government entity responsible for administering funds that finance the project. Because of the possibly large number of government entities involved in preimplementation activities, the determination of preimplementation time requirements is often a complex, but essential, aspect of developing multiyear improvement programs.

Furthermore, because it is likely that a number of projects will be competing for limited financial resources, it is also necessary to determine *project priorities* within funding categories. The transportation planning program will provide valuable assistance to decisionmakers in establishing priorities by providing information on how each deficient transportation element rates in terms of established standards of safety, mobility and physical deterioration, as well as how the proposed improvement rates in terms of such factors as environmental, esthetic and economic impact.

Transportation planning melds funding constraints, preimplementation time constraints, and project priorities to determine the urban transportation program or programs to be carried out in years ahead.

Gaining Public Understanding

In order to gain cooperation in implementing transportation improvements, government, industry, commerce and citizens need to understand what the problems are, what improvements are necessary, what the effects will be and when each element of the program will be ready for public use. Opening transportation planning to the public through advisory committees and publishing and distributing the transportation improvement program are ways to inform the public.

A land developer is interested in the programs for street and highway improvement, for this may influence his decision to purchase and subdivide land. The configuration of the street system to serve the subdivided lots may also be influenced by the programed improvement.

Commercial and industrial firms have a vital interest in transportation improvements, or the lack of improvements, in the vicinity of their businesses. Plans for increasing business capacity or relocating the business may be influenced by the program or programs for transportation improvements.

Local government agencies, such as offices of economic development, comprehensive planning



You may have a difficult intersection such as this was before it was improved to provide channelization to permit continuous right turns, an energy saver, a new traffic signal system interconnecting with the existing railroad protection system, and new pavement markings.

offices, emergency service offices, and school boards, need to be informed of the current transportation program or programs. Your office of economic development is vitally interested in programmed transportation improvements, for they may influence the decision of an industry or business to expand or relocate. Your comprehensive planning office or zoning office will wish to be pre-

pared for rezoning applications when a major arterial street or highway is improved. Police, fire and other emergency services will want to anticipate problems caused by street, highway or bridge construction or reconstruction.

Continuing Need for Planning

Just as in any program, stability must be sought, but is seldom completely realized. Therefore, transportation planning is a continuing program whose scale is dependent on a number of urban area conditions and characteristics.

Travel and land development patterns change over time. Basic elements of the transportation system continue to wear out. New transportation deficiencies are detected. New ideas about how to solve transportation deficiencies emerge. Unforeseen delays occur. Additional funds become available for improvements. Improvement funds are cut back.

These and many other factors bear on the need to continue the transportation planning program. At the least, the improvement program should be updated annually to omit completed projects, to add needed projects and to review the entire program implementation schedule in view of the status of preliminary activities.

Government Roles In Managing Transportation

Two levels of government are involved in managing and financing urban transportation systems: local government (that is, city, county and town government) and State government. A third level—the Federal government—is a substantial financial partner to local and State government in the improvement of transportation.



Financing and management of urban transportation systems involves all levels of government—Federal, State, local—but you will also want to include public transit operators, regional planning agencies, land use agencies, etc., all who may be affected by or who may have an effect on your transportation system.

Local Government

Cities, counties and towns are responsible for constructing, maintaining and operating all urban roads and streets within their respective boundaries, unless, through agreement by law, some or all of these responsibilities are assigned to another local government or to the State. These agreements and legalities are available to you from your

public works department, chief engineer, or their counterparts in your community.

Responsibilities for construction and maintenance of streets and highways are carried out by city, county or town public works departments, street departments or transportation departments. Traffic operations responsibilities fall either within these departments, or in a separate traffic engineering department, or within the police department.

Depending on State law, cities, counties and towns may either own and operate a bus system or may contract with a private bus operator to provide bus service, or may only regulate the operation of private bus and taxi companies. You should know or find out what the applicable ordinances are in your community.

State Government

States, through their highway departments or departments of transportation, are responsible for the construction, maintenance and operation of designated State highways in urban areas. Depending on State law, States may provide funds for 1) the construction, maintenance and operation of city, county and town roads and 2) the purchase and operation of buses and other public transportation equipment and facilities. Local matching funds may be required.

State responsibilities are shared by their headquarters staff and work forces and by district or division staff and work force.

Federal Government

The Federal government provides funds for planning and developing transportation improvements. Federal officials located in division offices within each State or in regional offices that cover several States oversee the expenditure of Federal funds to ensure the expenditures are consistent with current Federal policies. These division or regional officials are available to advise you on the availability and applicability of Federal funds.

Coordinated Transportation Planning

It is important to you that transportation planning be a coordinated effort of all urban area government entities. There are a number of reasons why you should strive for coordinated planning.

First, changes in the transportation system in your community could affect development in a city, county or town outside your own. Conversely, the projects of other agencies can affect your community.

For example, a proposed bypass highway planned to be built in a county, outside a city, might have an economic impact on the city. On the one

hand, new commerce and industry might be attracted to sites in the vicinity of the bypass, thereby enhancing the economy of the urban area. On the other hand, commerce and industry now located in the city might relocate along the new bypass and create economic problems for the city.

You should be aware of this double-edge transportation sword. The transportation planning team should keep you and your counterparts in surrounding jurisdictions informed of all transportation impacts.

Also, to ensure efficient movement of traffic, there is a need for route continuity on streets and highways that cross from one urban area jurisdiction to another. For example, a new four-lane arterial should not abruptly become two lanes at the city line. Intercity jurisdictional coordination is es-

sential to avoid bottlenecks.

Bus service across jurisdictional boundaries also might be improved through an areawide transportation planning program.

State highway improvements through an urban area should be reviewed in terms of their benefits to the statewide, as well as local, movement of people and goods and for their impact on urban area development. Of course, you must protect your community—but you must consider statewide mobility at the same time.

Finally, there may be opportunities for a more efficient transportation planning program with all jurisdictions in your region cooperating. Pooling of funds and technical resources can achieve remarkable efficiencies.

The Transportation Planning Team

Your background may be in public administration, political science, or poetry, but it really doesn't matter. You are in your position as a decision-maker because you have the trust and confidence of the people and other officials. You are depended upon to make fair judgments in the best interests of your community. To make these decisions in-

telligently, you depend upon the expertise, knowledge and talents of others. When it comes to moving people and goods in your community, the most efficient way to gain the expertise required is through your urban area transportation planning team.

The primary purpose of the urban transportation planning team is to bring together those people who have responsibilities for various segments of the transportation system and those who will be vitally affected by transportation service so that the best possible solutions to problems can be worked out *in advance*.

Such a planning organization brings together technical disciplines, economic expertise, and responsible "man-in-the-street" attitudes and recommendations. The team provides an effective forum for analyzing the transportation system, discussing the issues, and programing the most desirable actions.

The Organization

Since some States have laws that specify the objectives of urban transportation planning, the establishment of an urban transportation planning organization and its function should be consistent with such laws. For communities of over 50,000 population, current Federal regulations require that a metropolitan planning organization be designated to carry out transportation planning.

Many forms or patterns of urban area transportation planning organizations exist and others are possible. No single organizational structure will fit the needs of all urban areas. Your organization should be tailored to your community.



You have the responsibility to ensure that your planning team represents the entire community—the elderly, the handicapped, the disadvantaged, as well as the conservationists, environmentalists, social and recreational elements, etc.

Some urban transportation planning programs are highly structured with several formal committees. Others are more loosely structured to the point where the focus of the transportation planning program is centered on one or two persons.

Four categories of people participate in urban transportation planning—government decision-makers like you; technical staff of city, county, town and State government; citizens; and staff of officially designed transportation planning organizations. The role of each is outlined below.

Your Role

To give official status to transportation plans and recommendations, urban transportation planning should be recognized by both State and local government decisionmakers. Consistent with local and State laws, these officials should:

- Designate agencies or persons to carry out urban transportation planning responsibilities.
- Administer or delegate the administration of the urban planning program.
- Review and adopt the transportation planning program.
- Provide funding for the urban transportation planning program
- Adopt urban transportation policy, goals and objectives.
- Receive advice from citizens and technical staff on urban area transportation issues.
- Review and endorse plans, programs and other recommendations
- Inform the public well in advance of important transportation issues, policies and plans.

County supervisors, county executives, city councilmen, city managers, mayors, and town selectmen are appropriate representatives of the local governments. Each jurisdiction in your urban area should be represented.

The Role of Technical Advisers

The technical staff of urban area cities and counties, or of a regional planning agency, or of a separately designated transportation planning agency, or of any combination of the above are candidates to carry out the technical activities of the urban transportation planning program along with appropriate staff from the State highway agency. County engineers, traffic engineers, directors of public works, city engineers, town managers, directors of offices of comprehensive planning, and regional planning directors are among the city, county and town staff that have the background and experience for transportation planning.

City, county or town planning boards or other officially designated bodies that pass judgment on transportation or transportation-related problems

and issues should have a role in transportation planning activities.

The managers of the public transportation systems, whether they be private companies or public agencies, should also be called in for technical information and advice.

State technical advisers should include the State district or regional engineer or administrator and the State urban transportation planning director or their designated representative.

Advice should be sought from Federal agencies that administer Federal transportation grants.

Usually the transportation planning program can be carried out by engineers or planners already on the staff of local, city or county government or by engineers or planners on the staff of a regional planning agency. Technical assistance is also available from the State. Typically, an effective transportation planning program can be carried on with less than full time attention from one engineer or planner in urban areas of 25,000 population and from two to four engineers or planners in urban areas of 200,000 population.

The numbers of persons and the type of skills needed to carry out your transportation planning program is dependent on the complexity of transportation problems, the availability of transportation and transportation-related information, the availability of transportation planning funds and the availability of present technical staff.

Technical advisers should:

- Develop the transportation planning program with assistance from officials and designated citizen advisers.
- Carry out those portions of the transportation planning program not allocated to other agencies or to consultants.
- Coordinate the accomplishment of the transportation planning program.
- Develop reports of urban transportation planning progress.

Where it is deemed appropriate for these technical experts to be organized as a committee, it is usually termed Technical Advisory Committee.

The Role of Citizen Advisers

Citizens, as users of the urban transportation systems or as persons affected by urban transportation, should be included in urban transportation planning. Leaders of community or neighborhood associations, chambers of commerce, civic groups, women's clubs, large industries and others should be sought to act as urban transportation planning advisers.

Where it is deemed appropriate to establish a separate committee of citizens, it is usually termed Citizen's Advisory Committee.

Financing Transportation Planning

Depending on the complexity of your transportation problems and a number of other conditions and characteristics that are described in the companion document, *The Manager's Guide for Developing a Planning Program*, the urban transportation planning program will usually cost in the range of \$0.50 and \$1.25 per capita, based on 1980 costs.

Transportation planning funds are available from the State and Federal governments. Some Federal funds are made available directly to designated urban transportation planning agencies, and some are administered by the State highway department or department of transportation. State and Federal regulations specify in broad terms the use of State and Federal transportation planning funds. State and Federal officials can advise you on the amount, and intended use, of funds currently available to each urban area.



A relatively inexpensive solution to downtown congestion that might suit your community is fringe parking with protective shelters for public transit customers. Carpooling/vanpooling is another effective means, with cost benefits for everyone.

Federal transportation planning funds require matching funds. In some States, State funds are used as the matching requirement for Federal funds. In other States, local governments must contribute a portion of the money used to finance urban transportation planning.

One of the methods of providing local matching resources is to specify that certain urban transportation tasks be performed by engineers, planners and technicians on the staffs of urban area cities, counties, towns or regional planning agencies. Many of the urban transportation planning activities may not be new, but may be on-going, such as traffic counting, land use mapping and recording of traffic accidents. These activities may be included in the urban transportation planning program along with other activities deemed essential to meet the objective of solving your community's transportation problems.

Part or all of the State contribution is often the provision of specialized services that can be uniformly used by each urban area in the State. For example, the estimation of future traffic demand through the use of mathematical models is a transportation planning service that is provided to urban transportation planning programs by some State highway departments or State transportation departments. Check with officials in your State capital for details.

Summary

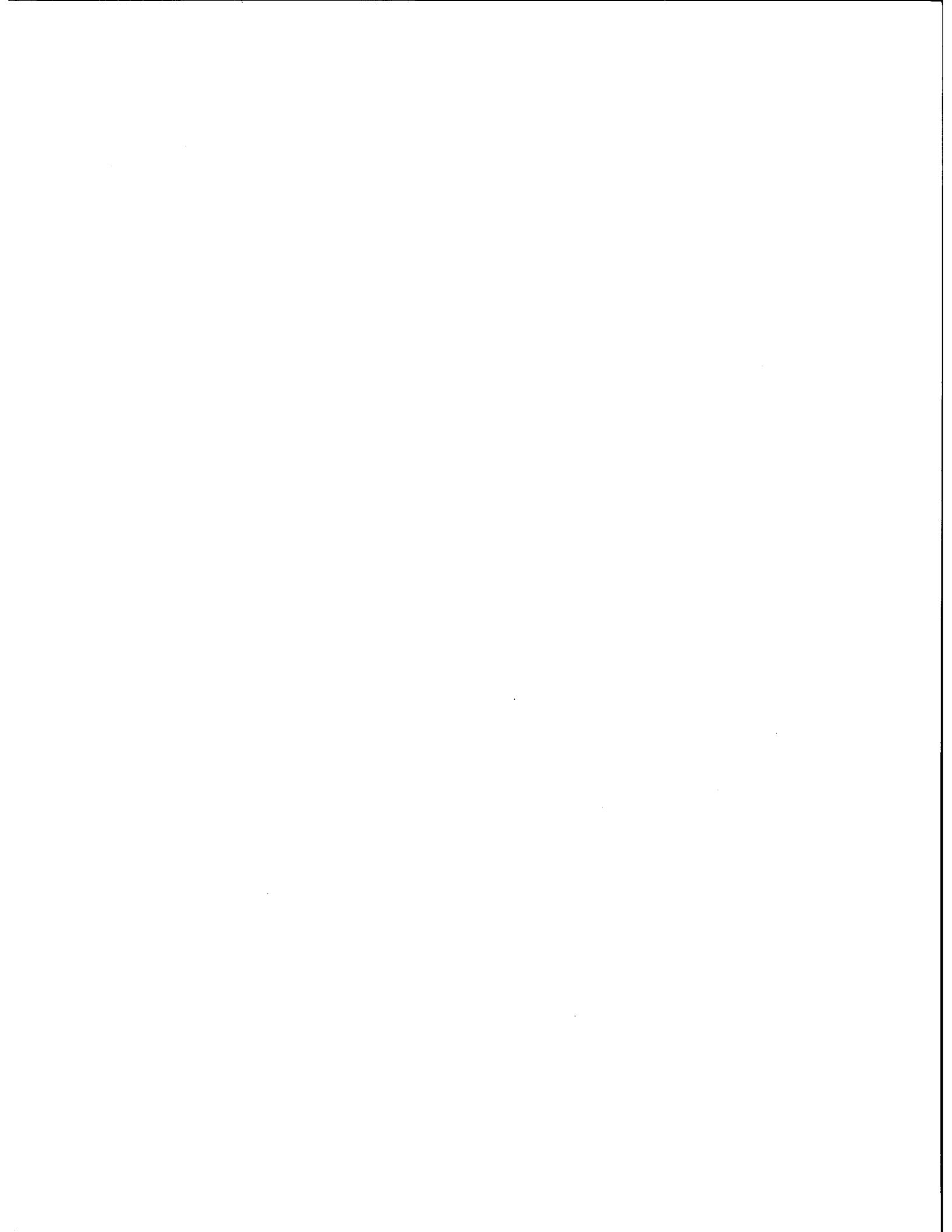
Urban transportation planning is becoming highly complex and must take into account not only the street and highway system itself, but public transportation, present and proposed land development, and the working and living patterns of

residents. While you need not be a transportation expert, you must provide the leadership which will seek out the help of those who are technically qualified. As a community leader, you must provide the systematic direction required to solve transportation problems or to prevent anticipated problems from reducing mobility.

The techniques for approaching transportation planning in small urban areas will vary from location to location—what works in one place may have to be modified to work in another. Nevertheless, the basic elements for urban transportation planning are well established and assistance is always available. Elected and appointed officials—the decisionmakers in the small urban area—have a major responsibility to the citizenry in vigorously managing transportation planning activities.



Transportation system management benefits your entire community. You the decisionmaker, must provide the leadership necessary for a healthy and prosperous community.



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