

Federal Highway Administration
*In Cooperation with the
Federal Transit Administration*

Planning for Transportation in Rural Areas



July 2001

Prepared by:
Dye Management Group, Inc.
500 108th Avenue NE, Suite 1700
Bellevue, WA 98004

Preface



The purpose of this document, *Planning for Transportation in Rural Areas*, is to provide a resource to rural planners, city and county engineers, stakeholders, local officials, and other decision-makers involved with developing rural transportation plans.

Rather than attempting to make this document a definitive step-by-step guide to rural transportation planning, it is intended to be a useful resource to those involved with rural planning.

The document is intended to contribute to a better understanding about:

- How “rural” is defined, the characteristics of the rural system, issues and trends impacting the rural system, and the benefits of a good rural transportation system.
- How various jurisdictional levels address rural transportation planning, major rural transportation planning challenges, and some lessons to be learned on how states are addressing these challenges.
- Questions to be answered before getting started on a rural plan, approaches for public consultation and environmental review, the basic components for rural transportation planning, and how to develop the plans.
- How transit system planning concepts, rural intelligent transportation systems, and access management can be used as additional tools for rural transportation planners.
- Successful rural transportation planning efforts from several states.

Throughout the document, references are provided for additional sources of information on rural planning approaches. In addition, Appendix D at the end of the document includes a list of World Wide Web resources, technical and policy references, and a glossary of transportation planning terms to assist rural transportation planners.

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I. Introduction



A. Background

Rural America relies on transportation services, both passenger and freight, to provide connections to the regional, national, and global economy. We commute to work, go shopping, run errands, visit family and friends, and go on vacation. To do this, we travel by automobile, airplane, train, boat, bus, bicycle, and on foot. Products and services also need to be delivered from place to place. Oil, machine and electronic components, agricultural products, special deliveries, and other goods arrive by truck, train, and airplane.

The quality of life and economy in rural America depends on an efficient, effective, comprehensive, and coordinated multimodal transportation system that provides choices for the movement of people and goods and allows quick transfers between modes when and where they are needed. The need to maintain transportation linkages between rural and urban areas is very important to the economy, public health and safety, and the social structure of rural America.

Effective rural transportation planning improves the multimodal and intermodal transportation system and helps to ensure that the quality of life and economy in rural America is maintained and enhanced. It does so by providing a strategic perspective on system investment over an extended period of time. Good rural transportation plans consider a wide range of investment, operational, and technology options that can meet the multimodal transportation needs of transportation system users. Most importantly, effective rural transportation planning provides the users and stakeholders of the transportation system with ample opportunity to participate in the planning process, thus ensuring maximum input into the desires, visions, and directions for transportation system investment.

B. Federal Rural Transportation Policy

In May of 1999, the United States Department of Transportation (USDOT) announced the Rural Transportation Initiative to ensure that rural areas and small communities share in the mobility, economic, and social benefits that many USDOT programs provide. The Initiative aims to increase the capacity of rural America to play a more integral role in the planning and decision-making that shape transportation systems. It also provides an array of technical assistance and grant programs to enable communities to plan, develop and improve air, surface, and water transportation infrastructure.

1. Rural Initiative Objectives

- Improve safety to reduce the human and material costs that are unintended consequences of the operation of the transportation systems in rural areas.
- Allow residents of rural areas and small communities access to the destinations and goods to attain their desired quality of life.
- Provide the transportation service that will afford rural areas and small communities the opportunity to reach their economic growth and trade potential.
- Enhance the social strength and cohesiveness of small communities and protect the natural environment of rural areas.
- Maintain the national security and border integrity necessary for the well being of all Americans.

2. Rural Initiative Outcomes

- **Safety** – Highway deaths and injuries decrease, rail-highway crossings are upgraded, roads are upgraded to reduce run-off-the-road incidents, and medical response time is shortened.
- **Travel** – Non-auto alternatives for those who cannot or choose not to drive increase and solutions are found to increase and support rural tourism.
- **Environment** – Rural air and water as well as culture, historic, scenic and natural resources are protected and transportation does not have an adverse affect on land use in rural areas and small communities.
- **Economic Activity** – Efficient transport of passengers and freight through rural areas and small communities allows these communities to compete on an equal footing for the business created by the provision of new and different transportation services.
- **Response to Demographic Changes** – Older residents' transportation needs are met and mobility choices to access jobs are assured.

3. USDOT Programs

USDOT programs can help address the safety, infrastructure, and other concerns outlined in the objectives of the Rural Initiative. Many of these programs are authorized through the Intermodal Surface Transportation Efficiency Act (ISTEA), the Transportation Equity Act for the 21st Century (TEA-21), and the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21). By passing these authorizing bills, Congress provided rural America with many tools to address its transportation system in a holistic manner.

The Rural Transportation Initiative is intended to be a first step – a beginning from which a transportation system can evolve which is better positioned to serve small communities and rural areas. It is also critically important that rural areas be involved in the state transportation planning process by which transportation investment decisions are made regarding public funds.

C. Document Structure

The document is organized into the following sections:

- I. **Introduction.** This section provides an overview of rural transportation planning and policy and outlines the structure for this document.
- II. **Our Rural Transportation System.** This section increases understanding about how “rural” is defined, the characteristics of the rural system, and the conditions and challenges addressed by rural transportation plans.
- III. **Responsibility for Rural Planning.** This section describes how various jurisdictional levels address rural transportation planning including roles, responsibilities, and alternative jurisdictional approaches.
- IV. **Successful Rural Transportation Planning.** This section provides an overview of issues to be resolved before starting the planning process, success factors and key elements to address, and public consultation and environmental review approaches.

Four appendices at the end of the document provide the following additional information and resources:

- Basic steps used to develop transportation plans, based on the statewide transportation planning process, as a guide for developing rural transportation plans.
- An introduction to rural intelligent transportation systems, access management, and transit system planning concepts as some additional rural transportation planning tools.
- Case study profiles of successful rural transportation planning efforts.
- A list of World Wide Web resources, technical and policy references, workshop status reports, and a glossary of transportation planning terms to assist rural transportation planning practitioners.

Throughout the document, references are provided for additional sources of information on rural planning approaches.

II. Our Rural Transportation System



This section increases understanding about how “rural” is defined, the characteristics of the rural system, and the conditions and challenges addressed by rural transportation plans.

A. What is “Rural”?

Rural America Comprises:

- 83 percent of the nation’s land.
 - 21 percent of its population (50 million people).
 - 18 percent of jobs, 14 percent of earnings.
 - 2,300 of approximately 3,000 counties.
-

In reality, the concept of “rural” cannot be narrowly defined. In fact, many definitions of rural exist. The way people think of rural largely depends on where they are from and where they live. While many people in New York City and Los Angeles consider anything outside a large metropolitan area as rural, residents of sparsely populated agricultural areas think of even small cities as urban. In practice, the U.S. Department of Transportation defines rural in two ways: first, for highway functional classification and outdoor advertising regulations, rural is considered anything outside of an area with a population of 5,000; second, for planning purposes, rural is considered to be areas outside of metropolitan areas 50,000 or greater in population. This definition leaves a lot of room for significant differences within these categories. Therefore, it is prudent to describe rural based upon what we see across the country. For the purposes of this document, “rural” is considered to be non-metropolitan areas outside the limits of any incorporated or unincorporated city, town, or village. Three general forms are described below.

Three Types of “Rural”:

- **Basic Rural** – dispersed counties or regions with few or no major population centers of 5,000 or more. Mainly characterized by agricultural and natural resource based economies, stable or declining populations, and “farm-to-market” localized transportation patterns.
 - **Developed Rural** – fundamentally dispersed counties or regions with one or more population center(s) of 5,000 or more. Economies in these areas tend to be mixed industrial and service based in the cities and agricultural and natural resource based in the rural areas. Populations tend to be stable or growing, and transportation more diverse (commuting intercity travel/freight, and other purposes).
 - **Urban Boundary Rural** – counties or regions that border metropolitan areas and are highly developed. Economic growth, population growth, and transportation are tied to the urban center. Many of these areas have experienced high levels of growth in recent years.
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1. Basic Rural



Basic rural is what we traditionally think of as “truly rural”. These areas are dispersed counties or regions with few or no major population centers of 5,000 or more. The economies of these areas tend to be predominately agricultural or natural resource based, and are characterized by typical “farm-to-market” localized rural transportation. Populations in *basic rural* areas tend to be stable or declining. Appalachia, the

central and northern plains states, and the Rocky Mountain states all have many vast regions that can be thought of as *basic rural*. These areas are typically interested in economic development and normally welcome transportation projects that may help stimulate growth. Tribal lands are generally basic rural in nature.

The fundamental issues facing *basic rural* areas are:

- Declining populations in many areas has reduced transportation funding for maintenance and preservation of the expansive system of roads and bridges.

- Funding new and/or upgraded roads outside the federal-aid system to support large-scale agricultural operations and tourist attractions is difficult.
- Rail branchline abandonment following rail mergers has reduced freight rail service.
- The public transit dependent segment of the population is small and it is costly to service this segment.

Planning needs in *basic rural* areas can be characterized as having less necessity for forecasting than other rural areas. These areas are generally most interested in preservation of existing transportation facilities and stimulating economic growth. Therefore, planning approaches for these areas should emphasize strategies that address these goals. *Basic rural* areas will typically have the least staff and least trained planning personnel to work with compared to other types of rural areas.

2. Developed Rural

Developed rural can be thought of as dispersed counties or regions with one or more population center(s) of 5,000 or more, and perhaps a metropolitan area(s) with 50,000 or more. There are developed urban areas in the county or region, but there is still a significant amount of the region that is *basic rural*. Economies in these areas tend to be mixed industrial and service based in the cities and agricultural and natural resource based in the rural



areas. Populations in *developed rural* areas tend to be stable or growing. Much of the Northeast, Southeast, and Midwest can be described this way. Transportation in these areas is more diverse than in *basic rural* areas, involving much more commuting, intercity travel, intercity freight, and other trip purposes. Some *developed rural* areas welcome growth and economic development, while others are interested in preserving the rural character of the area and are less interested in growth.

The fundamental issues facing *developed rural* areas are:

- Maintaining an effective regional system to enable access to regional service centers, farm-to-market, or ranch-to-market transportation.
- Funding is difficult to obtain for capacity improvements to roads off the federal-aid system even where traffic growth warrants improvements.
- Public transportation choices are often unavailable.

Planning needs in *developed rural* areas can be characterized as having an increased necessity for forecasting compared to *basic rural*. These areas are generally most interested maintaining an effective regional system and funding capacity improvements where traffic growth warrants them. *Developed rural* areas may be able to draw on staff resources and trained planning personnel from area cities and counties, and the state departments of transportation.

3. Urban Boundary Rural

Some areas can be described as *urban boundary rural*, which refers to rural areas that are located just beyond the fringe of large urban areas. We see these “ex-urban” areas as rural areas beyond the suburbs that are experiencing growth across America. Travel patterns and population growth in these regions are greatly affected by the



metropolitan area. Many of these areas are experiencing high rates of population growth from a low base in recent years, hence the impacts in terms of diminishing rural character and increasing

transportation system requirements is great. Transportation in these areas is completely diverse, with high levels of commuting and intermodal freight movements. Many *urban boundary rural* areas have members of their communities who oppose growth and wish to maintain rural character in these areas, while others wish to realize the economic benefits of their locations.

The fundamental issues facing *urban boundary rural* areas are:

- Areas must address the issue of supporting economic growth and development or attempting to limit growth to preserve the rural character of the area. In reality this usually involves a balanced approach between the two objectives.
- Traffic growth in many areas is making it difficult to keep up with maintenance and preservation on roads and bridges on and off the federal-aid system.
- Funding is difficult for capacity improvements to roads where traffic growth warrants improvements, especially for those roads outside the federal-aid system.
- Environmental concerns are increasing as “sprawl” pushes outward from urban areas.
- There is often a lack of funding for providing adequate public transportation choices to accommodate travel demand growth or job access.

Planning needs in *urban boundary rural* areas can be characterized as having high necessity for planning, forecasting, and growth management. These areas are generally most interested in balancing economic growth and development with preservation of rural character. Traffic growth and its impact on maintenance and preservation of facilities is of key importance in *urban boundary rural* areas, hence the importance of forecasting. Growth management is often an issue in areas experiencing the environmental impacts of “urban sprawl”. *Urban boundary rural* areas will typically have access to more and better-trained staff than other rural areas.

B. Characteristics of the Rural Transportation System

The rural transportation system is really a system of disparate parts. It is also very decentralized. Most roads are funded and maintained by different levels of government – cities, counties, states, and federal. While state and federal governments provide much of the capital funding for rural public transit in the United States, actual operations remain primarily a local responsibility. Rail rights-of-way are usually privately owned and maintained. Airports are usually owned by public or quasi-public organizations, but they also contain facilities that are owned by individual carriers. Both public and private organizations own terminals, stations, and other loading and interchange facilities.

Rural Geographic Challenges:

- Long distances between population centers.
 - Steep grades, mountain passes.
 - More dramatic weather events and effects on road conditions.
 - Dispersed system with high unit costs for service delivery, operations, and maintenance.
-

A transportation network functions properly when it helps form vital social and economic connections. This is especially true in rural America where distance and a scattered population make these connections even more important. Many rural areas are bridge areas between states or metropolitan centers. Rural transportation is essential not only for connecting people to jobs, health care, and family in a way that enhances their quality of life, but also for contributing to regional economic growth and development by connecting business to customers, goods to markets, and tourists to destinations. Commodities including timber, fuel, and agricultural products must be moved from rural areas where they are produced, to urban areas where they are consumed, processed, or sent out of the state or country. Ultimately, transportation is a rural community’s essential connection to the nation and the world.

When you consider the geographic scale and population diversity of the United States, citizens, businesses, and visitors alike have a high level of mobility. Rural America in general has access to an extensive transportation system that serves local, statewide, and national functions. A good rural transportation system provides many benefits to citizens, communities, and businesses including passenger mobility, freight mobility, intermodal connectivity, economic development, and transportation safety.



An interesting issue faced by transportation planners is that most transportation infrastructure is provided by government while the private sector supplies automobiles, trucks, airplanes, and rail cars in response to demand. Transportation planners must develop plans that are practical for the long term and try to ensure that the resulting system meets the needs of the private sector, which makes countless short-term business decisions. An example of this is the rail mergers in the 1990's, which will have dramatic long-term impacts on many rural areas. This is a case where business decisions by rail companies have resulted in the abandonment of many rural branchlines. The result has been loss of rail freight service to these areas and increased trucking on the rural road system to compensate for this loss. Increased trucking on rural roads ultimately increases road maintenance needs and reduces the financial capability of the rural area and state to keep the roads in adequate condition.

1. Rural Roads and Bridges

Rural Roads and Bridges:

- Rural roads comprise 80 percent of national road miles (3.1 million rural road miles).
 - Rural roads carry 40 percent of vehicle miles traveled.
 - Some 50 percent of rural roads are paved, 90 percent are 2-lane or less.
 - City and county governments are responsible for 95 percent of unpaved and 55 percent of paved roads.
 - There are over 450,000 rural bridges.
-

In general, the road system in rural America is well developed. In most rural areas, there is a well-established network of local roads, arterials, and county or state highways. These, along with interstate highways, provide for the movement of people

and goods. Many rural areas have experienced declines in population as people have migrated to urban centers to seek employment. In these cases, the rural area has been left with a mature road system that is a legacy from a time when there was a large rural population.

Rural roads, comprised of 3.1 million miles, account for 80 percent of national road miles and 40 percent of vehicle miles traveled. About 50 percent of rural roads are paved and 90 percent are two lanes or less. City and county governments are responsible for funding and maintaining 95 percent of rural unpaved roads and 55 percent of rural paved roads.

In many cases, rural transportation alternatives have declined in recent decades – placing more and more demands on rural roads as the predominant system. In many parts of rural America infrastructure has become increasingly inadequate to accommodate these demands, and the condition of facilities is suffering.

Approximately 40 percent of county roads are inadequate for current travel, and nearly half the rural bridges longer than 20 feet are currently structurally deficient.

The most significant issues facing rural roads and bridges are:

- A high percentage of county roads and bridges are deficient.
- Transportation safety is a concern on rural roads.
- There is a backlog of maintenance and preservation needs.
- Funding is limited for expansion/capacity improvements for local roads and bridges that are outside the federal-aid system.

2. Rural Freight System

Rural America's economy was built on a foundation provided by agriculture and natural resources. Today, service related businesses and tourism are becoming increasingly important. Demands for freight mobility in rural America are met by highway, rail, and air transportation, or a combination of these modes. Expanding trade and innovations such as just-in-time manufacturing often require the transport of goods by a combination of truck, ship, air, and rail modes in a short period of time. This places a great premium on a transportation system with a high level of intermodal connectivity. For this reason, transportation investments with the highest returns appear to be those that can produce what are called "network effects".

Network effects, as opposed to local improvements, raise the productivity of the system as a whole. Increases in network capability benefit everyone linked to the network, even those located at points far removed from the point where improvements are made. For example, a strawberry grower in California and a restaurant diner in New York may benefit from highway improvements in Nevada. Unfortunately,

network benefits are often overlooked when developing plans in favor of the site-specific and local benefits of new projects.

Highway Freight. Rural America's highway system plays an important role in the shipment of freight. The heaviest concentration of interstate or intrastate truck movement is along the interstate highway corridors. The vast majority of manufactured goods are shipped into and out of states by truck. Due to the flexibility and the door-to-door service provided, the highway and road network is vitally important for shipping freight. This is evidenced by the sheer size of the trucking industry in America.



Rail Freight. Rural areas depend on rail freight to transport heavy and bulky commodities such as lumber, wheat, coal, and heavy equipment. For heavy, large volume bulk commodities the cost of shipment is much less by rail. In addition, transport by rail reduces the damage to local rural roads that would take place if these commodities were hauled by truck. There are 19,660 miles of regional freight railroads and 27,550 miles of local freight railroads. Railroads move 40 percent of the nation's total intercity freight (measured in ton-miles), more than any other mode (trucks move 28 percent; water, 14 percent; pipelines, 18 percent). Railroads move 70 percent of the motor vehicles shipped from manufacturing sites, 65 percent of the nation's coal used to generate 56 percent of our electricity, and 40 percent of the nation's grain and farm products. Today, there are more than 500 railroad companies, many that could be called "small" railroads. Some are operations with a few miles of line and only a few full-time employees.

Air Freight. Air freight plays a significant economic role in rural areas. Air freight can connect rural freight shippers to major cities, and to domestic and international destinations. Although low volume, it has high value and has grown considerably in recent years. Air freight is increasingly important to the economy for shipping low weight high-value-added items. In addition, in a just-in-time economy with low inventories aviation plays a key role in the supply chain. Development in high technology industries is an example of where future growth can be anticipated to drive air freight growth.

Water Freight. Inland waterways, such as the Great Lakes, the St. Lawrence Seaway, inland rivers, and coastal waterways, are part of the rural transportation network. The first long distance system for moving goods and people, inland waterways remain a cheap alternative for moving heavy bulk commodities such as grain and iron ore. Forty-one states, 16 state capitals and all states east of the Mississippi River are served by commercially navigable waterways.

The most significant freight issues facing rural areas are:

- There has been large growth in the amount of freight transported by the various components of the rural freight system.
 - Since rail industry restructuring, the abandonment of many branch lines has led to a decline in rail service to many rural areas.
 - Large-scale agriculture and increased trade resulting from the North America Free Trade Agreement (NAFTA) has increased truck traffic on many deficient rural roads.
 - Rural freight needs emerge very rapidly due to changes in the economy. It is often difficult to respond to associated infrastructure needs rapidly.
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3. Rural Passenger Transportation

Public transportation includes all passenger transportation options available other than driving alone. This includes rural transit, demand responsive transit for the elderly and disabled, passenger rail, intercity bus, ferries, commercial scheduled air service, and car and van pooling. Passenger transportation in rural areas is provided by a variety of private sector, not-for-profit organizations, and various public agencies.

Intercity Bus. In the past, many rural communities were served by bus. Restructuring of the intercity bus transportation industry, combined with reductions in air fares and declining populations in many rural areas, has led to reductions in rural bus service. Intercity bus services are not subsidized and are not required to keep lines open if they are unprofitable. Therefore, many smaller communities have no bus service.

Today, there are approximately 4,500 communities with daily bus service compared to 23,000 communities in 1965. According to ridership surveys, intercity bus passengers tend to be lower income, female, minority, less educated and older than air and rail passengers. This decline has implications not only for passenger service, but also for essential freight services. In many rural communities intercity buses provide a scheduled daily package express service and, therefore, are a vital freight transportation link.

Public Transit. In rural areas, public transit services are provided primarily to transit dependent groups such as the elderly and disabled, however, there are some general public access services in rural areas across America. Public transit includes buses, commuter rail, demand response services (usually vans), light rail, and vanpools. This service is primarily local in nature and, largely, is not connected to the nation's passenger service network. In 1998, some 1,600 local agencies provided rural and

public transportation services using 10,000 vehicles, mostly buses or vans. However, some 38 percent of the nation's rural residents live in areas without any public transportation, and less than 10 percent of federal spending for public transportation goes to rural communities.

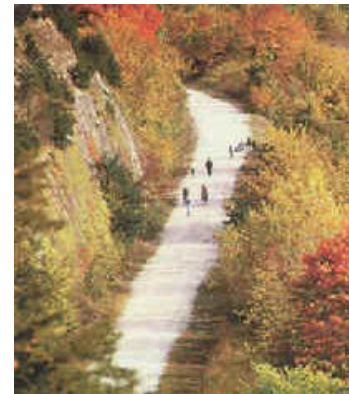


Passenger Rail. Passenger rail service is an option in some rural areas for longer trips. Currently, the only supplier is the federally subsidized, for-profit Amtrak. Amtrak's passenger rail network encompasses 24,000 miles stretched across 45 states, serving approximately 530 communities. Amtrak tends to concentrate on larger markets.

Although predominately serving urban centers throughout the Northeast, Midwest and West Coast, Amtrak also serves about 180 destinations in nonmetropolitan communities. Amtrak provides train service to approximately 10 percent of the communities that have intercity bus service. With the recent announcement of its new Acela Express service, Amtrak appears to be concentrating on high-speed service, which necessarily means less focus on service between small, rural intermediate points.

Commercial Scheduled Air Service. Rural populations depend on scheduled air service to conduct business, travel for medical reasons, take vacations, and visit family and friends. According to a comprehensive survey conducted by the Regional Airline Association, 71 million passengers boarded airplanes operated by regional airlines in 1998, representing an increase of 7 percent over the previous year. In total, regional carriers serve 95 percent of all the airports receiving commercial airline service in North America. Air service is seen by many as an important factor in attracting and retaining business in rural communities but the high cost of subsidizing such service limits its availability. At the time of deregulation, the Federal government retained Essential Air Service subsidy program. This subsidizes services to 26 communities in Alaska and 78 in the rest of the US in order to ensure that small, isolated rural communities have passenger air service.

Pedestrian Transportation. According to many experts, bicycling and walking are often the “forgotten modes” of transportation planning – especially in rural areas. The National Bicycling and Walking Study, finds that bicycle use is up 89 percent and walking is up 13 percent since 1990. Approximately 131 million Americans bike or walk for a variety of reasons, including transport to and from work, recreation, and other reasons. In more and more communities, pedestrian transportation is gaining importance from a



planning perspective. Many small rural communities were built with a main street and at a density in which walking is a very viable means of transportation.

The most significant issues facing the rural passenger transportation system are:

- There has been a significant decline in intercity bus service.
- Public transit in rural areas is limited and primarily local in nature.
- Passenger rail is available only along certain corridors.
- Commercial air service is expensive.
- Facilities and safety improvements for pedestrians can be costly to provide.

C. Conditions Addressed by Rural Transportation Plans

Although it is difficult to generalize, there are several trends occurring in rural America that will impact future rural transportation system needs and, therefore, need to be considered in rural planning efforts. These trends are divided into rural transportation system trends and social, demographic, and economic trends. A number of these trends are discussed below.

1. Rural Transportation System Trends

Rural Transportation Safety Concerns.

Rural transportation safety is a challenge that should be one of the highest priorities for those developing rural transportation plans. Rural America has significant highway safety needs. These arise as a result of long distances between population centers, deficient roads in many areas, and a combination of high vehicle speeds and/or mix of vehicle speeds. The fatality rate for rural areas (per 100 million vehicle miles of travel) is more than twice that of urban areas. This is due to a number of factors including speed, alcohol use, and accident response time and/or time to receive medical treatment.



Bicycling and walking are prevalent methods of transportation in some rural areas and they also constitute a safety problem. Thirty-five percent of bicyclists' fatalities occur in rural areas and, although fewer pedestrians are injured in rural areas than urban areas, they are more likely to result in fatalities because of the time it takes to get to the hospital. At-grade rail crossing crashes are also important safety issues in rural America.

Backlog of System Maintenance and Preservation Needs. While America's extensive interstate highway system and most state highways are in good condition, many rural jurisdictions are having difficulty keeping up with maintenance and preservation of local and county roads. Approximately 40 percent of county roads in rural America are inadequate for current travel, and nearly half the rural bridges longer than 20 feet are currently structurally deficient. Funding for low volume road maintenance and preservation is difficult for many rural areas, as there is often little state assistance. Most rural counties have a limited financial base from which to levy taxes to generate maintenance funding. In some cases, counties are reverting low-volume paved roads back to gravel to reduce maintenance costs. Additionally, in some cases, counties are opting not to take on maintenance responsibilities for new subdivisions.

Similarly, most states have an extensive network of general aviation (GA) airports. General aviation plays an important role in providing access and mobility to many parts of rural America. General aviation is important for search and rescue, medical emergencies, as well as for providing recreation and other economic benefits. Another rural planning issue relates to maintenance and preservation funding for general aviation. A historical lack of local funding for maintenance and preservation has led to a significant decline in GA airport pavements at many airports across the country.¹

Limited Funding for System Expansion. In addition to maintenance and preservation, some rural areas, particularly those located near large urban areas, are struggling to find funding for system expansion in places where traffic growth has outstripped the capacity of roadways. Given the high cost of expansion, these projects may have a difficult time competing against highways of state and national significance.

An increasing concern in many areas of the United States is road failure due to truck traffic. This is especially true for areas that have corridors bordering Canada and Mexico. Since the passing of NAFTA in 1994, truck traffic on some of these corridors has increased by as much as 80 percent. Most of these corridors are located in *basic rural* and *developed rural* areas and funding for new or upgraded roads in these areas is difficult.

Rural areas with growth needs, or where there are needs for expansion or major reconstruction (whether for new industries, large-scale agricultural facilities, or other needs), are having difficulty funding these projects. In many cases, these local projects have difficulty competing for state and/or federal funds against roads of statewide or national significance.

¹ The Aviation Investment and Reform Act for the 21st Century (AIR 21) is a new, major aviation legislation designed to increase the Small Airport Fund, guarantee funding for General Aviation Airports, and allow pavement maintenance projects to be funded under the Airport Improvement Program at non-primary airports.

Decline in Rail Service. The restructuring of the rail industry has led to the abandonment of many branch lines, which has cut off service to many rural areas. This is a significant planning issue for many rural areas that depend upon rail service. For example, rail branchline abandonment has led to grain elevator consolidation along mainlines in many areas which has also increased truck travel on rural roads to get wheat from farms to these facilities.

The restructuring of the rail industry has also meant that many smaller rail companies have taken over branchlines. Maintenance has lapsed on many of these branchlines since some small rail operators lack sufficient funds for adequate maintenance.

Environmental Issues. In rural areas environmental issues include preserving and protecting the natural, historic, scenic, and cultural environment, including productive rural working farmlands. Some rural areas on urban fringes are facing environmental challenges similar to those faced by cities – challenges that are the inevitable byproduct of growing travel demand and increased sprawl. Air quality is a particularly important issue for these areas. Improvements in air and water quality not only have positive environmental benefits, but also recreational and economic benefits as well, particularly for those areas largely dependent on tourism.

2. Social, Demographic and Economic Trends

The demand for transportation is known as a “derived demand”. This demand is derived from economic activity that is the result of peoples’ requirements to earn a living, enjoy leisure activities, and consume goods and services. The production, supply, and distribution of goods and services create the demand for freight movements. Thus, the social, demographic, and economic factors that create the demand for transportation will also determine the type of transportation system that will be necessary in the future. This means that these factors must be considered when developing rural transportation plans. Some of the major social, demographic, and economic trends that will affect rural transportation demand and, therefore, future rural transportation system needs are presented below.

Changes in Agriculture. Many rural economies were built on a foundation of agriculture, mining, and forest products. These “basic” industries are heavily dependent on a network of highways, railroads, and intermodal transfer facilities for exporting their products. They will continue to be major users of the existing transportation system. Preserving the existing network of highways, branch lines, and mainlines will be important for these industries.

There have been profound changes in the agricultural sector of rural economies. This has resulted in higher productivity, the use of larger and heavier machinery, and the consolidation of many activities. The industry has sought to realize economies of scale that have a large impact on transportation demands. For example, livestock production is changing and moving toward larger operations that seek to maximize economies of

scale. Some of these operations, such as hog pounds in the mid-west, are tremendous in size and have changed the typical “farm-to-market” requirements for rural transportation. Instead, these operations can create significant heavy truck traffic on rural roads and they tend to locate where rail service is also available – making them intermodal facilities.

Changes in Industry and Employment. One major economic change creating new and different demands on the rural transportation system is the growth of the service sector. Private service industries such as health care, recreational activities, legal services, and business/financial services are among the fastest growing sectors in many rural communities in America. Much of this growth is due to an aging and more affluent population, growth in health-related services, a growing demand for business support services, and most importantly, growth in tourism and recreation. Although the service industry is diverse, we can generalize and say that service industries generate relatively large numbers of trips. New service industries are more likely to use package delivery services, air transportation, and electronic media to support their day-to-day business activities.

Tourism and recreation are generating considerable new travel demands nationally and this growth is expected to continue over the next decade. The growth in tourism and recreational travel can also be linked to an aging and more affluent population. Of particular concern to rural transportation planners are key attractions, such as national or state parks, lakes, ski areas, etc. that generate high seasonal traffic. In these areas, special management strategies may become necessary for dealing with tourism-related travel demands.

Regional Population and Demographic Changes. Many rural communities in America have experienced population declines in the past decade. This is especially true for midsize rural communities in the 3,000 to 7,000 population range. Some of the trends in these communities include:

- *Migration to urban centers.* The United States has seen significant growth taking place in urban centers and this growth is expected to continue for the foreseeable future, driven by strong economic conditions and corresponding employment opportunities.
- *Services shifted to large centers.* Many midsize communities have lost local services such as shopping and entertainment to larger centers that can support large stores and large theater complexes.
- *People driving longer distances.* The trend toward location of services in larger centers has meant that people in midsize rural communities are having to drive more. This has led many to move to larger centers where services are readily accessible.

Many midsize rural communities have experienced an aging population since it is mostly younger people moving to urban centers to take advantage of employment opportunities. Declining rural population has led to a situation where many of these areas would welcome growth and economic development. These areas are generally supportive of transportation improvement projects, which potentially help foster area economic growth.

Some rural areas are experiencing limited growth based on people choosing a lifestyle alternative from urban centers. Improvements in telecommunications are a factor in this growth, allowing people to locate away from urban areas while still conducting business with them. Indications are that this lifestyle choice could become more popular in the future.

Economic Development Issues. The need to maintain linkages between rural and urban areas is very important to the economy, public health and safety, and the social structure of the country. Activities such as building new roads, widening existing roads, putting in new interchanges, or constructing bridges can result in various benefits for rural areas. These benefits include improved access to services and jobs for rural residents, better access to customers for businesses, and reduced transportation costs. Other potential benefits include reductions in travel time for motorists, lower vehicle operating costs, safety and environmental gains, and cost savings for local consumers as goods and services become more competitively priced. If an improved transportation network leads to growth for an area's economic base, it may also bring higher wages for workers and greater net income for owners of local businesses.

Another important economic development issue for many parts of rural America is supporting tourism development. The rural transportation system plays a central role in each state's tourism industry, connecting visitors to urban areas and to key attractions, including state and national parks. Tourism and the service industry are becoming increasingly important to many rural areas – and this trend is forecast to continue in the future. This is especially true for areas that have parks, attractions, and natural scenic environments. Also, “value-added” tourism such as outfitting, hunting and fishing tours, and “eco-tourism” is becoming increasingly popular. These types of activities generate significant local economic benefits.

Currently, some areas that are experiencing urban sprawl spillover are not in favor of transportation improvements because they want to control growth and to maintain the character of the area. Meanwhile, a great number of communities that have lost population due to migration to urban centers promote transportation improvements and the corresponding economic development benefits. Along with the local economic benefits of transportation improvements, it is important to keep in mind the interregional and international trade benefits that can occur through the network effects of the improvement.

Investing in transportation may entail development risks. Road construction projects or highway improvements may actually harm some areas if new investment diverts activity from an existing corridor within the region. Some areas may also be harmed as transportation system development results in “sprawl” in some previously undeveloped rural areas. And because transportation projects often include a variety of unknown or unexpected costs, underdeveloped regions that lack adequate financial resources may be particularly vulnerable to cost overruns.

Welfare Reform. Providing transportation options for low-income citizens is important for the success of welfare reform in rural areas. Rural areas face many unique challenges in meeting the work requirements under the welfare legislation passed in 1996. Unlike urban areas, there are often fewer jobs available in rural areas, and there may be greater distance between job sites. Many individuals have to drive “into town” or to the closest population center to find employment. Low population size and low population density can make it difficult to provide services locally, such as job training, child care, and skills classes that are essential to making the transition from welfare to work. Transportation to these services will also be critical for successfully transitioning individuals away from public assistance. Many states, especially in the Southeast, have been implementing a variety of programs to help welfare recipients get transportation to work. These include alternatives such as ride sharing and public transportation vouchers.

D. Challenges for Rural Transportation Planning

The objectives for rural transportation planning are to answer the following questions where are we now, where do we want to go, what will guide us, and how will we get there? *Where we are now* concerns trends and conditions relating to population characteristics, demographics, and the transportation system. *Where we want to go* involves major issues, public outreach results, obstacles, and opportunities. *What will guide us* is the mission statement, goals, and long-range objectives. Finally, *how we will get there* concerns revenue estimates, program and resource plans, and implementation steps.

1. Considerations for Rural Transportation Planners

There are several important considerations to be addressed when developing rural transportation plans. These include:

Planning for the Multimodal System. Rural planning needs to maintain a system-wide perspective at the local, regional and statewide levels. Many times when local and regional agencies perform planning, there is a natural tendency to focus on projects in the local area that address local concerns and technical needs. Many plans have a tendency to be project lists. Instead, plans should take a long term strategic perspective and reflect local, regional, statewide, and national priorities. How a

particular improvement fits into the local, regional and statewide system is a key planning question. A good rural plan will address this.

Coordination of Transportation Plans. One of the most important issues for rural planning is the coordination of the transportation plans created by different levels of government. It is critical for successful rural planning that all plans are coordinated. This means that, to the extent possible, policies and technical analysis should be consistent and comparable.

Coordination with Land Use and Development Process. There is growing local interest in the coordination between transportation and land use planning. However, in most rural areas there is very little land use planning with which to coordinate. While most local governments have local comprehensive plans, many of these do not have a transportation element. However, rural planners should determine how best to coordinate with the development review process and other land use decisions that affect transportation, such as incorporated area boundaries and subdivisions review, among others.

Ensuring Adequate Resources to Perform Transportation Planning. A common issue amongst many local and regional agencies performing rural transportation planning is a lack of technical expertise to perform planning. These agencies often “borrow” staff from the state DOT. These agencies are not always clear about how much technical expertise is required to do the planning. Documents such as this one are helpful with the process, however the state DOT planning practitioners often provide specific guidelines and data for technical analysis such as forecasts, pavement condition analysis, traffic and accident statistics, project evaluation criteria, and so on. Many states also have handbooks for such purposes.

2. Rural Planning Challenges

The FHWA conducted 10 rural transportation planning workshops involving 47 states in 1999. These workshops provided perspective on how different states are addressing rural planning challenges. These include mechanisms used by states to identify needs, develop plans, and program projects in rural areas within the context of the statewide, regional, county, and local planning processes. Exhibit II-1 summarizes the general conclusions, based on the FHWA workshops, which can be drawn regarding the challenges that face rural transportation planners.

Exhibit II-1: Challenges for Rural Transportation Planning

Challenge	Findings
Making Plans Multimodal	<ul style="list-style-type: none"> • Planning for different modes of transportation may be fragmented. • Rural transit plans appear to be mainly focused on keeping the existing system operational.² • Efforts to develop multimodal and intermodal plans are hampered by a variety of factors, including the lack of funding flexibility, the lack of a need to coordinate the plans, and the fact that different modes have different sponsors.
Planning and Prioritization	<ul style="list-style-type: none"> • In many instances, the plan is the program. • The process for generating projects at the local and regional levels may be different depending on whether the project is eligible for Federal aid or not. • Much of rural planning involves extensive coordination with local officials, agencies, and other stakeholders.
Funding the Rural Transportation System	<ul style="list-style-type: none"> • States' funding and maintenance responsibilities vary widely. • States vary in how the non federal match is provided. • Most states share their Federal aid with local governments. • Some states using a regional approach suballocate some or all of their funds to the regions and then allow each region to actually select their own projects.
Coordinating Transportation Plans and Programs	<p>Successful rural transportation planning processes:</p> <ul style="list-style-type: none"> • Establish a periodic process of meeting with planning counterparts to exchange information. • Using each plan as input into the development of other plans. • Develop a shared and consistent data collection and analysis strategy. • Develop a common set of assumptions for socioeconomic and demographic forecasts. • Establish common measurement and evaluation criteria for system and project selection.
Coordination with Economic Development	<p>Typically, economic development affects rural transportation planning in two ways:</p> <ul style="list-style-type: none"> • Efforts to upgrade interregional highways (usually four lane divided highways or freeways) with the hope that they will induce business to relocate. • Efforts to accommodate a specific new plan proposal.

² However, Kentucky actually conducted an analysis of transit operations and found many of the existing systems to be fragmented, underutilized and uncoordinated. As a result, the Governor required four separately funded transit program initiatives to be consolidated under the Transportation Cabinet instead of being administered by four separate state agencies.

Challenge	Findings
Land Use Coordination³	<p>The main land use trends facing rural areas that planning is addressing can be grouped into three categories:</p> <ul style="list-style-type: none"> • Those rural areas that are experiencing urban spillover. • Those areas that are not experiencing growth and are interested in economic development issues. • Accommodating travel demands of new development.
Regional Planning	<ul style="list-style-type: none"> • States that use Regional Planning Organizations (RPOs) are generally satisfied with them. • RPOs can be an effective mechanism for coordinating with Metropolitan Planning Organization (MPO) and statewide planning processes and plans. • For states that have instituted a regional approach to developing their transportation plans, the key element is what portion of the overall planning process is conducted regionally and what portion centrally. • Some states may use a regional approach but focus mainly on individual counties rather than regions (several counties). • Where RPOs are engaged in transportation planning, the staffing may be relatively independent from the state DOT, or may operate under contract to the state DOT. • The role of an RPO may also vary. Some are advisory while others have control over some of the transportation funds. • At the regional level, each agency may have different geographic boundaries.

³ As a positive example, Lancaster County in Pennsylvania contains some of the most pristine prime farmlands in the nation. In order to help manage and steer development properly, including public infrastructure investments, Lancaster County has established "growth boundaries". Moreover, Lancaster County is attempting to use the transportation project development process as a vehicle to link compatible land use solutions to the proposed project. Lancaster County has recommended commitment resolutions from most of the local governments to ensure land use compatibility in the future, as the proposed county-wide project evolves toward construction. More information is available at the Lancaster County website: <http://www.co.lancaster.pa.us/planning.htm>

III. Responsibility for Rural Planning



This section describes how various jurisdictional levels address rural transportation planning including roles, responsibilities, and alternative jurisdictional approaches. The Transportation Efficiency Act for the 21st Century planning factors are also presented.

A. Areas of Responsibility

Rural transportation planning is undertaken by small towns and cities, counties, regional planning organizations (RPOs), and state DOTs. There is considerable variation between different states since they have different laws and jurisdictional structures. For example, in some states such as Alabama or Mississippi the county engineer plays a very direct role, stated in law, in rural planning and project needs identification. In other states there are regional planning organizations made up of a number of counties that prepare regional plans and identify project priorities for their region. In general, the agency that has jurisdiction over the area transportation system takes the lead in developing transportation needs, plans, and programs. However, this varies due to the fact that state and federal programs fund many projects that are not under the jurisdiction of the state. In the case of these projects, the state DOT often has a partnership role, if not lead role, in planning.

There are four general areas of responsibility for rural transportation planning. They are as follows:

- **Coordination and public involvement.** Coordination and public involvement involves seeking input at key decision points in the process and allowing for public and local official participation to determine transportation issues and solutions.
- **Planning.** Planning sets objectives for the future transportation system and specifies the “planned” transportation system. Planning is performed at the city, county, regional, and statewide levels. Each one of these levels of plans cuts across the rural system.
- **Programming.** Programming prioritizes projects and sets budgets. Programming is also done at the city, county, regional, and statewide levels, and each level addresses the rural system.
- **Funding.** Funding is provided from different levels. Cities, counties, and regions have localized funding sources for rural transportation projects that are off the federal-aid⁴ system. These include property taxes and state funding programs. Rural needs are also funded through the federal-aid system and are thus reflected in the statewide plan.

⁴ The federal-aid system is defined by projects either partially or fully eligible for public funds. Federal-aid funding is often contingent upon local or state matching funds.

How these four areas of coordination and public involvement planning, programming, and funding are navigated in developing rural transportation plans is different in most every state. In general, the following holds true for areas of responsibility for rural transportation planning:

- State DOTs conduct statewide long range planning. This usually includes modal plans, policy plans, and statewide system level needs assessments.
- The statewide planning process addresses needs/programming for rural transportation projects on the federal-aid system. This process develops a statewide transportation improvement program (STIP).
- At the corridor and regional/subarea levels cities, counties, and RPOs develop area capital improvement programs (CIPs) or transportation improvement programs (TIPs) for projects both on and off the state and federal-aid system.
- The process through which rural transportation needs (as developed in corridor and regional/subarea level CIPs and TIPs) are identified and prioritized as part of statewide needs varies.

Geographic scale is an important consideration for transportation planning. Local and regional agencies tend to plan for smaller, more localized projects, while the state DOT usually takes a system-wide approach. The system-wide approach often, but not always, generates projects of a larger magnitude than those developed through local and regional plans. While the extent of planning varies between small cities, counties, urban areas, regions, and the state, all of these jurisdictions develop transportation capital improvement programs of one form or another. In most small cities and counties, transportation projects are a component of the local capital improvement programs (CIP), while MPOs, RPOs, and the state DOT, through a cooperative process, produce a regional and statewide transportation improvement program.

B. Jurisdictional Approaches

The identification of rural transportation plans, needs and projects takes place at different levels. Where rural transportation needs are addressed in the hierarchy of statewide and subarea plans differs between states for many reasons. These reasons have to do with state law, geography, economy, population density, level of urbanization, and institutional roles. In general, there are three (3) different approaches to planning for rural areas. States often have different approaches for different modes.

Three Types of Rural Transportation Planning:

- ***State-led planning approach*** – rural transportation planning, project prioritization, and funding is led primarily by the state DOT.
 - ***Local- or regional-led planning approach*** – rural transportation planning, project prioritization, and funding is undertaken primarily by local and/or regional planning agencies.
 - ***Combination or mixed planning approach*** –the state DOT leads planning for certain systems or categories of funding, and regional or local agencies conduct transportation planning, project prioritization, and allocate certain categories of funds.
-

1. State-led Planning Approach

Under a *state-led* approach, rural transportation planning, project prioritization, and funding for state and/or federally funded projects is undertaken through a process led by the state DOT. The state DOT, through its region or district engineers, determines statewide rural project needs, develops transportation plans, and determines priorities and funding for state and/or federally funded rural transportation projects.

Under this approach, region or district engineers consult with city and county agencies or regional planning organizations and government officials to determine the needs and priorities for these jurisdictions. The planning process then makes trade-offs amongst the different projects from the jurisdictions to determine plan needs and project priorities.

This process often involves very direct public involvement from local agencies regarding their project priorities. The DOT often becomes involved in public consultation during the project development phase, especially where the project is sufficiently complex to warrant it.

The statewide planning process often provides the basis for making funding allocations between urban and rural areas and between different categories of roads. Ideally, these allocations are policy-driven and structured to target funds on meeting statewide and local objectives. However, funding is often prescribed by state laws to suballocations to systems and geographic areas.

<i>Strengths:</i>	<i>Weaknesses:</i>
<ul style="list-style-type: none"> • It is clear who has responsibility for developing the Statewide Long Range Transportation Plan and the STIP. • State DOT can ensure that a statewide multimodal systems approach is maintained for the state (state system, transit and other modes, corridors, National Highway System). • State DOT generally has sufficient trained staff to do planning. 	<ul style="list-style-type: none"> • Often prioritization process is unclear for local and county projects – can be a • Local priorities can get lost in the process. • Local projects may not compete well against the state system.

2. Local- or Regional-led Planning Approach

Under a *local- or regional-led planning approach*, rural transportation planning, project prioritization, and funding for state and/or federally funded projects is undertaken through a process led by local municipalities, counties, and/or RPOs with the state at the table as a key stakeholder. Rural project needs and priorities are developed in regional plans. The local/regional plans are then used to build up the statewide plan and the STIP.

Under this approach the state DOT interfaces with the local and regional agencies to develop the long-range plan and the STIP. Public involvement for developing local and county project priorities is undertaken by the local and county jurisdictions under the local- or regional-led planning approach.

Funding allocations for state and/or federally funded projects are still generally made by state DOT headquarters under the local- or regional-led planning structure but the local/regional agencies have input or authority over how the funds are used in their jurisdictions.

<i>Strengths:</i>	<i>Weaknesses:</i>
<ul style="list-style-type: none"> • Local and regional priorities get reflected in the local and regional plans. • Local and regional agencies have a good understanding of their project needs. • In states with many counties, regional plans provide an efficient mechanism for state/local consultation. 	<ul style="list-style-type: none"> • Plans tend to focus on local and regional needs and may lose sight of overall system needs. • Transit and other modes may be centralized. • Local priorities can still get lost in the statewide plan and STIP produced by the state DOT.

3. Combination or Mixed Planning Approach

In reality, most states have some combination or mixed approach to rural transportation planning. Of course, there is a continuum of mixed approaches between the state-led and the local- or regional-led approaches. Generally under a combination approach the state DOT takes at a minimum a policy setting role, while local/regional agencies have varying degrees of control over planning, prioritization and allocation of transportation funds to specific projects.

There are differences in how project needs are identified according to the jurisdictional structure of a state. In states where there are RPOs, the state DOT might coordinate with the RPO, and the RPO with the counties and municipalities to consolidate and prioritize needs. Where RPOs do not exist, the state will generally have some sort of process for working with counties and municipalities to identify and prioritize needs to develop statewide plans.

Funding allocations under a combination planning approach will likely be made by the state DOT and, again, there will be differences in how this takes place depending on the jurisdictional and institutional structure of the state. For example, funding allocations may be made based on lane miles, population, other measures of need, geographic suballocation, political priorities, or some combination of these.

<i>Strengths:</i>	<i>Weaknesses:</i>
<ul style="list-style-type: none"> • If structured well, can provide both local/regional and overall statewide systems perspective. • Can allow state DOT to perform a policy setting and technical guidance role. 	<ul style="list-style-type: none"> • What portion of the plan will be developed regionally and what portion centrally may not be well defined.

C. Statewide Planning Roles

Decisions made in the planning process determine the extent and level of detail of planning that will take place at the rural corridor and rural subarea levels, who will do the planning, and how rural transportation needs will be coordinated across the statewide, corridor, regional, and local levels. Exhibit III-1 shows the different levels through which transportation planning addresses rural areas.

1. Statewide Planning Role

Statewide transportation planning includes rural and urban areas, and includes the state system and federal-aid system. The passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991 for the first time required that statewide multimodal transportation planning occur as part of the federally supported

transportation program. Specifically, states must prepare a multimodal long range plan and a short range transportation improvement program. Multimodal planning includes efforts to improve all components of a state's transportation system, including airports, transit facilities and services, intercity passenger and freight rail, ports, and inland water navigation. Congress reaffirmed this characteristic of statewide transportation planning when it passed the Transportation Efficiency Act for the 21st Century (TEA-21) in 1998.

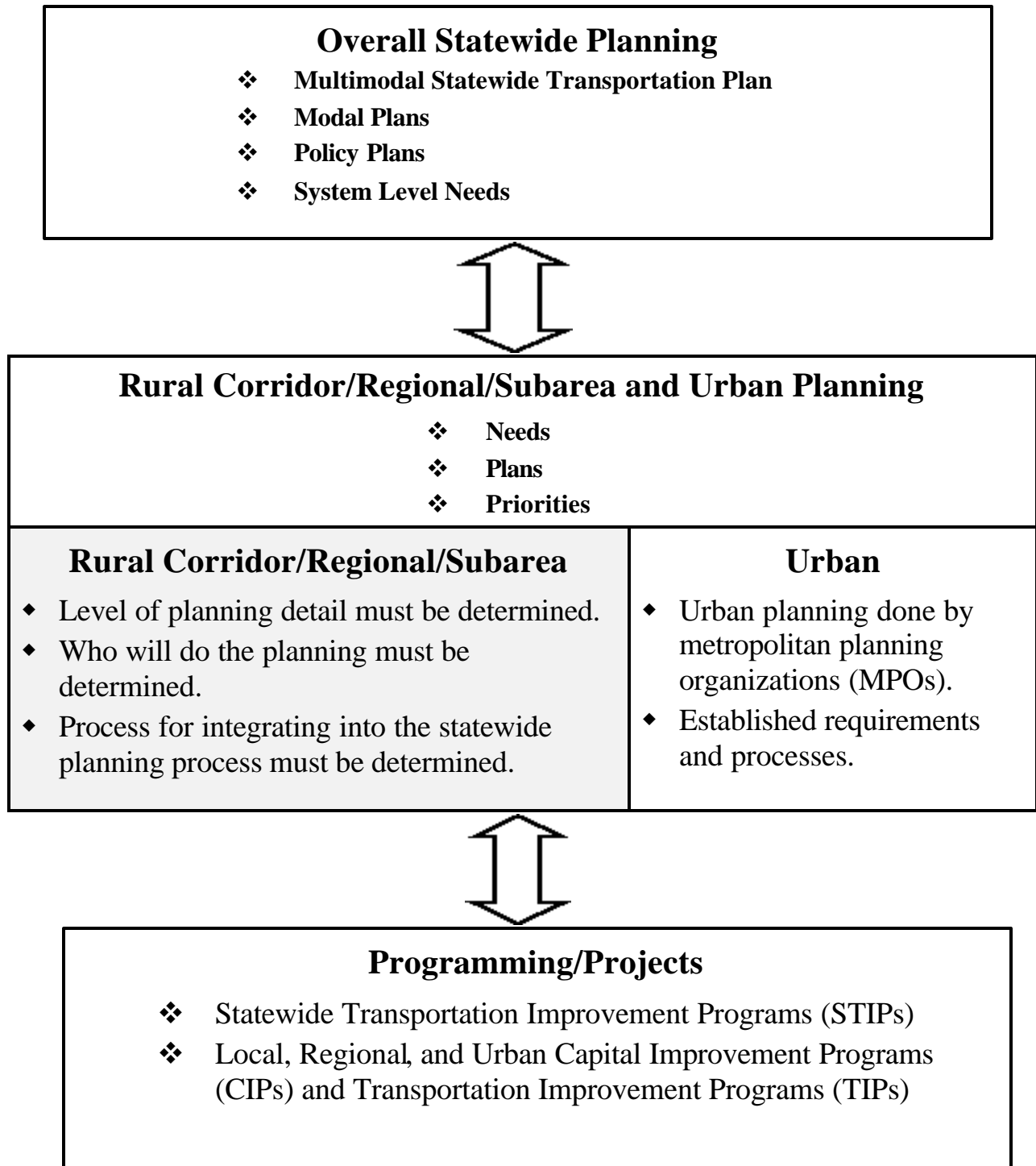
Statewide transportation planning is the process of answering very basic questions about the future transportation system and what society wants for this future. This includes, at the statewide level, consideration of the rural system. A major product of statewide multimodal transportation planning is information to decision makers, stakeholders, transportation system customers, and the general public on the transportation and societal consequences of proposed actions (or inaction). There are different types of plans produced by the statewide transportation planning process.

Statewide transportation planning concerns not only state-operated transportation facilities, but also a variety of transportation issues that occur at the regional or local levels.

Policy plans – these plans provide a policy framework to guide transportation planning and decision-making. These policies should address rural transportation issues.

Action plans – these plans recommend action steps that will be undertaken to implement policies and goals. The action plan will describe the course of action for addressing the rural issues.

Exhibit III-1: Transportation Planning Jurisdictional Roles



Corridor plans – these plans identify investment strategies at a macro-corridor level where the corridors are identified as being of statewide significance. These plans are usually a collaborative process and they often go through rural areas. They vary in their level of detail, but many specify the “level of development”.

Systems plans – These plans provide a statewide systems perspective on the problems and opportunities associated with the transportation system. They develop an assessment of needs that are primarily associated with the condition of the transportation infrastructure. This approach focuses on the interrelationships among the different components of the system. System planning can provide a quantification of rural needs.

Modal plans – these plans are often components of the system plan and focus on long term needs, policies, and finance for individual modes (highway, rail, air, transit, etc.). These modal plans should address rural issues.

Project plans – these plans identify and evaluate specific projects that have been determined to have statewide significance.

Statewide Plan Documents: The statewide planning process sets statewide transportation policy and usually provides high level direction for the type, magnitude, and timeframe of improvements that will preserve and/or enhance the state’s transportation system. The planning documents produced cover at least a twenty-year horizon and are statewide in scope so that system connectivity is achieved. The statewide process usually:

- Focuses on those issues and system characteristics that are of state concern such as, the state’s designated National Highway System.
- Considers all modal components of a state’s transportation system that could affect the performance of the system identified as of state concern.
- Is intermodal in that consideration is given to elements of and connections between different modes of transportation.
- Describes the availability of financial and other resources needed to implement the plan.
- Is coordinated and integrated with regional and metropolitan transportation plans.

The statewide planning process aims to reflect the needs and desires of a wide variety of stakeholders and transportation system customers. Through comprehensive public involvement efforts, those most affected by the performance of the transportation system, along with those who provide transportation services, are given numerous opportunities to contribute to the development of the plan.

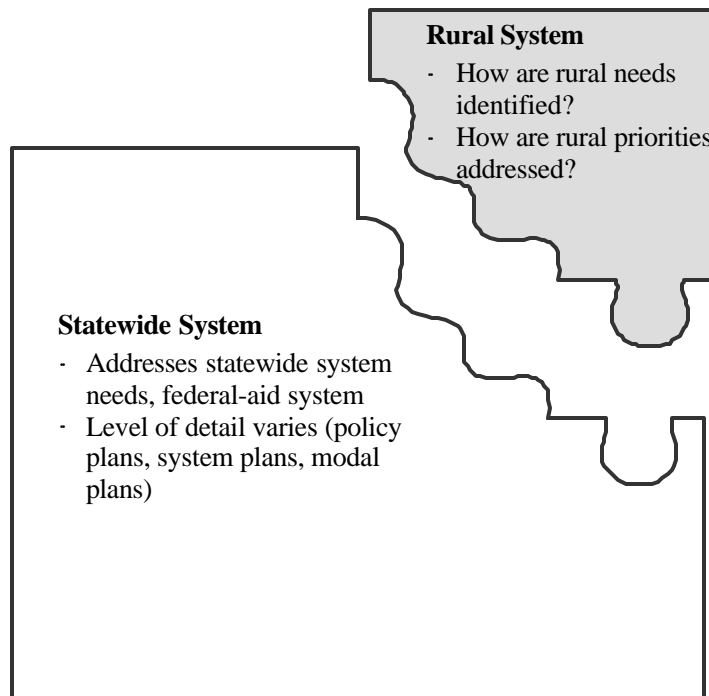
Statewide Transportation Improvement Program: States in cooperation with other units of government produce the *Statewide Transportation Improvement Program*

(STIP) that describes those projects that will be implemented over (at least) the following three years. The STIP includes all capital and noncapital projects or phases of transportation project development that will use federal transportation dollars. In addition, the STIP must include all regionally significant transportation projects requiring federal approval or permits, even if no federal dollars are to be used in the construction.

The type of information provided for each project in the STIP includes project description, estimated cost, federal funds for each year, category of federal funds and source of nonfederal funds for year one, likely sources of funding beyond year one, and responsible agency for project implementation. Importantly, the STIP must be financially constrained to available revenues for each year found in the document. This means that information should be provided on which projects will be implemented using available revenues and which are to be implemented using proposed new revenues.

Rural Improvement: The main issue around statewide planning from a rural perspective is how are rural needs addressed as part of the process, as shown in Exhibit III-2. Rural needs generally make their way into the Statewide Long Range Transportation Plan and STIP from corridor and regional/subarea plans developed in rural areas. The process through which it happens varies from state to state.

Exhibit III-2: Rural Needs as Part of the Statewide System



2. Role of Corridor and Regional/Subarea Plans

Rural transportation needs are often identified through corridor and region/subarea plans developed in rural areas. Statewide needs analyses that address rural areas are often drawn from these rural area plans. Regional/subarea plans include those developed by small cities and towns, counties, councils of government, or Regional Planning Organizations (RPOs). At the corridor and regional/subarea levels, cities, counties, and RPOs develop area capital improvement programs (CIPs) or transportation improvement programs (TIPs) for projects both on and off the state and federal-aid system. Projects geared toward the state and federal-aid system are often the ones which the rural area wishes to be considered for the statewide plan and STIP. Often, projects off the state and federal-aid system are funded by a variety of revenue sources in different states. Those include local general funds, sales taxes and transfers from the state for local transportation projects.

The main jurisdictional issues for corridor and regional/subarea plans are:

- Determination of the level of detail for the plans.
- Determination of whom will do the planning.
- Development of a process for integrating with other elements of the statewide planning process.
- Identifying funding sources for program implementation.

D. TEA-21 Planning Factors

The statewide planning process must comply with the federal law governing statewide planning. Section 1204 of the Transportation Efficiency Act for the 21st Century (TEA-21) provides the planning factors to be used in the development of statewide transportation plans. Understanding these planning factors and incorporating them to the extent possible in rural areas will ensure that rural transportation plans will integrate with and enhance the development of statewide plans. The TEA-21 planning factors are as follows:

(a) Each statewide transportation planning process shall provide for consideration of projects and strategies that will:

- 1. Support the economic vitality of the United States, the States, and metropolitan areas, especially by enabling global competitiveness, productivity and efficiency;*
- 2. Increase the safety and security of the transportation system for motorized and nonmotorized users;*

3. *Increase the accessibility and mobility options available to people and for freight;*
4. *Protect and enhance the environment, promote energy conservation, and improve quality of life;*
5. *Enhance the integration and connectivity of the transportation system, across and between modes throughout the State, for people and freight;*
6. *Promote efficient system management and operation; and*
7. *Emphasize the preservation of the existing transportation system.*

(b) In addition, in carrying out statewide transportation planning, the State shall consider, at a minimum, the following other factors and issues that the planning process participants might identify which are important considerations within the statewide transportation planning process:

1. *With respect to nonmetropolitan areas, the concerns of local elected officials representing units of general purpose local government; and*
2. *The concerns of Indian Tribal Governments and Federal land management agencies that have jurisdiction over land within the boundaries of the state.*

These requirements are addressed through a variety of planning approaches and processes in different states.

IV. Successful Rural Transportation Planning



This section provides an overview of issues to be resolved before starting the planning process, success factors and key elements to address for rural transportation plans, and approaches for public consultation and environmental review.

A. Getting Started...Questions to Answer First

Prior to preparing a rural transportation plan, decision-makers should be aware of the time, staff, budget, and other items that will be needed during the process. Preparing the transportation plan is a major undertaking. The best transportation plans will be the result of considerable effort during the preparation process. Extensive planning and thought will also be needed to successfully implement the process.

The answers to the questions listed below will help design your transportation planning process. Before beginning, decision-makers and staff should address the issues raised in each question. Planning for and addressing these questions will help ensure that adequate time and resources have been dedicated to the rural transportation planning effort.

- **How much of your staff will be available to work on the transportation plan?** What will their role(s) be in the project? What types of experience have they had with transportation planning? How knowledgeable are they about environmental regulations? If little is known about transportation planning and environmental regulations, staff may need training.
- **What are the capacities of your community's public works/traffic engineering departments?** How experienced or ready are they to engage in planning. Perhaps outside assistance will be required to provide some of these services.
- **How much budget has your jurisdiction allocated for preparing the transportation plan?** Will your community have additional funds available if needed to complete the plan? Public participation will be constrained by budget. Identifying budget amounts will help you select from the various types of public involvement. Schedule activities to allow enough time for public participants to complete their tasks.

B. Success Factors

The rural transportation planning process involves formalizing a decision-making structure to make informed choices that will ensure the best possible rural transportation system in the future, given available resources. The planning process will specify what the “best

Below are key success factors to strive for when developing a rural transportation plan. A rural transportation plan should:

- Set the overall transportation direction for the rural area and define the transportation future/vision to plan toward.
- Provide a decision-making structure, incorporating a participatory public involvement process, to plan and prioritize improvements to the rural transportation system.
- Build on existing knowledge, resources, and information to conduct technical analysis including evaluation of current and future conditions, forecasts, and trends.
- Balance multiple and competing stakeholder objectives and funding expectations.
- Identify and provide long-range funding program.
- Provide a framework to prioritize expenditures based on policy goals and objectives.
- Focus short range investments on long term goals.
- Provide accountability to customers on future direction and actions to get there.

Developing a rural transportation plan that addresses these success factors will help ensure that the significant energy involved in developing the plan will be worthwhile.

C. Public Consultation and Rural Transportation Planning



Public participation is a critical element of the rural transportation planning processes. It provides a structure in which citizens can develop an understanding of the state and regional transportation systems and how they operate. Successful rural planning requires a public consultation process that is proactive and provides complete information, provides timely public notices, and provides opportunities for early and continuous

participation. Early issue identification and cooperative solution-building can reduce the potential for conflict later in the process.

Success factors for implementing an effective and inclusive public consultation process include:

- Selecting the public involvement mechanisms that are right for your situation.
- Establishing reasonable timelines.
- Considering the cost effectiveness of different techniques.
- Coordinating and streamlining public involvement activities.
- Showing that input is considered seriously.
- Building balanced and broad-based public involvement.
- Ensuring staff has the skills necessary to obtain input on needs and present plan ideas.

The public involvement process provides for communication among all parties involved through public meetings, forums, and workshops. Citizens have access to information, plans, and programs for review and comment.

Key decisions to be made when designing your public consultation approach include:

- **Who will conduct it and when?** Roles should be specified in terms of who will conduct the public consultation and when. Effective public consultation will involve seeking input at key decision points in the process and allowing for public participation to determine transportation issues and solutions. Many rural areas have established community initiatives that can be used to help channel communication.
- **How will input from local officials be included?** An important requirement of TEA-21 is that input from local officials must be included in the statewide planning process of which the rural transportation plan is an important part. How input from local officials is to be included should be established early in the planning process and documented.

The broad goals for public participation include keeping people informed and involved on a continual basis and facilitating cooperation and consensus building. Some of the public participation related responsibilities in developing rural transportation plans include:

- Establishing and maintaining a mailing list of all known parties interested in transportation in the region.
- Providing reasonable notice and opportunity to comment on issues and draft documents.
- Issuing press releases and public service announcements to provide timely notices of regional and state transportation planning activities to the public.

- Making an effort to understand and consider the needs of those persons or groups that may be considered underserved by existing transportation systems, such as low-income and minority households, the elderly, persons with disabilities, and student population which may face difficulties accessing employment and other amenities.
- Seeking out representatives from all transportation modes including pedestrians, bicycles, buses, trains, commercial vehicles, and airports.
- Periodically evaluating the effectiveness of the rural public involvement process to ensure that the process provides full and open access to all and revising the process as necessary.
- Holding public meetings, open forums, visioning sessions, workshops, or open houses at key points for input on:
 - Initiating the rural transportation planning process.
 - Development of policies, goals, and objectives.
 - Identification of transportation issues.
 - Development of alternatives.
 - Draft transportation plan.
 - Updates of the plan.

1. Types of Involvement

Public involvement comes in many forms. Typically involvement comes from: outreach, data-gathering, and public participation. These broad categories can often overlap, with the understanding that their application to the planning process varies according to when they are used in the planning process.

- **Outreach.** Outreach is useful for informing people about a topic or issue. This type of participation includes but is not limited to personal contact, media, field offices or drop-in centers, citizen boards, and speaker bureaus. The outreach can be two-way, such as open discussions at a drop-in center. One-way delivery of information can also be used, such as bill-stuffers or news releases, or one-way receiving of information such as a telephone comment line. Outreach techniques are particularly appropriate for use both during the early steps in the process and as a way to keep the public informed while the plan is formulated.
- **Data-gathering.** Data-gathering techniques are important for transportation plan development. Examples of data-gathering participation methods are questionnaires, individual interviews, advisory committees, and surveys. Data-gathering techniques allow planners to obtain information from the public at large or selected groups (stakeholders, elected officials, specific focus groups, and so on). Surveys are the primary method used to gather this data, and the cost

for performing the techniques varies greatly according to the level of distribution and tools used to administer the survey (newspaper insert versus visual preference testing, for example). Data-gathering techniques are useful when alternatives are being considered and analyzed as a means to collect public opinion.

Keep in mind that special techniques may also be appropriate for stimulating more participation. The public has grown very used to certain types of public involvement techniques. Introducing new or unusual public involvement techniques will help keep the process interesting and, hopefully, the ideas flowing. Examples of such techniques include sponsorship of special events such as transportation fairs, site visits, kiosks, videos, and so on. It is often effective to piggy-back plan related activities with ongoing community activities such as meetings of community groups, other organization newsletters, school activities, and so on.

Whatever techniques are implemented, take time at the end of the public involvement process to ask participants two key questions: what were some of the things they liked about the techniques(s), and what were some of the things that can be done better next time. This will help keep the process relevant and useful for all participants.

2. Transportation Action Model

The Transportation Action Model (TAM), initiated and designed by a national consortium led by the U.S. Department of Agriculture, is specifically designed for communities with a population of approximately 5,000 to 10,000. The TAM seeks to involve citizens at a grassroots level to plan for the future of their community. It was created with two guiding principles. First, sound transportation systems and the decisions behind them are critical to the social and economic well-being of communities. Second, informed community participation creates better transportation decisions.

The process, through a series of ten steps (including four meetings), facilitates improved understanding of, and involvement in, transportation planning by rural officials and citizens. The process is based upon a vision of transportation's future in the area as developed by the area's leaders and citizens through a "facilitated involvement effort" rather than upon traditional technical transportation planning procedures.

The TAM is a highly structured, 21-week process that includes creating public dialogue, identifying transportation issues, and developing solutions. Successful completion of the program should provide a blueprint for local action. Although it is specifically designed to address transportation problems, it intends to take a more integrated approach to identifying a community's needs and vision for its future.

More information on the Transportation Action Model (RRD 174) is available from:

North Central Regional Center for Rural Development
404 East Hall, Iowa State University
Ames, IA 50011-1070 <http://www.ag.iastate.edu/centers/rdev/>

3. Systematic Development of Informed Consent

Some states have been using the Systematic Development of Informed Consent (SDIC) process, developed by Hans and Annemarie Bleiker of the Institute for Participatory Management and Planning, to help guide them in comprehensive public involvement planning. SDIC seeks to: 1) establish the public agency's legitimate role by casting its program as one aimed at problem-solving; and 2) communicate to the public the serious nature of the problem the agency is attempting to address. The premise of the SDIC process is that accomplishing these two objectives, in combination with a thorough public involvement process, will allow an agency to achieve informed consent. Informed consent is usually far short of unanimous support or consensus. It is, however, enough of an agreement such that each interest or individual with the capability of vetoing a proposed course of action is persuaded that they can live with the consequences.

The SDIC process identifies 15 citizen participation objectives aimed at developing informed consent. They are grouped into three categories: Responsibility Objectives, Responsiveness Objectives, and Effectiveness Objectives. It is critical to an effectively designed and administered public involvement program to ensure that the techniques and methods of involvement are connected to the objective that needs to be achieved.

More information about the SDIC process can be obtained by contacting:

The Institute for Participatory Management and Planning
P.O. Box 1937
Monterey, CA 93942
<http://www.ipmp-bleiker.com/>

4. Process for Involving Local Elected Officials

In the 1990's, the federal government's surface transportation programs underwent a significant restructuring. These statutory changes began with ISTEA in 1991, and carried through into the 1998 reauthorization of federal surface transportation programs in TEA-21. Prominent among the programs was changes to metropolitan and statewide planning processes. These changes include revised language addressing the long-standing requirements for involving local officials in both (1) planning transportation systems, and (2) programming the use of federal-aid funds at least three years into the future for highway and transit purposes, consistent with the long range plans.

Outside metropolitan areas (i.e. in rural areas), the state DOTs are required to conduct their statewide planning and programming “in consultation with” local officials, and to make decisions about spending certain federal-aid funds “in cooperation with” local officials. No particular methods or structures are required in the law or related regulations for accomplishing these consultations and cooperative activities.

There is a wide range of approaches in place in different states that meet this requirement. Regardless of the approach used, it is important that how input from local officials is to be included be established early in the planning process and documented. There are a number of benefits of involving local stakeholders in rural transportation planning, including:

- **Increased trust in government.** This benefit is greatest when the consultation process is viewed as fair, open, inclusive, timely, and legitimate.
- **Better plans and programs.** Consultation frequently identifies new needs and better ideas for meeting needs, especially ideas from outside the transportation field itself.
- **Stronger support for implementing plans and programs.** Local official involvement in the planning and programming process frequently helps to improve the implementation record.
- **Improved performance of transportation systems and better outcomes for people.** Feedback from local officials can help keep track of the performance of the transportation system in addition to its contributions to improving outcomes for people in terms of accessibility, social justice, livability, safety and economic vitality, and opportunity in rural America.

A useful resource that provides insights on public involvement coordination and the involvement of public officials in the rural transportation planning process is the Federal Transit Administration’s *Planning Guidelines for Coordinated State and Local Specialized Transportation Services*. The document is available on-line at <http://www.fta.dot.gov/library/policy/guide/toc.html>.

How to Give Effective Community Presentations⁵

Public presentations can be one of the most effective methods of conveying messages and addressing community issues. Here are some ways to make your community presentation interesting and effective:

- 1. Know your audience.** Understand who they are and what their concerns are. What matters to a group of seniors will be different from what matters to a PTA group. This will require some research and will determine everything about how you prepare the presentation.
- 2. Customize your materials to suit your audience.** Some audiences respond better to a slide show, others better to charts and graphs.
- 3. Time is of the essence.** Keep your presentations as short as possible and avoid going over the allotted time.
- 4. Avoid being too technical.** Keep in mind that in most cases you're much closer to the issue than the audience is. Your presentation is likely being done to familiarize and educate a group on issues that most directly affect them. Save the more technical explanations for one-on-one meetings, and avoid acronyms!
- 5. Leave it to the experts.** Once you've determined what is going to be presented, make sure it is going to be presented by a credible source.
- 6. Prepare an outline.** Your points will be most effective if made in an orderly fashion. Good outlines keep you from skipping important points and prevent rambling presentations.
- 7. Practice, practice, practice.** Schedule a practice run at least two days before the presentation. This will leave enough time for any changes or adjustments that may need to be made. All people involved in the presentation should participate.
- 8. Be flexible.** Sometimes the audience wants more or something other than what you've prepared. Go with the flow.
- 9. Anticipate questions.** Start by writing out a list of questions you're likely to be asked, then ask others to help you practice. Make sure you know the answers. If you don't know the answer, be honest, but get back with an answer ASAP.
- 10. Don't let all of your preparation go to waste.** Make sure that you have the equipment necessary to present your materials. Be sure you bring and test overhead projectors, VCRs, outlets, easels, extra light bulbs, and batteries if they aren't going to be provided.
- 11. Leave them something they can reference.** Bring handouts of material presented and contacts for further information.
- 12. Follow up while the issues are still fresh in their minds.** Be certain that any requests for additional information or contacts are immediately returned following the presentation.

⁵ This useful guide came from the *Idaho Corridor Planning Guidebook*, prepared by the Idaho Transportation Department, Division of Transportation Planning, February 1998.

D. Key Transportation Planning Elements to Address

A key decision for your rural planning process is to determine the network of transportation facilities to be addressed by the plan and to identify the other plans with which coordination needs to take place. Successful rural transportation planning should address the following important planning elements:

1. System Performance and Preservation

- Methods to address under- and overutilized facilities.
- Preservation of rights-of-way.⁶
- Transportation needs identified through analysis of existing/future conditions.
- Methods to expand and enhance transit services.

2. Mobility and Access for People and Goods

- Enhancement of freight movement.
- Long range mobility needs for persons and goods.
- Border crossings and access to intermodal facilities and major activity centers.
- Connectivity between State and local roads that support rural economic growth.
- Bicycle and pedestrian facilities.

3. Environment and Quality of Life

- Recreational travel and tourism.
- Overall social, economic, and environmental effects of transportation decisions.
- Effect of transportation decisions on land use and land development.
- Transportation enhancements.

4. Planning Coordination

- Coordination with local government officials and Indian tribal governments.
- Local, county, metropolitan, and state transportation plans.
- Environmental and land use plans and regulations.

⁶ The FHWA Right-of-way Office has a useful website that includes information on acquisition of property, property management, property valuation, relocation assistance and publications. This information is also useful for local governments that acquire right-of-way. The website is <http://www.fhwa.dot.gov/realestate>.

As a guide for developing rural transportation plans, the basic steps used to develop statewide transportation plans are presented in Appendix A. The steps outlined are not to be considered prescriptive, nor are they required. Each rural transportation planning process is unique and should be tailored to best meet local circumstances and needs.

E. Incorporating Environmental Review

Beyond the planning stage, environmental considerations play an important role in the development of a rural transportation project. Only when a proposed transportation project can be shown to not adversely affect the environment, or have its impact avoided, minimized or mitigated, can a transportation project advance into the construction phase of the STIP. Most Federal and state laws, rules and regulations, and policies relating to transportation attest to the importance of maintaining the quality of the environment. Therefore, it is useful to have a general understanding of the region's environment, as well as state and federal environmental regulations and requirements, when developing transportation plans.

It is useful in the early stage of plan development to compile existing information on the study area environment as part of the base on which the proposed regional transportation improvements will be superimposed. This will, at a broad level, allow planners to understand the likelihood of any potential adverse impacts associated with construction. Areas of concern include the potential impact on air quality, land use, noise levels, water quality, wetlands, flood plains, threatened and endangered wildlife, historical and archaeological sites, and hazardous materials sites. Where possible, identification of sites where proposed transportation improvements may potentially impact the environment or are presumed to be environmentally sensitive should be highlighted for more detailed analysis. It is important to note that the potential environmental impact of a plan development should not, in and of itself, be the reason to remove a project from the proposed rural transportation plan.

If it is determined that a project from the rural transportation plan is to be proposed for construction using federal funds, it is required that the National Environmental Policy Act (NEPA) be followed. It is within these NEPA documents that various alternatives and mitigation measures relating to environmental concerns will be fully addressed. The findings from an Environmental Assessment (EA) or Environmental Impact Study (EIS) are the legal basis that determine if, and under which conditions, a transportation project can be built.

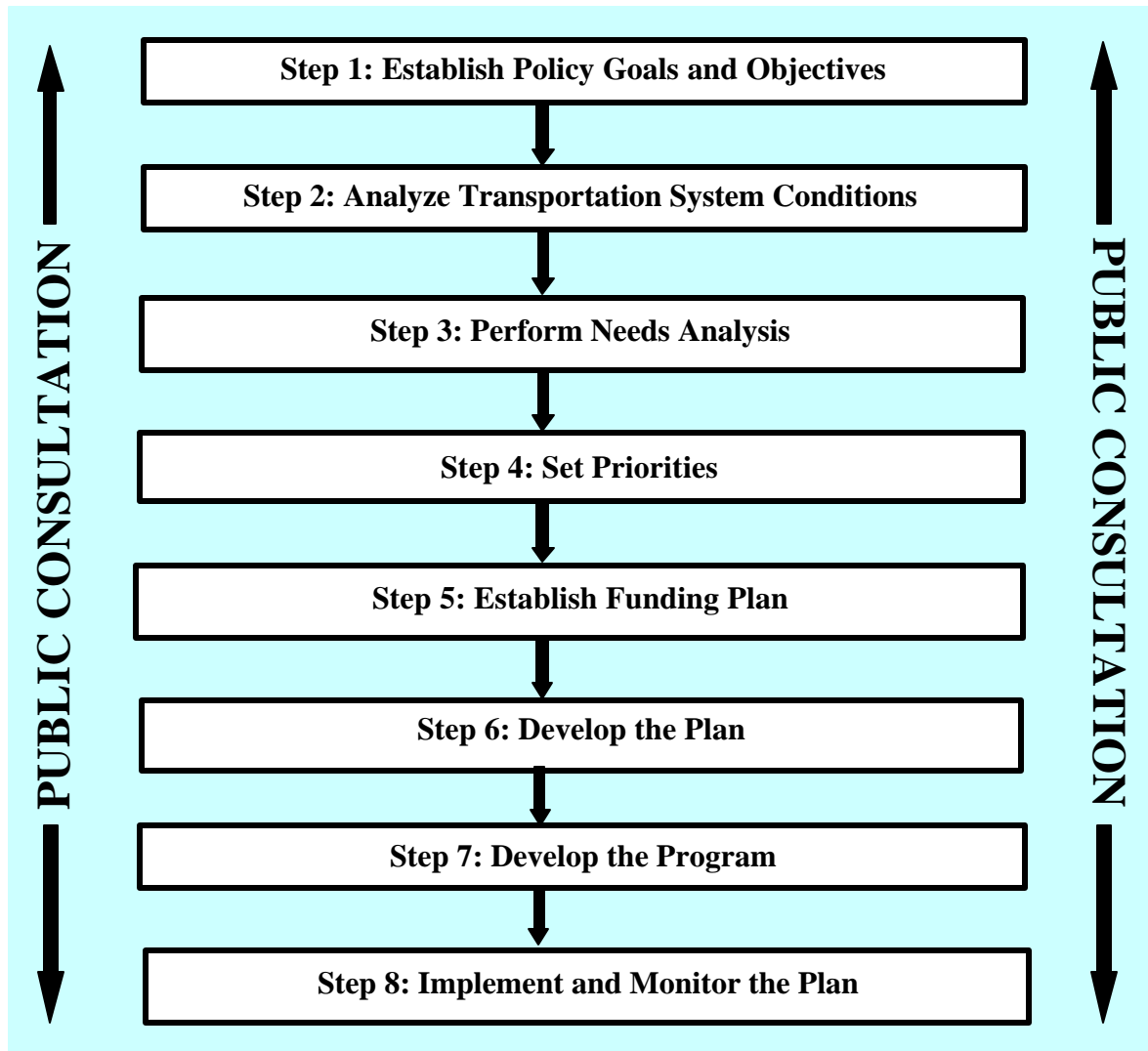
The Environmental Guidebook produced by FHWA in November 1999 is a useful resource for understanding environmental regulations and environmental review as it relates to transportation planning. The guidebook is available on the World Wide Web at <http://www.fhwa.dot.gov/environment/guidebook/intro.htm>.

Appendix A: Basic Steps Used to Develop Transportation Plans



This appendix presents the basic steps used to develop transportation plans, based on the statewide transportation planning process, as a guide for developing rural transportation plans. The steps outlined are not to be considered prescriptive, nor are they required. Each rural transportation planning process is unique and should be tailored to best meet local circumstances and needs. Exhibit A-1 shows the most important steps that will be discussed in this section.

Exhibit A-1: Basic Components of Rural Transportation Planning
For a Given Rural Transportation System



Public consultation is perhaps the single most important component of transportation planning. Public consultation should take place throughout the entire planning process and it is an integral component to many of the steps. Detail on public consultation is presented in Section IV of this document.

Step 1: Establish Policy Goals and Objectives

Transportation planning is most significant when it establishes “top down” policy goals for the transportation system. These goals provide the overall umbrella under which the transportation system is operated, maintained and developed. To be most useful the goals should be specific enough to guide the development of the plan but not too inflexible to respond to changing conditions and implementation priorities.

Success factors for the development of policy goals and objectives include:

- Roles should be specified in terms of who will be making the policy decisions and whether those roles are advisory or decision making.
- Development of policy goals and objectives should involve local officials and provide for broad stakeholder and modal involvement.
- Goals and objectives should have sufficient specificity to guide plan development.
- Goals and objectives should be tied to action and be meaningful to stakeholders/customers.
- Decisions should be made for timelines and mechanisms for modifying and updating policies.
- It should be determined how local, county, and regional policies coordinate with the statewide plan.

The greater the specificity of the goals, the harder it is to reach agreement. For example, most transportation plans include goals that address mobility or economic development. It is easy to reach agreement over broad goals but becomes more difficult when the goals are further developed to specify strategies or actions and priorities to address them.

When developing the policy statements for rural transportation plans it is not always necessary to be elaborate. For example, in a very effective transportation plan produced by Hutchinson County in Minnesota⁷ the policy goals are straightforward. The goals are to “...*establish a balanced and integrated transportation system that:*

- *Supports the land use and economic development policies of the city and region,*
- *Is sensitive to environmental concerns,*
- *Promotes safe and efficient transportation movements, and*
- *Supports multimodal transportation uses.”*

⁷ Hutchinson Area Transportation plan, SRF Consulting Group, Inc., August 1998.

For the Route 16 Corridor study prepared by the DOT and four regional planning agencies in the state of New Hampshire⁸, the policy goal was the following single statement:

To demonstrate an innovative approach to developing a long-range solution to the problem of providing an efficient transportation system which promotes economic vitality and high quality of life for the residents of communities and visitors to the regions served by the Route 16 Corridor.

Some plans establish measurable objectives for the transportation system. Below are a few examples of objectives that were developed for the Quad County Regional Transportation Planning Organization in Washington State.⁹ Quad County is comprised of Adams, Grant, Kittitas, and Lincoln Counties in central/eastern Washington. This plan developed objectives under the categories of general, coordination, system capacity and improvement, roadway, public transportation, and land use. Some example general objectives are as follows:

- a. *Support economic vitality and growth.*
- b. *Ensure that growth and change in the transportation system within and near local jurisdictions are consistent with the regional and local comprehensive and transportation plans for those jurisdictions.*
- c. *Provide a tool for the communities to use that will guide transportation system development to make it consistent with and supportive of area comprehensive plans.*
- d. *Ensure consistency with environmental rules and regulations.*
- e. *Emphasize the movement of goods and people rather than the movement of vehicles.*
- f. *Wherever possible, preserve existing rail lines and reserve abandoned rail lines through compatible use in accordance with the Washington State Rail Transportation Plan.*
- g. *Consider the most cost-effective mode or modes of transportation for the overall good of the region.*
- h. *Apply minimum standards for operating conditions, classification schemes, and performance measures uniformly on the regional system.*
- i. *Identify and implement strategies to resolve constraints to intermodal connections.*
- j. *Identify and implement strategies to take advantage of opportunities for new and enhanced intermodal connections and alternative transportation modes.*

Every rural area will of course have different priorities and, therefore, different goals and objectives. The important thing is that they are developed in a consultative manner, are measurable, and are used to guide plan development.

⁸ Route 16: The Corridor Tomorrow, New Hampshire Department of Transportation.

⁹ Quad County Regional Transportation Planning Organization, Regional Transportation Plan, Washington, June 1994.

Step 2: Conduct Conditions Analysis

Conducting a conditions analysis is the process of determining how your community or rural area will measure the condition of the system and the service provided for vehicles, transit, and non-motorized modes (bicycles and pedestrians). Service objectives for roadways may include consideration of roadway capacity, design, and safety. Examples of transit service standards are population coverage and frequency of service.

Success factors for conducting an effective conditions analysis include:

- Defining the transportation system to evaluate conditions on.
- Defining what information is needed about the overall system and the different elements of the system. What conditions are most important for the economic and social wellbeing of your area?
- Determining who is going to use the information, and what they are going to use it for.
- Defining which measures of system conditions will be used.
- Maximizing the use of existing management systems, analysis tools, and data collection procedures to provide measures and data.

1. Measurement/Monitoring of Existing Conditions

The steps involved in the measurement and monitoring of existing conditions are as follows:

- Determine data and information requirements to measure progress towards policy goals and objectives that are set for the transportation system.
- Establish agreed upon measures and evaluation procedures for system elements based on performance goals and objectives. A way to do this is to establish condition measures that describe the physical conditions of facilities or condition measures that describe levels of service or operational performance.
- Apply condition and performance measures.

The types of condition information fall into the following categories:

Category	Measure
Extent of the rural system – basic inventory	<ul style="list-style-type: none"> • Physical inventory • Services available
Use of system	<ul style="list-style-type: none"> • Traffic, ridership, etc.
Physical conditions/performance.	<ul style="list-style-type: none"> • Pavement, bridges, transit equipment
Operational conditions/performance.	<ul style="list-style-type: none"> • Mobility • Safety

2. Forecasting Future Conditions

Plans are future oriented. While they typically respond to a backlog of needs, they should address future conditions and plan for them. In rural areas, straightforward approaches can be used to forecast future conditions.

There are a number of ways to estimate travel demand within the rural transportation planning context. These range from simple techniques such as historical trend analysis to variants of more complex computer models that require large databases of demographic and socioeconomic information to forecast travel demand. Simplified demand estimation techniques and analysis are appropriate in most rural planning situations.

Historical trend analysis which estimates transportation demand by plotting historical demand levels over time and then extrapolating the trend into the future is one starting point for demand estimation in rural transportation planning areas. However, there are some drawbacks that need to be kept in mind as these numbers are developed. First, and foremost, the assumption under this proposal maintains that all factors and relationships affecting demand (such as transportation capacity improvements, demographic shifts, inflation, fluctuations in the price of fuel, etc.) remain constant over time. If one or more of these factors change, there could be a shift in demand.

In addition to the historical trend analysis discussed above, simplified versions of more complex techniques, which tend to focus on the impacts of a number of key factors influencing transportation demand, are now available and are being used by some transportation planners and consultants. These may also be appropriate for use in rural transportation planning. One approach is to take population and economic forecasts for your area and use the relationship between these corridors and travel demand to generate some growth factors.

The demand analysis should identify all perceived mobility issues, impediments, and opportunities in the region. For example, if a section of roadway is thought to be unsafe and safety improvements are proposed, a detailed accident history should be compiled to support the assessment. Or, if the transportation of the elderly and/or disabled is felt to be an important transportation need, then various findings from state, regional, and local transit needs and benefits studies should provide the supporting documentation. The state DOT will be able to provide modal data to assist in this analysis. This will include such things as traffic volumes, volume/capacity ratios, accident rates, transit ridership, the core rail system, etc.

Step 3: Perform Needs Analysis

Rural transportation system needs are most usefully assessed by evaluating the gap between the goals and objectives that are established for the transportation system and the baseline system conditions. The needs are the planned actions for addressing this gap. How much

can be implemented over the planning horizon will depend in large part on finance levels. A successful needs analysis should:

- Provide technical information for goal setting.
- Define the costs of meeting plan goals and objectives.
- Compare plan needs with available funds.
- Provide information to evaluate trade-offs between different needs.

1. Gap Analysis

The needs analysis can be used to determine broad but different categories of need for achieving planning goals. A first step in needs assessment is to measure the gap between the transportation system goals and current objectives and conditions. This requires a set of goals and objectives that can be quantified and relate to the operational and physical condition of the transportation system. The results of this gap analysis are often referred to as deficiencies.

2. Evaluation of Alternative Strategies and Actions to Address the Gap

The purpose of this step is to assess the cost and impacts on system condition of alternative strategies or improvements that address needs. For long range planning purposes the needs areas can be grouped different ways. They can be organized for the different elements of the transportation system (roads, bridges, rail, etc.) and different policy goal areas (mobility, safety, preservation, economic development environmental etc.) that are established in the plan. Evaluation can be undertaken at a “coarse” level to consider the full range of alternative strategies and identify those meriting further consideration. These can be then subject to more detailed analysis.

3. Select Strategies and Actions – Identify Costs

The strategies and actions selected to address deficiencies determine the magnitude of the plan needs. In most states, this decision making takes place at a combination of policy and planning levels. For the rural transportation plan, the evaluation of alternative strategies for addressing deficiencies is best considered as technical information that is an input into the policy and goal setting process that selects transportation system strategies. In this way the plan needs are driven by the overall policy goals and strategies established in the plan.

Once a plan strategy is developed, the cost of implementing this strategy defines the needs. The total cost of the plan improvements is important for determining implementation. This is developed by determining the cost of implementing the selected strategies. On the highway side, there are well-established unit costs that can

be applied to develop needs estimates for improvements. Unit costs can be developed and inflation accounted for. For other modes there are less well established methods, however, most state DOTs are now working on developing consistent assumptions and a rigorous approach for developing cost estimates for other modes.

Step 4: Set Priorities

Since rural transportation needs typically outweigh expected revenues, it is important to prioritize the needs identified during the rural transportation planning process. Given the often overwhelming number of potential improvements it is important that the planning process has an agreed upon approach to project prioritization. This approach will need to consider whether to apply the following type of prioritization methods: (1) sufficiency measures, (2) benefit-cost analysis, or (3) multiple criteria analysis.

The key success factors for setting priorities are:

- Establish formal prioritization criteria and apply it consistently.
- Apply the prioritization criteria to all programs and projects.
- Make efforts to use the same prioritization criteria as those used to develop the statewide plan.
- The prioritization criteria should consider as many factors as possible in determining program priorities (system, multimodal, environmental, social, and economic factors).

1. Sufficiency Measures

Sufficiency measures allow the comparison of projects that have different characteristics. They are used primarily for programming highway and bridge projects. Sufficiency ratings/measures for highway projects are based upon weightings assigned to different categories of need – for roadways this often includes:

- **Pavement Condition:** Based on physical features such as surface condition, structural adequacy, drainage, and ridability.
- **Safety:** Based on variables such as accident rates, surface and shoulder width, sight distance, and consistency.
- **Service:** Based on variables such as volume/capacity ratios, operating speed, and roadway geometrics.

Scores for each characteristic are added and then projects are ranked according to their relative importance. Weights are assigned to each characteristic according to its importance. For example, if *condition* has a weight of 40, *safety* has a weight of 30, and *service* has a weight of 30, then a project receiving 100 points would be in excellent condition, safe, and traffic would move smoothly.

Some of the issues with sufficiency ratings is that the rating systems must often be modified to account for projects with critical deficiency in one category and/or social, economic, and environmental considerations.

2. Benefit-Cost Analysis

Benefit-cost analysis typically considers only direct benefits and costs of transportation improvement projects. The approach is generally well understood, however it is important that all assumptions be documented. There are three main factors in traditional calculation of benefit-cost ratios: time savings, vehicle operating savings, and accident reduction.

Current dollars should be used in calculating benefit-cost ratios. Inflation and the time value is accounted for by using *discount rates*. They are important to benefit-cost analysis because benefits and costs occur at different times, there is a time value of money, and there is an opportunity cost of capital. A discount rate of 4-8 percent is typically used in benefit-cost analysis. One of the issues associated with the use of benefit-cost analysis is that it can be criticized for its narrow focus of benefits/costs and excluding externalities or full costs.

3. Multiple Criteria Analysis

Multiple criteria analysis evaluates transportation projects based on factors other than those related strictly to the direct use of the facilities. These include social, economic, and environmental factors. The following are example criteria for this type of project prioritization:

Criteria	Description
Public Support	Projects have the support of the transportation stakeholders and the general public as a result of focusing on customer service and obtaining their early and ongoing involvement in the planning of the project.
Congestion	Projects reduce congestion either by reducing demand for trips, shifting the demand to alternative modes, or implementing operational improvements.
Safety	Projects enhance transportation safety by emphasizing the security and safety of the traveler or by addressing existing or potential hazardous or unsafe situations.
Environment	Projects avoid and minimize if necessary, impacts to water, air and other resources; minimize energy use; and minimize noise pollution.
System Continuity	Projects address gaps in the transportation system and improve regional connections.
Preservation of System	Projects maintain and preserve the existing transportation infrastructure in order to repair or replace inadequacies or to extend the useful life of a facility.
Economic Impact	Projects support regional economic development goals.
Inter/Multimodal	Projects improve connections between different modes of transportation or support modes other than the single occupant vehicle.
Ability to Implement	Projects should be technologically sound and have achievable acquisition and approval requirements.

Once it has been decided on the criteria to use, a decision should then be made as to how each criterion will be weighted. The weight assignments should be determined by assessing the importance of each criterion in meeting the transportation plan's visions and goals. An example might be to weight "system preservation" with a weight of 15; while assigning a weight of 10 for "inter/multimodal", depending on the plan's vision, values, and goals. The sum of the weights should total 100.

In addition to the weighting, a score should be applied to each criterion. The scoring could range from one to three, for example, with 1 representing poor impact and 3 representing good impact. The score is then multiplied by the weight to determine the Total Weighted Points for each project. The projects can then be ranked to represent the priority for project funding consideration.

Step 5: Establish Funding Plan

The transportation plan needs to be realistic and usually that means fundable. A financial analysis of the transportation plan will help to ensure that it is realistic. Without tying transportation projects to reliable funding, the recommended solutions that are developed can easily become a "wish list". However, limiting solutions to projects that do not exceed available revenue could result in providing a lower level of service than the community desires. Principles for developing a funding plan include:

- The funding plan should include an analysis of the participating jurisdiction's capabilities of financing needs.
- The funding plan should be a multi-year financing plan based on the needs identified in the plan.
- If probable funding falls short of meeting identified needs, the funding plan should contain a discussion of how additional funding will be raised, or how assumptions will be reassessed to ensure that level of service standards will be met or adjusted.

1. Financial Planning Steps

The following steps can be used to develop the transportation finance analysis:

1. Identify transportation needs and solutions.
2. Develop cost estimates for solutions.
3. Assess the ability to pay for these projects and services.
4. Develop financing policies.
5. Forecast revenue from existing and potential sources.
6. Develop a financing schedule by matching transportation projects and services to revenue projections.

7. Establish policies to govern the management of the transportation financing program.

These steps are not strictly sequential. For example, forecasting revenue from existing and potential sources can proceed at the same time as identification of transportation needs.

2. Cost Estimates

Cost estimates are necessary to compare the transportation needs with available revenues. Costs should be estimated for:

- Maintenance of the existing and proposed transportation system.
- Designing and building new, expanded, or replacement facilities (roads, terminals, etc.).
- Acquiring new transit vehicles and related capital costs (maintenance facilities, etc.).
- Program costs for operating transportation services such as transit or ridesharing.
- General costs associated with administering and planning the transportation system.

It is important to estimate maintenance and operation costs as these will likely use a majority of the existing revenue resources. Estimates can usually be based on existing historic data. The information required is likely to be available from the finance officer of the city/county and the transit agency. Estimates of new costs for facilities and services will generally be based on a combination of rough estimates and specific cost estimates. Cost estimates based on preliminary engineering, right-of-way appraisals, or operating plans only need to be done for the most immediate recommended improvements.

Most of the recommended improvements in a long-range transportation plan will need an “order-of-magnitude” cost estimate. These estimates are based on factors such as typical “per mile” construction costs for different types of roadways or the operating costs for similar transit services in other counties.

3. Available Funding Sources

Revenues generated for transportation-related projects originate from a number of federal, state and local sources. Most states allocate a portion of their federal aid to local governments. The method used varies. Some states use a formula that reflects each agency’s share of federal aid highway mileage and traffic. In other cases it is less specific and varies from year to year. Some states with regional planning processes suballocate varying amounts of their funds to the regions and then allow each region

to actually select their own projects. Other states may only allow their regions to recommend projects.

Each jurisdiction needs to identify current funding sources, anticipated funds available, and any non-funded needs. In determining funds available, each jurisdiction should identify what public funds will be used and whether private sector funding will be collected. Three useful resources to identify available funding sources are:

Serving Rural America – US Department of Transportation Rural Program Guide, US Department of Transportation, 1999. This document can be ordered through the USDOT website at <http://www.dot.gov>.

This document outlines all federal funding programs available to rural America. It lists the purpose of the program, eligible projects, contacts, and funding available. This is the single best resource for federal programs to assist rural areas with transportation funding. Programs include safe communities, surface transportation safety grant programs, Aviation programs, surface transportation planning, training, and technical assistance, surface transportation construction programs, rail programs, transit programs, special purpose programs (such as job access, coordinated border infrastructure program, etc.), maritime programs, and community and environmental programs.

The next useful document is *Financing the Statewide Plan: A Guidebook*. Prepared by Dye Management Group, Inc. for the Federal Highway Administration, Office of Statewide Planning, 1999. This document can be downloaded from FHWA's Office of Statewide Planning website: <http://www.fhwa.dot.gov/hep10/state/04703r04.pdf>.

This document discusses funding sources at all levels and provides guidance on developing funding plans as part of the overall planning process. This document also addresses new and alternative funding sources for transportation projects.

The USDOT and US Department of Agriculture (USDA) *Transportation Toolbox for Rural Areas and Small Communities* was designed to assist public and private stakeholders in planning, developing, and improving rural areas and small communities, especially through transportation and related projects. The website contains information on a wide range of USDA and USDOT programs, including the components of the USDOT Rural Initiative and programs from such USDA programs as Rural Housing and Rural Development. The website address is: <http://ntl.bts.gov/ruraltransport/toolbox/>.

Step 6: Develop the Plan

Developing the plan document or “putting it all together” can be a difficult process if not approached in a systematic fashion. Key success factors for developing plans include:

- Have clearly established roles and responsibilities for who will develop the plan, how and when it will be adopted, and how and when the plan can be amended.
- Use the planning team and the public consultation process to help develop the outline for the plan.
- Ensure that the plan is a strategic and visionary document and not a project list or “wish list”.

During the planning process, all technical data and methodologies used should be documented. All references and other reports cited should also be documented. A model outline for a rural transportation plan is provided in Exhibit V-2.

Exhibit V-2

General Transportation Plan Format

EXECUTIVE SUMMARY

Provides an overall summary of the plan's objectives, methodology, findings, and recommendations.

SECTION I: GOALS AND POLICY STATEMENTS

This section presents the overall vision, goals, objectives developed during the planning process. These form the overall umbrella for the direction of the transportation plan in terms of plan priorities.

SECTION II: TRANSPORTATION ELEMENT

Chapter I. Introduction

The introduction outlines the purpose of the plan, the plan participants, and the organization of the document.

Chapter II. Existing Conditions

This section presents the existing condition of the transportation system in terms of:

- Roadways (road and bridge conditions, traffic volumes, safety, other criteria).
- Public or quasi-public transportation (transit, school bus, emergency service routes and facilities, air, and water).
- Non-motorized transportation (bicycle pathways, pedestrian pathways, equestrian routes).
- Land use and population considerations, plans and programs of other agencies and jurisdictions, and county-wide policies.

Chapter III. Traffic Forecasts

This section presents historical traffic trends, population and land use trends, population and demographic projections, population distribution, future land use map, future traffic projections and trends.

Chapter IV. Alternative Strategies Evaluation

The alternative strategies evaluation section presents the determination of needs based upon existing conditions and traffic. It forecasts the evaluation of alternatives for

traffic safety, level of service and congestion, environmental impacts, financing, community support, and consistency with plans of other agencies and jurisdictions.

Chapter V. Priorities and Recommendations

This section presents prioritized recommendations for improvements to the area transportation system including: level of service, new corridors, road widenings, spot/intersection widenings, realignments or channelization, traffic control or signalization, shoulder improvements, paving, bridge replacements, or other physical improvements, pedestrian, bicycle, or equestrian improvements, transit and transit facilities, and land use/transportation linkages.

Chapter VI. The Financing Element of the Plan

The financing section presents cost estimates for identified improvements, potential financing options, re-assessment of identified improvements based upon financial constraints, and the three-year transportation improvement program for the area.

Chapter VII. Implementation and Monitoring

This section provides the plan for continually monitoring the performance of the transportation system to determine the progress being made in improving system performance and to identify additional areas of improvement.

SECTION III: APPENDICES

- A. References
- B. Technical Data and Methodologies
- C. Excerpts from other Reports

Step 7: Develop the Program

Programming refers to a series of activities carried out by planners, including data assessment, appraisal of identified planning needs, and consideration of available or anticipated fiscal resources to result in the drawing up, scheduling, and planning of a list of identified transportation improvements for a given period of time. The programming of projects for funding should consider:

1. Timing of the need for improvements (i.e., when the facility falls below the locally established level of service under assumed growth rates).
2. Timing for fund availability.

Often plans will require more funds than are available from federal, state, and local sources traditionally dedicated to transportation funding. This means that the agencies engaged in rural planning should identify funding mechanisms to support implementation of the transportation plan or reassess their desired levels of service.

Step 8: Implement and Monitor the Plan

For a plan to be successful it must be implemented effectively and progress against plan objectives monitored, this provides “the feedback loop”. Transportation planning includes continually monitoring the performance of the transportation system and ensuring that plans are being implemented to meet the intended objectives.

The success factors for implementation and monitoring of the rural transportation plan include:

- Developing an on-going process, known to participants, for monitoring progress toward plan objectives.
- Establishing a process for how decisions regarding implementation are to be made.
- Establishing a process for conditions tracking system.
- Establishing a well-defined process for how priorities will be set.

Many transportation plans have failed because they lacked an effective implementation plan and monitoring mechanism. These are required to “keep the plan alive” and ensure that the plan guides and shapes transportation decisions in the future.

Appendix B: Some Additional Tools for Planners



Considerable input from rural transportation professionals and interest regarding special topics for inclusion in this document requested discussion of: transit system planning concepts, an introduction to rural intelligent transportation systems, and some consideration of access management as additional tools for rural transportation planners. These topics are presented in this appendix.

A. Rural Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) represent the application of information processing, communications technologies, advanced control strategies, and electronics to the field of transportation.

1. Ways Rural ITS Can Help

Rural ITS applications have the potential to make dramatic improvements in safety, mobility, and tourist information services. These applications have been categorized into the following elements:

- **Traveler Safety and Security:** Traveler safety and security technologies use in-vehicle sensors and information systems to alert drivers to hazardous conditions and dangers. This also includes wide-area information dissemination of site-specific safety advisories and warnings.
- **Emergency Services:** Emergency services technologies use satellite and advanced communications systems to automatically notify the nearest police, rescue squad, or firefighters in the event of collisions or other emergencies, even in the most remote locations.
- **Tourism and Travel Information:** Tourism and travel information services use in-vehicle navigation and roadside communications systems to provide information to travelers who are unfamiliar with the local area. These services can be provided at specific locations en route or before travelers even begin their trip.



- **Public Traveler and Mobility Services.** Public traveler and mobility services improve the efficiency of transit services and their accessibility to rural residents. Better scheduling, improved dispatching, smart card payment transactions, and computerized ride-sharing and ride-matching systems can be achieved through advanced vehicle locating devices and communications systems.
- **Roadway Operations and Maintenance.** Roadway operations and maintenance technologies improve the ability of highway workers to maintain and operate rural roads. These include severe weather information systems and immediate detection and alert of dangers to work zone crews.
- **Fleet Operations and Maintenance.** Fleet operations and maintenance systems improve the efficiency of rural transit and other rural fleets, such as snowplows and law enforcement vehicles, through advanced vehicle tracking and on-board equipment monitoring systems.
- **Commercial Vehicles.** Commercial vehicles use satellites, computers, and communications systems to manage the movement and logistics of commercial vehicles, and to locate vehicles during emergencies and breakdowns. These technologies also assist drivers' performance – a critical concern particularly on long-haul night trips.

Rural ITS Can:

- Enhance safety; improve emergency response.
 - Provide information – especially road and weather conditions.
 - Make public transportation more available and accessible.
 - Enhance the tourism/recreational travel experiences.
-

2. Benefits of Rural ITS

The potential is great for rural ITS applications to address the varied needs of rural travelers. Rural ITS services can provide the following benefits:

- More efficient highway operations and management activities such as snow removal.
- Quicker response to traffic incidents and crashes, saving lives and reducing medical costs.
- More efficient rural transit operations and vehicle fleet management.
- Greater peace of mind from advanced safety and security systems.

- Better traveler information through in-vehicle communications and roadway signage, particularly for hazardous weather conditions.
- Fewer fog-related, multi-vehicle crashes in rural areas through advanced sensor systems.

Resources for more information on Rural ITS are listed in Section VII: Resources for Rural Transportation Planning.

B. Transit System Planning



The following section on transit system planning was adapted from an article published by the Community Transportation Association of America entitled *Rural Transit Service, Design and Scheduling (1998)*. This article is useful for rural transportation planners and was recommended through consultations with the Federal Transit Administration (FTA) during development of this document.

Transit system planning is important for many rural areas. There are three levels of detail possible in transit planning: aspects of each can be appropriate to include in the transportation plan. All three levels of transit planning require coordination with existing transit operating agencies if they are to be implemented. The three levels of detail are:

1. Strategic planning
2. Functional planning
3. Route design

At the *strategic planning* level, the relationship between transit service and land use is developed and the type and level of service planned by corridor and area is described. As a minimum, the transportation plan should include a strategic planning level of discussion of transit service. The level of detail and analysis at the strategic planning level will vary. The level of analysis will be more general where there is no existing transit service.

A transit *functional plan* provides information on the route location within the general corridor or area of service, as well as the level of service on the route in terms of headways between transit vehicles. Size and seating capacity of transit vehicles by route, the times of service, major transfer centers, and specific destinations served is also provided. This level of analysis may be available in the transit plan of existing transit organizations and can be

incorporated or summarized into the transportation plan. You do need to coordinate with the transit operating agency to assure compatibility of the functional transit plan with proposed land use plans.

The transit *route design* plan provides specific information on transit stop locations, assignment of vehicles and labor, transit shelters, transit schedules, rider information, etc. Generally this level of detail is not included in the transportation plan. However, some specific design features may be included because of their interrelationship to other parts of the transportation plan. As an example, a specific bus stop location could pose problems to the transit company, passengers, and general traffic because of high volumes, inadequate room for the transit vehicle to pull-off, and hazardous pedestrian crossings. The physical improvements, such as a transit center, and transit operations at any given location may need to be discussed specifically in the transportation plan.

1. Types of Transit Services

Transit is a broad array of services. The type of service can be defined using three factors:

- Type and capacity of vehicle: rail, bus, van, minibus, taxi, etc.
- Degree of exclusivity of right-of-way: fully shared with other traffic; partially shared (i.e., high occupancy vehicle lane); or entirely exclusive (i.e., busway or exclusive rail bed).
- Operational strategy: routing, scheduling, and stop location.

Routing refers to the assigned course that the transit vehicle follows. The route structure directly determines the accessibility of the transit system to the potential customer and which destinations have transit service. The route structure also determines how direct a trip is between origin and destination which effects the travel time. Basic routing strategies are:

- **Fixed-route service.** Transit vehicle travels a pre- established route. Passengers are picked up or dropped off at designated locations (pre-established transit stops). The route is designed to serve the greatest number of passengers practical while providing for as direct a route as possible between two terminal points. This is the traditional transit service provided in urban areas.
- **Route Deviation Service.** Transit vehicle travels a basic fixed route, picking up or dropping off people anywhere along the route. On request the vehicle will deviate a few blocks from the fixed route to pick up or deliver a passenger. This type of service is finding application in rural areas.
- **Point Deviation Service.** Transit vehicle stops at specified checkpoints (shopping centers, park-and-ride lot, industrial park, etc.) at specified times, but travels a flexible route between these points to service specific customer requests

for service. This type of service is used to provide access to fixed-route service from very low density areas or for persons with limited mobility.

- **Many to Few Service.** Although origin points may be anywhere in a defined service area, the destinations are limited (i.e., airport service).
- **Many to Many Service.** Within a defined service area, all origins and destinations are served. The vehicle travels a flexible route between origin and destination points to service specific customer requests for doorstep pickup and delivery (i.e., taxi service).

Scheduling is the assignment of time that the transit vehicle is available to the customer. Schedules can be predetermined or fixed, or they can be responsive to customer requests through advance reservation or immediate request through a dispatcher. Fixed-schedule options generally provide more reliable service and shorter trip and wait times.

Stop location is the assigned geographical location where the transit vehicle may pick up or deliver passengers. Stop locations affect vehicle travel time, waiting time, walking distance, and general transit accessibility. There are three ways to classify locations of transit stops along a fixed route: local, express, and skip-stop. These are shown in Figure 5.3. Stop location is also important for flexible route services. Consideration is given to kinds of places a transit vehicle will stop from the standpoint of customer safety and convenience.

2. Transit Planning Principles

The following transportation planning principles relate to the identification of transit proposals:

- The locally established transit level of service should be provided by the transit proposal under the forecast development scenario. This may require one or more iterations of the transit level of service with the transit plan to assure consistency and feasibility.
- Transit service should be planned and operated from a market based, user-oriented point of view. Unlike roads, one transit service does not necessarily serve all transit users. Potential transit markets need to be identified and services should be provided that are targeted to the identified market segments according to local priorities. Example transit markets include able-bodied elderly, disabled persons, commuters, students, low-income persons, and tourists.
- Consideration of operating cost and financing is critical. Unlike roads, operating cost (labor cost) is the major portion of the cost of transit service. New or additional service requires identification of new or additional annual revenue to support it. Development mitigation generally only provides for capital investment.

- A quality access system to the transit service is necessary and should be considered in the planning. Access to public transit by pedestrians, bicyclists, and automobile users should be easy, safe, and direct.
- A transit system consists of more than one route. Transfers between routes should be considered. Unscheduled transfers are applicable in systems with frequent service. Scheduled transfers are recommended where headways between transit vehicles are long.
- The street system should be laid out and designed to facilitate efficient transit operations. Transit routes need to be direct and continuous. Pedestrian crossings need to be visible, wheelchair accessible, and provide for adequate crossing time. Roads are designed to accommodate heavy-weight and large vehicle requirements. Bus pullouts should be considered and bus shelters should be considered in rural areas where bus stops are infrequent.

Transit and land development should be designed to complement each other. The following principles apply:

- The transit system design needs to be consistent with the development pattern. Higher residential densities require higher levels of transit service in terms of availability, frequency, coverage, and connectivity to important destinations.
- Planned land use patterns should support the transit plan. Transit compatible land uses need to be located within existing urban centers supported by transit service or near a transit facility or route.

Transit and site design should be designed to complement each other. The following principles apply:

- Land uses need to be oriented to transit facilities. Building entrances and paved walkways need to lead directly to a transit stop, a park-and-ride lot, or a station. Pedestrian amenities (e.g., plazas, covered areas, moderate grades, sidewalks, benches, lighting) encourage transit use.
- Walking distances need to be pedestrian scale. Walking distance from building entrances to transit facilities is affected by building setback. Smaller set backs reduce the walking distance and encourage, transit use.
- Parking should be shifted to the rear and sides of buildings when the building fronts on a transit facility. Large parking lots between a building entrance and a transit stop discourage pedestrian access. Parking requirements can be reduced if good transit service is provided.

Many resources on transit system planning are available through the Transportation Research Board (TRB) <http://www.nas.edu/trb> and the Community Transportation Association of America (CTAA) <http://www.ctaa.org>.

C. Access Management

This section defines and explains the importance access management for rural transportation planning.

1. What is Access Management?

Access management is defined as the process of providing access to developed land located adjacent to a highway system. Generally state DOTs and local agencies manage the design, location and supporting facilities for access points. Access



management contributes to how well vehicles, bicycles, and pedestrians can enter and exit commercial and residential areas adjacent to highways or arterials.

Good access is a function of the design and location of driveways and arterials. Improved access is dependent on: the location of the driveway/arterial with reference to other access points, the motorists' ability to easily access the property

or road, and the placement of traffic signals. Poorly designed and located driveways and arterials can severely affect traffic safety, road capacity and traffic speed. Points of conflict also increase if traffic signals are too close together or are uncoordinated. If the driveway or arterial is too close to another access point motorists traffic congestion and number of conflicts increase.

2. What are the Benefits of Access Management?

The key to access management is planning for the number and location of access points rather than responding to requests by local governments or developers. In other words, it is far better to have planned access as opposed to access that is the result of reactions to local governments and developers. Planned access can be based on an overall strategy for access that results in better decisions.

Four main benefits support managing access to highways. Access management:

- **Minimizes access-related accidents.** Points of conflict increase as areas along the highway become more commercialized and densely populated. Each new access point added to an undivided highway in an urban and suburban area increases the annual accident rate by 11 to 18 percent on that highway segment. In rural areas, each access point added increases the annual accident rate by

seven percent. Well-managed access points can improve user safety by reducing the number, severity and cost of access-related accidents. For example, increased spacing between driveways minimizes conflict by allowing motorists more time to anticipate and recover from turning traffic. Minimizing the speed differences between turning cars and through traffic reduces conflicts between cars, pedestrians and bicycles.

- **Preserves our mobility and investments.** Highways and roads represent a major public investment. The federal government, the state, local governments, and the general public have invested millions of dollars in statewide highway resources to move trucks and vehicles efficiently. Poorly designed access points increase congestion and the number of accidents that reduce speeds. Good access management preserves capacity by moving motorists out of lanes efficiently to increase continuous traffic flows and reduce conflict points.
- **Preserves and plans for healthy economic development.** Managing access not only increases regional mobility but also extends the life of existing roads. Public investment is best preserved by maximizing the use of existing facilities. If more vehicles can be moved on existing roads, construction costs can be minimized on unnecessary facilities. Arterial roads can carry many more vehicles each day using good access management processes. Also, planning and designing access areas early in the project improves the allocation of scarce resources. As communities grow, it becomes increasingly expensive to redesign poorly planned access points. Funds that would otherwise be spent on maintenance or operation of existing roadways are spent on curbside and driveway construction and widening roads.
- **Maintains functional integrity of the highway system.** A consistent statewide access management approach best protects the functional integrity of the state highway system. This approach, based upon best engineering practices and coordinated local participation, provides improved driveway location and design for growing communities. Central to this approach is a core access classification system that defines the desired level and location of access for communities adjacent to the highway system. Standardized policies and procedures also help to ensure government decisions are consistent and fair across the state. Developers, investors and the general public benefit from this increased predictability for the development process. Uniform access design standards minimize costs associated with redesign and promote fair method to manage new development.

Managed access is most successful when the state, local decision-makers and residents support and coordinate actions. The state and local governments should invite investors and the general public to become involved in access management decisions and in promoting and developing strong access management practices.

These practices include identifying when and where developers should be responsible for the payment of access improvements that address safety and capacity issues. For example, implementing specific procedures for conducting a traffic impact analysis would determine land owner responsibilities for signals, turning bays, and other design features that provide safe and efficient access. Provisions could be established for waiving the cost or need for such studies.

Resources for more information on Access Management are listed in Section VII: Resources for Rural Transportation Planning.

Appendix C: Case Study Profiles



This section presents four case study profiles that provide examples of successful rural transportation planning activities:

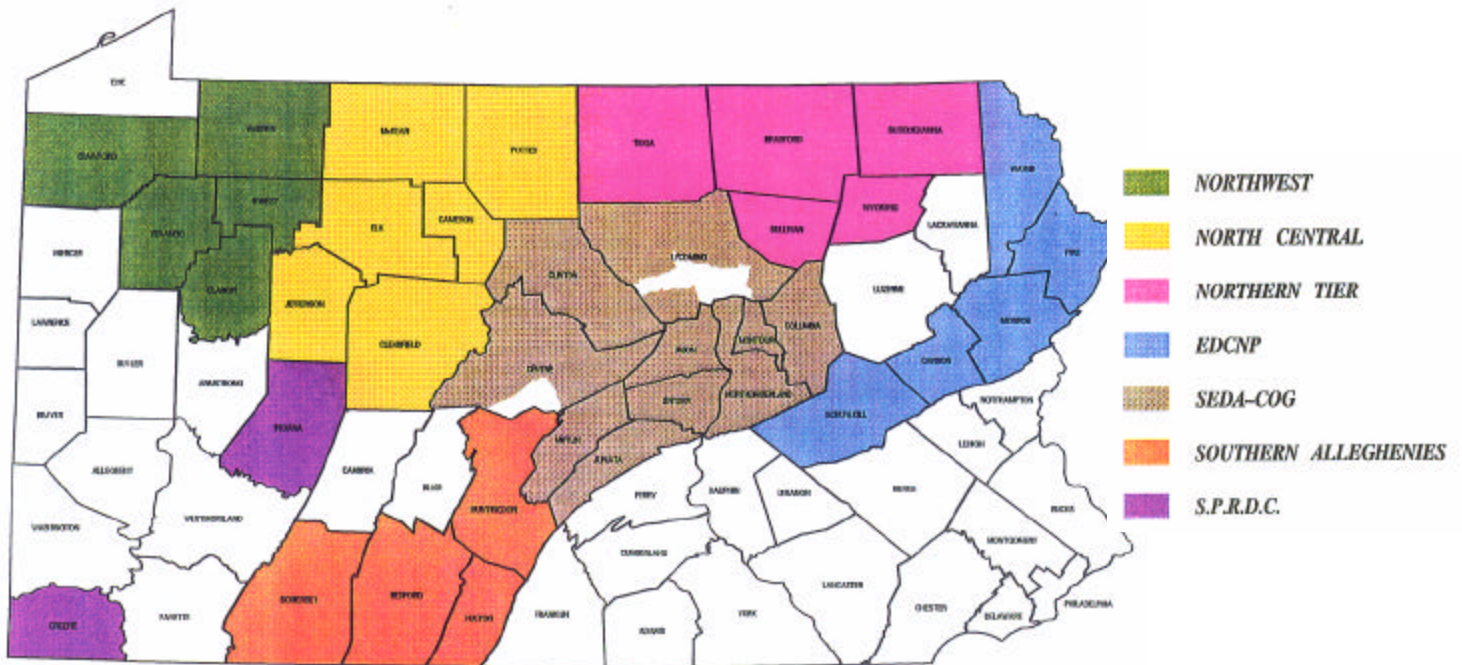
- **Pennsylvania's Planning Process.** Uses local development districts to facilitate rural transportation planning.
- **Kentucky's Transit Coordination program.** Provided effective coordination of rural transit services with welfare reform.
- **New Hampshire's Route 16 Corridor Planning.** Provides an example of corridor planning which involved effective coordination of different jurisdictions, agencies and private interests, as well as the integration of transportation with land use planning.
- **The Hutchinson (Minnesota) Area Transportation Plan.** A good example of local and state agencies working together to develop a coordinated, cooperative transportation plan to address regional growth.

Case Study Profile #1: Pennsylvania's Rural Planning Process

1. Background

During fiscal 1990, the Pennsylvania Department of Transportation (PennDOT) introduced a rural transportation planning program designed to integrate rural planning with ongoing metropolitan initiatives. The resulting rural transportation program(s) are incorporated into the Statewide Transportation Improvement Program (STIP). PennDOT recognized that, within the state, over seventy percent of linear highway miles are located in rural areas, which (currently) includes forty-four percent of all vehicle miles traveled. A primary objective was to develop a planning process based on cooperative decision-making between county, regional, and state agencies. The plan helped to ensure that priority goals and objectives were implemented with respect to both rural and metropolitan transportation planning.

Exhibit C-1: Pennsylvania's Seven Local Development Districts (LDDs)



2. Action

Seven Local Development Districts (LDDs) and two independent counties are now under contract with PennDOT to carry out rural transportation planning and programming. Funding is allocated based on a formula that accounts for population data, the area of land involved, and the complexity of the area's transportation system(s). A work program that includes federal, state, and local funding is negotiated annually between PennDOT and regional agencies. This work program includes funding targets and proposed planning activities to be conducted during the next fiscal year. Only activities approved in the work program are undertaken in that fiscal year.

State, regional, and local decision makers participate in technical advisory committees and policy committees which identify issues and opportunities, conduct studies and offer informed recommendations for programming and implementing transportation projects. These advisory and planning committees are charged with evaluating all aspects of transportation planning, including highway, bridge, transit, rail, bicycle, and pedestrian issues. Short- and long-range plans are approved in each area of interest. Together, the planning partner and PennDOT develop, negotiate and approve their rural portion of the Statewide Transportation Improvement Program (STIP).

3. Outcomes

During fiscal 2000-2001, each of the six Local Development Districts received approximately \$80,000 in federal and state funds for transportation planning and programming, in addition to a matching 10% from local funds. The two independent counties received approximately \$40,000. During 2000, rural planning partners worked with PennDOT to implement the statewide Transportation Policy Plan and served on committees that developed a new corridor-specific, statewide long-range plan, known as the PennPlan. Although the role of rural planning agencies is still evolving, the overwhelming opinion remains positive with regard to their role in planning transportation in Pennsylvania. With capable and professional staffing, the rural planning partners continue to assist with public involvement, coordination of transportation goals and objectives, and maintaining an overall focus on economic development.

For more information on the Pennsylvania process, contact Howard Grossman, Executive Director of the Economic Development Council of Northeastern Pennsylvania, at (717) 655-5581 or Jim Smedley, Transportation Planner for the Pennsylvania Department of Transportation, at (717) 772-1772.

Case Study Profile #2: Kentucky's Transit Coordination

1. Background

In the past, Kentucky's transit network had experienced inconsistencies in the overall level of service, as well as problems with delivery processes, increasing costs, and potential exposure to fraud and abuse. Transportation services were not readily accessible statewide, particularly in rural communities. In addition, Kentucky's welfare reform initiative was also expected to double transportation usage for Temporary Assistance to Needy Families (TANF).

2. Action

The Human Service Transportation Delivery (HSTD) Program, developed during 1997/98 under Governor Paul Patton's *Empower Kentucky* Project, consolidated transportation services which had previously been provided by various state governmental agencies. Under the provisions of the program, transportation services are provided to Medicaid recipients meeting the following requirements:

- Non-emergency medical situations.
- Persons under the TANF program who require transportation to interviews, job training, jobs and daycare centers for their children. This program also provides

transportation services to persons eligible for Vocational Rehabilitation and Department of the Blind programs.

The HSTD program continues to provide a number of benefits to eligible transportation recipients. A total of 15 statewide transportation regions operate 24 hours a day, 7 days a week with a “broker” established in each region. Brokers are responsible for coordinating and subcontracting transportation services as well as evaluating the eligibility data of recipients. Twelve of the 15 transportation regions are nonprofit Rural Transit Demand Response Public Systems. The twelve nonprofit transit systems coordinate their HSTD transportation with the general rural public transportation services. In order to reduce costs, a per capita rate structure was developed for each region. The Transportation Cabinet, the lead agency for this project, is tasked to oversee and properly monitor the functions of the HSTD.

3. Outcomes

Early program results reflect cost containment as well as an increase in the use of the system by recipients. Along with consolidating agency services statewide, the program further enhances the overall quality of transportation services by requiring random drug and alcohol testing and by setting higher standards for vehicle maintenance. The public now receives additional services and improved access to medical care, social services, and job training. To date, the program has provided over 3 million TANF and Medicaid trips.

As expected with any new program, challenges exist. The Kentucky Legislative Research Commission (LRC) released an evaluation of the HSTD program in November 1999. The evaluation noted recipients’ concern in the following areas: lack of choice as to who will provide the transportation services, the inconvenience of scheduling trips 72 hours in advance, and poor pickup reliability.

As a result of the LRC findings, several recommendations were offered to improve the Transportation Cabinet’s task of independently monitoring and enforcing the quality of transportation services delivered to program recipients. The combined efforts of the Transportation Cabinet and the brokers/service providers have led to a positive outcome for both recipients and taxpayers. In addition, the state benefits as a result of providing improved transportation services, with streamlined costs and less exposure to fraud and abuse.

For more information regarding the Kentucky coordination effort, contact Vicki Bourne, Public Transit Branch Manager, at (502) 564-7433.

1. Background

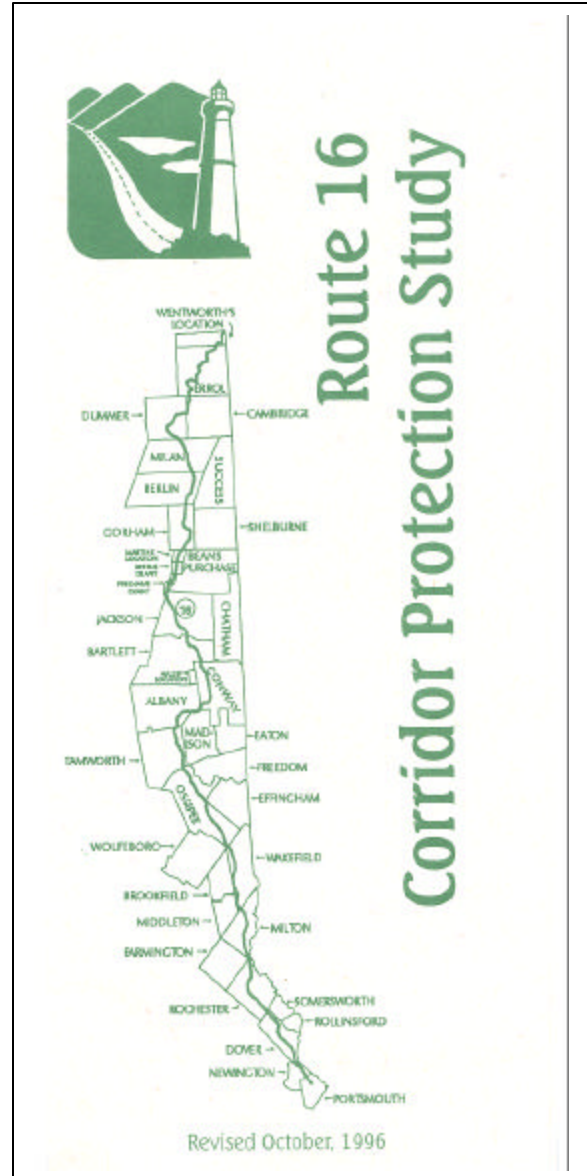
The Route 16 Corridor along New Hampshire's eastern border is a 156-mile corridor that contains 5 cities, 24 towns, and 8 unincorporated areas. The Corridor exhibits a highly diverse economy, population, and natural features. It was not surprising, therefore, that a variety of issues and opinions existed regarding the improvement of transportation along the Corridor.

2. Action

The Route 16 Corridor Protection Study, which began in 1994, was a five-year project funded with 80% federal funds and 20% state funds. The Study involved local communities in the development of initiatives to improve transportation along the Corridor. The project's goal was¹⁰:

To demonstrate an innovative approach to developing a long-range solution to the problem of providing an efficient transportation system that promotes economic vitality and a high quality of life for the residents of communities and visitors to the regions served by the Route 16 Corridor.

Focusing on the connections between transportation, land use, the economy and quality of life, this plan was based upon an approach that relied upon input and feedback from the people who live and work along the Route 16 Corridor. Regular community meetings, a quarterly newsletter, and the establishment of five working groups contributed to the success of this outreach effort. Innovative methods and



¹⁰ Route 16: The Corridor Tomorrow, New Hampshire Department of Transportation, pg. 1.

advanced communication tools allowed NHDOT to help town officials, residents, business owners, and other interested citizens to better understand the issues and to identify concerns. Instructional media included videos, interactive CD-ROMs, the use of Geographic Information Systems (GIS), and other visualization techniques.

This Study was distinctive because it effectively integrated components of both transportation and land use planning. Local land use decisions affect regional transportation needs as transportation improvements alter land value and regional growth.

The Study was divided into four phases:

- **Initial Data Collection** – Data was collected concerning development regulations, traffic classification counts, the location and inventory of major recreation facilities, employers and natural resources.
- **Additional Data Collection and Public Input** – A computer travel model was developed for the Route 16 Corridor and a strategy was designed and implemented to encourage public involvement.
- **Analysis** – Data collected in the first two phases was analyzed.
- **Recommendations** – Both short- and long-term recommendations were developed to support the findings.

3. Outcomes

This Study confirmed that transportation, land use, access management, zoning, quality of life, and other factors drive the growth and development of the Route 16 Corridor. The Study also provided a new approach involving state-of-the-art planning tools and active participation from a diverse and large number of concerned parties. This approach was successfully adopted in two other corridor studies, four community pilot studies and a number of other community and regional projects.

The Study determined that “perhaps the single most important realization in developing the final recommendations was that ‘we cannot build our way out of congestion.’ In other words, roadway construction projects must be accompanied by other non-highway transportation improvements that can help mitigate future traffic growth.”¹¹

Following is a list of initiatives that have been introduced as a result of the Study:

- A number of recommendations from the Plan have been introduced to the Transportation Advisory Committees of the Regional Planning Agencies as part

¹¹ Route 16: The Corridor Tomorrow, New Hampshire Department of Transportation, pg. 11.

of the Ten Year Transportation Improvement Program emphasizing the relief of congestion, improving safety and maintenance.

- The NHDOT is expected to issue a request for proposals for an inter-city bus operator within a regional corridor from Portsmouth to Conway.
- Four community pilot studies, or master planning initiatives, within individual Corridor communities help towns adopt the Route 16 approach at a local level.
- A Corridor Advisory Committee was formed to ensure that actions and lines of communication developed as a result of the Study will continue at local, regional and state levels.

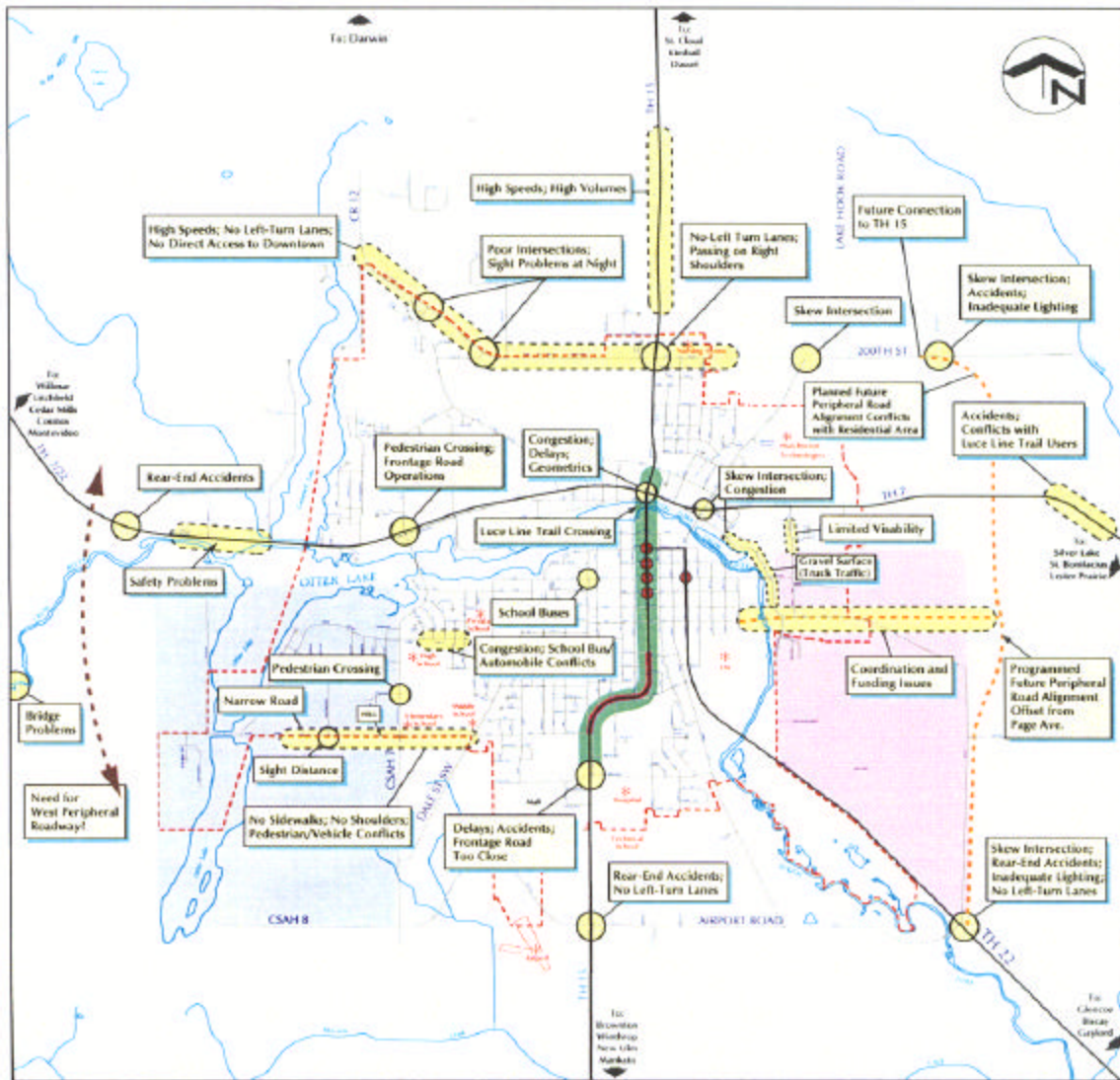
For more information on this study, contact Ansel Sandbourn at New Hampshire Department of Transportation, at (603) 276-3344.

Case Study Profile #4: Hutchinson County, Minnesota Transportation Plan

1. Background

Since completion of the 1970's transportation plan, the population of Hutchinson County increased by over 43 percent; and as a result, the area experienced major economic development and growth in traffic. Employment centers such as 3M and Hutchinson Technology attract large numbers of employees commuting from adjacent communities. The area's close proximity to the Twin Cities metropolitan area makes Hutchinson County an attractive place to live.

Exhibit C-2: Hutchinson Area Transportation Study Issues Map



2. Action

The Hutchinson Area Transportation Plan was a cooperative, coordinated effort to build a comprehensive transportation planning study for the City of Hutchinson and the surrounding area. The study involved the Minnesota Department of Transportation (MnDOT), along with transportation planners from McLeod County and the City of Hutchinson from the spring of 1997 to the summer of 1998. Together, these agencies expanded their understanding of growth trends, examined local transportation problems and needs, and developed joint solutions to common problems. This collaboration resulted in effective and long-lasting transportation solutions.

Public participation was considered necessary in order to identify issues and concerns. Throughout the planning process, MnDOT and its partners provided the public with opportunities to participate, including:

- Small-group stakeholder meetings offered interested parties regular opportunities to discuss concerns.
- A series of meetings offered local business representatives and residents a forum for discussing problems and potential solutions for the Trunk Highway (“TH”) 7 Corridor.
- Open house meetings provided the public with opportunities to comment on planning issues and to recommend solutions.
- A Project Management Team (PMT) was established that consisted of representatives from each governmental agency and the Mid-Minnesota Development Commission. The PMT provided input into the study process and the analysis of issues, and served as an important communication link with other decision-makers.

Surveying travel patterns provided a perspective on the function of each of the major roadways serving the City of Hutchinson. Of specific interest were TH 7, TH 15, TH 22 and County State Aid Highway (CSAH) 12. From this survey, the public and agencies concluded that a TH 7 or TH 15 bypass was not feasible at that time. Instead, they decided to focus efforts on developing alternative, peripheral routes.

Residents and businesses voiced opinions on critical TH 15 traffic congestion and safety concerns. Serving as the primary north-south route through the City of Hutchinson, traffic delays and safety issues are an ongoing concern during peak travel times. Plan recommendations addressed these issues. Among others, one recommendation involved alternate routes for local vehicular and truck traffic. City and county agencies recommended a west periphery route be developed to reduce regional traffic south of the city. Additional signage and completion of local construction were suggested to help minimize traffic congestion.

Safety, operational and access issues were the primary concerns relating to TH 7, a main east-west city corridor. A corridor study that identified operational, design and access issues resulted in a recommendation for reconfiguring the TH 7/TH 15 intersection and providing improved access to other intersections.

The Hutchinson Area Transportation Plan not only responded to immediate needs, but continues to serve as a guide for addressing long-term transportation system issues. The Plan offers several alternatives to be considered when managing access along important corridors:¹²

¹² Executive Summary, Hutchinson Area Transportation plan, SRF Consulting Group, Inc., August 1998.

- Restrict turning movements at minor access points to reduce conflicts.
- Develop parallel street systems for carrying local traffic.
- Develop proper setbacks to provide for future frontage roads.
- Develop proper secondary street spacing to protect future signal coordination.
- Encourage proper lot layout to minimize access points.
- Encourage shared driveways and internal circulation plans.
- Encourage connections between developments.
- Consideration for Official Map Processes, a forward-looking planning and development tool that allows for the preservation of important transportation corridors.

Agencies developed an implementation plan to prioritize short-term (0 to 6 years), mid-term (6 to 12 years) and long-term (12 to 20 years) initiatives.

3. Outcomes

The intergovernmental cooperation and support received from community leaders, businesses and citizens were significant to the overall success of the Plan itself. Findings and recommendations are highlighted below:

- Agencies and citizens are working cooperatively to keep lines of communication open when dealing with transportation issues.
- Agency partners¹³ regularly monitor the progress of projects identified in the plan.
- Agency partners are developing their internal approach for reviewing and addressing safety issues identified in the Study.
- Agency partners are successfully developing a transfer and land use/access plan for TH 22, a main roadway.
- Partners have worked together to maintain access management for key corridors.
- The City and County are incorporating transportation planning issues into their land use plans.
- MnDOT prioritized the TH 7/TH 15 intersection as their second highest priority.
- Partners are currently reviewing assumptions under which the Transportation Plan was developed and updated.

¹³ Agency partners include the Minnesota Department of Transportation (MnDOT), along with transportation planners from McLeod County and the City of Hutchinson.

- The City and County have updated the existing functional classification map.
- The economic and social changes from recent rapid development caused agencies and citizens to revise and reprioritize their recommendations.

For more information on the Minnesota Transportation Plan, contact Patrick Weidemann, District Planning Director, at (320) 214-3753.

Appendix D: Resources for Rural Transportation Planning



This appendix provides a list of World Wide Web resources, technical and policy references, workshop status reports, and a glossary of transportation planning terms to assist rural transportation practitioners.

A. World Wide Web Resources

1. Federal Resources

US Department of Transportation (USDOT)
<http://www.dot.gov>

Federal Highway Administration (FHWA)
<http://www.fhwa.dot.gov>

Federal Transit Administration (FTA)
<http://www.fta.dot.gov>

Federal Aviation Administration (FAA)
<http://www.faa.gov>

Federal Railroad Administration (FRA)
<http://www.fra.dot.gov>

Transportation Equity Act for the 21st Century
(TEA-21)
<http://www.fhwa.dot.gov/tea21/>

National Highway Traffic Safety
Administration (NHTSA)
<http://www.nhtsa.dot.gov>

National Safety Council
<http://www.nsc.org>

National Transportation Library
<http://www.bts.gov/smart>

FHWA Innovative Finance
<http://www.fhwa.dot.gov/innovativefinance/>

The Safe Communities Services
<http://www.nhtsa.dot.gov/safecommunities>

Bureau of Transportation Statistics (BTS)
<http://www.bts.gov>

Office of Transportation Technologies
<http://www.ott.doe.gov>

ITS Electronic Document Library (FHWA)
<http://www.its.dot.gov>

ITS Joint Program Office (USDOT)
<http://www.its.dot.gov>

ITS America
<http://www.itsa.org>

ITS Cooperative Deployment Network
<http://www.nawgits.com/icdn.html>

Essential Air Service
<http://www.ostpxweb.dot.gov/aviation/>

Local Technical Assistance Program (LTAP)
<http://www.ltap.org>

National Scenic Byways Program
<http://www.byways.org>

US Department of Agriculture – Rural
Development
<http://www.rurdev.usda.gov/nrdp>

US Department of Commerce
<http://www.doc.gov>

Job Access and Reverse Commute
www.fta.dot.gov/wtw/

USDOT and USDA Transportation Toolbox
for Rural Areas and Small Communities
<http://ntl.bts.gov/ruraltransport/toolbox/>

FHWA Real Estate and Right-of-Way
Information
<http://www.fhwa.dot.gov/realestate>

2. National Association Resources

American Association of State Highway and
Transportation Officials (AASHTO)
<http://www.aashto.org>

American Planning Association (APA)
<http://www.planning.org>

American Public Transit Association (APTA)
<http://www.apta.org>

American Public Works Association (APWA)
<http://www.apwa.net>

American Short Line and Regional Railroad
Association (ASLRA)
<http://www.aslra.org>

Amtrak
<http://www.amtrak.com>

Association of American Railroads (AAR)
<http://www.aar.org>

Association of Metropolitan Planning
Organizations (AMPO)
<http://www.ampo.org>

Community Transportation Association of
America (CTAA)
<http://www.ctaa.org>

American Traffic Safety Services Association
(ATSSA)
<http://www.atssa.com>

Intelligent Transportation Society of America
(ITSA)
<http://www.itsa.org>

American Public Transportation Association
(APTA)
<http://www.apta.com>

National Association of Development
Organizations (NADO)
<http://www.nado.org>

International City/County Management
Association (ICMA)
<http://www.icma.org>

The National Associations Working Group for
ITS
<http://www.nawgits.com>

National Association of Counties (NACO)
<http://www.naco.org>

Regional Airline Association (RAA)
<http://www.raa.org>

National Association of Towns & Townships
<http://www.natat.org>

National Association of County Engineers
(NACE)
<http://www.nace.org>

National League of Cities (NLC)
<http://www.nlc.org>

National Association of Regional Councils
(NARC)
<http://www.narc.org>

Appalachian Regional Commission (ARC)
<http://www.arc.gov>

3. State Department of Transportation Web Sites

Alabama
<http://www.dot.state.al.us>

Montana
<http://www.mdt.state.mt.us>

Alaska
<http://www.dot.state.ak.us>

Nebraska
<http://www.dor.state.ne.us>

Arizona
<http://www.dot.state.az.us>

Nevada
<http://www.nevadadot.com>

Arkansas
<http://www.ahtd.state.ar.us>

New Hampshire
<http://www.state.nh.us/dot>

California
<http://www.dot.ca.gov>

New Jersey
<http://www.state.nj.us/transportation>

Colorado
<http://www.dot.state.co.us>

New Mexico
<http://www.nmshtd.state.nm.us>

Connecticut
<http://www.state.ct.us/dot>

New York
<http://www.dot.state.ny.us>

Delaware
<http://www.state.de.us/deldot>

North Carolina
<http://www.dot.state.nc.us/DOT>

Florida
<http://www.dot.state.fl.us>

North Dakota
<http://www.state.nd.us/dot>

Georgia
<http://www.dot.state.ga.us>

Ohio
<http://www.dot.state.oh.us>

Hawaii
<http://www.state.hi.us/dot>

Oklahoma
<http://www.okladot.state.ok.us>

Idaho
<http://www.state.id.us/itd/itdhmpg.htm>

Oregon
<http://www.odot.state.or.us>

Illinois
<http://dot.state.il.us>

Pennsylvania
<http://www.dot.state.pa.us>

Indiana
<http://www.ai.org/dot>

Rhode Island
<http://www.dot.state.ri.us>

Iowa
<http://www.dot.state.ia.us>

South Carolina
<http://www.dot.state.sc.us>

Kansas
<http://www.dot.state.ks.us>

South Dakota
<http://www.state.sd.us/dot>

Kentucky
<http://www.kytc.state.ky.us>

Louisiana
<http://www.dotd.state.la.us>

Maine
<http://www.state.me.us/mdot>

Maryland
<http://www.mdot.state.md.us>

Massachusetts
<http://www.magnet.state.ma.us/mhd/home.htm>

Michigan
<http://www.mdot.state.mi.us>

Minnesota
<http://www.dot.state.mn.us>

Mississippi
<http://www.mdot.state.ms.us>

Missouri
<http://www.modot.state.mo.us>

Tennessee
<http://www.tdot.state.tn.us>

Texas
<http://www.dot.state.tx.us>

Utah
<http://www.sr.ex.state.ut.us>

Vermont
<http://www.aot.state.vt.us>

Virginia
<http://www.vdot.state.va.us>

Washington
<http://www.wsdot.wa.gov>

West Virginia
<http://www.wvdot.com>

Wisconsin
<http://www.dot.state.wi.us>

Wyoming
<http://wydotweb.state.wy.us>

4. Transportation Institutes and Centers

Transportation Research Board (TRB)
<http://www.nas.edu/trb/>

Surface Transportation Policy Project (STPP)
<http://www.transact.org/stpp.htm>

Institute of Transportation Engineers (ITE)
<http://www.ite.org>

Volpe National Transportation Systems Center
<http://www.volpe.dot.gov>

Center of Excellence for Sustainable
Development
<http://www.sustainable.doe.gov>

Rural ITS Project – California
Transportation Department (CALTRANS)
<http://www.ruralits.org>

Colorado Transportation Information
Program (COTIP)
<http://bechtel.colorado.edu/~xiy/>

Institute for Transportation Research and
Education (ITRE)
<http://itre.ncsu.edu>

ITS Program at Princeton University
<http://www.njtide.org/links/index.html>

National Transit Institute
<http://policy.rutgers.edu/nti>

Institute for Transportation Studies (UC-Berkeley)

<http://www.lib.berkeley.edu/ITSL/>

Intelligent Transportation Systems On-line

<http://www.itsonline.com>

MIT: Center for Transportation Studies

<http://web.mit.edu/cts/www>

National Center for Advanced Transportation Technology (NCATT)

<http://niatt.uidaho.edu/niatt>

Pan-American Institute of Highways

<http://www.pih-ipc.org>

Midwest Regional University Transportation Center – University of Wisconsin-Madison

<http://www.mrutc.org/>

Upper Great Plains Transportation – North Dakota State University

<http://www.ugpti.org/>

Northwestern University Transportation Library

<http://www.library.nwu.edu/transportation>

Pennsylvania Transportation Institute

<http://www.pti.psu.edu>

The SMART Library

<http://www.bts.gov/ntl>

Texas Transportation Institute

<http://tti.tamu.edu>

Center for Urban Transportation Research – University of South Florida

<http://www.cutr.eng.usf.edu/>

Mack-Blackwell Transportation Center – University of Arkansas

<http://www.cveg.uark.edu/mbtc/>

North Central Regional Center for Rural Development – Iowa State University

<http://www.ag.iastate.edu/centers/rdev/>

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Colorado Regional Transportation Planning Guidebook. Colorado Department of Transportation, 1998.

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Highway Capacity Manual. Third Edition, Special Report 209. Transportation Research Board. Washington, DC: TRB. 1998 Update.

Transportation Planning Handbook. Second Edition. Institute of Transportation Engineers, 1999.

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Rural Transit Service Design and Scheduling. Community Transportation Association of America, 1998.

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Small Transit System Management Handbook. Michigan Department of Transportation, 1985.

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Transit Cooperative Research Program, Report 3: Workbook for Estimating Demand for Rural Passenger Transportation. SG Associates, Inc. Annandale, VA with Leigh, Scott & Cleary, Inc. Tahoe City, CA and C.M. Research, Inc. Little Rock, AR.

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Access Management: Lessons From Fourteen Years in Colorado. Demosthenes, Phillip. Paper prepared for the 1996 National Access Management Conference in Vail, Colorado.

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National Bicycling and Walking Study – A Final Report. US Department of Transportation, Federal Highway Administration, 1994.

C. Working Groups on Rural Transportation

The following reports the progress of some recent working groups involved with rural transportation planning.

The Data and Information Exchange Working Group announced the press release of its completed website: ***Rural and Agricultural Transportation Data and Information Resources***. This website is located at <http://ntl.bts.gov/ruraltransport/> and contains over 800 links on freight, passenger travel and tourism, safety, economic and community development, the environment, and energy usage. The Working Group plans to monitor how many people use it and will investigate different methods for promotion of the web site, including development of rolodex cards. During the next meeting, the Working Group will also present recommendations on how the website may be maintained in the future.

The ***Rural Freight Working Group*** (RFWG) discussed a number of projects. USDA and USDOT have agreed to jointly support an annual survey and the development of a database by the Upper Great Plains Transportation Institute (UGPTI) on regional and short line railroad operations. The Working Group reported that total annual funding for this activity is \$80,000, with USDA and USDOT-Federal Railroad Administration (FRA) agreeing to share the expenses each year.

The ***Community Development Working Group*** has completed a digital toolbox for rural transportation. The digital toolbox, designed for rural customers, is a user-friendly website called “Transportation Toolbox for Rural Areas and Small Communities.” The website contains information on a wide range of USDA and USDOT programs, including the components of the USDOT Rural Initiative and programs from such USDA programs as Rural Housing and Rural Development. The website address is:
<http://ntl.bts.gov/ruraltransport/toolbox/>.

D. Glossary of Transportation Planning Terms

Alternative: One of a number of specific proposals, alignments, options, design choices, etc., in a study.

American Association of State Highway Officials (AASHTO): An association of state departments of transportation, the AASHTO advocates multimodal transportation by providing technical services, information and policy advice to member departments, the U.S. Department of Transportation and Congress. The AASHTO is influential in national transportation policy decision-making.

Americans with Disabilities Act (ADA): The legislation defining the responsibilities of and requirements for transportation providers to make transportation accessible to individuals with disabilities.

Arterial Highway: Arterial highways serve major traffic movements or major traffic corridors. While they may provide access to abutting land, their primary function is to serve traffic moving through the area.

Average Daily Traffic Volume: The average number of vehicles that travel on a given road during the day. As defined by traffic engineers, it is the total traffic volume during a given time period in whole days (24-hour periods), greater than one day and less than one year, divided by the number of days in that time period.

Bicycle Path (Bike Path): A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way.

Bridge Inspection Program (BIP): A FHWA program that inventories and inspects the condition of all bridges in the Federal-Aid Highway system. An evaluation of each bridge's load-carrying capacity is performed to determine if any deficiencies exist, and if necessary, appropriate action such as warning signs, bridge closing, rehabilitation or replacement, is taken.

Capacity: The maximum number of vehicles that can reasonably be expected to pass over a lane or a roadway during a given time period under prevailing roadway and traffic conditions. Typically, the maximum expressway capacity for automobiles is 2,000 vehicles per lane per hour.

Capital Improvement Projects: Refers to higher-cost transportation improvements, typically involving major infrastructure construction such as adding travel lanes to existing roads and building new roadways, interchanges, or railroads.

Central Business District (CBD): The downtown retail trade and commercial area of a city or an area of very high land valuation, traffic flow, and concentration of retail business offices, theaters, hotels and services.

Collector Highway: Collector highways are those highways that link local highways to arterial highways.

Collectors: In rural areas, routes serving intra-county, rather than statewide travel. In urban areas, streets providing direct access to neighborhoods as well as direct access to arterials.

Comprehensive Plan: The general, inclusive, long-range statement of the future development of a community. The plan is typically a map accompanied by description and supplemented by policy statements that direct future capital improvements in an area.

Congestion Mitigation and Air Quality Improvement Program (CMAQ): Federal money contained in TEA-21 for projects and activities that reduce congestion and improve air quality.

Controlled Access: Partial access restriction that gives preference to through traffic. Also provides for connections to selected public routes and to certain other adjacent locations where vehicles can enter or leave a roadway safely without interfering with through traffic.

Corridor: Land between two termini within which traffic, transit, land use, topography, environment, and other characteristics are evaluated for transportation purposes.

Demand Responsive Transportation: Transportation services that are flexible in terms of schedule and locations, such as taxis.

Design Criteria: Established state and national standards and procedures that guide the establishment of roadway layouts, alignments, geometry, and dimensions for specified types of roadways in certain defined conditions. The principal design criteria for roadways are traffic volume, design speed, the physical characteristics of vehicles, the classification of vehicles, and the percentage of various vehicle classification types that use the roadway.

Environmental Assessment (EA): A document prepared early in a planning process that evaluates the potential environmental consequences of a project or activity. An assessment includes the same topical areas as an EIS, but only assesses the effects of a preferred action, and in less detail than an EIS. An EA results in a decision, based on an assessment of the degree of impact of an action, that an EIS is necessary, or that an action will have no significant effect and a finding of no significant impact (FONSI) can be made.

Environmental Impact Statement (EIS): An EIS is a full disclosure, detailed report which, pursuant to Section 102(2)C of the National Environmental Policy Act (NEPA), establishes the need for the proposed action, identifies alternatives with the potential to meet the identified need, analyzes the anticipated environmental consequences of identified alternatives, and discusses how adverse effects may be mitigated. An EIS is prepared in two stages: a draft statement which is made available to the public for review and a final statement which is revised on the basis of comments made on the draft statement.

Environmental Overview: A beginning inventory or summary assessment of environmental features in a study area, usually performed during systems planning or preliminary environmental activities. From this preliminary information, the environmental impacts of the study alternatives will be determined. This overview may sometimes be referred to as Environmental Screening.

Environmental Protection Agency (EPA): The Federal agency charged with developing and enforcing national environmental policies. The EPA oversees federal policy regarding air and water pollution, among other topics.

Federal Aid Project: An activity, study, survey, project, or other work related to transportation authorized in advance by the Federal Highway Administration, Federal Transit Administration, or other federal agency, and which is paid for either partially or fully by public funds.

Federal Highway Administration (FHWA): The FHWA deals with highway transportation in its broadest scope, administering all Federal highway transportation programs, including FLHP.

Federal Lands Highway Program (FLHP): The FLHP funds transportation system investment for transportation facilities providing access to and within National Forests, National Parks, National Refuges, Indian Lands and other public lands.

Federal Transit Administration (FTA): The FTA funds the development of mass transportation systems such as subway and bus systems.

Free Access: The lowest condition of access control on state highways which allows an unlimited number of private driveway connections, intersections at grade, field entrances, or other land service linkages that give vehicles or pedestrians access to the highways.

Functional Roadway Classification: The organization of roadways into a hierarchy based on the character of service provided. Typical classifications include arterial, local, and collection roadways.

Geographic Information System (GIS): A computer-based system that links the geographic location of map features to text information or databases.

Geometric Design: Design that deals with the dimensions of a facility and the relationships of its features such as alignment, profile, grades, widths, sight distances, clearances, and slopes as distinguished from structural design which is concerned with thickness, composition of materials, and load-carrying capacity.

High-Occupancy Vehicle (HOV) Lane: A lane designated exclusively for vehicles carrying two or more persons, such as buses, carpools, and vans.

Historic Resource: A building, structure, site, district, or object that is significant in American history, architecture, archaeology, engineering, and culture.

Hazardous Waste: An environmental impact category encompassing all types of permitted and unregulated materials, sites, and substances which require prudent handling and treatment to prevent harm or danger.

Impacts: Positive or negative effects upon the natural or human environment resulting from transportation projects.

Indirect Effects (see Secondary Effects): Effects that can be expected to result from a given action and that occur later in time or further removed in distance, yet are reasonably foreseeable in the future; for example, induced changes to land use patterns, population density, or growth rate.

Intelligent Transportation Systems (ITS): Refers to the use of advanced technologies (such as traffic sensors and communications equipment) to improve transportation operations.

Intermodal: A mode is a particular form of transportation, such as automobile, transit, carpool, ship, and bicycle. Intermodal refers to connections between modes.

Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA): Federal legislation that mandated the way transportation decisions were to be made and funded. This landmark \$155 billion federal legislation signed into law in December 1991, called for broad changes in transportation decision-making, and included major revisions to metropolitan and statewide planning processes. ISTEA emphasized diversity and balance of modes, as well as the preservation of existing systems over construction of new facilities. The law expired in September 1997, and was followed by TEA-21.

Level of Service: A rating system used by traffic engineers to determine a roadway's ability to provide adequate capacity for the volume of traffic (number of vehicles) using the road.

Limited-Access Highway: A highway that has access to it restricted to designated points such as interchanges.

Long Range Transportation Plan: Identifies regional transportation goals, issues, and needs and defines the direction for regional planning, programming, and project development over a 20-year period.

Major Investment Study (MIS): The MIS is an evaluation of the effectiveness (such as level of use and ability to meet the mobility needs of the public) and cost-effectiveness of alternative transportation investments in attaining local, State, and regional goals and objectives for the metropolitan or rural area. The study uses a cooperative process that leads to a decision on the design concept and fiscal scope of an investment(s). The recommended design concept(s) may result in additional development as a transportation project(s).

Metropolitan Planning Organization (MPO): A planning group designated for each urban area with a population of 50,000 or more. Members include both private citizens and local government officials. An MPO addresses Federal aid planning mandates by producing local area transportation plans or transportation improvement programs on an annual or biannual basis, or by employing other strategies that make existing systems more efficient.

Mitigation Measures: Specific design commitments made during the environmental evaluation and study process that serve to moderate or lessen impacts deriving from the proposed action. These measures may include planning and development commitments, environmental measures, right-of-way improvements, and agreements with resource or other agencies to effect construction or post construction action.

Modal Split: The proportion of trips made on the roadway versus other modes of travel such as the public transit system.

Multimodal: Facilities serving more than one transportation mode or a transportation network comprised of a variety of modes.

Multimodal Facility: A transportation facility built to accommodate two or more types of transportation modes (e.g., bus/rail terminal).

Multiple Use/Joint Development: The use of transportation facilities and highway rights-of-way and corridor areas for purposes additional to and compatible with the designed movement of transportation conveyances (such as vehicles on the traveled way of a roadway). Examples include recreation and park areas, public art, scenic and wildlife resource enhancement, non-residential developments, and parking facilities.

National Environmental Policy Act (NEPA): Established by Congress in 1969, NEPA requires that Federal Agencies consider environmental matters when considering to carry out federal actions. This could include the preparation of environmental assessments (EAs) or environmental impact statement (EIS) for projects with the potential to result in significant effects on the environment.

National Historic Preservation Act (NHPA): Established by Congress in 1966, the NHPA sets a national policy for the protection of historic and archeological sites and outlines responsibilities for Federal and state governments to preserve the nation's history.

No-Build Alternative (also known as “No-Action Alternative”): Option of maintaining the status quo by not building transportation improvements. Usually results in eventual deterioration of existing transportation conditions. Serves as a baseline for comparison of “Build” Alternatives.

Origin-Destination Survey: A survey conducted of the traffic using the study area roadway system to determine/document current traffic patterns.

Paratransit Service: Transit service for individuals with disabilities who are unable to use the fixed route public transit system.

Park and Ride: A transportation option whereby commuters park their cars in designated lots and complete their trips using public transportation or joining other commuters in a high-occupancy vehicle (HOV) (e.g., buses, subways, and carpool/vanpool).

Peak Hour: Time when a highway carries its highest volume of traffic, usually the morning or evening “rush” period when commuters travel to and from work.

Preliminary Engineering: Early phases of technical studies undertaken to determine all relevant aspects of transportation location, to identify feasible route alternatives or design options, and to assess various cost and benefit parameters before advancing the project into more detailed final design development.

Prime Farmland: Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oil seed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor and without intolerable soil erosion, as determined by the Secretary of Agriculture. It does not include land that is already committed to urban development or storage.

Problem Statement: A concise narrative, prepared at the outset of a project or study or as part of a project needs study, defining the fundamental situation or circumstance to be solved. A problem statement will generally describe a particular situation in which an expected level of performance is not being achieved, and will list one or more important factors that cause or contribute to the unacceptable performance.

Productive Agricultural Land: Any land used for production, commercial purposes, crops, livestock, and livestock products, including the processing or retail marketing of such crops, livestock, or livestock products if more than 50 percent of such proposed merchandised products are produced by the farm operator.

Programming: A general term to refer to a series of activities carried out by planners, including data assessment, appraisal of identified planning needs, and consideration of available or anticipated fiscal resources to result in the drawing up, scheduling, and planning of a list of identified transportation improvements for a given period of time.

Public Hearing: A meeting designed to afford the public the fullest opportunity to express support of or opposition to a transportation project in an open forum at which a verbatim record (transcript) of the proceedings is kept.

Public Meeting: An announced meeting conducted by transportation officials designed to facilitate participation in the decision-making process and to assist the public in gaining an informed view of a proposed project at any level of the transportation project development process. Also, such a gathering may be referred to as a public information meeting.

Qualitative Analysis: A general concept which categorizes a process used in certain types of environmental or route location studies where multiple factors are compared in a systematic and comprehensive manner on the basis of sound judgment. Factors analyzed by using a qualitative analysis are such that they cannot be measured in monetary terms, have no apparent common denominators, and are not readily quantifiable.

Quantitative Analysis: The process used in certain economic, cost-benefit, engineering, or traffic studies where multiple factors, elements, and/or outcomes are evaluated and compared by the use of measurable data. Certain mathematical models, formulas, numerical indices, rankings, and value matrices may be used to assist with such a process.

Resource Agencies: The group of federal and state agencies or commissions which have various regulatory, jurisdictional, and/or administrative responsibilities in a variety of subject areas that are part of the transportation project development process. These agencies

and commissions are involved in participating in project meetings, reviewing and evaluating studies, commenting on documents, and granting certain approvals.

Right-of-Way: Land, property, or interest therein acquired or devoted to transportation purposes, including construction, maintenance, operations, and protection of a facility.

Safety Improvements: Roadway maintenance activities and smaller construction projects that correct conditions occurring on or alongside an existing highway. Typically involves minor widening, resurfacing, regrading roadsides, hazard or obstacle elimination, guardrail installation, and miscellaneous maintenance.

Secondary Effects: A general term to define impacts which are caused by a specific action and which take place later in time or further removed in distance but are still reasonably foreseeable. Secondary effects can be indeterminate, may not be easily recognized, and can be difficult to identify and evaluate.

Single-Occupancy Vehicle (SOV): A car with no passengers.

State-Funded Project: The design or construction of an improvement which is funded entirely with state highway or bridge funds.

State Transportation Improvement Program (STIP): A list of projects that includes all transportation initiatives proposed for federal funding within a state for a three-year period. It includes regionally significant projects; metropolitan transportation improvement projects are incorporated into the STIP without modification.

Study Area: A geographic area selected and defined at the outset of engineering or environmental evaluations, which is sufficiently adequate in size to address all pertinent project matters occurring within it.

Study (or Project) Limits: The physical end points of a proposed project or study, usually designated at geographic or municipal boundaries, at intersections, at roadway segments where cross sections change, or at the beginning or end of numbered state traffic routes.

Study (or Project) Need Statement: A statement of specific transportation problems and/or deficiencies that have resulted in the search for improvements. Study (or project) needs are typically based on technical information and analyses.

Study (or Project) Purpose: A broad statement of the overall intended objective to be achieved by a proposed transportation improvement.

Surface Transportation Program (STP): A transportation funding program within TEA-21. STP funds may be used for roadway construction and improvements, operational improvement, transportation systems, bicycle and pedestrian facilities, transit, ridesharing programs and facilities and transportation planning and studies.

Transit Center (or Transit Station): A mode transfer facility serving transit buses and other modes, such as automobiles and pedestrians. In the context of this document, transit centers are either on-line or off-line facilities with respect to the HOV lane.

Traffic Analysis Zone (TAZ): A subdivision of the project (or study) area for which demographic data are collected in order to estimate traffic volume. The arrival and departure pattern of the estimated traffic is also organized by TAZs.

Transportation Equity Act for the 21st Century (TEA-21): Signed by President Clinton in June 1998, this Federal transportation legislation retains and expands many of the programs created in 1991 under ISTEA. The legislation reauthorizes Federal surface transportation programs for six years (1998-2003), and significantly increases overall funding for transportation.

Transportation Improvement Program (TIP): A three-year, prioritized program of transportation projects within a metropolitan or regional planning area proposed for federal funding. It includes all regionally significant projects, planning research activities and emergency relief projects.

Travel Demand Management (TDM): A strategy for reducing congestion and pollution by reducing vehicle volume through such techniques as ridesharing and carpooling.

United States Department of Transportation (USDOT): Establishes the nation's overall transportation policy. Under its umbrella there are ten administrations whose jurisdictions include highway planning, development and construction; urban mass transit; railroads; aviation; and the safety of waterways, ports, highways, and oil and gas pipelines.

Wetlands: Those areas that are inundated or saturated by surface water or groundwater at a frequency or duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Zoning: The division of a land area into districts and the public regulation of the character and intensity of use of the land and improvements thereon.