

A GUIDEBOOK FOR DEVELOPING CIRCULATION PLANS



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TABLE OF CONTENTS

INTRODUCTION

PLAN FOR SUSTAINABILITY: 10 GUIDING PRINCIPLES	2
Seek to Optimize, Not to Maximize	2
Plan for Travel Choice	2
Mix Land Uses and Make Them More Compact	2
Plan in a Regional Context	2
Separate Regional and Local Traffic	2
Plan for Pedestrians, Bicyclists, and More Pedestrians	3
Remember, Land Use Shapes Transportation and	
Transportation Shapes Land Use	3
Protecting Existing Capacities	3
Minimize the Need for Parking	3
Open Up the Process and Rethink Your Goals	3

SET GOALS & OBJECTIVES

Examples	5
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DO YOUR HOMEWORK!

Transportation Inventory	6
Origin and Destination Study	6
Build-Out Analysis	6
Mapping	6

COMPLETE A NEEDS ASSESSMENT

8

INTEGRATE PLANS AND ELEMENTS

9

MAKE RECOMMENDATIONS

10

Capital Improvements and Service Enhancements	10
Changes to Land Use Regulations	10
Site Design and Traffic Calming	10

USE IMPLEMENTATION TOOLS AND TECHNIQUES

11

Financial Capital Improvements and Service Enhancements	11
Transportation Demand Management	12
Transportation Systems Management	13
Land Development Process	13

CONCLUSION

14

APPENDIX: MODEL CIRCULATION PLAN OUTLINE

15

INTRODUCTION

The New Jersey Municipal Land Use Law (40:55D – 1 et. seq.) requires every community that wishes to regulate land to have a master plan which "guides the use of lands within the municipality in a manner which protects public health and safety and promotes the general welfare." Master plans must contain the goals upon which development proposals are based, a Land Use Element and a Housing Element. Plans for circulation, utility services, community facilities, recreation, conservation, economics, historic preservation, and recycling are optional. The master plan must indicate the relationship of the proposed plan to those of its neighbors, the county in which it is located, and the State Development and Redevelopment Plan (SDRP).

Although the circulation plan is discretionary, the way people and goods move within and between communities is important. Recognizing the impact of transportation, most towns in New Jersey attach circulation elements to their master plans. However, most circulation elements focus on roadways, addressing alternative modes of transportation only superficially. Often there is no serious planning for pedestrians and bicyclists, and transportation demand management is not mentioned. It is also rare for circulation plans to indicate improvements for alternative modes or for enhancements to connections between modes. Typically, circulation plans are not developed in conjunction with land use plans.

This Guidebook provides a framework for improving circulation plan elements in municipal master plans and explains how to develop a circulation plan. It outlines guiding principles for planning a comprehensive and sustainable transportation system, and how to identify goals, write a model plan, and integrate the plan with other master plan elements. Portions from actual master plans in New Jersey are included to illustrate best practices. The Appendix presents an outline of a model circulation plan.





Plan for Sustainability: *10 Guiding Principles*

Sustainability is the ability to meet present needs without compromising the ability of future generations to meet their own needs. It is about the big picture and the long-term. By its nature, the community planning process must focus on issues of sustainability.

The following 10 principles can help community leaders and activists plan community transportation systems and develop circulation elements for their master plans.

1 - Seek to optimize, not to maximize.

Community planning protects the environment while creating pleasant community aesthetics and providing space for social interaction, commerce, and infrastructure. You must plan for the whole community, not just for transportation, and not just for cars. Ensuring mobility for non-drivers, protecting limited capacity, providing accessibility, and reducing costs are competing transportation goals that require trade offs. Viewing communities as places to live, work, and play, and not as places to drive from one destination to another, is key to developing sustainable transportation systems.

2 - Plan for travel choice.

Consider all forms of transportation. Besides the automobile, people often travel by different modes -- foot, train, trolley or light rail, subway, bus, vans, shuttles and jitneys, or occasionally, even by horse. A well integrated, multi-modal transportation system requires a plan. When options are available, people can choose the most efficient mode to meet their needs and increase their ability to achieve other personal and community goals.

The more you think about moving people instead of vehicles and how to make destinations, products, and services accessible without automobiles or trucks, the better your transportation system will be. To shift people out of cars, make other modes convenient by removing barriers, providing clear signage and information, and quick, affordable, and reliable service.

Remember that land use patterns play a critical role in the success of other modes. Ridership density is

necessary for public transit to work. Pleasant, safe, and convenient walkable environments will attract pedestrians. Consider location and cluster trip origins and destinations to reduce distance and increase the convenience of another mode choice.

3 - Mix land uses and make them more compact.

An important component of viable transportation choices is a diverse and compact mix of land uses. Land use patterns should be interwoven and, where possible, walkable. This requires a density higher than found in most suburban locations, but commonly found in villages, towns, and cities built prior to the 1950s. Typically, pre-1950 development patterns were multi-use zones where residential, office, retail, and light industrial uses coexisted to benefit residents and workers alike.

Instead of the separate districts required by many traditional zoning ordinances, plan areas of compact mixed-use development. Likewise, residential, office, and retail uses within the same buildings should be considered. Transportation alternatives such as walking, biking, and transit require sensitive community design that creates an inviting pedestrian environment. Streetscapes, which welcome the pedestrian yet accommodate the automobile, are advised.

Give special attention to locating origins and destinations within the community relative to travel behavior, linking those locations in ways that encourage mode choice. This is an important aspect of building communities of place and a sustainable transportation system.

4 - Plan in a regional context.

It is true that no community exists in a vacuum. Often, the issues facing a community occur due to decisions made by its neighbors. Since New Jersey's municipal jurisdictions are comparatively small and because a small proportion of any community's residents work, shop, and play exclusively within their home town, it is unreasonable to expect that any community can insulate itself from regional travel demands. Indeed, it could be considered contrary to the public interest to even attempt such a thing. A community transportation system should be planned in relation to surrounding communities and other regional origins and destinations.

5 - Separate regional and local traffic.

Development patterns since the 1950s have set the stage for the automobile to be the travel mode of choice for the majority of commuters. Therefore, local and regional traffic will remain a fact of life in New Jersey for a long time. Nevertheless, convenient and cost-effective road-based transit, such as jitneys and buses, as well as rail-based transit are likely to be expanded to support a growing number of trips. Road traffic must be planned for and accommodated where appropriate.

To the extent possible, regional and local traffic should be separated. Where the volume of regional traffic is

significant, for instance on state highways and certain county collector roads, explore limited access bypasses as a means of isolating local and regional travelers. Add connections to serve local travel needs.

In addition, provide a system of local roads, sidewalks, and paths that offer a variety of route choices to pedestrians, bicyclists, transit riders, and motorists. Route choice defuses the impact of traffic by dispersing it among multiple access points. Designing and engineering circulation patterns to discourage cut through traffic protects residential areas.

6 - Plan for pedestrians, pedestrians, and more pedestrians.

A convenient, attractive, interesting, and safe environment welcomes pedestrians. Adequate sidewalks, lighting, street trees, and benches are not frills but necessities. Buildings should be oriented to the street and streets, driveways, parking lots, and garages should be designed to a pedestrian scale.

Encourage more foot traffic by making street crossings safer with pedestrian signals in well-traveled areas. Create safe havens for walkers by installing highly visible and accessible curbs and crosswalks. Traffic calming techniques that narrow the road, reduce speed, and discourage cut-through traffic should be installed where appropriate.

Most planners believe that pedestrian activity is crucial to bringing about the wholesale changes in travel behavior needed to create communities of place, revitalize business districts, and build a sustainable transportation system.

7 - Remember, land use shapes transportation and transportation shapes land use.

From the early days of footpaths to the invention of trains, which opened up whole continents for development, land use shaped transportation and transportation shaped land use. Later, trolleys and commuter rail lines, and the towns they served all thrived. Compact and mixed-use land patterns sustained and, in turn, were sustained by walking, bicycling, and public transportation.

The introduction of the automobile continued the precedent of transportation technology shaping land use. Low density, single use subdivisions, office parks, and shopping centers encouraged the private automobile. With people living and working in dispersed locations, it is not surprising that trolleys and traditional buses and rail lines became impractical. Transportation technology, again, shaped land use. But this time, the new technology did not add transportation choices as it had in the past. Instead, it limited choice, changing land use patterns in such a way that now the only convenient transportation option is the automobile.

By 2020, New Jersey's population will grow by more than one million people. Will their cars fit on our existing highway network? Can and should those highways be

expanded? Will more roads alleviate gridlock? Probably not. Alternatives to the automobile are needed though reducing auto dependence will require many policy and behavior changes. Most significantly, land use patterns must change and an investment in alternative travel modes must be made. One cannot occur without the other. As history has shown, land use and transportation must support each other.

8 - Protect existing capacities.

One of the most compelling reasons to encourage compact land use patterns, instead of traditional suburban sprawl, is the savings accrued from a more efficient allocation of infrastructure investments. Billions of dollars in public funds have been spent on roadway construction over the past century. Most transportation professionals rightly believe that New Jersey's transportation system has entered a stage of maturity where little more can be invested in additional roadway capacities.

New Jersey's ability to grow and prosper demands better management of existing infrastructure capacities, especially our transportation infrastructure. We can no longer build our way out of congestion. Sustainable transportation solutions depend on a multi-faceted approach that encourages travel alternatives and promotes better management of existing capacities.

9 - Minimize the need for parking.

National studies reveal that the best way to reduce the number of single-occupant vehicles arriving at a site is to reduce the amount of free parking available while expanding travel alternatives. Obviously, if there is free parking everywhere and few options, people will continue to drive. Charging people to park and reducing the number of spaces available are the most successful, albeit unpopular, ways to reduce solo driving. There are others.

Land banking requires developers to build the normal number of spaces early in a project, but reduces the number in later phases while setting aside land for future parking if needed.

Joint use parking encourages neighboring sites to share parking lots if their need for parking occurs on different days or during different times of the day. Park and ride services create parking at peripheral sites and provide vans, shuttles, or other transit services to destinations inside of the centers.

10 - Open up the process and re-think goals.

The traditional community planning process tends not to involve residents at the beginning when goals and visions for the future are explored. This could invite considerable neighborhood opposition if new facilities are built.

Currently, there is little relationship between the process for making land use decisions and the process for making transportation decisions. In addition, planning and coordination among municipal or regional neighbors is rare. This fragmentation and specialization reduces the

chances that a community will maintain its quality of life and produce a rational, effective transportation system. Efforts should be made to address these deficiencies in the process.

Here are a few strategies to consider:

Plan for everyone.

Recognize that as time passes, the needs, abilities, and means of residents will change. Plan for the complete life cycle and for people in all walks of life.

Understand your resources for growth and then live within your means.

The master plan should describe what you want your community to become. Yet, most plans are never tested for build-out conditions. Because development is incremental, it is not uncommon to be surprised by its impact on schools, traffic, and other infrastructure and services. Learn to use the tools available to predict the outcome of build-out on your community.

Set targets and monitor results.

Planning goals will not be realized unless you specify where development should occur and establish policies to encourage it to go there. Monitor results and change goals or strategies as needed.

Think regionally, but act locally.

Local conditions are part of regional natural, economic, and infrastructure systems. Just as many local problems stem from regional conditions, decisions made locally affect the region. As you build your community, consider the impact on your neighbors.

Concluding Thoughts

A high quality of life requires a strong economy that supports a clean and attractive environment, affordable infrastructure and services, and an appropriate system of governance. The object is to achieve all of these goals without threatening or sacrificing any of them. And so, getting back to the first principle – seek to optimize, not to maximize.

Sometimes you must rethink your strategies, respond to changing conditions, or regroup when an obstacle looms, but these principles still guide all play. They determine where you are going and how you will get there.

To the extent that you use these 10 principles to measure the quality of your recommendations, you will have succeeded in making a plan that will provide for all the needs of the future -- economic, environmental, and social -- and a plan for all the region's communities -- urban, suburban, and rural. And you do need to plan. For, as Benjamin Franklin said, "The best way to prepare for the future is to invent it."



Set Goals & Objectives

Goal setting defines expectations for the future. As part of the master planning process, each community sets general and overarching goals that address a myriad of diverse needs. Usually, one, or several, of these deal directly with transportation and circulation issues. In addition, other community goals, which appear to be unrelated to circulation, often have a bearing on planning the community transportation system. It is important to give careful consideration to the relationship between each of a community's broad master plan goals and the transportation system when developing a circulation plan. Frequently, master plan goals are too broad to form the foundation for transportation recommendations and more specific goals and objectives should be formulated.

Citizen involvement is necessary in establishing effective goals. Residents provide valuable insight into their needs and develop community support for future implementation. A series of roundtable discussions or interactive design charrettes can be an effective way of involving townspeople. Schedule evening or weekend meetings for greater public participation and improved attendance. Meetings with school children and seniors may help planners gain a better understanding of the particular needs of various people in the community.

Ask these questions when establishing transportation goals and objectives:

- How does your community look now? How would you like it to look in the future? Are your zoning regulations consistent with this vision for the future?
- Are various land use types (residential, commercial, retail, etc.) currently separated? If so, should they be better integrated?
- Do only roads connect various origins and destinations? If so, should there be sidewalks, trails, transit, and bike paths? Where are opportunities for better connections?
- What are the travel needs of those who can not or do not wish to drive, especially seniors, young people, and those with disabilities? Are their needs being met? If not, why not? How can you best meet their needs?

In addition to road-based travel, a successful circulation element should address walking, bicycling, various types of public transportation, and transportation demand management. Circulation goals and objectives should complement your community's vision for the

future, reflect the valuable input of citizens, and strive to achieve a multi-modal transportation system that increases access and mobility for everyone.

Examples

Each community has its own unique set of needs and issues; therefore, goals will vary from community to community. Goals should be stated clearly and briefly. They should be realistic.

The Borough of Sayreville's 1998 Master Plan is a good example of well-defined goals. Sayreville's Master Plan successfully nests broad community goals with more specific goals for circulation.

Consider the following:

Master Plan Goals

- Promote a balanced variety of residential, commercial, industrial, recreational, public, and conservation land uses.
- Preserve and enhance the existing character of the residential neighborhoods in the Borough while providing a mix of housing types and uses.
- Guide redevelopment and development of the remaining large parcels and scattered vacant sites within neighborhoods to ensure that proposed uses support existing uses without adverse impacts in terms of land use compatibility, traffic, economic, and aesthetic impacts.
- Provide a circulation network for vehicles and pedestrians that permits safe and efficient travel.

Circulation Plan Element Goals

- Ensure that traffic demand generated by new development does not exceed the existing and planned capacity of the Borough circulation system.
- Ensure that future road improvements identified in the Circulation Plan be included in the capital improvement program and/or be developed in conjunction with new developments.
- Promote transportation management strategies for employment generators to reduce automobile impact on the roadway network, especially during peak hour.
- Encourage the use of mass transportation.
- Provide for pathway (pedestrian and bikeway) circulation facilities serving as connections between community facilities, commercial areas, residential neighborhoods, and employment sites.
- Provide for adequate commuter parking facilities to limit the use of residential side streets for such.
- Provide for the completion of a Main Street bypass.



Do Your Homework !

Goals give focus to a community's vision. The next important step in preparing a master plan circulation element involves fact finding and data collection with an eye toward the big picture and the long term.

The following data collection and analyses will help to identify strengths and weaknesses in the existing transportation and circulation systems and define future needs. The model circulation plan outline in the Appendix details the specific data that should be collected.

Transportation Inventory

Undertake an inventory of existing transportation facilities and services including roads, transit services, bicycle and pedestrian facilities, and transportation demand management.

Roads. The roadway inventory should include the functional classification of roads (e.g., collector, arterial, freeway, etc.), speed limits, traffic counts, accident data, and, if available, information related to critical intersections. It should highlight locations of congestion or other problems.

Transit. The transit facilities and service inventory should include transit routes, the location and number of transit stops, ridership, and hours of service. Obtain similar information on non-traditional transit services such as vanpools, jitneys, and senior shuttles operated by public, private, and nonprofit service providers. Do not overlook park and ride facilities.

Bicycle and Pedestrian Facilities. The bicycle and pedestrian facilities inventory should consist of sidewalks, existing bike routes and paths, bicycle compatible roadways, and formal and informal trails. It should address sidewalk and other pathway conditions and the relationship to roadways and land uses. Give special attention to pedestrian and bicycle amenities such as benches, lighting, and bike racks. Be sure to note if intersections are accessible to the disabled and if there are obstacles that may impede the mobility of walkers.

Transportation Demand Management. The Transportation Demand Management (TDM) inventory should contain a list of major private and public employers and the alternative service modes and facilities present. Identify various work hours arrangements and other TDM programs that are available to employees at these locations. If the employer has achieved trip reductions in the peak period over the past several years, then this data should be reviewed, including any information from various origin and destination surveys available.

Origin and Destination Study

In addition transportation facilities and services in your community, you should understand where people live, work, and play in relationship to the transportation system. To help to identify existing travel patterns, consider completing an origin and destination (O/D) study. An O/D study determines the number of trips that begin in one location and end in another. Often studies look at particular times of the day such as morning and evening peaks.

Typically, an O/D study examines the general locations and comparative size of traffic generators in and around the community. These destinations may be municipal facilities, schools, parks, "Main Street," shopping centers, malls, cultural and entertainment centers, and office/industrial parks. In addition, the study should include areas of population concentration such as neighborhoods, housing developments, apartment complexes, and other places where trips originate.

Build-out Analysis

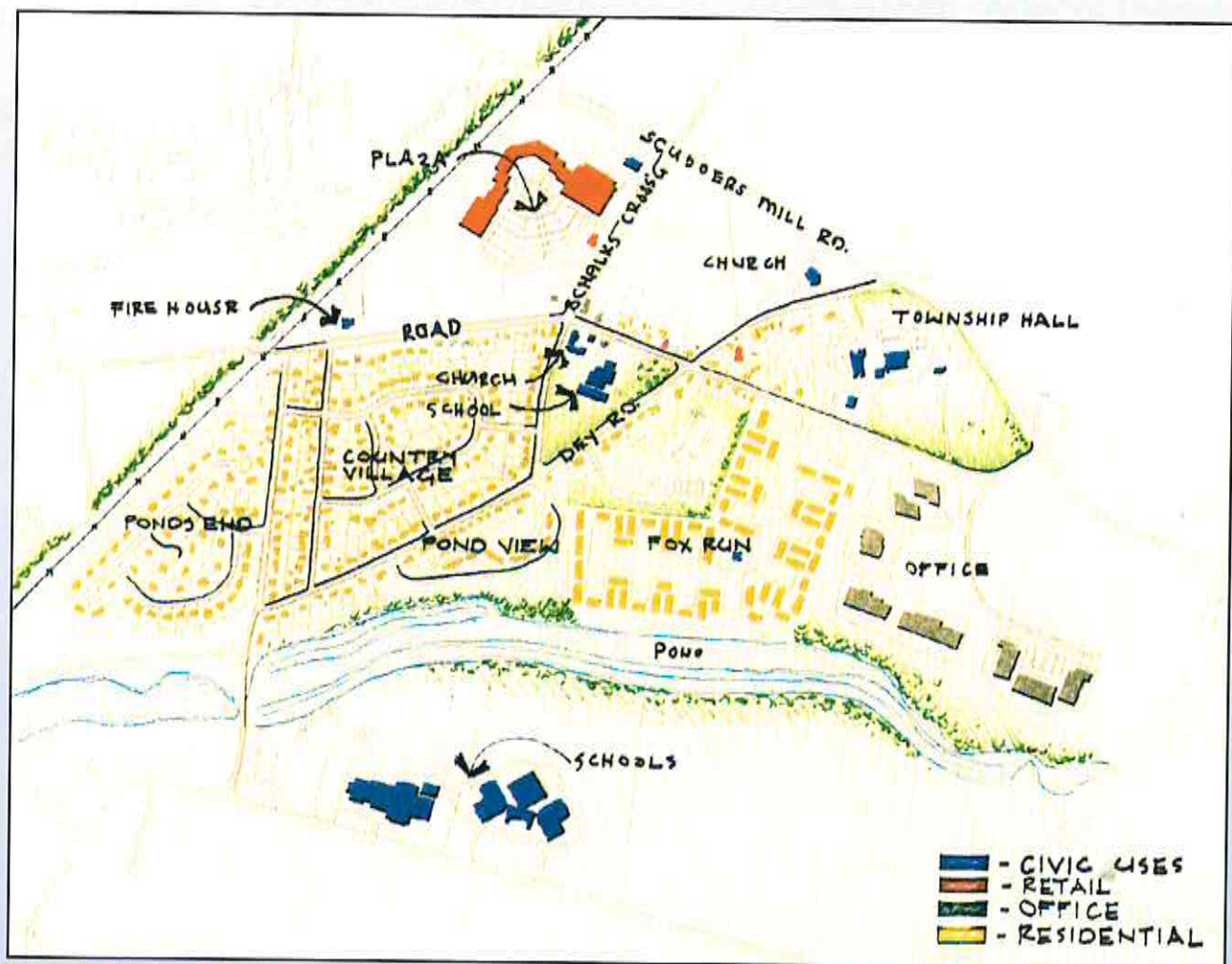
To plan comprehensively for the future, consider potential travel demand and the location of new origins and destinations. A technique used frequently for projecting travel demand and patterns is called a build-out analysis. Build-out analysis attempts to project the location and scale of future residential and non-residential development in your community if it were fully developed according to existing zoning regulations. Once the build-out is known, then you can see the effect of this full development on transportation facilities such as roads and transit. While this type of analysis is a theoretical exercise, it is a useful crosscheck between existing zoning and master plan land use and transportation goals and objectives.

Mapping

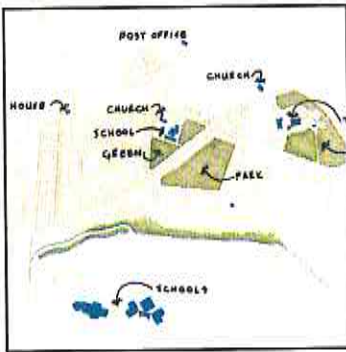
Once data collection and analysis is complete, it is useful to map the information. Someone once said that, "a picture is worth a thousand words." This is especially true when trying to visualize the connections between your community and the region, existing and future land use patterns, and the relationship between land use and transportation. A series of maps showing existing transportation facilities and services, their performance attributes, current land uses with origins and destinations,

and future land uses with origins and destinations should be developed. Design the maps to allow the overlay of information. This will help evaluate the current system and identify gaps in services, missing links, and potential conflicts. Overlays show how land uses, transportation facilities, and services can be better integrated.

Doing your homework is a critically important step in the circulation planning process and it is not as onerous as it may seem. Much of the data is readily available from a variety of sources and needs only to be collected, compiled, and integrated for your community. Furthermore, the analyses described can be completed at a variety of levels depending on your community's resources and needs. The important thing to remember is that a process informed by quality data and information leads to better outcomes.



Mapping helps visualize the connections between existing and future land uses, and the relationship between land use and transportation.



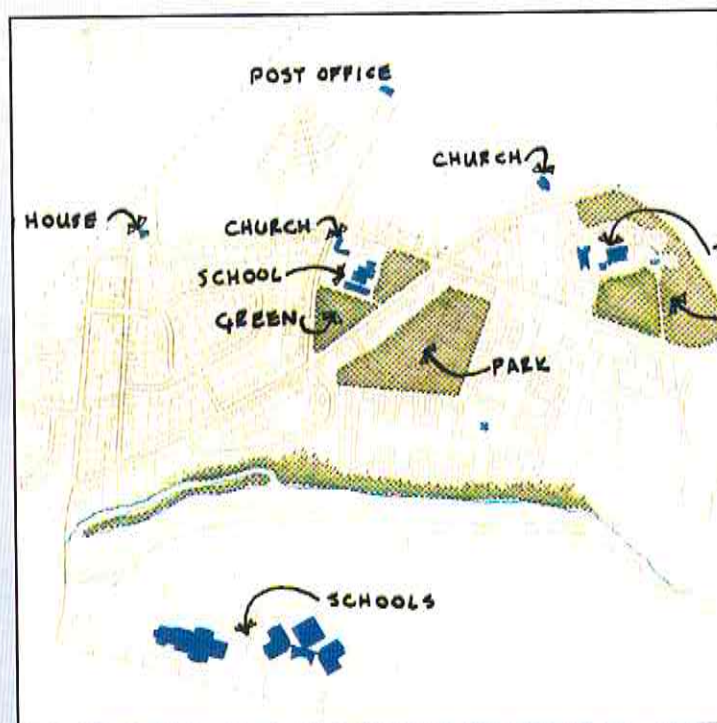
Complete a Needs Assessment

The next step in preparing a community circulation plan is to conduct a transportation and circulation needs assessment. A needs assessment is a comprehensive review of community and regional transportation facilities and the forces that will impact system capacity, connections, and travel choice now and in the future. It should include all modes of travel and consider the data and information previously collected as part of the planning process. Undertake the needs assessment in the context of the community's master plan and vision for the future, as well as the agreed upon transportation and circulation goals and objectives. The purpose of the needs assessment is to identify system deficiencies, gaps in service, and future problem areas, in order to develop an agenda for near term and long range improvements.

Ask these questions when determining your community's transportation and circulation needs:

- What is the nature and extent of existing and planned transportation infrastructure, including, private, local, county, and state facilities and services?
- Where are local and regional trip destinations located?
- Where are local and regional trip origins clustered?
- What are the travel modes and routes that provide access to these origins and destinations?
- Where are there service gaps and facility needs?
- Are there missing or inadequate connections between modes?
- Where are congestion and safety "hot spots"?
- Where are potential origin and destination trip generators located?
- What are the current demographics or future trends, such as an increasing seniors population or an expected influx of school age children, that will require special transportation considerations?
- What can be done to ensure mobility for all segments of the population?

The result of the needs assessment is a list of problem areas that must be addressed by the master plan. In turn, these problem areas will suggest improvements and then projects that can be prioritized and implemented.



The needs assessment considers origin and destination trip generators and helps identify routes and travel modes which can provide access to these locations.



Integrate Plans & Elements

Key outcomes of any community planning process should be consistency and integration among plans at all levels and between different plan elements within the master plan. Consider how each fits into the larger region. For example, it is unreasonable to pursue policies that insulate a community from all regional traffic. Each municipality contributes to regional traffic demands and, consequently, should plan accordingly. Make a conscientious attempt to coordinate land use and transportation planning efforts on a regional basis so that expensive public infrastructure investments can be used efficiently.

Plan consistency and integration is especially important when dealing with transportation because, although transportation impacts are felt locally, transportation problems must be addressed regionally. In New Jersey, transportation planning is undertaken at all levels of government as well as by the private and nonprofit sectors. Ensuring consistency and integration is no small task. At the most basic, consult the following plans and planning entities to ensure that municipal circulation plans support regional and state policies and objectives:

- The New Jersey State Development and Redevelopment Plan
- County Growth Management Plans
- State & County Long Range Transportation Plans
- State & County Bicycle & Pedestrian Plans
- MPO Long Range Plans
- NJ State Highway Access Management Code
- County and Local Access Management Codes & Plans
- Transportation Management Associations (TMAs)
- Employer Trip Reduction Programs
- Adjacent Master Plans and Zoning Ordinances
- Transit Service Provider Plans

In the same way, no one master plan element should be developed or used independently from the others. Every community pursues multiple goals and must undertake multiple actions to achieve the outcomes envisioned in their master plans. Various master plan elements set forth the underlying conditions that shape a community, help outline a community's policy approach to

achieving its stated goals, and suggest strategies for achieving the desired outcomes. At times, conflicting goals must be balanced against one another to achieve the best outcomes. Therefore, when planning for your community's transportation system, make every effort to ensure that specific circulation goals, implementation strategies, and recommended improvements do not conflict with the goals, strategies, and recommendations set forth in other master plan elements.



Make Recommendations

Once you have completed an inventory, analyzed the transportation system, and established your community's transportation and circulation-related needs, you are ready to make recommendations to improve mobility. As stated earlier, circulation is not only about moving vehicles as quickly and efficiently as possible. Other goals may be enhanced and supported by recommendations in the circulation element. Consequently, the recommendations in your circulation element need not be limited to transportation improvements.

The two key questions to keep in mind when making recommendations are:

- Do your recommendations support other master plan goals?
- Do your recommendations address all modes of transportation – walking, bicycling, transit, automobiles, and TDM strategies?

Capital Improvements and Service Enhancements

An ideal community transportation system provides a seamless network of facilities and services, effortless access to all community destinations, and a smooth transition between various modes of transportation. With this as the desired outcome, the most common recommendations are likely to relate to capital improvements and transit service enhancements.

Roadways. Intersection improvements, new connections, road widenings to increase capacity and others to enhance efficiency, operation and safety are all part of road improvements. Intermodal travel may be enhanced by widenings and re-striping to increase the accessibility and safety of roads for bicyclists and pedestrians or changes that make bus operations easier and more efficient. Finally, traffic calming measures such as speed humps, roundabouts and curb extensions to reduce the speed and dominance of motor vehicles should not be overlooked.

Transit. Transit services may be upgraded by extending existing bus routes, or adding new services to shuttle commuters to and from rail stations and employment

destinations. More frequent and extended hours of service are often desirable. Pay attention to facilities including expanding and enhancing existing park-and-ride lots or establishing new ones. Bus shelters and improved signage and transit information may also be appropriate. Consider improvements that increase access to transit by bicycling and walking and improve the connections between the various public transportation services.

Bicycle and Pedestrian. Extending existing sidewalks or completing the connections between sidewalks are a real plus for pedestrians. The condition or size of sidewalks as well as the walking environment should be addressed. Regarding the latter, the community's master plan could urge streetscape enhancements such as lighting, street trees, and benches. Recommendations may also include walking trails in recreational areas and links to the sidewalk system and adjacent land uses.

For bicycling, communities should strive to create an integrated regional system and forge connections between adjacent land uses and other community resources such as schools, libraries, recreation centers, and transit stops. Municipalities should map out recommendations for bicycle compatible roadways, and bicycle routes and paths. Bicycle and pedestrian improvements should improve access to bus stops and rail stations.

Changes to Land Use Regulations

Viable transportation choices can not be provided without supportive land use patterns. Typical low-density suburban land uses can not generate enough riders to make transit service cost effective. In addition, suburban land use types are often separated and lack sidewalk or trail connections for pedestrians or cyclists.

Compact mixed-use land uses combine a network of roads, sidewalks, trails, and transit to offer a variety of transportation choices. In order to provide access and convenient mobility for all citizens, you may wish to revise land use regulations.

Here is a checklist of land use recommendations to consider:

- Require higher densities in locations presently served by or planned to be served by transit, and encourage mixed-use buildings and neighborhoods
- Require that bicycle and pedestrian facilities/amenities be constructed in conjunction with all new development
- Require connections between adjacent land uses
- Permit commercial and office development only in areas presently served or planned to be served by transit
- Reduce parking minimums and allow land banking for parking

Site Design and Traffic Calming

Planning and implementing a transportation system that promotes the use of non-auto travel modes requires

more than just providing pedestrian, bicycle, and transit facilities and services. It requires creating a quality pedestrian environment that will encourage the use of alternative modes. Therefore, make recommendations that ensure bicycle, pedestrian, and transit-friendly site design and encourage the use of traffic calming techniques where appropriate.

Here is a checklist of specific recommendations to consider:

- Install traffic calming devices at key locations to discourage cut-through traffic in residential neighborhoods
- Design streets for all modes of transportation
- Allow on street parking in appropriate locations
- Adopt flexible parking requirements such as shared parking, reduced minimum standards and land banking
- Ensure that streets, sidewalks and trails are connected and free from obstacles
- Clearly mark cross walks and other pedestrian facilities with striping and alternative paving materials
- Require vegetative buffers between streets and sidewalks when possible
- Require street trees and other streetscape improvements in all new development
- Improve information signage for transit, bike routes and trails
- Require the installation of shelters and bike lockers/racks at transit stops



Use Implementation Tools and Techniques

A planner's "tool box" contains tools and techniques to help implement transportation and circulation plan goals, objectives, policies, and recommendations for improvement. Those tools range from financing capital improvements to managing transportation system supply and demand to shaping the transportation system through the land development process. Consider the following points when developing an action plan for solving community circulation problems and creating a sustainable community transportation system for the 21st century.

Financing Capital Improvements and Service Enhancements

Your list of transportation and circulation recommendations most likely includes a number of capital improvement and service enhancement projects. The following tools and techniques can be used to finance projects:

Impact Fees. One of the most widely used and accepted methods of paying for needed transportation and circulation improvements is through developer impact fees. This method is used as part of the development approval process and imposes impact fees on private sector developers to fund public improvements to transportation infrastructure. Most commonly, these fees pay for on-site improvements and a pro-rata share of off-tract improvements necessitated by individual developments on a case specific basis.

Impact fees are sometimes direct payments to the affected jurisdiction, however, in-kind contributions of engineering or construction services are more common. A municipal ordinance clearly stating the method for calculating the pro-rata share of improvements and the manner by which impact fees will be collected must be approved before fees can be imposed.

Negotiated Agreements. Another popular method of financing transportation and circulation improvements and recommendations is negotiated agreements. Negotiated agreements are legally binding contracts between the developer and a municipality, utilities authority, or some other responsible local government agency.

The agreement outlines the improvements to be made voluntarily by the developer as well how, by whom, and when they are to occur. Unlike impact fees, negotiated agreements do not require specific enabling ordinances and can include improvements beyond those required by the approving board, provided that it is clear that the improvements are voluntary.

Transportation Improvement Districts. Another financing tool is the Transportation Improvement District (TID). Municipalities are authorized to establish a TID under the Municipal Land Use Law. TIDs are similar to the more generalized impact fee method. However, TID fees are associated with a pre-determined set of improvements for a particular area or district, consistent with a capital improvement plan for that district. The improvements are based on a planning and engineering study that usually examines a build-out of zoning in that district. TIDs require an additional level of planning and analysis and the adoption of a TID plan as an amendment to the Master Plan as well as the adoption of a TID ordinance to govern the imposition and collection of fees and or use of in-kind contributions. A TID provides more predictability than a general impact fee approach.

Transportation Development Districts. In 1989, the New Jersey Legislature authorized the establishment of Transportation Development Districts (TDD) to help fund transportation infrastructure. TDDs are closely related to TIDs in that they function in a similar fashion – impact fees for off-tract transportation improvements are assessed and collected in accordance with a plan. They differ, however, in that the responsible implementing entity is the county. This reflects the more regional scope of a TDD and the likelihood that the geographic area covered by a TDD will be multi-jurisdictional. Municipalities seeking to implement circulation and transportation improvements may wish to explore a municipal - county partnership to use the TDD tool.

Capital Improvement Programs. One of the most basic tools for financing transportation improvements is through local appropriations. The Municipal Land Use Law authorizes the local governing body to direct the planning board to prepare a six -year capital improvement program and to set priorities for public projects. Though well suited to implementing circulation plan improvements that require capital investment, this tool is often overlooked by local governments.

Grants and Aid Funding. There are a variety of sources for local grant and aid for municipally sponsored transportation projects. They range from formula driven state-aid allocations to competitive grant programs at the county, state, and federal levels. NJDOT's State Aid to Centers program and the federal Transportation Equity Act for the Twenty-first Century (TEA-21) Transportation Enhancement program are good examples of competitive grants that can be used for a range of capital improvement and planning projects, especially for transit, and bicycle and pedestrian enhancement initiatives.

Transportation Demand Management

Transportation Demand Management (TDM) should be a key element of any implementation agenda. Successful TDM can improve the functioning of existing transportation systems by reducing demand for and increasing the efficiency of particular facilities. This is true for all modes of transport, however, it is especially important when dealing with the roadway network. TDM techniques are most widely used to reduce the demand related to single occupant vehicle travel. They can be voluntary or regulatory and cover a wide range of activities. TDM strategies usually create a partnership between the public, private, and nonprofit sectors. The following table summarizes the most commonly used TDM strategies and the parties, which contribute to their successful implementation.

TDM Strategies & Implementation

TDM Strategy	Implementation
Alternative Work Schedules	• Employers, Transportation Management Associations (TMAs)
Ride-sharing (carpooling, vanpooling)	• Individuals, employers, TMAs
Subscription Bus Service	• Employers, TMAs, counties, transit operators
Parking Management (preferential parking, parking pricing, parking ratios, park & rides)	• Employers, developers, counties, municipalities, transit operators
Preferential Road Treatments (e.g., reversible lanes, High Occupancy Vehicle lanes)	• DOT, road authorities, counties, municipalities
Transit Incentives (e.g., TransitChek, employer subsidized transit, employer sponsored transit)	• Employers, transit operators, TMAs
Land Use & Zoning Regulations (e.g., mixed use development, transit supportive densities, bicycle, pedestrian, and transit friendly-site design)	• Municipalities, counties, DOT
Trip Reduction Ordinances	• Municipalities

(Adapted from Transportation Demand Management: A Cautious Look, Zupan, 1991)

Transportation Systems Management

Transportation System Management (TSM) focuses on the supply side of the transportation system equation and seeks to optimize the use of existing transportation facilities, protect previous investments in transportation system capacity, and help to obviate the need for costly system expansions. TSM strategies can be used for all modes of travel, but are particularly important relative to managing road facilities.

Strategies range from the deployment of sophisticated, state-of-the-art Intelligent Transportation System (ITS) technologies that monitor traffic flow from centralized command stations to ensuring that traffic signals are properly timed. However, one of the most effective TSM strategies available to local government is access management.

Access Management. Access management is considered by many to be a low-cost and effective way to preserve capacity along roads and highways. Simply, access management seeks to regulate access to roads and highways in order to improve safety and maintain optimal traffic flow by limiting potential driving conflicts such as driveways and other turning movements.

Here is a checklist of the most commonly used ways to improve or control access:

- Regulate minimum spacing of driveways
- Regulate minimum corner clearances at intersections
- Optimize driveway spacing and regulate the maximum number of driveways per property frontage
- Consolidate existing access for adjacent properties
- Regulate minimum sight distances
- Encourage connections between adjacent properties
- Require adequate internal site design and circulation

(Adapted from *Managing Transportation in Your Community: A Municipal Handbook*, NJDOT, 1/89)

New Jersey's State Highway Access Management Code establishes a highway master plan for the roads under state jurisdiction and regulates access to state highways. In addition, it authorizes counties and municipalities to work cooperatively with the Department of Transportation to establish local codes that regulate access to county and local roads. Access Management is an effective way to implement circulation plan recommendations.

Land Development Process

The land development process plays an important role in shaping a community's future landscape. From zoning to site design, there are a number of ways to effect transportation improvements as part of the local planning and site development process.

Zoning. In New Jersey, the power to zone land for development rests with local government. A versatile and flexible tool, zoning dictates the type, character, and intensity of future development. It can influence aspects of site design and factors related to transportation and circulation. Traditional and innovative zoning applications can be used effectively to implement transportation and circulation recommendations.

Here is a checklist of common zoning techniques that can shape a community's transportation system:

- Use and intensity requirements such as residential density minimums and maximums, floor area ratios, and mix of use standards ensure that trip-making patterns from future development are consistent with your transportation vision and the capacity of existing or planned transportation infrastructure.
- Bulk standards for setbacks and building height help to define the character of buildings and the relationship of buildings to transportation infrastructure.
- Urban and architectural design guidelines further define the visual and contextual character of development, especially in terms of streetscapes and the pedestrian environment. Guidelines help make certain that site design is transit-friendly.
- Street, sidewalk, and pathway standards meet your community's transportation goals and circulation needs by stipulating the size and quality of streets, sidewalks, trails, and bike paths. These standards can result in connectivity between various elements of the transportation and circulation system. (New Jersey's Residential Site Improvement Standards dictate the width of streets and sidewalks related to residential development; however, the standards do not apply to non-residential development and municipalities can apply for waivers from the standards if necessary).

Subdivision & Site Plan Review. The subdivision and site plan review process is an effective way for municipal planners to ensure that site design standards and transportation and circulation goals and objectives are being met by the private sector as part of their development proposals. In addition, as part of the review process, municipalities can require developers to prepare traffic impact studies to understand trip-making patterns from individual developments. Traffic impact studies quantify the amount of trip making that is expected by the new development.

CONCLUSION

Although there is no consensus as to how auto-dependent the future will be, there is agreement that a change in land use patterns is essential to support any sustainable transportation alternative. A more compact and mixed-use land pattern is one of the most important ways to reduce auto-dependence and the need for new roadway capacity. Only a compact, mixed-use development pattern can increase pedestrian and bicycle trips and provide some form of public transit. For these reasons, the future of transportation is linked with changes in land use planning, even with the automobile as the dominant mode of travel.

Compact, mixed-use development supports improvements in transportation and transportation plays an important role in shifting land use patterns. In recognition of this connection, New Jersey's State Plan gives strong transportation directives. The Plan states that compact, mixed-use development (centers) require a pedestrian-orientation, an appropriate hierarchy of streets and roads, and the opportunity for alternative modes of travel. It reasons that the circulation pattern and the pedestrian-friendliness of the streets are the defining elements in the character of a "community of place."

Looking at how land use must change to support a different transportation outcome, is not a question of the transportation "tail" wagging the community "dog." Center-based growth that supports a less auto-dependent transportation system in the future, also achieves many other benefits – saving farmland and open space, protecting the environment, reducing public costs, and providing a better quality of community life. A well-conceived circulation plan, combined with other elements such as the land use plan, is important to the future of your community. The planning tools are in your hands if you have the courage and the will to use them.

APPENDIX

The section that follows presents an outline of a model circulation plan. The outline presents the various modes that municipalities should consider incorporating into their master plans. These modes include roadways, transit, bicycle and pedestrian pathways, transportation demand management, and air, waterborne and rail freight. For each mode there is a list of inventory data that should be collected. This list is comprehensive and represents the ideal level of data collection. It is understood that each municipality must decide whether or not the data that it currently possesses is adequate. In some cases, municipalities may simply not have the financial resources to spend on additional data collection activities.

In addition to the inventory of data needs, the outline suggests the various improvement plans, programs, and studies that should be considered by municipalities when developing town circulation plans. These items may be found at the municipal, county, and state levels of government, and include both transportation and land use development components. Finally, the outline urges municipalities to develop recommendations for improvements to services, facilities, and connections between modes. It is recommended that both existing conditions and future improvement plans for each mode be mapped. While the outline provides direction for planning for all modes, it is understood that municipal circulation plans will reflect the individual needs and unique differences of each municipality. Used together, the Guidebook and circulation outline should provide technical guidance to towns that are updating circulation plans.

Model Circulation Plan

Roadways

Existing System

Inventory

- Functional classification of roads
- Definitions of classifications
- List roads by classification
- Description of roads (location, characteristics, land uses served)
- Traffic volumes (average daily traffic)
- Congested roadways (location, level of service)
- Crash history (number of accidents, location, type)
- Parking facilities (on-street, off-street lots, location, capacity, usage, pricing structure)

Improvement Plans, Programs & Studies

- Municipal (transportation)
- Municipal (land use development)
- County
- State (NJDOT Long Range Plan, SDRP)

Plan Recommendations

- New construction (roadways, parking)
- Reconstruction (roadways, parking)
- Maintenance (roadways, parking)
- Intermodal enhancements (transit, bicycle, pedestrian)
- Reclassification of roadways
- Jurisdictional changes
- Traffic calming priorities

Implementation

- Transportation Management Plans
- Transportation Improvement Districts
- Transportation Development Districts
- Impact Fees
- Negotiated Improvements

State Highway Access Management Code

- Description of Code

Transit

Bus Service Inventory

- 2000 U.S. Census information
- Bus routes and stops (location, operators, destinations)
- Service characteristics (days, hours, span of service, headways)
- Ridership by route (current and historical; peak/off peak; origins; access modes)
- Fares (by origin & destination)
- Park-and-rides (location, capacity, usage, pricing structure)
- Facilities (depots, shelters, signage, information)

- Pedestrian facilities (sidewalks, paths to and at stop)
- Bicycle facilities (compatibility of roads for bicyclists, bicycle paths, racks and lockers)
- Connecting bus services (location, operator, service description, fares)
- Connecting rail services (location, operator, service description, fares)
- Surrounding land uses at bus depots and stops

Passenger Rail Service Inventory

- 2000 U.S. Census information
- Rail lines and stations (location, operators, destinations, days and span of service)
- Service characteristics (days, hours, span of service, headways, on-time performance)
- Ridership at station (current and historical; peak/off-peak; origins; access modes)
- Fares (by origin & destination)
- Rail station parking (location, capacity, usage, pricing structure)
- Facilities (signage, information)
- Pedestrian facilities (sidewalks, paths to and at station)
- Bicycle facilities (compatibility of roads for bicyclists, bicycle paths, racks and lockers)
- Connecting bus services (location, operator, service description, fares)
- Connecting rail services (location, operator, service description, fares)
- Surrounding land uses at rail stations

Non-Traditional Transit Service Inventory

- Type of service (jitneys, shuttles, demand responsive, dial-a-ride)
- Operators (public, private)
- All information as under bus services section

Improvement Plans, Programs & Studies

- Municipal (transportation)
- Municipal (land use development)
- County
- State (NJDOT, NJ TRANSIT)
- Private Operators (bus and rail)

Plan Recommendations

- Service changes (location, day, time of day)
- Service extensions (operators, routes, stops)
- New services (operators, routes, stops)
- Facility improvements (locations, shelters, stations, signage, information)
- Intermodal enhancements (roadway, bicycle, pedestrian, transit)

Pathways

Pedestrian Circulation Inventory

- 2000 Census information
- Sidewalks (location, dimensions, condition)
- Informal paths
- Nature/hiking trails (location, dimensions, condition, usage)
- Pedestrian counts (locations, days, time of day)
- Pedestrian generators and attractions (community facilities, schools, shopping and employment centers, residential land use developments, senior centers)
- Facilities (seating areas, lighting, shelter)
- Streetscape (land uses, landscaping, community design)
- Crash history involving pedestrians (number of accidents, location, type)

Bicycle Circulation Inventory

- Bicycle compatible roadways
- Designated bicycle routes
- Bicycle paths (location, dimensions, condition)
- Bicyclist counts (locations, days, time of day)
- Bicycle generators and attractions (community facilities, schools, shopping and employment centers, residential developments, senior centers)
- Facilities (bicycle racks, lockers, lighting)
- Crash history involving bicyclists (number of accidents, locations, type)

Improvement Plans, Programs & Studies

- Municipal (transportation)
- Municipal (land use development)
- County
- State (NJDOT Long Range Plan, Bicycle/Pedestrian Plan, SDRP)

Plan Recommendations

- Improvements (existing pathways)
- Pathway extensions (locations)
- New pathways (locations)
- Facility improvements (locations, dimensions)
- Intermodal enhancements (roadway, transit)

Transportation Demand Management

The Clean Air Act

- Description of the Act

Employee Trip Reduction

- 2000 Census information
- Description of voluntary state program
- Alternative modes (transit, van and carpooling, walking, bicycling)
- Alternative work hours and arrangements (compressed work week, teleworking)
- Direct incentives (preferential parking, parking cash out programs)
- Existing employer participants and programs (private firms, public agencies)
- Impact of trip reduction programs (reduction in single occupant vehicles at sites)
- Regional TMAs (purpose, programs)

Traffic Management Ordinances

- Description of ordinances

Improvement Plans & Programs

- Municipal (transportation)
- Municipal (land use development)
- County
- State (NJDOT)

Plan Recommendations

- Municipal employee programs
- Municipal actions to support private sector
- Intermodal enhancements (roadway, transit, bicycle, pedestrian)

Air, Waterborne, Rail Freight

Inventory

- Public and private airports, marinas, rail freight facilities (location, usage)
- Connecting transportation services

Improvement Plans, Programs & Studies

- Municipal (transportation)
- Municipal (land use development)
- County
- State (NJDOT)
- Intermodal enhancements

Plan Recommendations

- Improvements (routes, services)
- Extensions of service
- Facility improvements (locations)
- Intermodal enhancements (roadway, rail freight, airport)

A GUIDEBOOK FOR DEVELOPING CIRCULATION PLANS

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