Any municipality meeting the following basic requirements may apply:

- A seasonal or year-round population between 4,000 and 50,000.
- Commitment to employ a full-time Executive Director, with an adequate program operating budget for a minimum of three years.
- Historic architectural resources in a defined downtown commercial district.

Successful applicants demonstrate commitment to the following principles:

- Establishment of a volunteer board of directors.
- Procurement of stable, long-term local funding.
- Development of public/private partnerships.
- Commitment to hire an executive director.
- Commitment to the four-point Main Street approach defined above.
- Establishment of a well-defined commercial district.
- Commitment to historic preservation.
- Willingness to work and succeed over time.

II. TRANSPORTATION

In addition to 'smart growth' land use concepts recommended above, there are a number of 'smart transportation' concepts that are recommended as part of the Strategic Plan. The land-planning practices recommended above will create and maintain efficient infrastructure, ensure a strong sense of community, preserve natural systems, and preserve visual character. They will help municipalities shift from practices such as zoning ordinances that isolate land use activities and that encourage auto-dependent low-density growth patterns. Rather, municipalities will encourage development that reduces reliance on single-occupancy vehicles and the number of vehicle miles traveled along a highway corridor.

Transportation resources can be used as focal points for introducing smart growth concepts. There are three major opportunities for applying this philosophy, including transit, site planning, and access management. Each is discussed below.

A. Site Access

Site design guidelines or standards can ensure that best practices for site access are being considered during the review of future projects. The design of individual projects has substantial impact on the success of the transportation management program. The potential best management practices that should be considered by municipalities as part of the subdivision and site design review include:

- Lot layouts (e.g., subdivide parcels into lots that do not require direct access to arterials);

- Parking lot location and design (e.g., make provisions at the back of lots for secondary roads, require reciprocal easements for shared parking or rights of way, site commercial buildings close to the road but outside the existing and planned right of way, and require the creation of on-street parking to calm traffic and buffer pedestrians from moving traffic);
- Pedestrian and bicycle accommodations (e.g., install mid-block crossings within centers, require connections between parking lots and building entrances, limit service roads widths and curb radii, and minimize the number of conflict points);
- Provisions for bus passenger loading and unloading;
- Incentives for smaller and fewer signs by allowing a reduced setback from the road; and
- Driveway location and design (e.g., provide adequate driveway length to allow stacking and establish limits for vertical alignment of major roadways at curb cuts as in **Figures 20** and **21**. (See next page.)

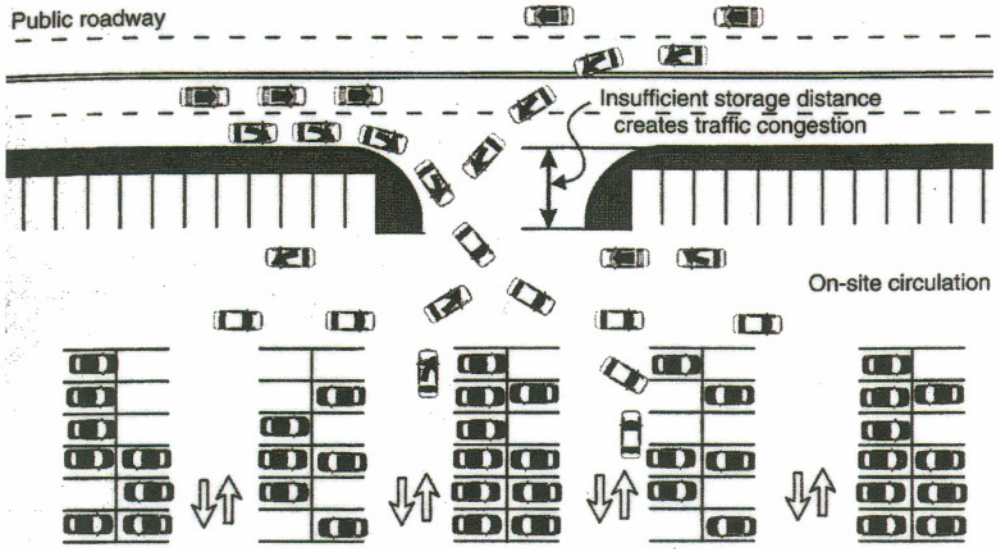
B. Access Management

Access management provides access to adjacent land development while simultaneously preserving the flow of traffic on the road system in terms of safety, capacity and speed. Access management can increase the capacity of the transportation infrastructure and create shorter travel times. In addition, the functional life of existing roadways can be prolonged. Simply put, access management maximizes the efficiency of our existing roadways. In turn, this reduces the need for costly future roadway improvements.

Thus, the Strategic Plan recommends the use of access management techniques by municipalities in their local plan review process. Typical access management strategies include:

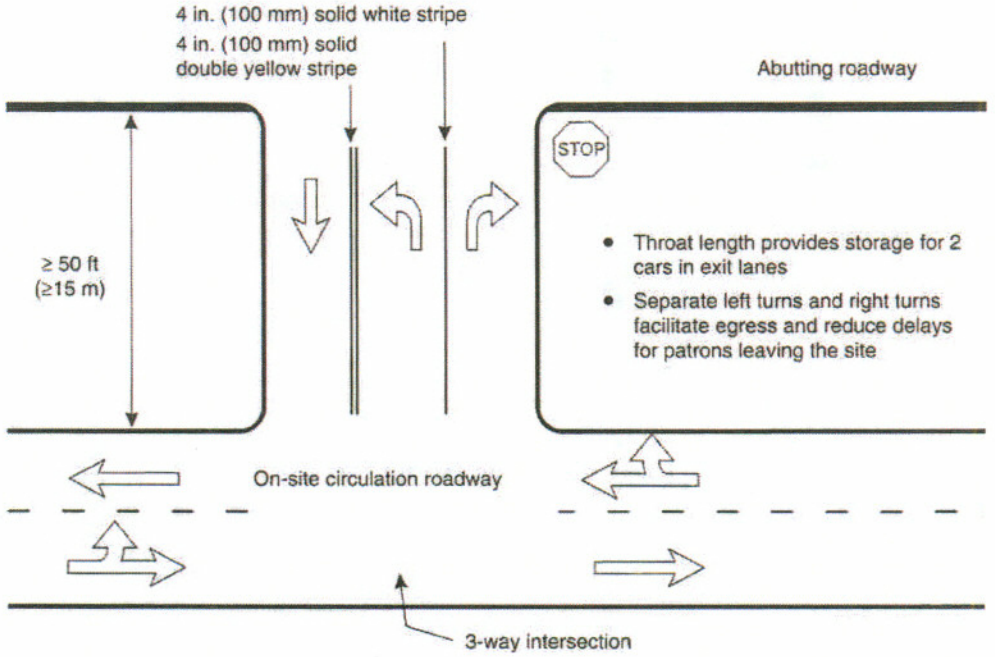
- Plan for an integrated community street network that links to adjacent areas;
- Requiring developers to provide a connected and sufficient local road system to minimize using the main arterial that is designed to accommodate through traffic;
- Reducing/limiting the number of curb cuts by considering the location, design, and spacing of driveways;
- Planning for the location of future signalized intersections;
- Requiring shared access points and connectivity between parcels;
- Reducing the number of parking spaces by permitting shared parking arrangements among individual businesses;

FIGURE 20 – INADEQUATE THROAT LENGTH



Inadequate entry throat length results in poor traffic operations.
(Source: Transportation Research Board Access Management Manual 2003)

FIGURE 21 – ADEQUATE THROAT LENGTH



Adequate entry throat length results in improved traffic operations. Entry throat distance varies by number of lanes and signalization.
(Source: Transportation Research Board Access Management Manual 2003)

- Aligning driveways and create regular offsets;
- Relating driveway designs to travel speeds and traffic volumes;
- Prohibiting direct parking access from a parking space to arterials or collectors; and
- Planning for public parking.

In order to assist the municipalities, the County is developing prototypical access management plans for two county highway corridors. These include Route 519 in White, Harmony, Lopatcong and Greenwich as well as Route 517 in Allamuchy and Independence. The plans will provide guidance for the municipalities along those specific corridors. They should also be used by other municipalities as examples of how various techniques can be applied.

C. Transit

Transit Lines – Public opinion survey respondents strongly supported the creation of additional bus and rail services in Warren County. There are four major opportunities to enhance transit service that should be explored further, including passenger rail service on the Lackawanna Cutoff, Washington Secondary and the Raritan Valley line as well as bus service among Washington Borough, Belvidere and Phillipsburg. Each is described below.

NJ Transit currently operates the only passenger rail line in Warren County. The Morris and Essex Line serves Hackettstown, Dover, Morristown, Gladstone, Summit, The Oranges, Montclair, Newark, Hoboken and various intermediate points. These lines also provide midtown direct service to Penn Station, New York. Hackettstown is the only local station located within Warren County. The station is located on the edge of the business district. During the strategic planning process there was support to increase the speed of the rail service between Hackettstown and Netcong. This would make use of the line more desirable as an alternative to automobile travel.

In addition, the Strategic Plan recommends enhanced intercounty bus service along Interstate 78 and 80 to employment centers east of Warren County.

Lackawanna Cut-off - Efforts are currently underway to restore passenger service along the Lackawanna Cutoff in northern Warren County. The former passenger line is anticipated to provide transit service to employment centers in Morris County and further east when activated. It is intended to provide an alternative mode of travel to the congestion on Interstate 80 during peak periods. The Cutoff would extend to Scranton, PA via a crossing of the Delaware River near the Delaware Water Gap. NJ TRANSIT is leading the planning, design and environmental approval processes in partnership with the State of Pennsylvania and Monroe, Lackawanna, Warren, Sussex, and Morris Counties that would be served by the line. The Strategic Plan recommends that the restoration of passenger service be evaluated further to determine feasibility and the potential impacts on the environment, growth and quality of life.

The only station proposed in Warren County is located on Route 521 in Blairstown. It must be noted that the current governing body of the Township of Blairstown opposes siting the station at this location. The station site is zoned commercial while the surrounding area is zoned for low density residential. The station area is approximately 1 mile from the Blairstown downtown commercial and historic center. Typically, it is desirable to establish higher residential densities and mixed uses at station areas as described in the Land Use and Transit section below. However, the Blairstown station area is unique in that the existing "downtown" is more appropriate for these uses and densities. Thus, it may be desirable to establish a park and ride connection in the center with jitney service to and from the station.

The restoration of freight service on the cutoff and in particular the movement of solid waste must be examined carefully. The Interstate Commerce Commission Termination Act of 1995, preempts state and local regulation over railroad construction and transportation, but does not preempt entirely the ability for state and local agencies to enforce environmental laws and regulations. They do preempt the county and state sold waste planning process when transfer stations may be proposed by the operator along railroad lines. Therefore, in consideration of the environmental features of the area, the strategic plan recommends against the construction of transfer stations along the cutoff.

Washington Secondary – The Strategic Plan recommends the restoration of passenger rail service on the "Washington Secondary" line between Hackettstown and Phillipsburg be evaluated further to determine feasibility and the potential impacts on the environment, growth and quality of life. The line along the Route 57 corridor goes through Port Murray, Washington Borough, Broadway, New Village and Stewartsville. The Norfolk Southern (NS) currently operates this line between Phillipsburg, Washington, Port Morris and Dover (NJ) for freight service.

The service could either be an extension of the passenger rail service provided by NJ TRANSIT to Hackettstown from Morris County or light rail service serving Hackettstown, Washington Borough and Phillipsburg with a direct connection to NJ TRANSIT in Hackettstown. It would allow residents of Warren County to access Morris and Essex Counties, the MidTOWN DIRECT service to and from Manhattan as well as the Secaucus Transfer and Hoboken Terminal. As importantly, it would provide rail transit service among the county's centers along the Route 57 corridor.

Raritan Valley Line – The Strategic Plan recommends the extension of NJ TRANSIT passenger rail service from High Bridge in Hunterdon County to Phillipsburg be evaluated further to determine feasibility and the potential impacts on the environment, growth and quality of life. The extension would require the shared use of a segment of the Lehigh Line. The NS operates the former Lehigh Valley/Conrail main line known as the "Lehigh Line" for freight service. The Lehigh Line typically has a high volume of trains and the track was recently altered to double stack clearance (20'6"). The extension would provide direct access for residents of Warren County to Hunterdon, Somerset, Union and Essex Counties as well as the Secaucus Transfer and Hoboken Terminal. The line would also provide access to Phillipsburg for residents of these surrounding counties. In 2000, the North Jersey Transportation Planning Authority initiated discussion with Somerset, Hunterdon, Warren Counties and the Lehigh Valley Planning Commission to evaluate the feasibility to extend the Raritan Valley westward. Due to a lack of funding the effort was held in abeyance. The County Strategic Plan recommends that these activities begin again.

Mid-County Bus - The Warren County Transportation Advisory Council is considering instituting shuttle service from Belvidere to Phillipsburg where connections could be made with the Rt. 57 Shuttle and with connections to the Phillipburg Mall, the Phillipsburg line run by NJ TRANSIT and LANTA.

Another logical route that should be evaluated for new shuttle bus transit service would be from Washington south to Phillipsburg through Washington Borough, Oxford, Bridgeville, Belvidere, County Center, and Harmony. This "mid-county bus" would follow Route 31 to Route 46 to CR 620 to Route 519. A route such as this would connect several centers as well as offer transfers with the Route 57 Shuttle in Washington Borough, **Figure 22** (see next page).

Land Use and Transit - In order to make transit services more viable, municipalities should establish minimum land use densities in centers needed to support ridership. Generally, the minimum densities of 6-8 housing units per acre for bus and 15 housing units per acre for rail are needed within walking distance (i.e., 1600 feet) of the transit line stops or stations. Currently, the existing centers along the transit corridors do not have zoning that meet these thresholds. However, the population near the recommended and existing transit services will increase as the centers are further developed under existing zoning. Although this will not meet the desired threshold, the population increase will contribute some ridership for the transit services.

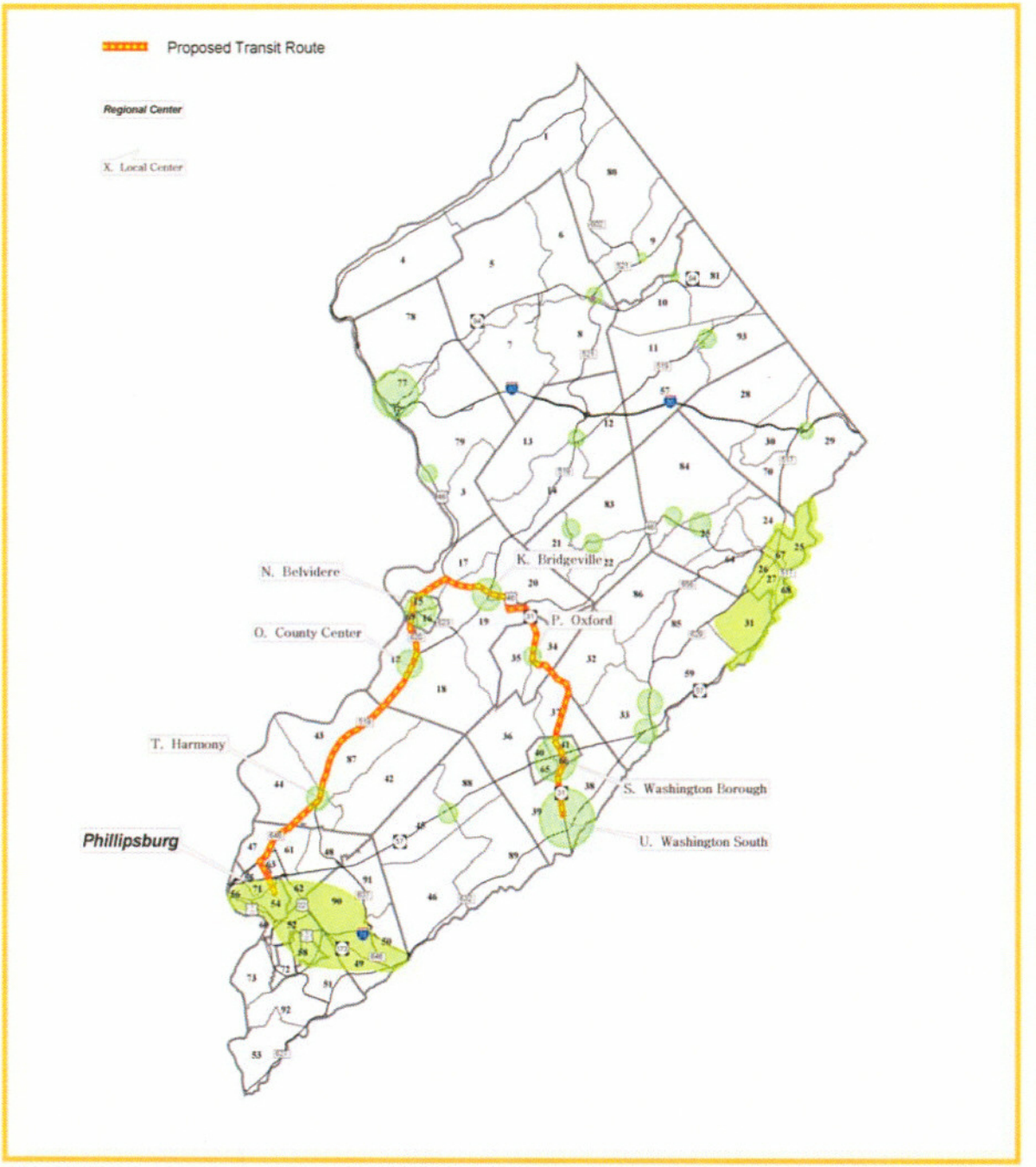
Participants in the public outreach opposed increased residential densities in centers due to concerns such as impacts on school finances. As a result, the alternatives analysis did not test increased residential density in the centers. However, the relationship between land uses and transit was explored as part of the analysis. For example, regional connections with park and ride accessibility are likely to have the greatest impact, as residents living in dispersed locations within the County would be able to access the stations via private automobile. This would include projects such as NJ TRANSIT's Lackawanna Cutoff.

There is a need to explore the need for additional park and ride lots or spaces. Currently park and ride lots exist in Hope Township at the I-80/CR 521 interchange, at Panther Valley in Allamuchy, at the Phillipsburg Mall, and on Route 46 in Mount Olive Township Morris County. Additional locations along major transportation routes where parking lots are not fully used during weekdays should be identified. Potential locations include the A&P Shopping Center lot in Washington Township on Route 31, and along Route 22 in Pohatcong Township.

In addition, pedestrian improvements (as mentioned below in *Site Design*) can provide for better connections between existing transit stops and riders' origins and destinations. Additional measures to increase the attractiveness of transit include bus shelters, improved signage, and improved reliability. Several of the transit routes in Warren County offer route-deviation service, which involves vehicles that follow a set route but that will deviate by a specified distance from the route to pick up or discharge a rider closer to their origin/destination. This paradigm allows more efficient service in less-dense areas, and opportunities for new/expanded services should be pursued.

Figure 22

Proposed Transit Service



WARREN COUNTY SMART GROWTH PLAN

D. Improvements and New Master Planned Roadways

The smart growth, site access, and transit recommendations included herein will help address some of the transportation needs of Warren County. However, as shown by the Travel Demand Modeling performed as part of the Strategic Plan (see Chapter 4), it is evident that additional lane capacity, local connector roadways and new regional through roads may need to be constructed to accommodate traffic in the future. Many of these improvements and roads have been proposed in studies that have been completed in the recent past. They are discussed in the following section. However, the remaining portions of the County need to be evaluated to determine where and at what level additional lanes and new roadways are needed.

The modeling shows how important the smart growth land use recommendations are to reducing the need for new roadway capacity. The key output of the Travel Demand Model is the volume-to-capacity (V/C) ratios of sections of roadways. The V/C ration indicates the operating condition of the roadway. When the V/C ratio is equal to 1 the road is considered at capacity. A V/C ratio greater than 1 indicates that the demand for travel on a roadway exceeds capacity. As a result, the operations of the roadway are failing and drivers experience long delays and queuing. In this study, V/C ratios were compared from existing conditions as well as build out under existing zoning and the alternative scenario.

Under existing conditions, only 3% of the roadways in the county experience a V/C of 1 or greater during the weekday PM Peak hour. Build out under existing zoning indicates that the percentage of roadways in the county that will have a V/C equal to or greater than 1 will rise to 58% of the roadways. Roadways such as Route 46, 31 and 57 experience V/C ratios greater than 2 (demand for the roadway is two times greater than supply). The roadways exceeding the V/C ratio of 1 are shown on **Figure 14**.

Under the alternative land use scenario the performance of the transportation system is greatly improved. Also, the V/C ratio of many of the roadways is reduced. However, many of the County's roadways will still operate at or above capacity under the alternative scenario (see **Figure 15**). These are the areas where future roadway improvements will likely be needed. The model should be used by the county and municipalities to help define more specific remedies. This can be done in coordinated corridor studies as well as during the review of proposed developments by municipalities.

E. Financing Districts

Transportation Development Districts (TDDs) – The districts are a potential tool for planning and funding transportation improvements for high growth areas. The districts are a mechanism to obtain 'fair share' contributions from developers for the cost of improving circulation and mobility. The districts are

authorized in New Jersey under the Transportation Development District Act of 1989 (TDD Act). There are no such districts in the county currently.

A TDD can be created to assess fees on future developments responsible for increasing the burden on the transportation system. The fees may be used to finance projects on state or local roads as well as other types of projects. The fee must be based on an adopted transportation improvement program and individual project agreements approved by the DOT. The law requires that a fee formula be established that assess developers their "fair share" of transportation improvements and that developers be able to determine their share based upon the plan.

The designation of a TDD can be initiated by Warren County by applying to the NJDOT. 1) The application must include the proposed boundaries of the district, 2) evidence that growth exceeds one of the thresholds listed below, 3) a description of the transportation needs, 4) certification there is county master plan adopted under R.S.40:27-2 and that the district would conform to both the county master plan and the State Development and Redevelopment Plan, 5) certification the affected municipalities have been given at least 30 days advance notification and the opportunity to comment on the application, 6) comments offered by any of these municipalities and the county's response, and 7) any additional information the NJDOT may require.

Under the TDD Act growth must be demonstrated in one of the following categories to establish a district.

- Growth rate for estimated population or employment in excess of 10 percent in three of the past five years in at least three contiguous municipalities.
- Projected local traffic growth in excess of 50 percent in a five-year period generated from new development.
- Commercial/retail development projected at a rate of one million square feet per square mile in a five-year period.

Projected growth or employment in excess of 20 percent over a 10-year period.

Upon approval of a draft district by the NJDOT, the county would be required to conduct a joint planning process to develop a District Transportation Improvement Plans and accompanying financial plan. The joint planning process must involve State, County and local governments as well as representatives of the private sector. These plans must then be adopted by the county before the TDD can be implemented.

In 1990, the Warren County Planning Department conducted a study to evaluate if TDD's could be created anywhere in the county. The study concluded that based on the criteria, no TDD's could be established in the county as no towns met the growth thresholds.

To date, only four counties have engaged in a TDD planning process. They include:

1. Mercer County - TDD application was approved in 1990; and the TDD plan was approved in 1992. The District is in effect.
2. Atlantic County – Two former Transportation Improvement Districts (TIDs) have been grandfathered as TDDs under the TDD Act.
3. Hunterdon County – The TDD application was approved in 1990, but no plan has been approved and the district is not operational.
4. Union County – The TDD application was approved in 1998, but no plan has been approved and the district is not operational.

Transportation Enhancement District (TEDs) – There currently exists a bill (A-1750) in the New Jersey Legislature to allow for the creation of Transportation Enhancement Districts (TEDs). The TEDs would address many of the constraints to implementation of a TDD.

The Regional Intergovernmental Transportation Coordinating Study Commission (RITCSC) was established by the New Jersey Legislature to review and make recommendations the TDD Act. Its' interim report (2000) included several important findings regarding the use of TDDs which are summarized below.

The coordination among municipalities, counties, the NJ Department of Transportation, NJ Transit and the private sector during the required Joint Planning Process "has been the most consistently valuable component of TDD/TID implementation efforts to date." Because of the regional nature of the impacts of growth and the role of the transportation system, the TDD may be a useful tool along major roadway corridors in Warren County.

However, as noted by the RITCSC, "there is no clearly defined source of funding to support TDD planning efforts." This has been a disincentive to TDD implementation. In addition, the RITCSC also found that the growth thresholds favor TDD eligibility in under-developed areas on the exurban fringe because those areas start with low levels of site-generated traffic.

The TED would provide for the sharing of transportation costs through a long-term comprehensive planning approach. While a TDD is permitted to assess fees on future developments, the TED would enable the County to assess fees on existing properties generating traffic in a district. The TED would also permit certain planning costs for a TED to be recovered as part of the fees and does not include growth thresholds. This would encourage the use of financing districts in a wider range of land use settings, including developed areas. Because of its benefits, the joint planning process would be retained.

As currently proposed in A-1750, the Board of Chosen Freeholders must apply to the Commissioner of NJDOT for designation and delineation of a TED. The application would include the proposed boundaries, evidence of

existing and future transportation deficiencies to justify its creation, a description of existing and future transportation needs arising from existing and anticipated future development within the district, and consistency with existing master plans. There are other administrative requirements as well.

Following the Commissioners designation a joint planning process would be undertaken to develop a comprehensive, future oriented district transportation enhancement plan including a financial element. The financial element would estimate the costs of the transportation improvements and develop the recommendations for the types and rates for development and enhancement fees to be assessed.

Potential Districts - Based on the findings of the Transportation and Land Use Modeling for this Strategic Growth Plan, there are several potential areas for financing districts. Additional analysis will be required to determine if the growth thresholds are met in for TDD's. However, as discussed below, pending legislation may eliminate the use of thresholds. It is recommended that the county initiate discussions with the involved municipalities and the state to determine the most appropriate use of financing districts.

Route 22 Corridor – The corridor would include Routes 57, 519, 637, 638, 646, 173, 122 and 22 in Greenwich, Phillipsburg, Pohatcong and Lopatcong. The corridor includes one of the most extensive areas of commercially and industrially zoned vacant land in the county. Given its proximity to Route 78, the potential for new development that significantly impacts the transportation system is relatively high.

For example, in 1998, the Warren County Planning Department completed the US Route 22 Corridor Study encompassing US Route 22, NJ Routes 57 and 122 and County Route 519. This corridor was identified as having a high potential for growth activity. The study area included development proposals of almost 3,800 dwelling units and over 2.5 million square feet of commercial and industrial space. The study also found that there is significant movement of traffic between the northern /central counties of New Jersey and the Lehigh Valley of Pennsylvania, and this activity traverses directly through the study area.

The study recommended that several new roadways be constructed to carry traffic through the region. The Route 22 Study may be used as a guide in identifying where improvements and new roadways may be feasible for inclusion in a revised county transportation plan and considered as part of an overall financing district.

The Route 57 Needs Assessment/Concept Development Study (2003) defines a number of improvements to the corridor between Route 22 in Lopatcong and Route 182 in Hackettstown. The study recommended retaining Route 57 as two lanes, widening the shoulders to eight feet for emergency pull over and to provide bicycle compatible lanes and recommended intersection and site roadway improvements to accommodate left turn lanes and improved channelization at major intersections and activity centers.

Both corridor studies could be used as a starting point for defining the needed transportation improvements in the vicinity. However, land use changes should also be considered to help reduce the extent of necessary transportation improvements and their costs and to reduce congestion. Neither study assessed the impact land use changes could have on the transportation system.

Route 519, 646 and 46 Corridor - The corridor extends through the towns of Harmony and White. It includes a thin linear strip of commercially zoned vacant land in Harmony and extensive areas of industrially zoned vacant land in White. An access management plan has been developed as part of this Strategic Growth Plan for the corridor. The improvements defined in the access management study should be used to help define the transportation improvements that could be funded by a TDD.

Route 31 Corridor - The corridor extends through Washington Township and Borough, and the northwestern portion of Mansfield. In 2000, the Routes 31/46 Between I-78 and I-80 Corridor Needs Study Report was completed by Warren County with assistance from Hunterdon County. The study can be used to help define the transportation improvements that could be funded by a financing district. The study had recommended operational improvements to the intersection of Routes 31 and 57, the intersection of Route 31 with Broad Street and Springtown Road and the widening of Route 31 to two lanes in each direction south of Washington Borough.

Route 57 Corridor - The portion of the roadway that extends through Mansfield and Hackettstown could be served by a TDD. The Route 57 Needs Assessment/Concept Development Study identified a number of improvements to the corridor in these two municipalities that could be funded through a TDD. The study recommended retaining Route 57 as two lanes, widening the shoulders to eight feet for emergency pull over and to provide bicycle compatible lanes and recommended intersection and site roadway improvements to accommodate left turn lanes and improved channelization at major intersections and activity centers.

In 2000, the Warren County Planning Department completed the Hackettstown By-Pass Corridor Study to evaluate mobility needs in the Hackettstown vicinity. The by-pass study was updated in 2004 with the Route 46-57 Connector Study that included an origin destination study and a traffic simulation model. The Connector Study was completed as part of this Strategic Growth Plan and Transportation Technical Study. The simulation

illustrated that significant reductions in congestion could be achieved by extending Route 57 to Route 46 in the Township of Washington in Morris County. The Route 57 Extension could also be funded in part by a financing district.

County Transportation Model - The County's Model can be enhanced to perform trip generation based on the land use of individual parcels. This would help provide a defensible mechanism to obtain a 'fair share' contribution by a developer as described below.

Using the model, the effects of the developer's project could be determined system wide. Usually the traffic impacts of a development are determined for the development's access point to the roadway and the adjacent intersections or roadways. The impacts are often only assessed in the municipality where the project is proposed. With the enhanced computer model, a traffic engineer or planner could input the development into the model and determine its effect system or corridor wide. This would allow the County to identify the most effective mitigation measures and improvements necessary to address the impacts of a development.

III. WATER QUALITY

A. Water Quality Model

One of the Strategic Plan's goals is the protection and enhancement of water quality and quantity. Groundwater is an important natural resource that is integral to the sustainability of development in most rural communities. Groundwater within Warren County is particularly important since most of Warren County is located within the Northwest New Jersey Sole Source Aquifer. Because of its geographical location, it is even more important to implement development practices that sustain this natural resource.

During the strategic planning process, the supply of groundwater to meet the demands of future growth was considered. The 1979 General Development Plan (GDP) found that, with the exception of a portion of the northern part of the county in the Delaware River watershed (e.g., National Park), the major limiting factor to growth is the ability of the soils to accept on-site wastewater without adversely affecting water quality. In that analysis, as shown on Table II of the GDP, the population limits based on quantity would be nearly double the population based on water quality.

Municipalities are encouraged to examine the potential impacts of minimum lot size on water quality for individual wastewater treatment systems. This can be done using the New Jersey Geological Survey's "Recharge-Based Nitrate Dilution Model for New Jersey."

As part of the strategic planning process, the model was used to assess the ability of soils under existing zoning densities in Warren County to adequately protect water quality. The modeling was performed at the two thresholds – 10