

Transportation Alternatives

In 2015, an intercity rail system speeds commuters across the Triad, reducing congestion at peak times on our expressways



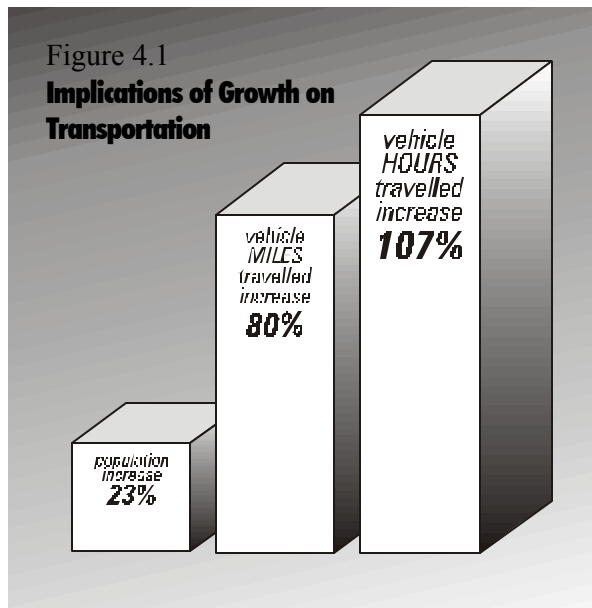
Traffic congestion on our streets and highways is a growing concern in our community. Why is traffic increasing and what can be done to alleviate it?

Some people believe that the increased traffic is caused by newcomers moving to our community and the resulting new development. However, studies elsewhere show that even in areas of the United States where population has been stable or declined, the number of cars on the road has increased. In fact, much of the increased traffic and congestion is due to all of us driving more and driving greater distances than ever before.

Complex social and economic changes are part of the reason we are driving more—increases in disposable income, growth in the number of jobs and two wage earner families, and more trips that are not work related. However, the root cause is the way our communities have been designed and built. Scattered, sprawling suburban development, built at low densities and spreading ever farther into the countryside has been our preferred development pattern for the past 30 or 40 years. When combined with zoning ordinances that require separation of employment locations, shopping and services from residential areas, the result is more and longer trips and an almost total dependence on the automobile for most of us. Routine trips to buy a loaf of bread, mail a package or take the kids to the park require a car. Most of us, therefore, drive more and those who don't or can't drive—children, the elderly and disabled—are totally dependent on others for any activities away from home. Alternative transportation choices (taking transit, bicycling, or walking) are given little emphasis in

suburban developments and are not viable choices for most trips.

Our spread-out development patterns and increasing dependence on the automobile has its price. More cars on the road mean lost time and productivity, more accidents and increased air pollution. Dispersed growth and changed travel patterns make it harder for our public transit system to provide good service, attract riders and remain efficient. More cars require new roads and the widening and maintenance of existing roads come at a cost that we may no longer be able to afford. Ultimately, our traffic problems reduce the quality of life in our community. We are beginning to realize that we cannot pave our way out of our congestion dilemma. Laying more asphalt may just mean that the congestion is two lanes wider!



Our Vision

The *Legacy* Focus Groups have envisioned in their report, “Forsyth County Tomorrow” a much more balanced and sustainable transportation system in our future. Transit-oriented land use policies have made transit (buses and rail), walking and bicycling competitive with the automobile and given people a choice of how they get around our community.

In the year 2015 we envision that . . .

- 👁 Land use policies that support transit ridership, walking and bicycling have reduced our dependency on the automobile. More compact development patterns at activity centers and along transit corridors have made the transit system economically self-sustaining. In our neighborhoods, transit-oriented developments emphasizing a mix of uses and easy pedestrian access to shopping and services have lessened the need to drive.
- 👁 While the automobile continues to be a major means of travel in our community, the availability of convenient and affordable transit, including buses, vanpools and rail, provides alternatives for travel between neighborhoods, retail and employment centers and reduces congestion on our highways.
- 👁 In the Triad region, an intercity rail system connects major destination points reducing congestion at peak commuting times on our expressways.

- 👁 Incentive programs to reduce single occupant vehicle commuting and promote transit, vanpooling, carpooling and staggered work hours are strongly supported by local businesses and government.
- 👁 Advances in technology have reduced the traffic on our streets, cut costs and improved air quality. High speed computer networks allow increasing numbers of people to work at home at least one day a week. Use of alternative fuels and a gradual conversion to electric vehicles have reduced air pollution from automobiles to acceptable levels.
- 👁 Planning for new roads is now under local control. There is a more open and participatory public process guiding decision-making on transportation issues.

Goals, Objectives, Policies and Action Agenda

Goal:

A balanced and sustainable transportation system that links highways, transit, greenways, bikeways and sidewalks into a seamless transportation network that provides choices for people’s travel needs.

Objective 1: Transit Supportive Land Use Patterns and Design

Promote land use patterns and transit-oriented design standards that support public transit, walking and bicycling and reduce the number and length of automobile trips.

Costly road projects, traffic congestion, air pollution and other urban problems are not inevitable consequences of growth—they are the result of the way we grow. We are currently growing outward in a low density pattern of single use development rather than inward in a more compact, mixed use development pattern. This sprawl development has a number of negative economic, social and environmental consequences which are discussed elsewhere in this guide. For the transportation system, dispersed development creates a number of problems since streets and highways must give access to newly developed land located on the fringes of the community. Spread out development places destinations so far apart that the automobile is the only practical way to get from home to work or shopping. At the same time, spread out development cannot be served cost-effectively by transit. Buses and light rail are simply not economical or efficient serving low-density, dispersed development.

However, sprawl and the negative consequences that come with it are not inevitable. We do have choices. We can plan for and develop more compact transit-oriented land use patterns that foster transportation choices: transit (bus and

rail), walking, bicycling as well as using the car. We can create more livable neighborhoods with nearby services that we can reach by walking, bicycling, or taking a bus. We can locate neighborhoods and jobs and shopping closer together so that the length of our transit and automobile trips are reduced. By creating land use patterns that allow for transportation choices, we can decrease commuting time, diminish traffic congestion, improve the quality of our air and increase the livability of our community.

The following recommendations are designed to reduce the number and length of automobile trips and to promote transit supportive land use patterns and transit-oriented design for developments that will make transit (rail, buses), carpooling and vanpooling, bicycling and walking viable transportation choices in our community:

New Land Use Patterns

Develop a Growth Management Plan

Create a more compact community by identifying areas that are suitable for future new urban development, infill and redevelopment and areas that should remain rural. See “Growth Management Plan,” Chapter Three.

Create A Strong Downtown Winston-Salem

A strong commercial, entertainment and cultural center in downtown Winston-Salem with nearby housing can become a focal point for a metro transit system. Downtown is also one of the few areas in our community that was designed with walking from use to use in mind.

Direct Growth to Activity Centers and along Transit Corridors

For transit to be viable, it is essential that a sufficient number of people live or work close to transit stops and along transit routes. Intensifying land uses within one-quarter to one-half mile walking distance of existing or planned major transit stations and corridors (bus or rail) encourages higher levels of transit ridership.

Promote Mixed-Use Development

When residential, retail and employment uses are mixed it becomes possible to walk instead of drive for some trips. More importantly, the pedestrian environment which mixed use creates encourages people to walk to bus and rail stops by providing interesting pathways and places to stop along the way. At employment locations, a mix of uses allows employees to take care of day-to-day errands within walking distance of their jobs. Similarly, locating a grocery store, dry cleaner or day-care center adjacent to a residential neighborhood or near a bus or rail stop allows people to do these errands on their way to and from work.

Foster Infill and Redevelopment

Encouraging infill, redevelopment, and reuse of vacant or underutilized parcels within developed areas increases densities. Several studies conducted in different cities during the past fifteen years have found that increasing density is one of the most effective measures to increase transit ridership and makes transit more viable. Infill and redevelopment also supports the efficient provision and use of transit and promotes

walking. However, many neighborhoods and communities reject higher densities because they associate them with unattractive multifamily developments. Developers and government agencies must develop a dialogue with the community on how to build attractive, compatible compact housing. The keys to building successful development at higher densities is careful internal design of the project and making sure that the design respects and complements the existing surrounding development.

Transit-Oriented Site Design

Transit users are pedestrians and need neighborhood, employment and shopping environments that are conducive to walking to and waiting at transit stops. Surveys of transit users reveal that waiting at transit stops is the most unpleasant aspect of using public transit. Site design guidelines can address this by proposing ways to create pedestrian friendly environments near transit stops.

Develop Pedestrian/Bicycle/Greenway Facilities

Providing good pedestrian accessibility supports the other transportation choice strategies and can reduce vehicle miles of travel. This strategy includes direct routes linking neighborhoods with destinations, safe and attractive sidewalks and paths, protection from vehicular traffic, pedestrian-activated traffic signals, traffic calming features, and other amenities.

Connect Neighborhoods and Transit Stops With Direct Pedestrian Walkways

A continuous network of streets, sidewalks and trails is important to support walking and bicycling to transit stops. The use of culs-de-sac (dead end streets) can greatly increase distances that pedestrians and bicyclists must travel to reach a nearby destination.

Locate Retail and Office Buildings Near the Street

Retail and office buildings should be near the street and sidewalk. This reduces the distance pedestrians and transit users have to travel and provides direct access to buildings along the street. Locating buildings close to the street, lining the street with trees, buffering the street with parked cars, ensuring buildings have display windows at the sidewalk edge all provide an interesting walking environment where pedestrians feel a sense of activity, enclosure and safety. Parking should be located to the rear and sides or under retail and office buildings.

Orient Commercial Buildings Toward Transit Stops

Buildings should be oriented with at least one entrance facing a transit stop. The distance between a building entrance and the transit stop should be minimized. Buildings

in automobile dominated suburban locations often turn their backs on the street and orient themselves to parking lots. This becomes even less acceptable when done in an area close to a transit stop.

Provide Generous Landscaping, Paved Walkways, and Safe Street Crossings

Trees and other landscaping provide a softening of the built environment, shade in summer, and can buffer pedestrians from automobile traffic.

Give Transit Passenger Safety and Security a High Priority in Design

Create “defensible space” by providing direct and unobstructed views to major destination points.

Encourage buildings to have large windows to create the sense that the area is constantly under visual inspection. Create activity, since people feel safer when there are other people around.

It’s no secret that it is difficult to get people to leave their cars and make some of their trips by transit, on foot or by bicycle. It may be even tougher to slow suburban sprawl. But the financial, environmental and social costs of not doing so will ultimately be very high. Quality future growth demands that we provide and promote these transportation alternatives.



Policies

- Encourage the Transportation Advisory Committee, the Winston-Salem Department of Transportation and the Winston-Salem Transit Authority to utilize *Legacy* and the guidelines in this chapter when updating transportation plans and implementing projects and services.
- The City-County Planning Board should continue to review transportation plans and programs to ensure that these plans support land use proposals and maximize the potential for transit and other modes of transportation.
- Showcase developments that are “transit friendly” and promote alternative modes of transportation.

Action Agenda

- Update zoning and subdivision ordinances to incorporate provisions that encourage and support alternative modes of transportation.
- Ensure that zoning along Urban Boulevards, other major roads and at Activity Centers support the mix, type, density and design of development that facilitates walking, bicycling and the use of public transportation.
- Prepare and adopt a transit-oriented design manual for new developments.

**Objective 2:
Streets and Highways**

Develop a first class street and highway network which meets the short and long term needs and aspirations of Winston-Salem and Forsyth County.

The emphasis in this chapter is on transportation alternatives—the bus system, van and car pooling, commuter rail, walking and bicycling—and the required changes in land use patterns that will make those alternatives viable transportation choices. At the same time we recognize that the automobile will still be the primary means of getting around our community in the year 2015. We therefore need to plan for a street and highway system that can meet our future travel needs.

The *Winston-Salem/Forsyth County Urban Area 2025 Multi-Modal Long Range Transportation Plan* is a comprehensive, long-range planning document compiled cooperatively by State and local planning agencies. This Transportation Plan which was approved by the Transportation Advisory Committee in 1999, serves as a long-range guide for the coordinated development of a county-wide transportation system which addresses anticipated future travel needs. The major new road proposed by the *Transportation Plan* is the Northern Beltway. The first phase is the 14.8 mile, \$275 million dollar western leg of the Northern Beltway. The second phase is the eastern leg of the beltway, expected to be constructed in the later half of the plan period. Other major new roads expected to be completed by 2015 are the US 311 Connector, Idols

Iced Tea?

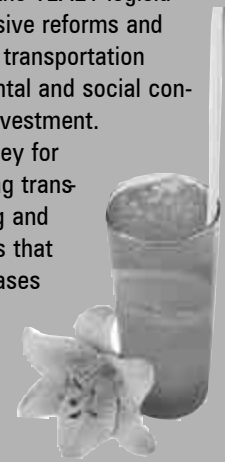
ISTEA is the acronym for the landmark 1991 federal Intermodal Surface Transportation Efficiency Act. This six year plan governed how states and local governments could spend federal transportation funds.

Rather than simply building more highways, the purpose of ISTEA was to create a transportation system where all modes (buses, trains, pedestrians, bicycles as well as cars) had their roles.

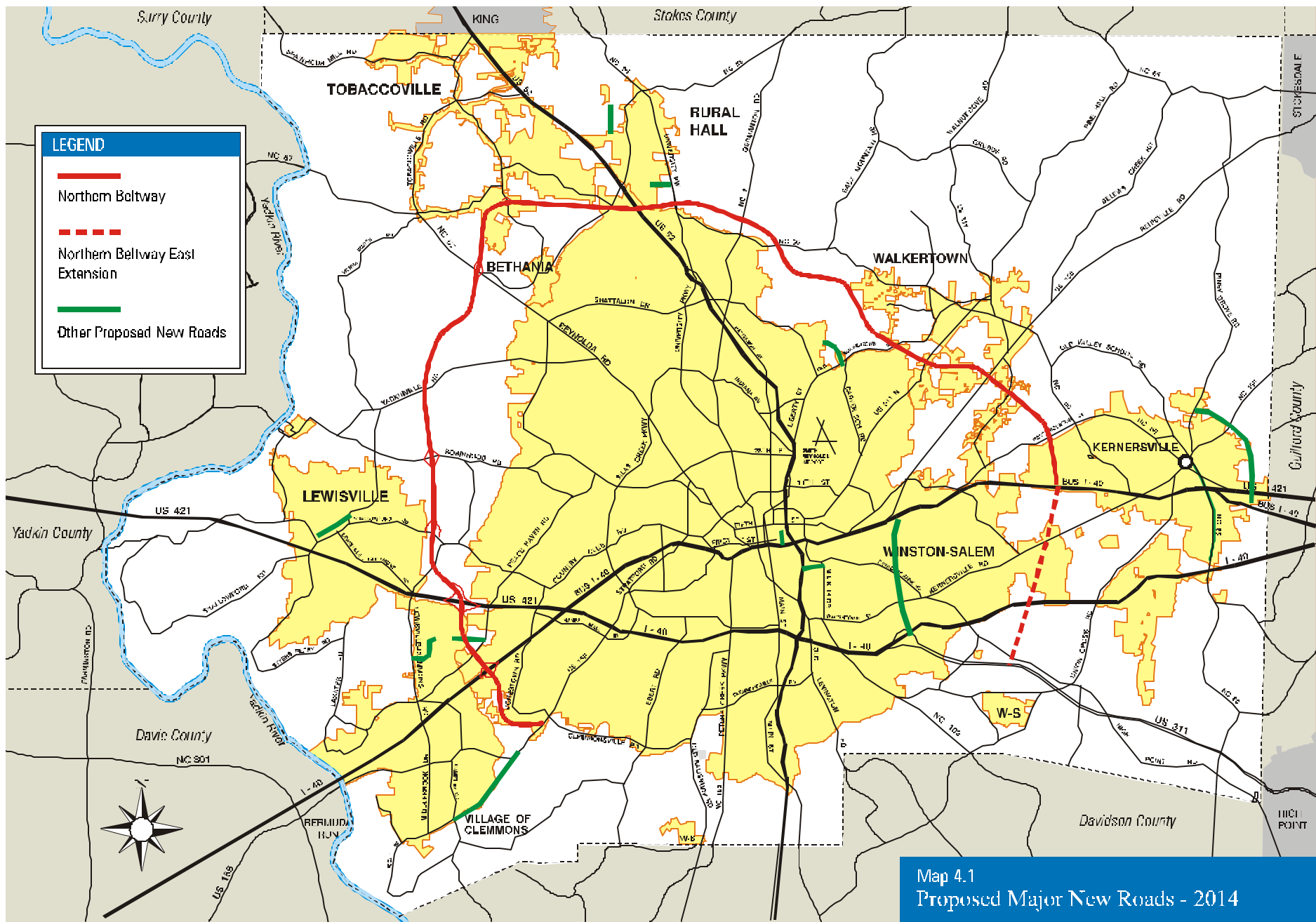
ISTEA did this by providing more money for transit and by setting aside 10% of each state’s transportation funds for a variety of environmental enhancements including construction of trails and bicycle and pedestrian facilities, landscaping and scenic beautification and removal and control of outdoor advertising. Over its six year life, it channeled over \$2.6 billion into these enhancements.

The recently adopted Transportation Equity Act (TEA21) reauthorizes ISTEA and calls for spending over \$200 billion on transportation over the next five years. The good news is that the TEA21 legislation reaffirms ISTEA’s progressive reforms and emphasis on a more balanced transportation system and on the environmental and social consequences of transportation investment.

TEA21 provides more money for mass transit, continues funding transportation choices like bicycling and walking, strengthens programs that reduce air pollution, and increases local government control and citizen involvement.



TRANSPORTATION ALTERNATIVES



Road Extension and a portion of the Town of Kernersville’s Eastern Loop. The *Transportation Plan* also calls for widening and improving several roads including sections of US 52/Future Interstate 74, US 421 and I-40 as well as the construction of several other new local roads. (See Map 4.1 - Proposed Major New Roads - 2014.)

The 2025 Multi-Modal Long Range Transportation Plan projects costs and revenues for its recommended programs, projects, facilities and planning initiatives to the horizon years of 2004, 2014, 2020 and 2025. Building the needed infrastructure for highways as well as alternative forms of transportation will not be cheap. The street and highway program will cost approximately \$2.4 billion. Bicycles, sidewalks and greenways facilities will cost approximately \$60 million. Cost are included for the ongoing regional rail studies at \$750,000. Implementation costs are not yet available. In order to maintain the current Winston-Salem Transit Authority system and to expand to the unserved areas of Winston-Salem, provide for the Welfare to Work program, Sunday service, express service to outlying communities, operate downtown circulars and meet the needs of commuting regional passengers it will cost approximately \$300 million.

Policies

- Develop streets and highways in a manner consistent with adopted land use plans.
- Explore improvements to existing facilities first when faced with capacity deficiencies.

Action Agenda

- Implement the county-wide *Multi-Modal Long Range Transportation Plan*.
- Pursue state legislation enabling local decisions on new sources of revenue for transportation needs.

**Objective 3:
 Street Design**

Design streets and highways that are safe, efficiently and effectively move vehicular traffic, accommodate pedestrians and bicyclists and have minimum negative environmental impacts.

Streets and highways are required to move cars, trucks, public transportation, bicycles and pedestrians safely and efficiently. However, the focus has been to design streets to move automobiles faster and more efficiently. This has undermined the use of transit, walking and bicycling since each mode of transportation has its own speed of movement and some separation of motor vehicles, bikes and pedestrians is essential in most cases. The result has been demands from neighborhood groups that traffic volume and speed in their neighborhoods be reduced.

To facilitate the use of all modes of transportation, streets and highways must be designed to accommodate the various users by providing facilities for pedestrians, bicyclists and transit users. These include sidewalks, bikeways, crosswalks, transit stops, traffic calming features etc.

The street design and type of accommodation provided would depend on the function of the street.

Highways designed with the main function of moving vehicular traffic at high speed to major destinations must be protected from the proliferation of strip commercial development with the accompanying access points and stop lights along them that reduce their effective capacity. They must also be free of direct access to commercial development at intersections since this can severely curtail the free flow of traffic and create traffic hazards.

New streets in residential areas must be designed to accommodate all users. Greater connectivity between residential streets would distribute the total traffic, ease congestion and make movement easier for all modes of transportation. Existing neighborhoods with streets that are unfriendly to pedestrians and bicyclists can be retrofitted and traffic calming measures to reduce speed employed.

Traffic calming is an integrated traffic planning approach that seeks to manage mobility to reduce its undesirable effects. It is based on the principles that streets are not only for cars; that residents have rights to the least noise possible, the least pollution possible, the safest environment possible and an equal share in the mobility a city can provide for its residents; and that there is the need to maximize mobility while reducing costs in terms of time, money, energy, and social and environmental effects. The main techniques employed to achieve traffic calming are:

- reducing the speed at which automobiles travel by altering roadway design;
- changing the psychological feel of the street through design or redesign;

- increasing incentives to use public transportation;
- discouraging use of private motor vehicles;
- encouraging people to organize their own travel more efficiently;
- creating strong viable local communities by bringing facilities to the people.

Roads impact our environment in a number of ways. Their negative impacts can be reduced by good road design which respects the value of our natural and built resources. This is discussed later in this chapter in the section on protection of the environment.

Policies

- Design streets and highways to accommodate public transportation, bicycles and pedestrians.
- Develop streets and highways in a manner which minimizes travel times and distances.
- Enhance individual mobility by improving the connectivity of the existing street network.
- Reduce travel speeds on local residential streets as needed.
- Minimize accident potential and severity.
- Employ traffic calming measures where appropriate.

Objective 4: Rail Transportation

Develop a long-range plan for the establishment of a commuter rail system.

A decade ago transportation officials were not talking publicly about commuter rail service as an alternative to the automobile. Indeed, *Vision 2005*, the comprehensive plan for Forsyth County that was adopted in 1987, makes no mention of commuter rail. Today attitudes about rail have changed dramatically. Nationally there is a rail renaissance underway. From Atlanta to San Diego, rail projects have taken the front seat in regional transportation planning. In North Carolina, the Research Triangle Area and Charlotte are planning for regional commuter rail systems. Rail transit systems are viewed as a key component not only of increased mobility but also economic development strategies. Soaring costs for new roads, inadequate funds to maintain the existing road system, and unhealthy air requiring cities to cut auto emissions have all resulted in a renewed enthusiasm for rail.

Recognizing the need for transportation alternatives including rail in North Carolina, Governor Jim Hunt appointed the Transit 2001 Commission in September 1995. The Commission's charge was to make recommendations on how to provide improved public transportation in the State for the twenty-first century. Headed by President Hearn of Wake Forest University, the group concluded that it is in North Carolina's best interest to take a leadership role

in development of a truly seamless multimodal transportation network including conventional and high-speed rail passenger service in heavily traveled corridors. Their report, completed in January 1997, recommends that total investment in public transportation should increase from a current level of \$108 million per year to \$265 million per year.

There are currently two state-supported passenger trains, the Piedmont and the Carolinian, running on the Raleigh-Greensboro-Charlotte route. The state plans to improve tracks and crossings and employ tilt-train technology to turn that route into a high speed corridor with trains running at up to 110 miles per hour. Those speeds would cut the Raleigh-Charlotte rail trip to less than three hours within five to seven years.

There is planning underway in the State's three major urban areas—the Research Triangle Area, Charlotte, and the Triad—for intercity commuter rail systems. The Triangle Transit Authority is the farthest along with its planning and will begin operating the first commuter rail system in the state in the year 2002. The train will run on a route connecting downtown Durham, Research Triangle Park, Cary and Raleigh. It will be an alternative to Interstate 40, which is badly congested by commuters in the Triangle each weekday morning and afternoon.

Mecklenburg County residents approved a one-half cent increase in the local sales tax in 1999 to be used for public transportation. Some of the money will go to build a rail line connecting downtown Charlotte with suburban communities like Rock Hill and Concord. Community leaders believe that commuter rail will reduce

suburban sprawl and focus new growth inward rather than out on the edges of their community.

The Piedmont Triad has its own commuter rail initiative underway. The State legislature has authorized and governments in the Triad have created the Piedmont Authority for Regional Transportation (PART). The purpose of PART is to coordinate regional public transportation system planning and programming in the Triad. PART will have the authority to operate public transportation systems. Funding could come from a tax on vehicle rentals and automobile registrations. The Boards of County Commissioners in Forsyth, Guilford and Alamance Counties will be required to approve these vehicle taxes before they can be levied.

The Authority is expected to study the feasibility of a commuter rail system between High Point, Greensboro, Winston-Salem and outlying communities as well as rail passenger service between Raleigh and Asheville through Winston-Salem generally following the I-40 corridor. The State legislature has approved \$750,000 for these studies.

The *2025 Multi-Modal Long Range Transportation Plan* identifies proposed rail study corridors in Forsyth County for future passenger travel. The corridor along the Norfolk-Southern line parallels I-40 and Business 40 in Forsyth County and continues on past the Piedmont Triad International Airport and to the Amtrak Station in downtown Greensboro.

A second proposed study corridor links Rural Hall with downtown Winston-Salem and proceeds south to the Davidson County Line. A third corridor follows I-40 and US 311 to High Point.

The Growth Management Plan Map identifies a rail line and potential commuter rail stops in Forsyth County at Clemmons, the Hanes Mall area, Baptist Hospital, downtown Winston-Salem, the Airport, eastern Winston-Salem and Kernersville. Commuter rail in this corridor could relieve congestion on heavily traveled I-40.

Will a future rail transit system solve all of our traffic problems? Not likely. Ridership in most rail cities is less than 10 percent of commuters and highways continue to be congested, so our community will continue to need a first class system of roads and highways. But the expected growth in our population and an even greater increase in the vehicle-miles traveled on those roads mean that we may not be able to afford to expand the road system fast enough to meet demand, especially on our intercity corridors. Mass transit will provide an alternative to congestion and the trip to work promises to be faster and less stressful for commuters who choose transit. In short, we need to look carefully at all our transportation alternatives including commuter rail service.

Policies

- Support the Piedmont Authority for Regional Transportation in coordinating regional public transportation planning in the Triad
- Preserve existing rail lines and rights of way for future regional/local rail service or pedestrian use.
- Ensure that facilities and services planned for a future rail system are interconnected and coordi-

nated with those of other existing and proposed public transportation systems.

- Ensure that land use policies and zoning regulations along rail transit corridors and around rail stations support increased development densities and transit-friendly design.

Action Agenda

- Complete a feasibility study of rail transit as an element of public transportation at the local and regional levels. Look specifically at the potential for a passenger rail line from Greensboro through Winston-Salem to Asheville.
- Consider the feasibility of a commuter rail system along I-40.

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**Objective 5:
 Public Transportation**

Expand public transportation into a county-wide transit system of buses, van pools, car pools and special population transit services that is efficient, convenient, safe and cost-effective.

Winston-Salem has had a public transportation system since 1890 when electric streetcars began serving the Downtown. In 1972, the management of public transportation became the responsibility of the Winston-Salem Transit Authority (WSTA). WSTA currently operates 27 daily routes within the city limits of Winston-Salem. In addition,

WSTA serves 45 park and ride lots located along major transportation routes. TransAid, a county-wide demand responsive dial-a-ride service for elderly and disabled residents is another service operated by WSTA. A new Downtown Transportation Center with modern equipment and technology opened in 1997 offering transit passengers comfort, convenience and safety. WSTA was recently named as one of the top five public transportation systems in the country in providing the most cost-effective transit services.

PART has taken over from WSTA the responsibility of managing Ridesharing Services and Vanpooling of the Piedmont (RSVP), a state-funded ridesharing program for people in the 12-county Triad region. Through carpool matching and vanpool leasing, RSVP provides commuters with an alternative to driving alone. This successful program with a fleet of 73 vans currently eliminates over 19 million miles of commuter travel in the Triad region each year.

In spite of its successes, WSTA is losing market share. Over the past 20 years, the number of daily automobile trips in our community has increased dramatically. Over that same time period, the yearly total passengers carried by WSTA has increased only about 10 percent. Today, as in 1982, the vast majority of bus riders are still those with low incomes, the disabled and non-drivers—captive riders who have no other means of getting around. WSTA has tried and failed to persuade many “non-captive” commuters to leave their cars in their driveways and board the bus. This is due in part to suburbs that are designed almost exclusively for driving. Low density suburban development is simply not a transit friend-

ly land use pattern. Given that gasoline is still relatively inexpensive, there is little economic incentive to ride either. As a result, WSTA’s operating losses for FY 1999/2000 amounted to \$2.3 million dollars.

In the early 1980’s, Winston-Salem voters gave approval for the Winston-Salem Board of Aldermen to assess, at their discretion, up to \$.05 per \$100 on real property to support the transit system. In FY 1983/1984, \$.03 of the transit tax was levied. While transit funding from this source has remained fairly constant since that time, the levy has been reduced over time to a current rate of \$.019 in FY 2000/2001 to reflect property revaluations.

So what is the future of public transportation in our community? What alternatives are available to WSTA? WSTA could continue to alter routes, add stops, adjust time tables and perhaps offer express service along major corridors. This is basically the strategy for increasing ridership that WSTA has employed in the past without much success. It will likely have only a limited ability to attract new riders in the future.

Transit, including buses, need higher densities of land use to be competitive but our community is currently too spread out to provide required densities. The alternative advocated by *Legacy* is for the community to foster transit use by encouraging higher density mixed use development patterns. By focusing development, including government services, in downtown Winston-Salem, along urban corridors, at Activity Centers, rail stops and in town centers, bus transit would become more convenient to users and much more

viable. Buses circulating through neighborhoods could “feed” this main line of the bus system and the rail stops. In fact successful commuter rail systems are very dependent on a strong bus feeder system that carries passengers between their neighborhoods and rail stop locations. A healthier bus system might in turn be able to expand main line service by offering fast, convenient trips with direct routes and frequent service.

The *2025 Multi-Modal Long Range Transportation Plan* proposes that WSTA expand its fixed route system to serve areas outside of Winston-Salem. These include Tobaccolville, Rural Hall, Walkertown, Kernersville, Clemmons and regional fixed route services to Greensboro and High Point.

Policies

- Adopt new transit technologies and develop a range of facilities and services to improve the efficiency, reliability and responsiveness of transit service. Facilities and services could include conveniently located, attractive and comfortable bus stations and stops, easily available information on routes and arrival times, better coordination of fixed route transit, paratransit and ridesharing programs.
- Ensure that capital improvement programs, bond initiatives and budgets give priority to the allocation of funds for transit facilities.
- Educate the public about the incentives available to use transit.

- Ensure that public transit service is responsive to residents with special needs such as the elderly and disabled.
- Levy more of the transit tax already approved by City of Winston-Salem voters to pay for increased transit service.
- Locate government services where they can be adequately serviced by public transportation.

Action Agenda

- Review existing public transportation service in relation to the goals of *Legacy*. Develop a plan to expand the existing system along major corridors connecting the Downtown Transportation Center with proposed Activity Centers, Town Centers, Rail Stations, and major employment centers (See the "Growth Management Plan" Chapter 3). Explore ways to provide service to the entire County.

**Objective 6:
Bicycle and Pedestrian Transportation**

Create a bikeway/sidewalk/greenway network that is an integral part of the transportation system and provides an alternative means of transportation as well as recreational opportunities.

Bicycling and walking should be integral parts of our transportation system. Pedestrian- and bicycle-friendly design of our roadways and

neighborhoods will encourage people to walk and bike to commute to work and school, for utilitarian trips such as visiting friends, shopping, or other personal errands, and to make connections to transit. By encouraging bicycling and walking we will reap a number of benefits including reduced traffic congestion, improved air quality, and a healthier citizenry.

Bikeways

Bike sales are up and in 1998 the number of bike riders nationally who rode more than once a year was estimated at 43.5 million people. Those numbers include frequent as well as occasional and infrequent riders. Surveys have indicated there is a significant number of these recreational bicycle riders who would be interested in bicycle commuting if it were made safer and more convenient. Clearly marked and separated bike lanes on streets, bike trails, convenient bike parking, showers at destinations and transit equipped to carry bikes are the kinds of enhancements that would provide an improved bicycling environment.

Cities that have strong bicycle programs which cater to cyclists' needs have seen significant increases in bicycle commuting. In Portland, Oregon the bicycle share of trips is about 2 percent and 3.3 percent in the inner, more dense areas of that city providing a measurable reduction in air pollution and traffic congestion.

North Carolina has one of the oldest and most successful bicycle programs. The Bicycle and Bikeway Act of 1974 directs the North Carolina Department of Transportation (NCDOT) to assist local governments with the development of bicycle programs, construct a state bikeway system,

Human Powered!

Bikeway: A trail, path or route designated for bicycle use. It may be designated for bicycle use only or may be shared with pedestrians, skaters, etc.

Bicycle Trail: A trail, path or segment of a bikeway completely separated from the roadway and used exclusively for bicycles and pedestrians (i.e., greenways and sidewalks).

Bicycle Lane: A portion of a roadway designed for bicycles, distinguished by a paint stripe, curb or similar device.

Bicycle Route: A system of bikeways which interacts with motorized traffic, does not have a separate lane and is designated by route markers. Bicyclists must share the same roadway with motor vehicles.



develop policies and standards for facilities and develop safety training programs. In 1997, almost three million dollars were allocated by the state for bicycle programs. In 1991 a local citizen's committee identified a system of bike routes in Winston-Salem and Forsyth County. A bike map of these routes was published in 1992 by the Office of Bicycle and Pedestrian Transportation and copies are available to the public. The maps identify bicycle routes and give safety guidelines.

Bicycle planners have identified the three most important ingredients in making communities more bicycle friendly. They are: (1) a bicycle coordinator to review and design bicycle friendly facilities in conjunction with new highway projects and to develop policies necessary to adapt public transit and parking to bicycle commuter needs; (2) a bicycle advisory committee to promote local bicycle programs, providing focus, continuity, volunteers, community input and political support; and, (3) responsive politicians, professionals and public to support incentive programs, funding priorities and education outreach which are necessary to make a bicycle program successful.

The Bicycle Plan completed as part of the *The 2025 Multi-Modal Long Range Transportation Plan* recommends policies to increase and improve facilities for bicycling. It also recommends compilation of a comprehensive bicycle

accident record data base to be used in improving transportation conditions for bicyclists and education programs to promote a safe and enjoyable riding and driving environment.

Pedestrian Facilities

Walking is another form of transportation that can reduce our dependence on the automobile for short trips. If you walk regularly for exercise you are in good company. It is estimated that 35 million Americans walk almost every day for exercise. Locally, a visit to Schaffner or Bowen Park any evening or weekend will reveal crowds on the walking trails and confirm that walking is indeed a popular form of exercise.

But what does walking have to do with transportation planning? Many trips begin and end with walking. New land use patterns that mix residential and shopping linked by a network of sidewalks and greenway trails can create more walkable communities and reduce short vehicle trips. With

these changes, people will be able to walk rather than drive to basic destinations such as the grocery store, bank, post office or the local park. School children and transit riders will enjoy safer walking routes to school and to their bus stops. The elderly and many others dependent on good pedestrian walkways will enjoy increased mobility and independence. The towns of Clemmons,

Lewisville, Kernersville currently require sidewalks in all new subdivisions.

There is in excess of 500 miles of sidewalks in the community. The majority of these sidewalks are in Winston-Salem. A Pedestrian Plan, a component of *The 2025 Multi-Modal Long Range Transportation Plan*, recommends that Winston-Salem and the other municipalities in Forsyth County construct an additional 70 miles of sidewalks by 2014. Priority areas identified for completion by 2004 include sections of Hanes Mall Boulevard, Bethabara Park Boulevard, Stratford Road, Reynolda Road and Lewisville-Clemmons Road. The plan includes projected federal, State and local revenue sources to fund these projects. The plan also recommends policies to improve pedestrian facilities in the community.

Greenways

Greenways are corridors of protected open space that are managed for recreation purposes like walking and jogging and/or for conservation. They follow natural land and water features, like ridges or streams, or constructed features like abandoned railroad corridors. These linear greenways link neighborhoods with parks, schools, shopping and services and natural areas. Winston-Salem currently has sixteen miles of greenways. Greenways are mentioned here because they can be an important part of the pedestrian walkway system. They are discussed more fully in the "Open Space, Parks, and Greenways" chapter. The federal Transportation Equity Act (TEA21), formerly the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), gives state and local governments more



flexibility in determining transportation solutions and provides enhancement money for pedestrian and bicycle projects. The Brushy Fork Creek Greenway, an addition to the Winston-Salem greenway system currently in the planning stage, will be constructed with TEA21 enhancement money. A feasibility study is to be conducted on the Muddy Creek Greenway, as well as studies on greenway connections from Lewisville to Clemmons, from the Salem Lake Trail to downtown Kernersville and regional connector trails from the Triad Park to High Point.

Bicycling and walking are increasingly integral parts of the transportation system in North Carolina. State roads are being built to be bicycle compatible and many have sidewalks and special pedestrian treatments. Communities are starting to plan for these modes of transportation. Forsyth County should increase its commitment to creating a more bicycle- and pedestrian-friendly community with bikeways, sidewalks and greenways providing safe routes to shopping, jobs, schools and recreation.

Policies

- Integrate consideration of bicycle and pedestrian travel into every level of community planning—transportation, community development, recreation, school siting, transit, etc.
- Ensure that capital improvement programs and budgets include adequate funds to implement the Bikeway, Pedestrian and Greenway Plans.
- Reserve, obtain and/or acquire right-of-way

access or easements to secure proposed routes for bikeways, pedestrian paths and greenways.

- Include suitable bicycling accommodations in all new road and road improvement projects.
- Adopt from the *Transportation Plan* the list of priority locations to widen pavement widths.
- Provide sidewalks along existing and future transit routes.
- Provide sidewalks along existing and future signed bicycle routes within corporate limits.
- Provide sidewalks along adopted Thoroughfare Plan streets.
- Provide sidewalks along collector streets.
- Include sidewalks in all future roadway improvement projects.
- Amend subdivision ordinances to include the construction of sidewalks on at least one side of subdivision collector streets and along adjacent street access.
- Coordinate with the Forsyth County Parks and Recreation Department in the development, construction and maintenance of greenway trails.

Action Agenda

- Implement a County Bikeway Plan. Consider creating a permanent bicycle committee and a

bicycle coordinator position.

- Implement a county-wide Pedestrian Plan.
- Update and implement a county-wide Greenway Plan. Identify a system of greenway trails, make recommendations for their establishment and identify funding sources.
- Consider including provisions for standards for the development of bike lanes, bikeways, bike parking and sidewalks in the Zoning and Subdivision Ordinances of the Unified Development Ordinances.
- Develop a comprehensive marketing and education program to promote bicycling and walking as alternative transportation options. Make maps and other information on bikeways and greenway trails easily available to the public.
- Compile a comprehensive bicycle accident record database.

**Objective 7:
Travel Demand Reduction**

Establish policies and programs to reduce travel demand.

The idea behind travel demand reduction is to reduce congestion by decreasing the number of vehicle trips on the existing road network, as

Table 4.1
Travel Demand Reduction Strategies

Influence Travel by	Strategies
Mode	Carpools, vanpools, transit, bike, walk
Time	Flextime, staggered work hours, compressed work weeks, high occupancy vehicle (HOV) lanes
Frequency	Linked trips, trial use of alternative modes
Trip Length	Land use patterns and design, telecommuting, HOV lanes
Convenience	Preferential parking for carpools, vanpools
Regulation	Employee commute options, trip reduction ordinances
Route	Congestion pricing, intelligent transportation systems, HOV lanes
Cost	Parking pricing, congestion pricing, transit subsidies

Source: *Commute Alternatives Systems Handbook*, Center for Urban Transportation Research, College of Engineering, University of South Florida, May 1996

opposed to expanding the road network to handle increased traffic. Travel demand reduction focuses on maximizing the movement of people, not vehicles, within the transportation system. This can be done by increasing the number of persons in a vehicle, or by influencing the time of travel.

Decreasing the volume of vehicle trips is far less costly than providing new transportation facilities and the decrease in the number of trips will reduce vehicle-generated air pollution. Travel demand reduction relies mainly on incentives or disincentives (see Table 4.1) to make shifts in travel behavior attractive.

This chapter has already discussed and made recommendations about a number of the travel demand reduction strategies listed in Table 4.1. Others, such as high occupancy vehicle lanes and congestion pricing, may be in our future if congestion and air pollution problems grow worse. Some communities have adopted trip reduction ordinances which require larger employers to submit and implement a commute trip reduction plan. Such plans employ a number of the strategies listed in Table 4.1 (carpooling and vanpooling, preferential parking and reduced parking fees, transit subsidies, flextime, staggered work hours, compressed work weeks and telecommuting) to reduce travel demand to employment centers at peak commute times.

Policies

- Support Ridesharing Services and Vanpooling of the Piedmont, the Triad ridesharing program.
- Promote telecommuting.

- Ensure that employers who obtain City/County incentives are required to allow WSTA to promote various forms of ridesharing at their places of employment.

Action Agenda

- Work with large employers to prepare trip reduction plans.

**Objective 8:
Air Transportation**

Provide for the long-range aviation needs of the community by improving the efficiency, effectiveness and safety at Smith Reynolds Airport.

Air travel has become the form of mass transit that Americans embrace with enthusiasm! In 1995, commercial air service in this country reached a milestone. The total number of airline passengers transported in our skies since 1926 by scheduled air carriers passed the 10 billion mark. Most of this growth happened in the last three decades. Looking to the future, it is expected that domestic air travel will double to the 20 billionth passenger in just nine short years—by the year 2007. More Americans will be boarding more commercial airline flights and flying more miles than ever before.

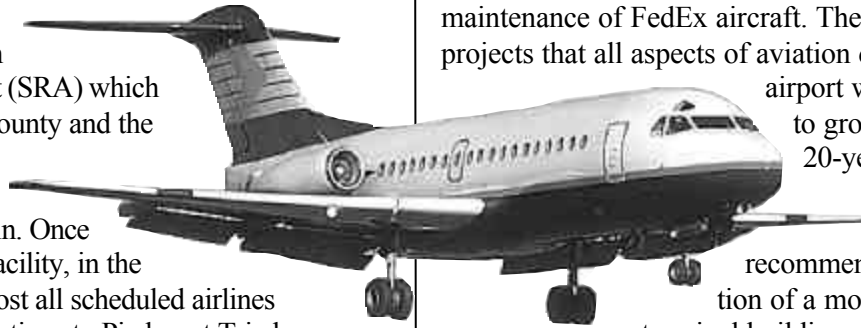
To meet the demand, a 40 percent increase in new direct flights may be needed. Fifty of our country's busiest airports handle more than 80 percent of all U.S. air traffic. Most of these airports are heavily congested. About half already

experience more than 20 thousand hours of delays each year.

These sharp increases in air travel and the congestion at larger airports may well help reverse the fortunes of Smith Reynolds Airport (SRA) which serves Forsyth County and the adjoining counties of Davie, Stokes and Yadkin. Once a busy regional facility, in the early 1980's almost all scheduled airlines moved their operations to Piedmont Triad International Airport (PTIA). Currently there is no scheduled passenger airline at SRA. Smith Reynolds Airport does serve general aviation to a greater extent than PTIA.

The Federal Aviation Administration requires that airports prepare and periodically update a master plan. In 1995, consultants completed the *Smith Reynolds Airport Master Plan Update (1994-2014)* for the Airport Commission of Forsyth County. Passenger enplanements have recently been increasing and the study projects an 87 percent increase by the year 2013 as the airport enjoys a higher frequency of service to nearby hubs. General aviation aircraft operations are projected to increase from 66,817 in 1993 to 93,347 in 2013 with 70 percent of this consisting of transient operations, mainly of a business nature.

Smith Reynolds Airport is not currently served by an all cargo freight carrier and a dedicated carrier operation is not anticipated for the 20-year planning period. Air cargo demand is anticipated to continue to be accommodated in



the baggage compartments of the air carrier passenger aircraft. The airport could benefit from the planned Federal Express facility at the Piedmont Triad International Airport by handling some maintenance of FedEx aircraft. The master plan projects that all aspects of aviation demand at the airport will continue to grow over the 20-year planning period. It therefore recommends construction of a modern air carrier terminal building, renovation of the existing building as a general aviation terminal facility and extension of one runway. The plan also notes that the airport has a limited amount of developable land and must maximize its development opportunities. It recommends acquisition of approximately 85 acres of land in the vicinity of the airport for future general aviation development.

To date, \$7 million has been earmarked towards the development of a seventy-five acre Airport Business Park located just south of the airport. The business park will focus on airplane and technology related businesses that need to be close to the airport. This project may eventually generate up to 1,100 jobs and private investment exceeding \$20 million.

Smith Reynolds Airport is an asset to the City and County that is currently being underutilized. It has the advantage of an easily accessible location close to downtown Winston-Salem. As activity at Piedmont Triad International Airport increases in the future, more scheduled flights

from Smith Reynolds Airport can be anticipated. However, its location close to Downtown means that it is surrounded by development and environmentally sensitive areas. Future expansion and new activities must therefore seek to increase the benefits that can be derived from this asset without negatively impacting on the surrounding development and environment.

Policies

- Identify a more definitive role for the airport in the economic development of both the City and the County. Examine in particular the role of the airport in tourism development.
- Determine the environmental impacts of all proposed expansions.

Action Agenda

- Develop the facilities required to accommodate expected growth in aviation demand and that contribute to the safety and economic vitality of the service area.

**Objective 9:
Protection of the Environment**

Develop a transportation system which respects and enhances the natural and built environment.

The highway network and the automobiles it supports have a major impact on the environment. At least 10 percent of the land area in sub-

urban developments is given over to the streets and highways, parking lots and driveways that cater to the automobile.

Clearing and grading the land, altering the drainage system and laying asphalt for this network of roads degrades the environment. Inevitably, highway projects to accommodate more and more cars result in the loss of open space, wetlands and other valuable ecosystems, as well as destruction of neighborhood, cultural and historic resources. It is important, therefore, to consider the impacts of road proposals on both natural and built habitats and resources and to design roads to reduce negative impacts on these environments.

Cars and trucks are major contributors to noise pollution as well as water pollution due to stormwater runoff from streets and parking lots that contains asbestos, petroleum, lead and other heavy metals. Road salts are a significant source of ground water contamination in some areas and twice as much oil enter U.S. waters from improper automobile waste disposal than from spills and accidents.

One clear and serious environmental problem caused by the automobile is air pollution. The tailpipes of cars emit a variety of pollutants including carbon monoxide, nitrogen oxide, volatile organic compounds and particulate matter. Several of these chemicals combine with oxygen and sunlight to form another pollutant, ozone. Automobiles are the major source of air pollution although factories and power generating facilities contribute as well. A recent study of 500,000 adults in 151 cities found that people from regions with the most pollution were 15 percent more likely to die prematurely than those

who lived where the air was cleaner. Young children and the elderly are especially affected.

Emission controls on automobiles, like the catalytic converter, have helped reduce tailpipe pollution in the last twenty years. However, air quality in many areas is still unhealthy. This is because the number of miles we drive has gone up at a high rate, more than offsetting gains from cleaner cars. Between 1986 and 1996 while the population of the State of North Carolina grew 14 percent, vehicle registrations increased 20 percent and vehicle-miles traveled increased 44 percent. In 2000, the Triad area exceeded ozone standards on 22 days. The upward trend in automobile use is expected to continue in the future. Here in Forsyth County, vehicle-miles traveled will almost double by the year 2025 according to projections by the Piedmont Triad Regional Transportation Study.

What can we do to reduce air pollution and lessen the other environmental impacts of the automobile? Reduced to a few words that fit on a bumper sticker: "Drive fewer vehicle miles". In other words do all the things that are advocated throughout this chapter on transportation alternatives and in the Growth Management Plan chapter. Promote transit. Encourage carpools and vanpools. Increase telecommuting. Most importantly change our land use patterns so we can drive shorter distances to shopping and jobs and walk or bicycle for some of our trips.

Policies

- Develop land use and transportation plans and programs which improve air quality.

- Design transportation facilities which preserve natural features, protect historic and cultural resources and enhance community appearance.

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Objective 10:
Transportation Planning Process

Support an open, inclusive and participatory transportation planning process.

In the past, significant public involvement in transportation projects often occurred near the end of the planning process. Residents of a neighborhood suddenly realized they are about to be impacted by a new road and organized to protest at the final public hearing on the project or to block the issuance of environmental permits or even to stop the bulldozer. This citizen involvement was inevitably confrontational because the government agencies responsible for the project had, by this late stage, already committed to the project. The results were angry citizens, disrupted meetings and litigation, causing project delays and considerable additional expense for taxpayers.

The landmark 1991 federal transportation legislation (ISTEA), which has recently been reauthorized (TEA21), greatly increased the opportunities for public input in federally funded transportation projects. As a result of ISTEA, the Federal Highway Administration and the Federal Transit Administration told transportation agencies to "aggressively support proactive public involvement at all stages of planning and project

development.” Citizens were required to be given a reasonable opportunity to comment on highway projects and plans that affect their lives.

For some time federal and State legislation has required that urban areas with a population of 50,000 or greater create a local decision-making body for transportation planning. ISTEA gave local governments a greater role than ever before by requiring community officials to take a lead in planning their transportation futures. In Forsyth County, the Winston-Salem/Forsyth County Transportation Advisory Committee (TAC) is the group responsible for transportation planning. It is made up of representatives from each of the eight municipalities and Forsyth County, and has four advisory, non-voting members. The TAC receives input from a 25 member technical coordinating committee made up of staff from WSDOT, WSTA, town managers, the local division of NCDOT and others. The TAC on occasion has created special citizen groups to advise it on matters such as bicycle planning. The new transportation law (TEA-21) continues and strengthens the existing public involvement requirements.

Changes are underway at the State level that may make the transportation planning process more open and participatory. In an effort to increase local voices in transportation decisions, NCDOT is now required to consider the views of the local governments in transportation projects. Planned transportation projects exceeding \$150,000 require local government review and comment within 45 days.

These changes could lead to a more sincere effort to engage the public early in the planning

process. The result could be more public consensus about transportation projects selected and decisions that reflect public concerns. In the long run, such early public input can save money and time, rebuild public confidence in government, and serve elected representatives by providing input into the needs and desires of their constituents. A proactive and open public involvement process can lead to better decision making.



The opportunity exists to change a department that mostly builds roads into a department that looks at all forms of transportation and does so with increased public review and input.

Policies

- Create a proactive, inclusive and open transportation planning process.
- Ensure that transportation planning and decision-making is a collaborative process that includes citizens, local, state and federal governments.

Conclusions

Our vision of providing transportation alternatives outlined in this chapter goes well beyond simply expanding public transit facilities and services. It advocates making basic changes in the way our community grows and functions in the future. Those changes include actions to guide land use and development into new, more compact patterns that will enable public transit to compete with the automobile. It includes creating more walkable neighborhoods and designing transit-oriented commercial areas. Adopting these changes will not only allow for transportation choices, it will make our community more livable and be essential to achieving quality growth in our community in the future.

