



# Chapter 9. Transportation Element

## 9.1. PURPOSE

This Transportation Element provides guidance and direction regarding future transportation efforts in Orange County. The goals and objectives identified within this element serve as the foundation for establishing future transportation policies and action strategies undertaken by Orange County, its advisory boards, and staff. This specific process for developing a transportation implementation strategy is outlined in *Section 1.4: Administration and Implementation Guidelines*.

## 9.2. OVERVIEW

Orange County's transportation system is often described as a network. The term network describes a collection of destinations and connections. On the ground in a transportation network, the destinations would be areas where people live and destinations people have outside their homes, places like work, shopping centers, parks, government offices, etc. Connections are the routes people take to travel between nodes, between home and work, for instance. Destinations and connections together can be viewed as the physical structure of a transportation network. Another term, traffic, is used to name the activity that takes place on the network.

Planning for a transportation system requires planning for destinations and connections, as well as traffic. All three components are essential for a logical, robust network.

Orange County's transportation network is comprised of a hierarchy of roads that moves automobiles and provides access to land developments, railroad lines that allow freight and commuter trains to move through the County, bicycle routes that provide access to points of interest and recreational trails, and local sidewalks and pedestrian facilities that foster walking in neighborhoods, downtowns, and at commercial and employment centers.

While the County, in partnership with the Towns of Hillsborough, Chapel Hill, Carrboro, and Mebane, has been a long-standing proponent of a multi-modal transportation system, more can be done to encourage non-automobile forms of transportation. New facilities and improvements are needed to encourage a more efficient and effective transportation system that achieves the County's goals of achieving long-term sustainability and maintaining Orange County's distinctive community character.

### TRANSPORTATION PLANNING

Transportation Planning in Orange County is guided by federal legislation that requires states to carry out a continuing, cooperative, and comprehensive statewide multimodal transportation planning process that facilitates the safe and efficient management, operation, and development of surface transportation systems that will serve the mobility needs of people and freight (including accessible pedestrian walkways and bicycle transportation facilities) and that fosters economic growth and development within and between States and urbanized areas, while minimizing transportation-related fuel consumption and air pollution in all areas of the State, including those areas subject to the metropolitan transportation planning requirements. The "three-C" process (continuing, cooperative, comprehensive) includes the development of a long

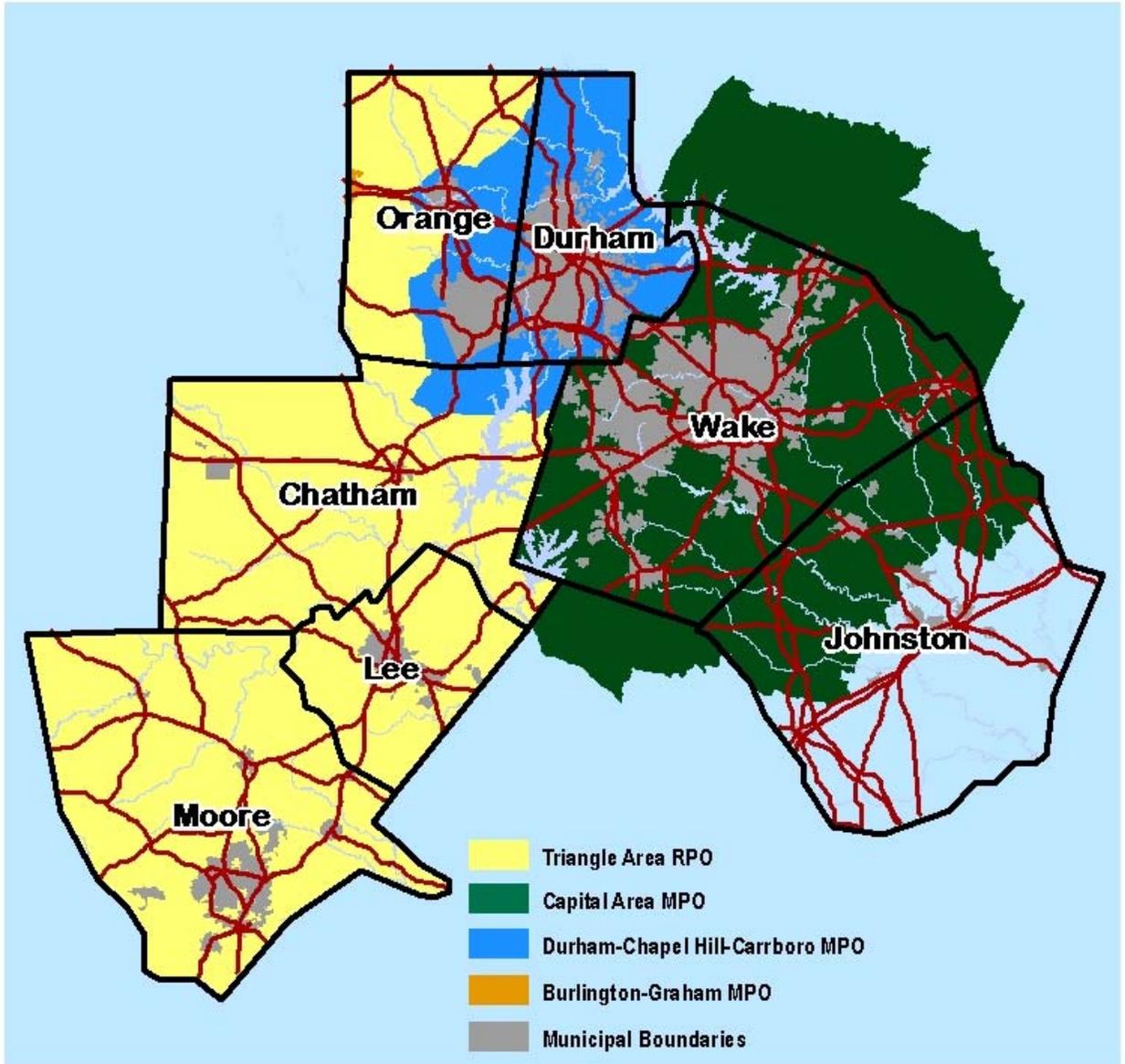


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range statewide transportation plan and statewide transportation improvement program (STIP). The State Long Range Transportation Plan and Transportation Improvement Program is developed in cooperation with the Metropolitan Planning Organization designated by federal legislation for the metropolitan area. The State consults with the local officials of the affected nonmetropolitan area to develop the transportation plan and TIP for nonmetropolitan areas.

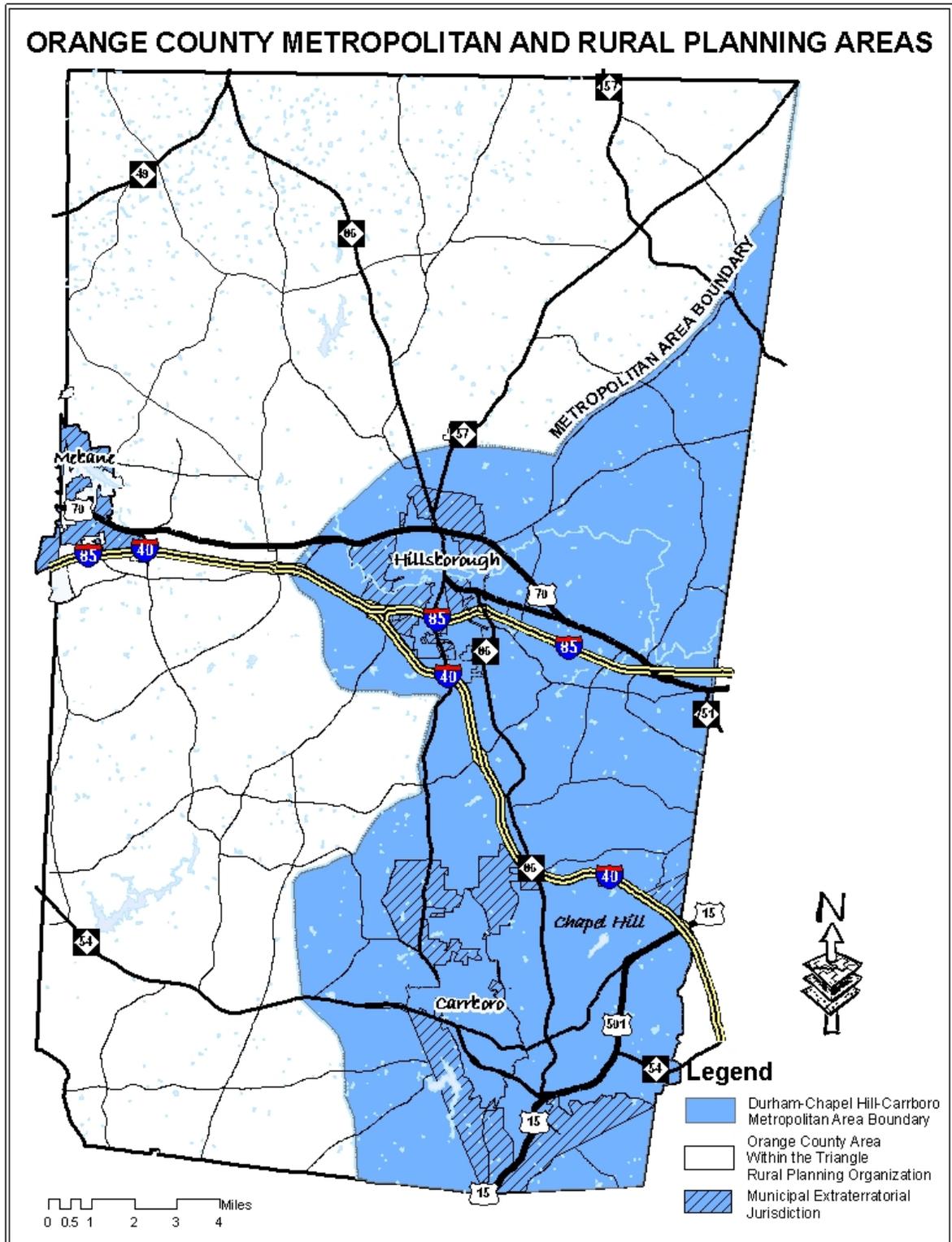
The Durham-Chapel Hill-Carrboro (DCHC) Metropolitan Planning Organization (MPO) is the regional organization responsible for transportation planning in the western part of the Research Triangle area, including the eastern, and more urban, portions of Orange County. The DCHC MPO Transportation Advisory Committee (TAC), the policy and decision making body of the organization, is made up of elected officials from the local jurisdictions in the Metropolitan Area Boundary, and the North Carolina Board of Transportation member representing the area. The Triangle Area Rural Planning Organization (TARPO) coordinates the transportation planning in the rural areas outside the Metropolitan Area Boundary of Orange County and Chatham County and for all of Lee and Moore Counties.

The TARPO Rural Transportation Advisory Committee (RTAC) is made up of elected officials of the member jurisdictions and the Division 8 North Carolina Board of Transportation member. These are the two organizations through which Orange County coordinates its plans for local transportation projects for implementation through regional programs. Map 9-1 shows the transportation planning jurisdictions in the Research Triangle region.



**MAP 9-1: REGIONAL TRANSPORTATION PLANNING ORGANIZATIONS**

Map 9-2, below, shows the boundaries of the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization and the Triangle Area Rural Planning Organization within Orange County.



MAP 9-2: TRANSPORTATION PLANNING ORGANIZATIONS IN ORANGE COUNTY



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The **Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (MPO)** coordinates planning and development of transportation facilities in its jurisdiction through two primary planning mechanisms:

- **Long-Range Transportation Plan.** The plan is a guide for major transportation investments in the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization area. It is designed to support land use and air quality goals for the urban area, and is prepared in accordance with federal requirements. The plan projects the amount and type of transportation demand over a 20-year minimum period, and is updated every four years to demonstrate compliance with air quality standards. It identifies priority highway, bus transit, rail transit, bicycle, and pedestrian improvements needed to service future populations, and the projected costs of these improvements. The Long Range Transportation Plan is fiscally constrained and identifies viable anticipated funding sources for projects proposed in the plan.
- **Metropolitan Transportation Improvement Program.** This program is a seven year document that is included in the Statewide Transportation Improvement Program and contains funding and scheduling information for bicycle, pedestrian, highway, rail, public transportation, and enhancement projects. Every two years, the Metropolitan Planning Organization develops a prioritized list of projects to be considered for funding in the biennial update of the Metropolitan Transportation Improvement Program. Projects must come from adopted transportation plans

The Triangle Area Rural Planning Organization (TARPO) coordinates the transportation planning in the rural areas of Orange County and Chatham County outside the Metropolitan Boundary Area and for all of Lee and Moore Counties. (See Map 9-1.) Triangle J Council of Governments is the administrator and lead planning agency for the TARPO, and coordinates transportation plans and programs and land use policies and programs in the four-county planning area. The general purpose and responsibilities of the Rural Planning Organization are to:

1. Develop long-range local and regional multi-modal transportation plans in cooperation with the area Metropolitan Planning Organizations (MPOs) and the NCDOT.
2. Provide a forum for public participation in the rural transportation planning process.
3. Develop and prioritize suggestions for transportation projects that the RPO believes should be included in the State Transportation Improvement Program (STIP).
4. Provide transportation-related information to local governments and other interested organizations.

The Orange Unified Transportation Board (OUTBoard) is made up of 14 citizens and two ex-officio liaisons from the Board of County Commissioners. The OUTBoard provides recommendations to the Board of County Commissioners regarding overall planning and programming of transportation improvements in the County, including identifying and



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setting priorities for the County's roadway and transit needs along with associated costs and specific sources of funding.

- Assisting in development and review of the transportation component of the comprehensive plan;
- Providing recommendations to the Board regarding Federal and State legislation affecting transportation in Orange County; and
- Exploring and making recommendations on innovative techniques and methods to improve the efficiency and capacity of existing and future transportation systems.

### COUNTYWIDE ROAD NETWORK

Orange County's road network is comprised of a hierarchy of roads including interstates, major US and NC highways, North Carolina Secondary Roads, and local roads that serve different functions in providing access to other regions and within Orange County.

Interstate 40 and Interstate 85 are part of the Federal Interstate Highway System and are the major corridors that provide for transport of people and goods through Orange County to other regions, including employment centers in the Triangle Area (Durham, Research Triangle Park and Raleigh) to the east and the Triad (Greensboro, Winston-Salem and High Point) to the west.

Major US and NC routes linking Orange County with surrounding areas also provide intra-county access and linkage to the rural areas of the County. US 70 is a major highway that provides east-west access through Orange County, linking the City of Durham in Durham County, the Town of Hillsborough in Orange County and the Town of Mebane in Alamance County. US 15 and US 501 provide north-south access linking the City of Durham to the Towns of Chapel Hill and Carrboro and the Town of Pittsboro in Chatham County. NC 86 provides north-south access through Orange County from Caswell County and links the Towns of Hillsborough and Chapel Hill. NC 57 provides north-south access from Person County through Orange County to the Town of Hillsborough. NC 54 provides linkage between Research Triangle Park in Durham and Wake Counties, the Towns of Chapel Hill and Carrboro, and Greensboro in Guilford County.

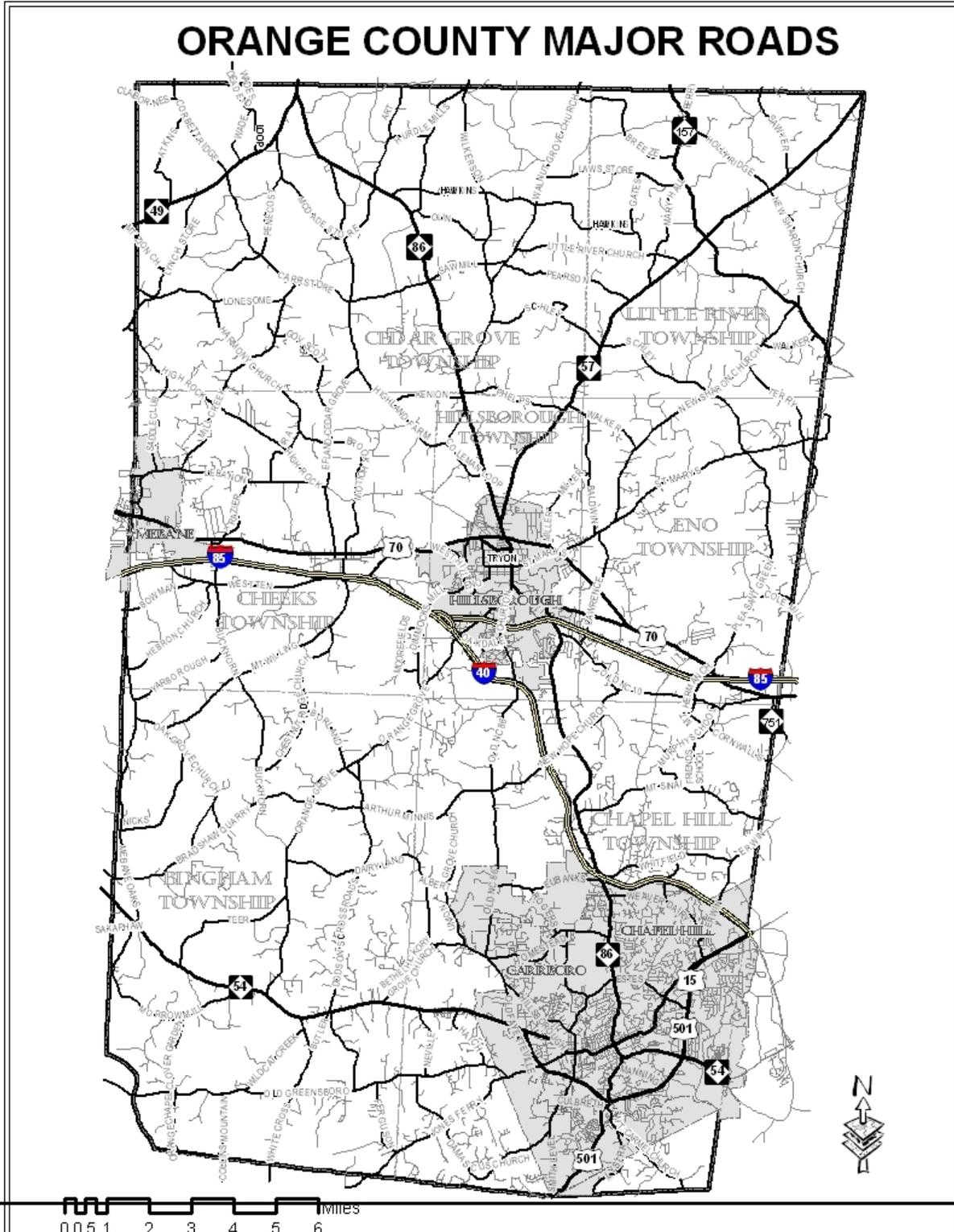
A widespread state-maintained system of Secondary Roads provides access to the major regional corridors from the rural areas of the County.

Local roads emphasize the land access function, and connect rural residential and commercial development with the Secondary Road System and major US and NC corridors.

Map 9-3 below illustrates how Orange County road network functions to provide inter-county and intra-county access.



MAP 9-3: MAJOR ROADS IN ORANGE COUNTY





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### ALTERNATIVE MODES OF TRANSPORTATION

Orange County residents have several options for using alternative modes of transportation.

Three public transportation systems provide bus service in Orange County:

- **Triangle Transit**- the “TT” provides regional bus service linking the Town of Chapel Hill to Research Triangle Park, Raleigh-Durham International Airport, Duke University, NC State University, and other key regional locations. TT also contracts with Orange Public Transportation (the “Orange Bus”) to provide service between the Towns of Hillsborough and Chapel Hill.” In addition, TT has a vanpool program for commuters that have a greater than 20-mile round-trip.
- **Chapel Hill Transit** - the Towns of Chapel Hill and Carrboro, and the University of North Carolina-Chapel Hill partner to provide daily fare free bus service to routes in Chapel Hill and Carrboro. Services include fixed route bus service, park and ride shuttle service for special events, shared ride feeder service to areas which do not receive regular bus service, and EZ rider service for individuals with mobility limitations. Many of the bus stops are shared with TT and provide access to the larger regional bus system.
- **Orange Public Transportation** - Orange County provides bus service to County residents on the “Orange Bus” including fixed route (in partnership with TT) general public service, door to door pick-up and drop-off service for human service contracting agencies, deviated fixed route service for the general public, and paratransit service for disabled residents.

Private Sector Transportation Services - Several for profit private sector transportation services are available to transport individuals and groups and may be more cost effective for some transportation needs than the above named systems.

Orange County residents have opportunities to ride-share through various private transportation providers as well as through Triangle Transit’s vanpool program. TT also hosts a website for Share the Ride NC, a statewide ride share matching service for both local and inter-county trips.

Orange County has an active bicycling community that uses Orange County roads for recreational riding, competitive training, and commuting. Orange County’s Bicycle Transportation Plan identifies major routes for improvements to facilitate bicycle commutes. The Bicycle Transportation Plan is included in the regional DCHC Long Range Transportation Plan. Although there are currently no bicycle lanes on Orange County roads outside municipalities, Orange County has been able to obtain modest improvements for bicycles, such as two-foot paved shoulders on secondary roads, through NCDOT programs for resurfacing roads and spot safety projects. A State Transportation Improvement Program project that will identify popular cycling routes on an Orange County Bike Map is underway, and should be completed by the end of 2008. NCDOT will install numbered bike route signs as part of the overall development of the County bike route system.



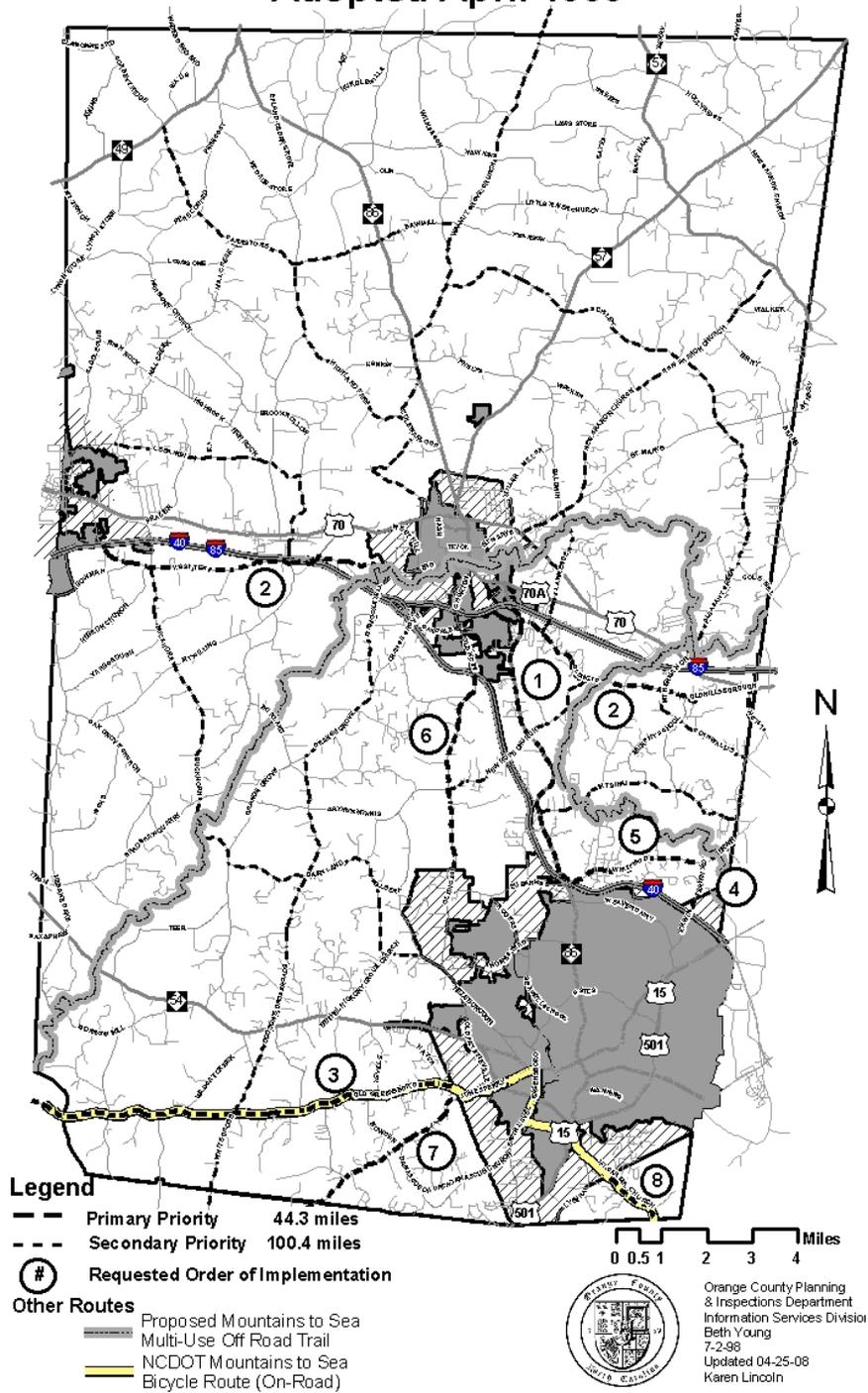
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There are no pedestrian trails outside of parks and greenways. However, several plans outline a connected trail system throughout the County through parks and environmentally sensitive areas along floodplains from Chapel Hill into Durham County.

Amtrak passenger service traverses central Orange County through the Town of Hillsborough, but currently does not stop in Orange County. There is widespread community support for a passenger train stop in Orange County. All local County jurisdictions, in early 2008, indicated their support for a train station to be located in Hillsborough and the Town of Hillsborough requested North Carolina Department of Transportation Rail Division, North Carolina Railroad and the National Railroad Passenger Corporation (Amtrak) to consider adding a stop in Hillsborough. Officials with the N.C. Department of Transportation and Amtrak, in July 2008, confirmed that a passenger train stop in Hillsborough is a financially viable endeavor according to a financial impact analysis conducted by Amtrak.



# Orange County Priority Bicycle Transportation Routes Adopted April 1999



MAP 9-4: PRIORITY BICYCLE TRANSPORTATION ROUTES



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### RECENT TRANSPORTATION PLANNING EFFORTS

Orange County has undertaken several transportation planning efforts over the last several decades. Summaries of these plans and reports are provided here.

#### *ORANGE COUNTY, NORTH CAROLINA BICYCLE TRANSPORTATION PLAN (1999)*

In 1999, Orange County adopted a Bicycle Plan that included recommendations for all of Orange County outside of the municipal extra-territorial planning jurisdictions and the transition areas of the Joint Planning Land Use Plan. The purpose of the plan was to identify key bicycle and pedestrian connections between subdivisions and other developments. A Task Force was appointed and met over a 6-month period to develop the plan. The plan identifies priority and secondary bicycle routes, and sets out goals and objectives for improving bicycle and pedestrian facilities in the County. It goes on to outline two general strategies for improving bicycle facilities and programs:

- Bicycle facility improvements on roads; and
- Programs to increase cyclist safety and efficient transportation cycling.

Detailed implementation strategies are identified for these two general strategies. A timeline and cost estimates were prepared for the development of paved shoulders on identified primary priority bicycle transportation routes. The plan was formally adopted by the Board of County Commissioners in 1999.

Many Orange County citizens bicycle for recreation. While bicycle improvements proposed in the Bicycle Transportation Plan can also be used for recreational bicycling, it is important to note that transportation funding can not be used for improvements that do not serve a transportation purpose. The County should plan for recreational bicycle trails and bikeways. Coordinating those plans with on-road planned transportation programs can help fund a comprehensive bicycle network that can accommodate the needs and various skill levels of cyclists in Orange County.

#### *ALTERNATIVE FUEL VEHICLE OPTIONS REPORT (2000)*

Acknowledging that protection of the air quality in Orange County is essential for the well being of the County's residents, the Board of County Commissioners passed three air quality resolutions in 1999. These resolutions directed County employees to begin an Ozone Air Quality Action Plan, to investigate low emission and fuel-efficient vehicles, and to examine the purchase of alternative fuel vehicles (AFVs) as an option for County fleet emissions reduction. An Alternative Fuel and Low Emission Vehicles work group was established to lead the investigation of these latter issues and to propose an action plan which includes the potential purchase of a number of alternative fuel vehicles. The report sets out short-term, intermediate term, and long-term goals:

- **Short-Term Goal:** Research the advantages and disadvantages of the various alternative fuel vehicle options, and use that information to apply for state grants to cover the costs associated with purchasing multiple vehicles in 2001;
- **Intermediate-Term Goal:** Explore the possibility of acquiring an alternative fuel bus, continue replacing gasoline vehicles with alternative fuel vehicles, as appropriate, develop the educational



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component of the County's alternative fuel vehicle program, and coordinate with other jurisdictions through the newly formed Triangle J Clean Cities Program; and

- **Long-Term Goal:** Minimize emissions from the County's vehicle fleet and maximize the fleet's fuel efficiency.

The report provides research on the pros and cons of alternative fuel vehicles and sets out specific strategies for meeting each of the three goals.

### [RECOMMENDATIONS OF THE JOINT ORANGE COUNTY-HILLSBOROUGH ECONOMIC DEVELOPMENT DISTRICT TRANSPORTATION WORKING GROUP \(2001\)](#)

An outgrowth of the Orange County Economic Development District workgroup, the Economic Development District Transportation Committee, met in 2001 to discuss concerns about the existing transportation system, particularly in the Economic Development Districts in and around Hillsborough. The committee was comprised of a broad array of interests, including elected officials, planning board members, representatives from the Commission for the Environment, the Chamber of Commerce, the Alliance for Historic Hillsborough, the Economic Development Commission, the Eno River Association, a local developer, a design professional, property owners, and County staff.

Discussions focused on the potential for the Elizabeth Brady Road extension (or a viable alternative), setting priorities for the 2001 Transportation Improvement Program, and addressing the insufficiencies of the existing transportation system and its ability to service future development in the Economic Development Districts. The group identified a set of shared interests, objectives that new transportation projects should achieve, criteria for evaluating development of new roadways, and specific roadway improvements. The committee recommended to the Orange County Board of Commissioners and the Hillsborough Town Board of Commissioners that suggestions regarding the evaluation of the Elizabeth Brady Road extension be provided to NC-Department of Transportation, that a list of transportation improvements be selected for the next round of the Transportation Improvement Program, and that three particular policies be implemented locally:

- Encourage the County to provide park and ride for employees;
- Consider a policy about road widening similar to Carrboro's (no road widening greater than three lanes in town); and
- Set up a standing joint town/county committee to address transportation issues.

### [ACCESS MANAGEMENT AWARENESS PROJECT AND REPORT FOR ORANGE GROVE ROAD \(2003\)](#)

In March 2002, the Board of County Commissioners and the Town of Hillsborough established the Orange Grove Road Transportation Task Force as part of its continuing cooperative planning effort. Existing and proposed development activity, as well as existing public facilities, such as schools in this corridor, prompted a review of transportation issues and a discussion regarding the range of transportation planning initiatives that could lead to a multi-modal system along the portions of the Orange Grove Road corridor included in the study. The task force determined that access management (i.e., transportation improvements that manage access to developments while seeking to preserve the flow of traffic on a roadway) was the key to addressing these issues. The report includes



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analysis of the area, a survey of access management best practices, an analysis of the regulatory framework, and a list of possible tools that could be used to implement the recommendations. The report also includes specific transportation goals, objectives, and policies for joint transportation planning. The intent was that these policy frameworks could be applied in other areas of the County.

### [EFLAND-MEBANE SMALL AREA PLAN \(2006\).](#)

A small area plan for the Efland-Mebane area of Orange County was developed and adopted in 2006. This plan outlines several key strategies for improving the multi-modal transportation system in the area, including:

- Further analysis and identification of transportation enhancements to improve congestion and traffic problems along key roadways, particularly focusing on Buckhorn Road;
- Provision of bus service to the area and a park-and-ride lot;
- Addition of bicycle lanes along major roadways;
- Provision of sidewalks in new developments, retrofitting sidewalks in existing developments, and the addition of other pedestrian facilities, like pedestrian bridges, to link key locations; and
- Development of a streetscape plan to identify locations for street trees, sidewalks, and other street improvements.

### [ORANGE COUNTY MASTER AGING PLAN.](#)

In 2007, Orange County adopted the *Orange County Master Aging Plan: Building-Aging Friendly Communities in Orange* that sets goals and strategies for coordinating delivery of community services to older adults who have different levels of functional capacity throughout their life spans. The plan identifies five new demographic conditions affecting communities across the nation:

- An explosion in the numbers of older persons.
- A dramatic increase in longer lives for older persons.
- An uneven distribution of older persons within the County with different key characteristics, particularly the uneven locational distribution of elderly housing.
- More residents living more of their advanced years in declining health and limited function.
- A large and growing number of older persons (retirees and non-retirees) who are a major human resource.

Four overarching goals provide the County with guidance in planning for our elderly population. Goal C is relevant to the provision of transportation services for the elderly:

- **Goal C: Transit/Mobility** – Enhance mobility options for all older adults regardless of functionality, through a multi-modal vision that is acceptable, efficient, effective, and affordable.



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Several of the transportation objectives listed in this chapter were derived from the objectives of the Master Aging Plan. Key strategies are outlined in the *Master Aging Plan* that can inform future efforts for implementation of this element.

### [ORANGE COUNTY COMPREHENSIVE TRANSPORTATION PLAN](#)

The Orange Unified Transportation Board (OUTBoard) initiated development of a comprehensive transportation plan in 2008 that will set countywide long-term transportation goals for roads, transit (bus and rail), and pedestrian/bicycle facilities. The intent of the plan is to have a series of maps and specific strategies for implementing the County's vision of an inter-connected and multi-modal transportation network. The OUTBoard has developed a framework for the plan that is provided in *Appendix O: Draft Framework for Orange County Comprehensive Transportation Plan*.

This Transportation Element includes an objective to develop and adopt a comprehensive transportation plan within two years of adoption of the Comprehensive Plan.

### [KEY ISSUES](#)

Several key issues have been raised through during past transportation planning efforts that set the stage for developing transportation policies and implementation strategies. These are:

- There is a **strong desire to provide more multi-modal opportunities** for commuting and traveling to key points of interest in the County, such as UNC-Chapel Hill's main campus and the future Carolina North campus, the new County campus in downtown Hillsborough, and other destinations. Success of future transit, bicycle and pedestrian modes is largely dependent upon the location, pattern, and density of future developments in the County. Mixed-use, higher density developments are advantageous for promoting use of alternative modes of travel.
- **Reducing carbon emissions and increasing energy efficiency** of the County's transportation system is paramount. Guiding principles of this Plan include encouraging energy efficiency and reducing air pollution in the County. Commuting trends in the County show that more miles are being driven per person over time. Increased use of energy efficient, low-emissions vehicles and the shortening of commutes by locating residential, commercial, and employment developments in closer proximity can help achieve these County goals.
- Regional Metropolitan Planning Organizations in the Research Triangle region have concluded that providing well-planned and timely major **regional transit** investments is a very important part of maintaining the Triangle region's current levels of transportation mobility, high quality of life and economic prosperity. While plans for federal funding are now on hold, regional partners are preparing a set of recommended major transit investments to serve the Research Triangle region. As this strategic planning moves forward, the County will need to ensure that new developments are appropriate and will reinforce the use of potential future transit services.



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- Development of the new University of North Carolina-Chapel Hill campus – **Carolina North** – will be a high priority for transportation planning in the coming years. While the campus is located in Chapel Hill and near Interstate-40, it is likely there will be workers commuting from and through other parts of the County to get to this new employment center. This campus is an ideal opportunity for using alternative modes of transportation to move workers to and from work, and to ensure that traffic volumes on existing roads do not exceed capacities.
- The plan to develop a bypass to relieve traffic through Hillsborough’s historic downtown will continue to be an important planning issue for the County and the town. An Environmental Impact Statement is being prepared for the proposed **Elizabeth Brady Road Extension**. The County’s involvement in this project will be critical for ensuring that the final outcome meets the needs and expectations of the County and Hillsborough.
- The County’s aging population is increasing, and with that comes a **need to provide additional transportation services for seniors** needing access to medical and social services, especially for those that are physically disabled.
- **Many bicycle routes throughout the County are deemed dangerous** due to lack of adequate road shoulders, poor visibility, and other issues. Plans for improving these should be done in a comprehensive manner that coordinates the need for bike paths, trails, and other transportation and recreational improvements among the County’s jurisdictions to achieve efficient solutions.

### 9.3. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

The following data provide background information on the historical and current transportation conditions in Orange County. Additional data on this topic can be found in *Appendix A: County Profile (Data) Element*.

#### KEY FACTS

The following snapshot of Orange County’s transportation related statistics can help inform development of future transportation planning strategies.

- There were **84,983 cars and trucks registered in Orange County in 2005**, representing a 33% increase in vehicle registrations since 1990;
- On average, **the length of travel is increasing in Orange County**. In 2000, daily vehicle miles traveled was 28.9. In 2003, per capita daily vehicle miles traveled was 30.2;
- Future projections estimate that the number of **daily vehicle miles traveled for Orange County will increase by 8.3%** from 2000 to 2015;
- In Orange County, the **point sources of air emissions are relatively small compared to other emission sources** (i.e., non-point sources, such as automobile exhaust emissions);



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- Sixty percent of the labor force lives and works in Orange County. The remaining 40% commute to other counties for employment. Likewise, **40% of Orange County's labor force commutes in from other counties**;
- The **average drive time to work for Orange County residents is twenty-two minutes**, representing a 19% increase since 1980;
- The **percentage of workers who bike or walk to work is higher in Orange County than the state**, owing largely to the presence of the University of North Carolina-Chapel Hill campus;
- According to the North Carolina Department of Transportation, **75% of state-maintained roads in Orange County are in the unincorporated areas**; and
- Based on a 2000 report, **Orange County had 215 miles of unpaved roads that were not maintained by the state**. This is one of the highest counts in the state.

More information on these key statistics is provided in the following charts and graphs.

### VEHICLE MILES TRAVELED

Automobile use in the County has been increasing since 1990. Figure 9-1 shows that total and per capita vehicle miles traveled have been consistently increasing in the County over the last decade. 2015 projections predict that this trend will continue. See Figure 9-1.



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**FIGURE 9-1: HISTORIC AND PROJECTED VEHICLE MILES TRAVELED IN ORANGE COUNTY (1990-2015)**

|  | Measured         |                  | Projected        |                  |                  | % Increase  |
|--|------------------|------------------|------------------|------------------|------------------|-------------|
|  | 1990             | 2000             | 2003             | 2007             | 2015             | 2000-2015   |
| <b>Rural<sup>1</sup></b>                 |                  |                  |                  |                  |                  |             |
| Interstate                               | 745,550          | 1,417,590        | 1,414,490        | 1,673,667        | 2,155,278        | 52%         |
| Arterial                                 | 75,700           | 196,100          | 192,150          | 217,288          | 261,398          | 33%         |
| Collector                                | 569,300          | 647,630          | 678,090          | 757,525          | 947,433          | 46%         |
| Local                                    | 111,300          | 148,980          | 167,670          | 175,512          | 238,130          | 60%         |
| <b>Total</b>                             | <b>1,501,850</b> | <b>2,410,300</b> | <b>2,452,400</b> | <b>2,823,992</b> | <b>3,602,239</b> | <b>49%</b>  |
| <b>Urban and small urban<sup>1</sup></b> |                  |                  |                  |                  |                  |             |
| Interstate                               | 21,070           | 114,320          | 109,200          | 132,904          | 172,555          | 51%         |
| Freeway                                  | 53,660           | 57,420           | 61,600           | 63,559           | 79,569           | 39%         |
| Arterial                                 | 558,040          | 754,080          | 445,200          | 867,498          | 1,083,826        | 44%         |
| Collector                                | 35,890           | 41,500           | 388,590          | 46,245           | 57,894           | 40%         |
| Local                                    | 57,620           | 34,080           | 107,980          | 37,138           | 148,104          | 335%        |
| <b>Total</b>                             | <b>726,280</b>   | <b>1,001,400</b> | <b>1,112,570</b> | <b>1,147,344</b> | <b>1,541,948</b> | <b>54%</b>  |
| <b>Grand Total</b>                       | <b>2,228,130</b> | <b>3,411,700</b> | <b>3,564,970</b> | <b>3,971,336</b> | <b>5,144,187</b> | <b>51%</b>  |
| <b>Per Capita DVMT</b>                   | <b>23.7</b>      | <b>28.9</b>      | <b>30.2</b>      | <b>29.9</b>      | <b>31.3</b>      | <b>8.3%</b> |

**Notes and Sources:**

<sup>1</sup> Road classifications are defined in the appendix.

Note: Daily vehicle miles traveled (DVMT) represents vehicle use on public roads in Orange County by both residents and non-Orange County residents.

Source: NCDOT, as compiled by the Orange County Commission for the Environment, "State of the Environment, 2004"

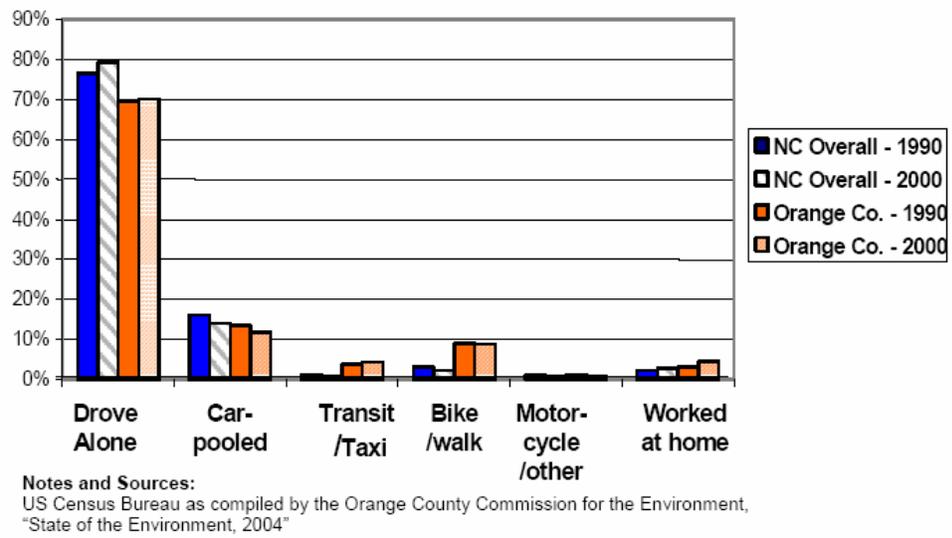
### JOURNEY TO WORK

The percent of Orange County commuters that drive alone in their cars is less than the state average, and the percent of commuters using alternative forms of transportation is higher in Orange County than in the state. There was a slight increase in single-occupancy vehicles in the County between 1990 and 2000, and the number of persons car-pooling over this period also declined slightly. Transit and bicycle use has been stable in the County. More workers worked from home in 2000 than in 1990, a trend that is likely to continue. See Figure 9-2.



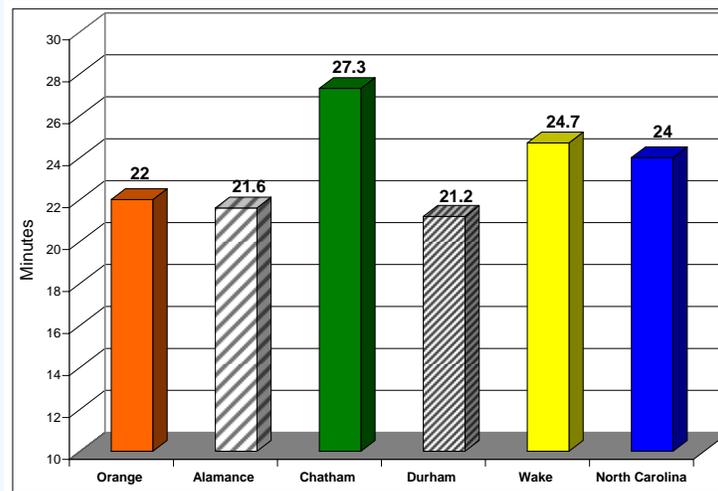
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**FIGURE 9-2: COMPARISON OF JOURNEYS TO WORK IN ORANGE COUNTY AND THE STATE OF NORTH CAROLINA (1990-2000)**



The average commute times in Orange County are on the low end compared with other counties in the Research Triangle region. In 2000, the average commute time for workers in Orange County was 22 minutes. Workers in Wake County commuted on average for 24.7 minutes per day, and workers in Chatham County commuted on average 27.3 minutes per day. Only workers in Alamance and Durham Counties had a shorter commute time than workers in Orange County. See Figure 9-3.

**FIGURE 9-3: COMPARISON OF AVERAGE COMMUTE TIMES IN THE TRIANGLE REGION (2000)**



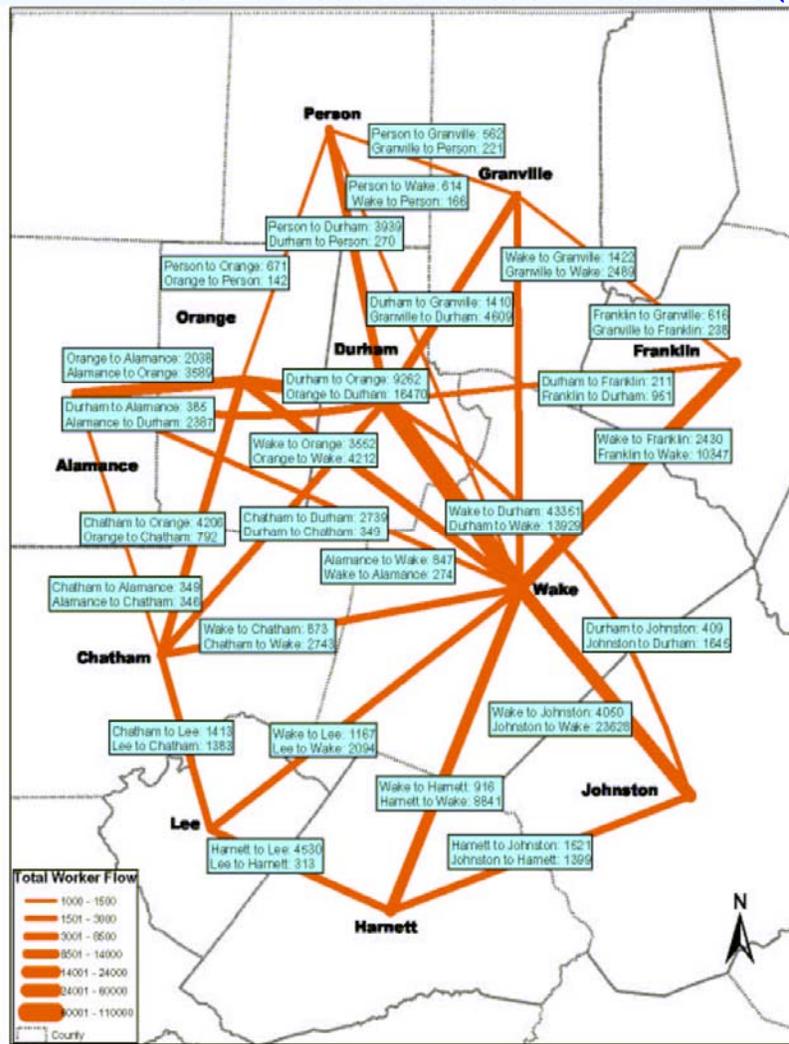
Source: Appendix A: County Profile (Data) Element



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In 2000, approximately 40% of the County's workforce commuted to work in other counties. Likewise, 40% of the County's workforce commuted in from other areas. Cross-county commute data illustrate where residents of Orange County that worked outside of the County traveled to each day, and where Orange County workers that lived outside the County commuted from. In 2000, a large proportion of these residents were commuting to Durham (16,470), while a smaller proportion was commuting from Durham to Orange County (9,262). In 2000, the commutes between Orange County and Wake were fairly similar. 3,552 persons commuted to Orange from Wake and 4,212 commuted from Orange to Wake. More commuters came from Alamance to Orange (3,589) than from Orange to Alamance (2,038). See Figure 9-4.

**FIGURE 9-4: COUNTY TO COUNTY COMMUTES (2000)**



**Notes and Sources:**

The width of the line indicates the volume of commuters between counties. Values are provided within the yellow boxes.



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### REGISTERED VEHICLES AND ACCIDENTS

The number of registered vehicles in Orange County has kept pace with population increases. In 1980, there were 45,046 vehicles registered in the County. By 2000 that number had increased by more than 33,000 to 78,177 registered vehicles. By 2005, there were 84,983. Registered vehicles increased by 88% between 1980 and 2005. Traffic accidents in the County increased by 69% over this same period, showing that there have been fewer traffic accidents per registered vehicle over time. See Figure 9-5.

**FIGURE 9-5: REGISTERED VEHICLES AND TRAFFIC ACCIDENTS IN ORANGE COUNTY (1980-2005)**

| Year | Auto/<br>Truck<br>Regs <sup>2</sup> | Traffic<br>Accidents <sup>3</sup> |
|------|-------------------------------------|-----------------------------------|
| 1980 | 45,046                              | 1,695                             |
| 1990 | 63,711                              | 2,018                             |
| 2000 | 78,177                              | 2,715                             |
| 2001 | 80,101                              | 2,927                             |
| 2002 | 81,390                              | 2,874                             |
| 2003 | 82,093                              | 3,034                             |
| 2004 | 83,886                              | 2,799                             |
| 2005 | 84,983                              | 2,875                             |

**Notes and Sources:**

1 NC Department of Transportation

2 Actual registrations for automobiles and trucks for the calendar year in which the vehicles were registered.

3 A reportable accident is one that involves a motor vehicle resulting in injury, death, or total property damage of \$1,000 or more.

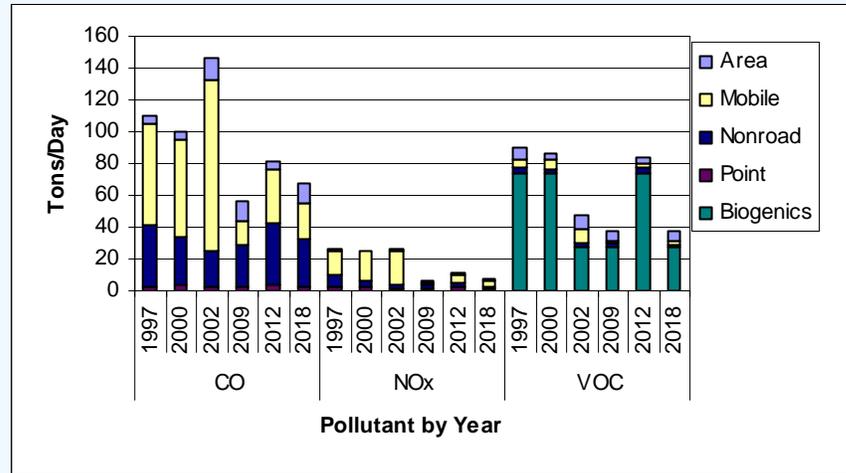
### VEHICLE AIR EMISSIONS

Inventories of local air emissions show that mobile uses (i.e., automobiles, trucks, other vehicles) were the primary generator of non-point source carbon monoxide (CO) emissions in the County. In 2000, mobile sources (e.g., automobiles, trucks) generated almost 60% of carbon monoxide (CO) emissions, and almost 80% of nitrogen oxides. Non-road emissions (e.g., lawn mowers, outboard engines, and agricultural equipment) were also a significant source of pollutant emissions during this period. Together, these two sources are the primary generators of carbon monoxide and nitrogen oxide emissions in the County. Projections by the North Carolina Department of Air Quality suggest that total emissions will decrease over time, and that mobile and non-road vehicles will continue to be the primary sources. See Figure 9-6.



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**FIGURE 9-6: ESTIMATED AND PROJECTED EMISSIONS BY SOURCE (1997-2018)**



Source: North Carolina Department of Air Quality (NC DAQ)

The U.S. Environmental Protection Agency designated Orange County and other counties in the Research Triangle region as ozone non-attainment areas. This designation means that ozone levels in the area exceeded federal standards over a three-year period, and that regulatory measures have to be taken to reduce these levels and improve air quality. In late 2007, the EPA approved a request from the State to redesignate the Raleigh-Durham-Chapel Hill area to "attainment" and it is now in a maintenance program to follow a State plan for maintaining the ozone standard through 2017. Many car-owners in Orange County have addressed this need to decrease air emissions and reduce the use of non-renewable resources by purchasing alternative fuel vehicles. As of 2003, there were 141 registered hybrid vehicles in Orange County. See Figure 9-7.

**FIGURE 9-7: REGISTERED HYBRID VEHICLES IN ORANGE COUNTY (2003)**

|   |            |
|---|------------|
| Honda Civic                             | 35         |
| Honda Insight                           | 14         |
| Toyota Prius                            | 92         |
| <b>Total Registered Hybrid Vehicles</b> | <b>141</b> |

Source: Orange County State of the Environment Report, 2004.



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### 9.4. ORANGE COUNTY TRANSPORTATION NEEDS

Future population increases in Orange County will bring more houses, more jobs, and more commercial opportunities to the County. The County's transportation system, including roads, buses, bike trails, and pedestrian facilities, will need to keep pace with this new development. The system will need to offer more alternative transportation options, use energy resources wisely, reduce greenhouse gas emissions and improve air quality over time.

A long standing position of Orange County has been that new roads and the significant widening of existing roads does little to improve the transportation system. Orange County has traditionally directed its resources to improve alternatives to the single passenger motorized vehicle as the primary means of transportation. The focus has been on public transportation, improving traffic flow, alleviating congestion at busy intersections, improving safety for cyclists and those who choose to walk.

- In June 2004, the U.S. Environmental Protection Agency (EPA) designated Orange County as a non-attainment area for ozone per National Ambient Air Quality Standards (NAAQS). In late 2007, however, the EPA approved a request from the State to redesignate the Raleigh-Durham Chapel hill area to "attainment" and is now in a maintenance program to follow a State plan for maintaining the ozone standard through 2017. Efforts have been undertaken to identify the sources of these pollutants, including both point sources and non-point sources. Automobile use and non-motorized vehicles such as such as lawnmowers, outboard engines, and agricultural equipment are the primary generators of several air pollutants found in Orange County. To improve the air quality of Orange, these **pollutant emissions need to be reduced**. The challenge for Orange County is to:
  1. Reduce the projected increase in vehicle miles traveled.
  2. Increase mass transit ridership.
  3. Reduce the use of fossil fuels.
- The **County needs a comprehensive transportation plan** that identifies long-term, coordinated goals for planning the County's transportation system of roads, bikeways, pedestrian facilities, and rail\transit systems that will meet the needs of future populations. Unlike regional transportation plans, a comprehensive transportation plan would identify on maps long-term transportation improvement goals for the County, irrespective of financial constraints. Comprehensive transportation planning should be coordinated with land use planning to ensure that development and transportation systems are planned for in tandem. It should look beyond the County's jurisdiction and include projects being undertaken by the towns that could be integrated into a -wide system, such as bike trails and greenways. The plan could provide direction when updating Regional Transportation Improvement Programs and Long-Range Plans, and streamline transportation planning efforts in the County. The OUTBoard has begun work on this plan, and a draft plan framework



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can be found in *Appendix O: Draft Framework for Orange County Comprehensive Transportation Plan*. The comprehensive transportation plan should address deficiencies in the existing transportation system to provide needed improvements to:

1. Increase safety for cyclists and pedestrians.
  2. Link bicycle lanes.
  3. Link foot trails.
- Area specific plans, such as the Efland-Mebane Small Area Plan and the Orange Grove Road Access Management Plan, identify specific transportation improvements such as improving access management, increasing walkability, reducing congestion in high volume traffic areas, roadway realignments, provision of a park and ride lot, and other enhancements. **A process for integrating implementation strategies from area specific plans into the County's comprehensive transportation planning process should be developed.**
  - Counties have few resources to construct bicycle facilities. Orange County needs strategies to fund implementation of the 1999 Bicycle Transportation Plan. The County should identify funding sources to make improvements to designated bicycle routes for transportation and recreational uses and to increase safety for bicyclists throughout the County.

### 9.5. GOALS

The following transportation goals will guide future policy and implementation strategies for the County.

**Transportation Overarching Goal:** An efficient and balanced transportation system that uses multiple motorized and non-motorized modes of transportation and for which the planning, design, and implementation will be guided by the following overarching qualities:

- A. Protects air quality, water quality and quantity, soil quality, and biological resources
- B. Promotes public health and safety
- C. Encourages sustainable economic development
- D. Provides equal access to all users
- E. Is highly modally and inter-modally integrated and connected
- F. Fosters sustainable and efficient use of resources, including financial and natural resources
- G. Protects the County's natural and cultural heritage
- H. Uses creative and well-designed infrastructure



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- I. Is attractive, user-friendly, and easy to understand because of factors such as signage, brochures, and web pages
- J. Respects privacy and citizen rights.

### **Transportation Goal 1:**

An efficient and integrated multi-modal transportation system that protects the natural environment and community character.

### **Transportation Goal 2:**

A multi-modal transportation system that is affordable, available, accessible to all users, and that promotes public health and safety.

### **Transportation Goal 3:**

Integrated land use planning and transportation planning that serves existing development, supports future development, and is consistent with the County's land use plans which include provisions for preserving the natural environment and community character.

### **Transportation Goal 4:**

A countywide and regionally-integrated, multi-modal transportation planning process that is comprehensive, creative and effective.

## 9.6. OBJECTIVES

The intent of this Plan is that this list of objectives will help guide regular and ongoing decision-making by the County related to transportation initiatives. Each objective has a recommended timeline for completion. (Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines*.)

**Transportation Goal 1:** An efficient and integrated multi-modal transportation system that protects the natural environment and community character.

#### **Objective T-1.1:**

Increase the occupancy of automobiles through ridesharing and other means; and expand the use of public transit (including bus and rail), walking, and biking as primary modes of travel. (See also Economic Development Objective ED-2.3.)

#### **Objective T-1.2:**

Facilitate the overall development and use of a transportation system that is more energy-efficient, reduces carbon emissions, and reduces the use of fossil fuels while promoting the use of local renewable and sustainable fuels.

#### **Objective T-1.3:**

Develop new transportation facilities in a manner that has a positive impact or avoids negative impacts on the natural environment,



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including air quality, water resources, biological resources, and wildlife habitat.

### **Objective T-1.4:**

Develop new transportation facilities in a manner that has a positive impact or avoids negative impacts on the community, including historical or cultural assets, existing neighborhoods, schools and recreational facilities, and the overall rural character in Orange County.

### **Objective T-1.5:**

Identify prime view sheds along major transportation corridors and protect these areas for their scenic and natural resource values. (See also Parks and Recreation Objective PR-5.4.)

### **Objective T-1.6:**

Expand the availability and use of public transportation (including bus and rail) throughout the County to provide better connections between employment centers, shopping and service locations, and other key points of interest in both urban and rural areas, particularly for the County's senior and disabled populations and others without access to automobiles.

**Transportation Goal 2:** A multi-modal transportation system that is affordable, available, and accessible to all users and that promotes public health and safety.

### **Objective T-2.1:**

Increase the provision of bikeways and walkways, and also increase supportive facilities such as bicycle parking zones.

### **Objective T-2.2:**

Evaluate and serve special transportation needs of the senior population, youth, the economically disadvantaged and the disabled, including both everyday needs and disaster transit provision.

### **Objective T-2.3:**

Increase countywide access for emergency vehicles, including ways to improve response times, both for existing and new developments. (See also Services and Community Facilities Objectives PST-2 and PST-5.)

### **Objective T-2.4:**

Improve the provision of public transit facilities and services, and also increase supportive facilities for transit, such as park and ride lots.

### **Objective T-2.5:**

Improve public education and advertising of existing transit services.

### **Objective T-2.6:**

Increase safety awareness between car drivers and bicycle riders, and increase safety for pedestrians.

### **Objective T-2.7:**

Construct bicycle facilities in Orange County that will make cycling safer, more convenient, and more efficient.



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**Transportation Goal 3:** Integrated land use planning and transportation planning that serves existing development, supports future development, and is consistent with the County's land use plans which include provisions for preserving the natural environment and community character.

**Objective T-3.1:**

Improve the County's transportation system by first enhancing existing facilities as opposed to developing new facilities.

**Objective T-3.2:**

Create and implement an Orange County Comprehensive Transportation Plan that provides the framework for a comprehensive and connected transportation system supporting a mix of all transportation modes, including sidewalks and bicycle facilities, bus and rail transit facilities, and highways. The plan should be coordinated with the goals and objectives of this Comprehensive Plan and seek to maintain and enhance community character and the natural environment.

**Objective T-3.3:**

Determine the policies to guide connectivity within and between residential developments based on their impact on neighborhood character.

**Objective T-3.4:**

Direct development to higher density mixed-use districts along transit corridors and make necessary multi-modal transportation improvements to service lands that are slated for future intense development, such as Economic Development Districts.

**Objective T-3.5:**

Use innovative techniques to increase mobility and reduce rush hour congestion.

**Transportation Goal 4:** A countywide and regionally-integrated, multi-modal transportation planning process that is comprehensive, creative and effective.

**Objective T-4.1:**

Work with nearby jurisdictions to integrate the County's transportation plans with those of other transportation planning agencies and service providers in Orange County and the Triangle region. The resulting intermodal transportation system should reflect regional goals and objectives to meet projected travel demand and to reduce congestion and reliance on single occupancy vehicles.

**Objective T-4.2:**

Plan and integrate the County's multi-modal transportation routes and services with regional transportation agencies and transit service providers, agencies and transit providers in neighboring counties, the North Carolina Department of Transportation, Amtrak, and the North Carolina Railroad.



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### **Objective T-4.3:**

Revive rail transportation in Orange County and the Triangle region.

**TABLE 9-1: GOALS AND OBJECTIVES LINKS TO PLANNING PRINCIPLES**

| GOAL/ OBJECTIVE                        | BOARD OF COUNTY COMMISSIONERS' PLANNING PRINCIPLES  |   |    |    |   |   |   |   |   |   |
|--|---|---|----|----|---|---|---|---|---|---|
|  | <ol style="list-style-type: none"> <li>1. Efficient and Fiscally Responsible Provision of Public Facilities and Services</li> <li>2. Sustainable Growth and Development</li> <li>3. A. Encouragement of Energy Efficiency, Lower Energy Consumption, and the Use of Non-Polluting Renewable Energy Resources<br/>B. Promotion of Both Air Quality Protection and the Development of an Effective Transportation System</li> <li>4. Natural Area Resource Preservation</li> <li>5. Preservation of Rural Land Use Pattern</li> <li>6. Water Resources Preservation</li> <li>7. Promotion of Economic Prosperity and Diversity</li> <li>8. Preservation of Community Character</li> </ol> |   |    |    |   |   |   |   |   |   |
|  | 1   | 2 | 3A | 3B | 4 | 5 | 6 | 7 | 8 |   |
| Overarching Goal                       | ✓   | ✓ | ✓  | ✓  |   | ✓ | ✓ |   |   | ✓ |
| Goal 1 and Objectives<br>T-1.1 – T-1.6 | ✓   | ✓ | ✓  | ✓  |   | ✓ | ✓ | ✓ |   |   |
| Goal 2 and Objectives<br>T-2.1 – T-2.7 | ✓   | ✓ | ✓  | ✓  |   |   |   | ✓ | ✓ |   |
| Goal 3 and Objectives<br>T-3.1 – T-3.5 | ✓   | ✓ | ✓  | ✓  |   | ✓ |   | ✓ |   |   |
| Goal 4 and Objectives<br>T-4.1 – T-4.3 | ✓   | ✓ | ✓  | ✓  |   |   |   | ✓ |   |   |

### 9.7. LINKS TO OTHER ELEMENTS

Transportation planning and land use planning are interlinked processes. Like land use planning, natural resource protection, economic development, housing, and other planning efforts reinforce and inform transportation planning efforts. Below is a listing of objectives from other Elements that are linked to transportation planning objectives.



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### ECONOMIC DEVELOPMENT

#### **Objective ED-2.3:**

Promote public transportation, alternative modes of transportation, and encourage carpooling and park-and-ride participation.

### LAND USE

#### **Objective LU-3.2:**

Coordinate land use patterns to facilitate the expanded use of non-auto modes of travel, the increased occupancy of automobiles, and the development and use of an energy-efficient transportation systems.

#### **Objective LU-3.10:**

Identify prime viewsheds along major transportation corridors and other areas, and amend County land use ordinances to ensure long-term protection of viewsheds.

### NATURAL AND CULTURAL SYSTEMS

#### **Objective AE-7:**

Expand and enhance Orange County's public transportation system.

#### **Objective AE-8:**

Improve transportation efficiency: promote more public transportation, ride sharing, and alternative transportation such as bicycles and walking.

#### **Objective NA-16:**

Create a system of public and private open space and conservation areas, including parks, nature preserves, and scenic vistas representative of the Orange County landscape.

### PARKS AND RECREATION

#### **Objective PR-5.4:**

Encourage development of a system of private open space and conservation areas, including nature preserves, parks, linear parks, and scenic vistas compatible with the character of Orange County.

### SERVICES AND FACILITIES

#### **Objective PS-T-2:**

Ensure that all state roads in the County receive non-duplicated names to be posted on signs at intersections and that all houses are numbered in order to improve the responsible time of law enforcement and emergency vehicles.

#### **Objective PS-T-5:**

Include in applied site design standards for residential, commercial, and industrial development, appropriate road design standards to ensure adequate law enforcement and emergency vehicle access to the development.



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### 9.8. OTHER KEY DOCUMENTS

Key documents used to develop this element are included below. (See *Section 1.2.5: Where to Look for Related Information* if you would like to obtain one of these documents.)

- *1999 Orange County Bicycle Transportation Plan*
- *2000 Draft Update of the Orange County Transportation Element*
- *2000 Alternative Fuel Vehicle Options Report*
- *2001 Recommendations of the Joint Economic Development District Work Group*
- *2006 Efland/Mebane Small Area Plan*
- *2003 Orange Grove Road Access Management Plan*
- *Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Transportation Improvement Program (2007-2013)*
- *Draft of the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Transportation Improvement Program (2009-2015)*
- *Triangle Area Rural Planning Organization Transportation Improvement Program (2007-2013)*
- *Draft of the Triangle Area Rural Planning Organization Transportation Improvement Program (2009-2015)*
- *2007 Master Aging Plan: Building Aging-Friendly Communities in Orange*
- *2030 Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Long Range Transportation Plan (April 2005) and amendments (May 2007)*
- *2008 Regional Transit Vision Plan: Recommendations for North Carolina's Research Triangle Region.*

### 9.9. INTERGOVERNMENTAL COORDINATION

Because transportation in Orange County is largely planned at the regional level, intergovernmental coordination is already institutionalized in the planning process. Land planning and development is also coordinated in certain joint planning areas, but not in others. Efforts to increase multi-modal opportunities and improve the efficiency and sustainability of the County's transportation system will need to include representatives of the County, towns, the University of North Carolina-Chapel Hill, and other key partners. The County needs to work with these entities to share information, leverage financial resources, and set countywide transportation strategies.



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