The City of Charlotte

TRANSPORTATION Action Plan

Technical Document

CHARLOTTE.

5 Year Update

August 22, 2011

Transportation Action Plan

Technical Document

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August 22, 2011

CHARLOTTE.

Charlotte Department of Transportation
Charlotte-Mecklenburg Planning Department
Charlotte Area Transit System

To accomplish great things, we must not only act but also dream. Not only plan but also believe.

Anatole France (1844-1924)
French critic, writer, Penguin Island

Transportation Action Plan (TAP)

The TAP — originally adopted by the City Council in May, 2006 — is Charlotte's first comprehensive transportation plan.

This 5-Year Update carries forward the original TAP's mission and its basic goals and objectives. Within that framework, this Update evaluates our transportation system today. It spells out policies for meeting Charlotte's growth challenges over the next 25 years and identifies what improvements are needed, how much they will cost and what revenue sources might be considered.

This TAP Update follows the format of the original TAP, consisting of two documents:

- ***TAP Policy Document*** is the officially adopted portion of the Transportation Action Plan. It is a separate document that contains the City of Charlotte's transportation-related policies (essentially, Chapter 3 of this notebook). It was adopted August 22, 2011 by the City Council.
- ***TAP Technical Document*** (this notebook) is a reference document and is not intended for adoption. The *TAP Technical Document* contains the information used to define the goals, objectives, policies, projects and programs recommended in the *TAP Policy Document.*

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Chapter 1

Introduction and Mission Statement

Charlotte will be the premier city in the country for integrating land use and transportation choices.

— City of Charlotte Transportation Action Plan Mission Statement

Already a fast-growing city, Charlotte will find growth even more challenging in the years ahead. Over the next 25 years, approximately 225,000 new residents will move to Charlotte. This is comparable to the population of Durham, Birmingham or Orlando moving to Charlotte. Charlotte is now the nation's 18th most populous city and could become the 14th most populous by 2035. This growth will increasingly strain Charlotte's limited transportation infrastructure.

If our 225,000 new residents were to bring with them 128 lane miles of freeways and 53 lane miles of arterials, as well as their local streets, Charlotte's transportation system would operate much as it does today. Unfortunately, our new residents will not be able to bring their transportation infrastructure with them, so it is up to the City to provide the necessary infrastructure to accommodate them while protecting our existing quality of life. Accommodating this growth will not be cheap.

Charlotte's City Council recognized the need to accommodate the transportation needs of our new and existing residents through the adoption of the **Transportation Action Plan (TAP)** in 2006. Since the adoption of the TAP, increased funding for transportation of over $390 million was used to advance key road and intersection projects.

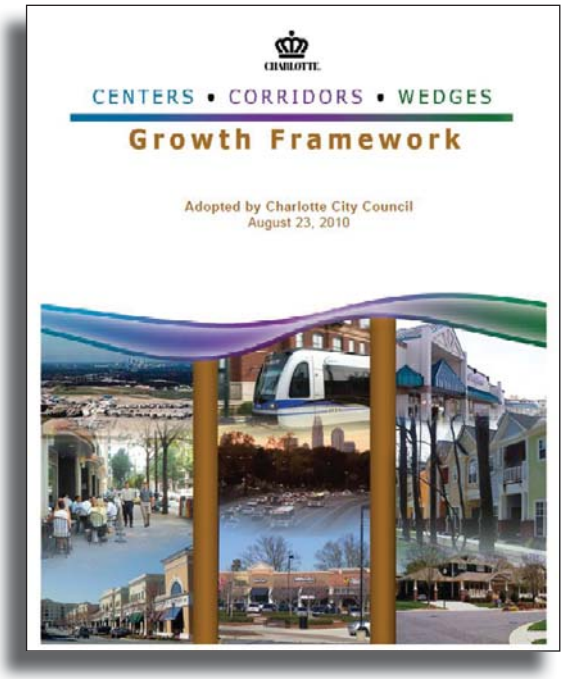
This **Transportation Action Plan (TAP) Update** provides the framework to accommodate that growth through 2035. A key component of this framework is integrating the City's Centers, Corridors and Wedges Growth Framework and providing

more transportation choices. This TAP Update spells out policies to support this strategy; evaluates how our transportation system functions now and how it would function in 2035; and examines alternatives for funding the transportation system investment needed.

This Transportation Action Plan Update is a comprehensive plan that ensures Charlotte's transportation and land use policies are clearly and appropriately aligned and provides a framework to achieve the above mission statement. The TAP Update follows the format of the original TAP, consisting of two documents:

- ***TAP Policy Document,*** essentially Chapter 3 of this document, was adopted by the Charlotte City Council on August 22, 2011.
- ***TAP Technical Document*** (this notebook) contains the full plan. It is not intended for adoption.

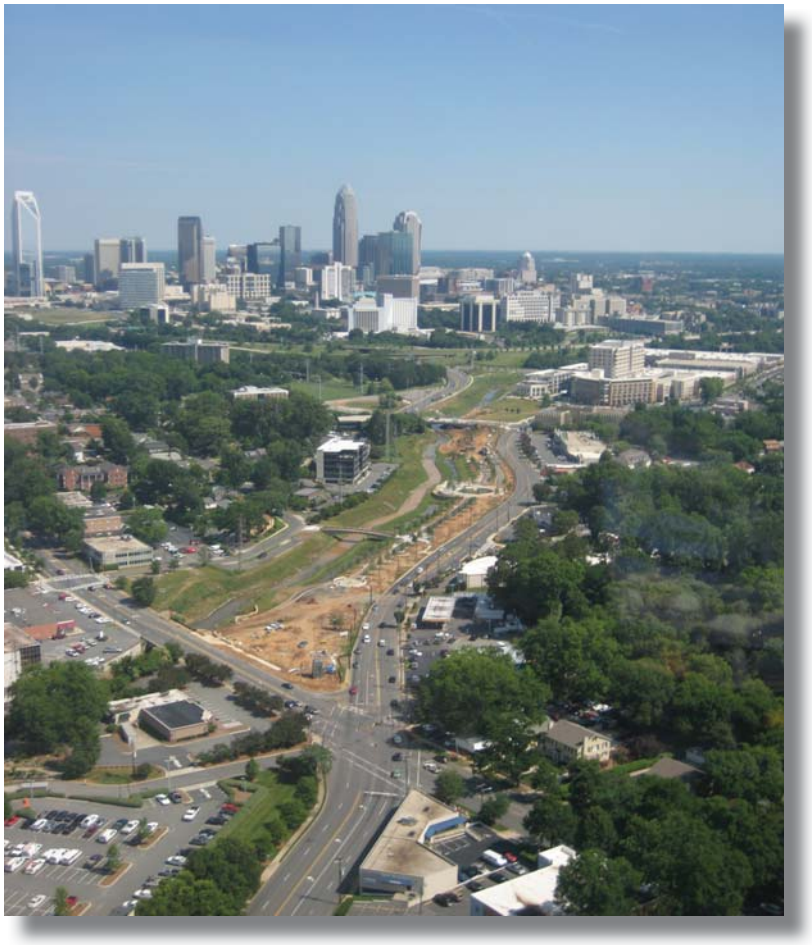
The TAP provides a short-term and long-term policy and implementation "blueprint" for achieving the City's transportation goals and helping to implement the Centers, Corridors and Wedges Growth Framework. The TAP recognizes that Charlotte's transportation success directly hinges on a successful land use strategy.



Fortunately, Charlotte has adopted a solid transportation and land use foundation in the initial 1994 Centers and Corridors growth strategy, which was updated and adopted as the *Centers, Corridors and Wedges Growth Framework* in 2010. Charlotte's leaders recognized that the area could develop in a number of ways and that some important choices were imminent to ensure the area's healthy growth. This framework offers Charlotte the opportunity to develop a well-organized and cost-effective metropolitan area.

The Centers, Corridors and Wedges Growth Framework was developed to maximize transportation effectiveness and efficiency, enable Charlotte to become a stronger and more effective competitor in the global economy and maintain Charlotte's ability to accommodate growth while protecting quality of life for existing and future citizens. *Appendix A* illustrates the Centers, Corridors and Wedges in Charlotte.

The TAP hinges on our success in meeting our land use targets for residential and office development in the centers and corridors



The Centers, Corridors and Wedges Growth Framework uses a simple and clear development pattern to provide a foundation for Charlotte's economic growth, while protecting its quality of life. By intensifying development within existing Activity Centers and Growth Corridors, consistent with area plans, the Centers, Corridors and Wedges approach helps to improve employment opportunities and housing choices and make the best use of existing infrastructure and transportation resources. The TAP relies on three key policies being implemented:

- **TAP Policy 1.1.2**
  The City will encourage a minimum of 70% of new multi-family units, 75% of new office development and 75% of new total employment to be in Activity Centers and Growth Corridors, consistent with adopted area plans.

- **TAP Policy 1.1.3**
  The City will encourage a minimum of 63.5% of Charlotte residents to reside within ¼ mile of transit service.

Through the Transportation Action Plan Update, Charlotte will further define, refine and implement transportation policy that is consistent with the Centers, Corridors and Wedges characteristics. The City of Charlotte is committed to "becoming the premier city in the nation for integrating land use and transportation choices."

In order to become a "premier city," Charlotte needs a comprehensive transportation plan that identifies, plans, implements and monitors the transportation system to ensure that we are accomplishing the Centers, Corridors and Wedges vision as well as keeping pace with transportation demands. The purpose of the *City of Charlotte Transportation Action Plan (TAP) Update* is to update and build upon the nationally recognized Transportation Action Plan adopted in 2006. Updating the TAP is important to ensure that the City evaluates and adjusts its comprehensive policy and implementation framework to achieve the City's vision of becoming a premier city under changing conditions.

The TAP Update carefully considers the challenges and opportunities facing Charlotte over the next 25 years, and recommends goals, objectives, policies and improvements to prepare the city to meet its future transportation needs. The Transportation Action Plan Update provides citizens, elected officials and staff with the TAP Policy Document and TAP Technical Document that includes the City's transportation goals, policies and implementation framework to achieve the City's vision. This *Transportation Action Plan Technical Document* includes the following chapters:

Chapter 1 — Mission Statement and Introduction
This chapter describes the City of Charlotte's transportation mission, vision and the challenges and opportunities for implementing the mission statement and achieving the vision. This chapter also summarizes the Centers, Corridors and Wedges Growth Framework and the importance of following that framework in order to accommodate Charlotte's growth while protecting the City's quality of life.

Chapter 2 — Purpose of Plan
This chapter explains the need for an updated comprehensive transportation plan and how this plan will be beneficial in making Charlotte the premier city in the nation for integrating land use and transportation choices. This chapter also explains the benefits of having a comprehensive transportation plan that includes the City's transportation policies, programs, projects and financial resources so that elected officials and City staff can then use the TAP to make day-to-day and long-term transportation choices which will influence land use decisions.

Chapter 3 — Goals, Objectives and Policies
This chapter includes the City's transportation mission statement, defines the City's goals and provides a comprehensive listing of objectives and policies to implement the goals and mission statement. Chapter 3 also shows the measurable objectives and policies that

City of Charlotte
Transportation Action Plan Goals

- **Goal 1**
  Continue implementation of the Centers, Corridors and Wedges Growth Framework.
- **Goal 2**
  Prioritize, design, construct and maintain convenient and efficient transportation facilities to improve safety, neighborhood livability, promote transportation choices and active living, and meet land use objectives.
- **Goal 3**
  Collaborate with local and regional partners on land use, transportation and air quality to enhance environmental quality and promote long-term regional sustainability.
- **Goal 4**
  Communicate land use and transportation objectives and services to key stakeholders.
- **Goal 5**
  Seek financial resources, external grants and funding partnerships necessary to implement transportation programs and services.

are aligned under each goal. Aligning the objectives and policies under each goal enables document users to fully understand how individual policies are working in conjunction with other policies to implement the City's mission statement and goals.

Chapter 4 — Existing Conditions
This chapter describes existing transportation and land use baseline conditions to determine if we are meeting the City's mission statement of becoming the premier city in the nation for integrating land use and transportation choices. This chapter identifies existing transportation needs and current shortfalls to determine what, if any, changes should be considered in order to meet the City's mission statement. This chapter also presents the baseline land use and transportation measures that will be used throughout the 25-year planning horizon to determine how well the City is advancing the Centers, Corridors and Wedges Growth Framework.

Chapter 5 — Future Conditions
This chapter assesses anticipated transportation projects to be implemented by — and transportation conditions expected for — 2015, 2025 and 2035. This chapter enables the

City to determine if existing and projected funding levels are adequate to deliver quality transportation service and implement the City's mission and vision. The chapter also assesses projected land use and transportation measures (as detailed in Chapter 4) to determine how well the City is advancing the Centers, Corridors and Wedges Growth Framework.

Chapter 6 — Financial Element
This chapter documents the existing and anticipated transportation revenue sources through 2035. The information regarding Federal, State, City and other sources is used in Chapter 5 in determining capital investments and operation projections. Chapter 6 identifies funding shortfalls, if any, that may impede the City from achieving its transportation mission and vision. It also cites funding mechanisms currently under study that may help minimize funding shortfalls.

Appendix A — Adopted Figures
This appendix contains a series of adopted maps and tables that provide the framework and implementation tools for Charlotte's Transportation Action Plan.

Appendix B — Other Figures
This appendix contains supplementary maps and figures that are cited for reference in the main body of the plan.

Chapter 2

Purpose of the TAP

The purpose of the Transportation Action Plan (TAP) is to provide a comprehensive policy and implementation strategy to achieve the City's vision of becoming the premier city in the nation for integrating land use and transportation.

- The City of Charlotte is committed to "becoming the premier city in the nation for integrating land use and transportation choices." In order to achieve this vision, Charlotte needs a comprehensive transportation plan.
- The purpose of the TAP is to provide the comprehensive policy and implementation strategy to achieve this premier city status, achieve our transportation goals and help implement the Centers, Corridors and Wedges Growth Framework.
- The Transportation Action Plan provides citizens, elected officials and staff with an implementation tool that includes the City's transportation goals, policies and implementation strategy to achieve the City's vision.

The City of Charlotte will undergo significant growth during the next 25 years which provides great opportunities and, at the same time, significant challenges for transportation and land use. Charlotte's population is projected to increase from approximately 775,000 in 2010 to 1,000,000 in 2035. This plan seeks to provide a short-term and long-term policy and implementation "blueprint" for accommodating that growth while integrating land use and implementing our transportation vision.

The City of Charlotte Transportation Action Plan carefully considers the challenges and opportunities facing Charlotte over the next 25 years and recommends goals, objectives,

policies and improvements to prepare the city to meet its future transportation needs. The plan identifies a staging schedule for transportation projects and is intended to provide a strategy for short and long-range transportation decisions and related land use activities. In this way, the City can assess the relative importance of transportation projects and schedule their planning, engineering, and construction as growth takes place and the need for the facilities and improvements is warranted. It also establishes a prioritization of the projects by time period to be included in future Capital Investment Plans (CIPs).

The relationship between transportation and land use is recognized in Charlotte's Centers, Corridors and Wedges Growth Framework. This plan will help implement the growth framework to ensure that we are achieving our goals and simultaneously protecting Charlotte's quality of life.

Transportation systems and land use patterns have well-documented reciprocal relationships. Fast-growth communities, like Charlotte, demand upgraded multi-modal transportation systems, forward-thinking solutions and a commitment to protecting Charlotte's quality of life elements that make it an attractive and livable place today.

A key TAP goal is for streets to be appropriately designed to enhance and protect Charlotte's quality of life.

Implementing the Centers, Corridors and Wedges Growth Framework, while integrating transportation infrastructure improvements, will substantially improve the city by providing enhanced access and livability for current and future residents.

Continued adherence to the Centers, Corridors, and Wedges Growth Framework and to the Transportation Action Plan policies and strategy will result in a transportation and land use approach that is consistent with the City's mission to "become the premier city in the country for integrating transportation and land use choices."

A key component of the transportation plan is that it be financially attainable. While it is clear that financial resources available to the City to fund new streets, transit services

and facilities, bicycle facilities, pedestrian systems, and signal systems are limited, it is important to show the transportation system under existing funding sources and levels. In addition, this plan will explore new revenue sources and/or increased funding from existing sources and the corresponding benefits to the transportation system.

The City's Centers, Corridors and Wedges Growth Framework and the Transportation Action Plan recognize that Charlotte's transportation system needs to be multi-modal. This is consistent with a 2010 survey of Mecklenburg County residents. When asked what they think the City and NCDOT should do to relieve traffic congestion, the two highest-rated answers were "widen roads "(83%) and "provide alternative modes of transportation" (71%). In addition, 80% believe roads should be designed to accommodate all users – including motorists, pedestrians, bicyclists and transit.

Charlotte needs to increase transportation funding to meet its transportation goals and adequately maintain its transportation infrastructure.

The TAP calls for a significant number of roadway improvements, but it also recognizes that transit, bicycle and pedestrian modes need to be included and accommodated equally. The City's bus transit and expanding rapid transit system are relatively well defined and are an integral component of the City's Centers, Corridors and Wedges Growth Framework.

The Transportation Action Plan also recognizes the need to make Charlotte more bicycle- and pedestrian-friendly. As part of protecting our quality of life and commitment to providing transportation choices, Charlotte must ensure that its neighborhoods are walkable and bicycle-friendly. The City should strive to ensure that an increasing percentage of its residents are within walking distance to neighborhood-serving land uses such as parks, schools, greenways, retail stores and employment areas.

In the next chapter, the TAP presents the goals, objectives and policies that will support these efforts in a comprehensive policy and implementation strategy.

Chapter 3

Goals, Objectives and Policies

Charlotte will be the premier city in the country for integrating land use and transportation choices.

— City of Charlotte Transportation Action Plan Mission Statement

This chapter sets forth the City's transportation mission statement, defines the City's transportation related goals and provides a comprehensive listing of measurable objectives and policies to guide Charlotte towards becoming the premier city in the country for integrating land use and transportation choices.

The focus of this chapter is on providing the goals, objectives and policy framework for implementing the City's Transportation Action Plan and achieving the City's transportation and land use vision. The City has adopted five primary goals with a series of measurable objectives and detailed policies to implement the TAP goals. These goals, objectives and policies can be used by Charlotte residents, elected officials and staff to achieve the City's transportation goals.

Goal 1 emphasizes that in order for Charlotte to meet its transportation goals we must ensure that the Charlotte's land use pattern is consistent with the City's Centers, Corridors and Wedges Growth Framework. A successful transportation strategy is directly linked to a successful land use strategy. This Growth Framework will arrange growth in a way that best utilizes our limited transportation resources and results in more efficient and effective transportation system.

Legal Disclaimer:
City Council's adoption of the Transportation Plan enacts no policies not explicitly included in the Plan. Nothing herein is intended or should be interpreted to establish a legal obligation on or standard of care for the City of Charlotte, or to provide individuals or businesses with a legally enforceable right, benefit, or expectation in the goals, objectives or policies.

Index to Goals, Objectives and Policies

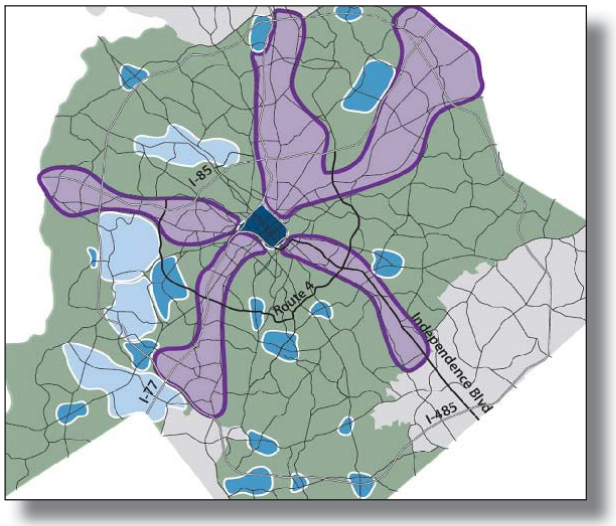
Continue implementation of the Centers, Corridors and Wedges Growth Framework.

Goal 1

Objective 1.1

The City will continue to track development in Activity Centers and Growth Corridors to help assess the efffectiveness of the Growth Framework.

Policy 1.1.1
The City will continue to refine the boundaries of the Growth Corridors, Activity Centers and Wedges through the area planning process and reflect these refinements in Figure 1.



The Centers, Corridors and Wedges Growth Framework will be used to guide growth into areas where it can best be served.

Policy 1.1.2
The City will encourage a minimum of 70% of new multi-family units, 75% of new office development and 75% of new total employment to be in Activity Centers and Growth Corridors, consistent with adopted area plans.

Policy 1.1.3
The City will encourage a minimum of 63.5% of Charlotte residents to reside within ¼ mile of transit service.

Policy 1.1.4
The City will work with the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) to ensure that the Long Range Transportation Plan is consistent with and supports the City's Centers, Corridors and Wedges Growth Framework.

Policy 1.1.5
The City intends for the TAP to support and enhance City Council's adopted housing and neighborhood improvement plans.

Policy 1.1.6
The City recognizes and will continue to support the Charlotte-Douglas International Airport as a significant multi-modal transportation facility, major employment center and important regional economic generator.

Objective 1.2
CIP Coordination

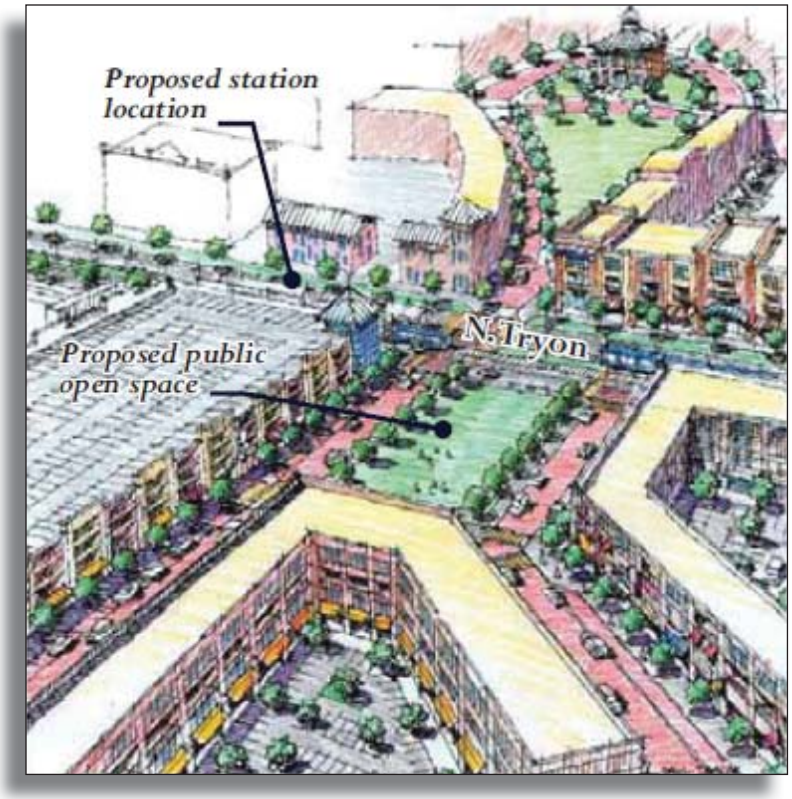
Objective 1.2

The City will ensure that the Capital Investment Plan priority projects are fully coordinated with the Centers, Corridors and Wedges Growth Framework.

Policy 1.2.1
The City will utilize the Capital Investment Plan (CIP) to advance transportation projects that support the Centers, Corridors and Wedges Growth Framework.

Policy 1.2.2
The City will use public infrastructure investment as a catalyst for new transit-supportive development in select station areas.

The City will invest in infrastructure in station areas, consistent with the Centers, Corridors and Wedges Growth Framework.



proposed Rocky River Station

Objective 1.3
2030 Corridor System Plan

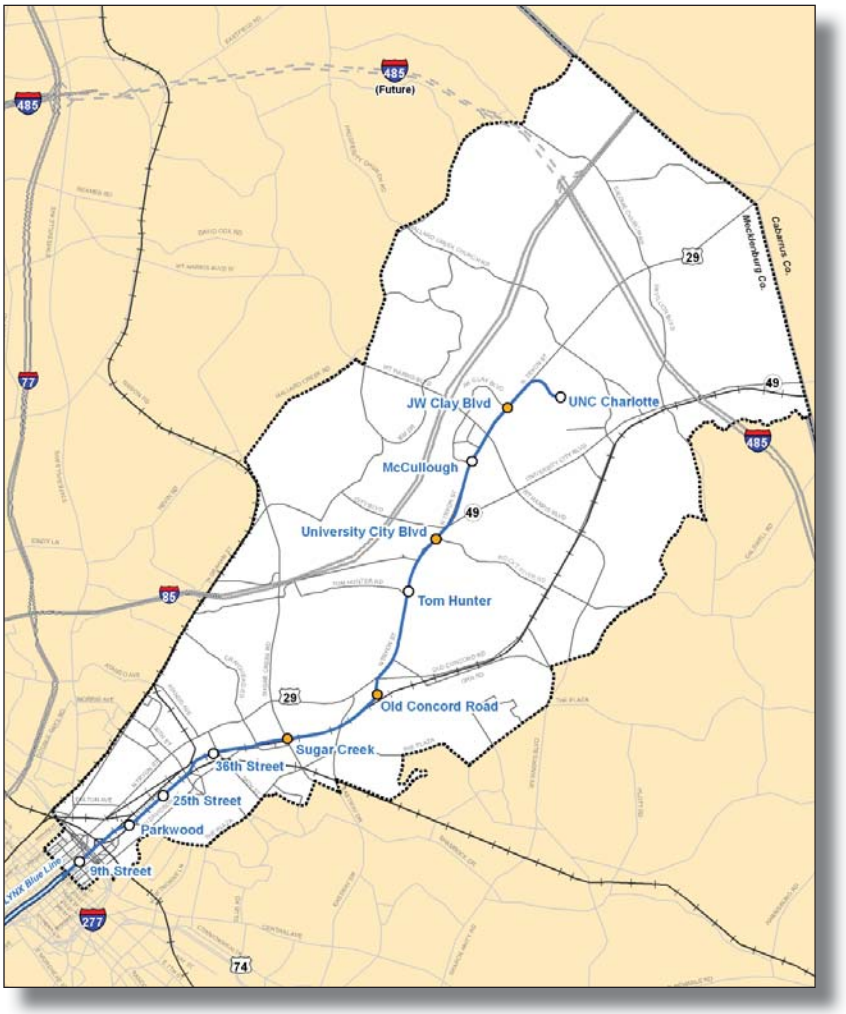
Objective 1.3

CATS will continue implementing the 2030 Corridor System Plan consistent with the Centers, Corridors and Wedges Growth Framework.

Policy 1.3.1
CATS will continue implementation of the four rapid transit corridors to support the Centers, Corridors and Wedges Growth Framework.

Policy 1.3.2
CATS and Engineering & Property Management will implement the Streetcar starter project in support of the Centers, Corridors and Wedges Growth Framework.

Policy 1.3.3
CATS will preserve existing countywide transit service levels, while making strategic enhancements that ensure competitive service and growth in transit ridership while maximizing commuter choice.



Northeast Corridor Blue Line Extension

Goal 2

Prioritize, design, construct and maintain convenient and efficient transportation facilities to improve safety and neighborhood livability, foster economic development, promote transportation choices and active living, and meet land use objectives.

Objective 2.1

The City intends for all transportation projects to improve safety and neighborhood livability, foster economic development, promote transportation choices and active living, and support the Centers, Corridors and Wedges Growth Framework.

Policy 2.1.1
The City will classify existing and future streets based on the Urban Street Design Guidelines (see Figure 3).

Policy 2.1.2
The City will promote a balanced and multi-modal transportation system that serves the mobility needs of all segments of the population, accommodates all travel modes and promotes community economic development (see Figure 4 for the proposed categories of locally funded transportation expenditures), while furthering the Centers, Corridors and Wedges Growth Framework.

Policy 2.1.3
The City will prioritize intersection improvements in the Capital Investment Plan based on crash rates, congestion levels, pedestrian level of

East Boulevard is a well-designed street that balances the interests of all users.

Objective 2.1
Transportation Project Goals and Design
(continued)

Objective 2.1 (continued)

The City intends for all transportation projects to improve safety and neighborhood livability, foster economic development, promote transportation choices and active living, and support the Centers, Corridors and Wedges Growth Framework.

Policy 2.1.3 (continued)
service and bicycle level of service as described in the Urban Street Design Guidelines.

Policy 2.1.4
The City will build complete streets (i.e., by designing transportation projects within the context of adjacent land uses to improve safety and neighborhood livability, promote transportation choices and meet land use objectives) consistent with the City's Urban Street Design Guidelines.

Policy 2.1.5
The City will work with NCDOT to create context-based streets that include transit, bicycle and pedestrian design features as part of new or widened NCDOT street construction projects, or on State-maintained streets.

Harris Boulevard is a NCDOT roadway that is missing several context-sensitive treatments and fails to promote transportation choices.

Policy 2.1.6
The City will continue to implement overhead street name markers, when installing new signals and during signal maintenance, in an effort to create more user-friendly and visible street signage at signalized intersections.

Policy 2.1.7
The City will work with MUMPO to ensure that the Long Range Transportation Plan advances transportation projects that improve safety, neighborhood livability, promote transportation choices, meet land use objectives and support the Centers, Corridors and Wedges Growth Framework.

Objective 2.2
Monitoring

Objective 2.2

The City will monitor and report Level of Service for motorists, bicyclists and pedestrians, every five years.

Policy 2.2.1
The City will monitor levels of service for motorists, bicyclists and pedestrians at signalized intersections.

Policy 2.2.2
By 2015, the City will consider defining transportation adequacy policies.

The intersection of Sharon Road and Fairview Road has poor levels of service for motorists, bicyclists and pedestrians.

Policy 2.2.3
The City will conduct turning movement counts at signalized intersections and roadway segment counts, on a two-year rotation, in order to monitor transportation level of service and to fulfill formal agreements with NCDOT related to the maintenance and operation of State system signals.

Policy 2.2.4
The City will continue to apply flexible transportation mitigation measures, within Activity Centers and Growth Corridors, in an effort to promote infill development.

Policy 2.2.5
The City will maintain seven years of crash data and conduct trend and crash pattern analysis to support ongoing programs.

Policy 2.2.6
The City will take an active role in the education of motorists, pedestrians and bicyclists through annual transportation safety campaigns.

Policy 2.2.7
The City will prioritize major roadway projects based on the following ten CIP prioritization criteria: (1) reduce congestion, (2) improve safety,

Objective 2.3
Public Transportation

Objective 2.3

CATS will improve the quality of life for everyone in the greater Charlotte region by providing outstanding community-wide public transportation services while proactively contributing to focused growth and sustainable regional development.

Policy 2.2.7 (continued)
(3) support rapid and express bus transit, (4) support the Centers, Corridors and Wedges Growth Framework and Area Plans, (5) increase accessibility to Uptown and other Economic Centers in the Charlotte Sphere of Influence, (6) improve connectivity, (7) provide multimodal options, (8) support "fragile" and "threatened" neighborhoods, (9) improve intermodal connectivity and (10) provide positive cost-effectiveness.

Policy 2.3.1
The City recognizes that service policies related to achieving this objective will be governed by the Metropolitan Transit Commission (MTC) that is alternately chaired by the Mayor of Charlotte and the Chair of the Mecklenburg County Commission. The MTC is responsible for the operating policies of CATS and sets the policies that govern the expansion, operation and maintenance of transit services within the entire CATS system.

Policy 2.3.2
CATS will preserve the local bus system to support the incremental development of a fixed guideway system in key corridors to meet the transportation needs of our diverse population and provide greater mobility throughout the community and region.

Policy 2.3.3
CATS will provide expanded, competitive service to grow transit ridership, support land use objectives and maximize commuter choice.

CATS provided bicycle accommodations on the Lynx trains.

continued next page

Objective 2.3
Public Transportation
(continued)

Objective 2.3 (continued)

CATS will improve the quality of life for everyone in the greater Charlotte region by providing outstanding community-wide public transportation services while proactively contributing to focused growth and sustainable regional development.

Policy 2.3.4
CATS headways for local and neighborhood shuttle bus routes will be no more than 60 minutes. In peak periods, 30-minute headways will be the norm on local routes unless low demand warrants less frequent service. Express and Regional Express services will have a minimum of three (3) trips in each peak direction. CATS light rail services will operate at a frequency of ten (10) minutes or better in the peak and at least 30 minutes in the off-peak.

Policy 2.3.5
The standard span of service for CATS local bus routes, Special Transportation Services and Light Rail will be 5:00 a.m. to 1:30 a.m. Exceptions will be based on ridership and productivity.

CATS express and regional bus service serves longer-distance commuters.

Policy 2.3.6
The City recognizes that the MTC's adopted service policies regulate stop spacing and amenities.

Policy 2.3.7
All new CATS services will be subject to performance evaluation and will be expected to meet the performance standards for its service type within two years of implementation.

Policy 2.3.8
New CATS shuttle services in employment areas may require a financial contribution from business community stakeholders up to 100 percent of the marginal operating cost.

Objective 2.3
Public Transportation
(continued)

Objective 2.3 (continued)

CATS will improve the quality of life for everyone in the greater Charlotte region by providing outstanding community-wide public transportation services while proactively contributing to focused growth and sustainable regional development.

Policy 2.3.9
The local collector portion of CATS express routes will not exceed 15 minutes in travel time or 50 percent of the travel time on the express portion of the route, whichever is less.

Policy 2.3.10
CATS will monitor routes with an overall index score between 0.75 and 0.99, and make changes to the service as needed. Routes falling between 0.50 and 0.74 should be subject to a more detailed analysis that examines performance by route segment and time of day and makes appropriate recommendations.

CATS ridership has more than doubled since 1998.

Objective 2.4
Pavement Conditions

Objective 2.4

The City will maintain a 12-year resurfacing schedule and an average pavement conditions rating of 90 on all City-maintained streets.

Policy 2.4.1
The City will monitor and report pavement condition ratings through the use of bi-annual pavement condition surveys and pavement management data.

Policy 2.4.2
The City will continue to identify ways to enhance the City's pavement conditions and will conduct a peer comparison of other jurisdictions' standards every 5 years.

The City has been able to return to a 12-year resurfacing cycle due to increased funding and lower material costs.

Policy 2.4.3
The City will update and refine maintenance-related policies and operating procedures every three years.

Policy 2.4.4
The City will implement bicycle-friendly maintenance procedures and maintain bicycle facilities appropriately.

Objective 2.5
Safety and Operations

Objective 2.5

The City intends to review and implement transportation safety and operation improvements as needed.

Policy 2.5.1
The City will identify and analyze roadways where speed-related collisions constitute a higher percentage of all crashes in order to prescribe engineering or enforcement countermeasures, consistent with the Urban Street Design Guidelines, to address excessive vehicle speeds.

Policy 2.5.2
The City will analyze locations with significantly higher crash rates to develop projects and programs, consistent with the Urban Street Design Guidelines, to reduce both the number of crashes and the overall crash rate.

Policy 2.5.3
The City will track and report the results of safety improvement programs and projects annually.

The City is committed to improving safety through a wide array of initiatives.

Policy 2.5.4
The City will seek to maximize capacity of existing streets by investing in technology such as improved controllers, expanding the coordinated signal system and implementing Intelligent Transportation Systems.

Policy 2.5.5
The City intends for all traffic signals to be part of a coordinated signal system by 2030.

Policy 2.5.6
The City intends to replace 50 obsolete signal controllers annually in order to maintain the efficient operation of the City's signalized intersections.

Policy 2.5.7
The City intends for a minimum of 90% of transportation detection systems (loops and video detectors) to be operable at all times, and failed detection devices to be repaired within 30 calendar days.

The City currently maintains over 725 signalized intersections.

Objective 2.6
Bicycle Facilities

Objective 2.6

The City will complete at least 150 miles of bikeway facilities within the city by 2015, and an additional 350 miles by 2035.

Policy 2.6.1
On street types where the Urban Street Design Guidelines recommend the provision of bicycle lanes, the City will require bicycle lanes on all new or reconstructed roadways within the city, where feasible. Where bicycle lanes are not feasible, justifications will be included as part of the road preliminary design process and alternative routes will be identified.

Policy 2.6.2
The City will place bike route signs on selected local streets as bike routes, as needed, to provide a connected network of bikeways.

Policy 2.6.3
The City will continue to create bicycle lanes as part of the road resurfacing program, where possible, by narrowing traffic lanes and striping bicycle lanes, consistent with the Urban Street Design Guidelines.

When roads are resurfaced, the City looks for opportunities to stripe bicycle lanes as part of the project.

Objective 2.6
Bicycle Facilities
(continued)

Objective 2.6 (continued)

The City will complete at least 150 miles of bikeway facilities within the city by 2015, and an additional 350 miles by 2035.

Policy 2.6.4
The City will coordinate the construction of bicycle connection projects with the implementation of ongoing transit and greenway projects.

Policy 2.6.5
The City will study and identify off-road bicycle trail opportunities (in addition to existing/ planned greenways) as part of the City's Bicycle Plan. The City will consider an increased role in providing multi-use trails to create a comprehensive network of bikeways.

Policy 2.6.6
The City will continue to seek opportunities to increase the availability of bicycle parking in Charlotte.

Policy 2.6.7
The City will update the Bicycle Plan every five years.

Charlotte's bicycle parking requirements make Charlotte more bicycle-friendly.

Objective 2.7
Sidewalks

Objective 2.7

The City will construct over 375 miles of new sidewalks by 2035.

Every trip begins and ends as a pedestrian trip.

Policy 2.7.1
The City, when constructing sidewalks on existing streets, will construct sidewalks on both sides of all thoroughfares, on one side of all collector streets and (when requested) on one side of all local streets, consistent with the sidewalk prioritization process.

Policy 2.7.2
The City will prioritize sidewalk projects based on the City's adopted sidewalk prioritization process.

Policy 2.7.3
The City will provide sidewalks, crosswalks, pedestrian signals, lighting and other facilities consistent with the Urban Street Design Guidelines to make it safer, easier and more comfortable for people to walk.

Charlotte's sidewalk program makes Charlotte a more walkable community for all users.

Policy 2.7.4
The City will require new development to construct sidewalks consistent with City Code.

Policy 2.7.5
By 2012, the City will complete a sidewalk inventory of existing sidewalks and pedestrian elements.

Policy 2.7.6
By 2012, the City will adopt a pedestrian plan.

Policy 2.7.7
In 2011, the City will consider appointing a Pedestrian Advisory Committee to serve in an advocacy role to create a more walkable city and to promote a better pedestrian environment.

Objective 2.8
Traffic Calming

Objective 2.8

The City will continue to implement traffic calming in an effort to improve safety and neighborhood livability, promote transportation choices and meet land use objectives.

Policy 2.8.1
The City will implement neighborhood traffic calming, where requested and in accordance with City policy, to help minimize speeding through a variety of approved remedies, including: speed limit reductions, multi-way stops, speed humps, and other traffic calming measures as deemed appropriate.

Charlotte's improved sidewalk and planting strip requirements are creating more walkable streets.

Policy 2.8.2
By 2012, the City will further develop requirements and standards for new local streets to be designed to include traffic calming design features consistent with City Code.

Policy 2.8.3
The City will continue implementing traffic calming measures on non-local streets, as deemed appropriate, to improve safety, livability, transportation choices and meet land use objectives.

Policy 2.8.4
By 2012, the City will review its traffic calming processes and procedures, and continue to update them to reflect emerging practices.

Policy 2.8.5
The City intends for all school speed zones meet the standards for signs, markings, and other safety features set forth in the School Speed Zone and Crossing Policy, as adopted in June, 2004.

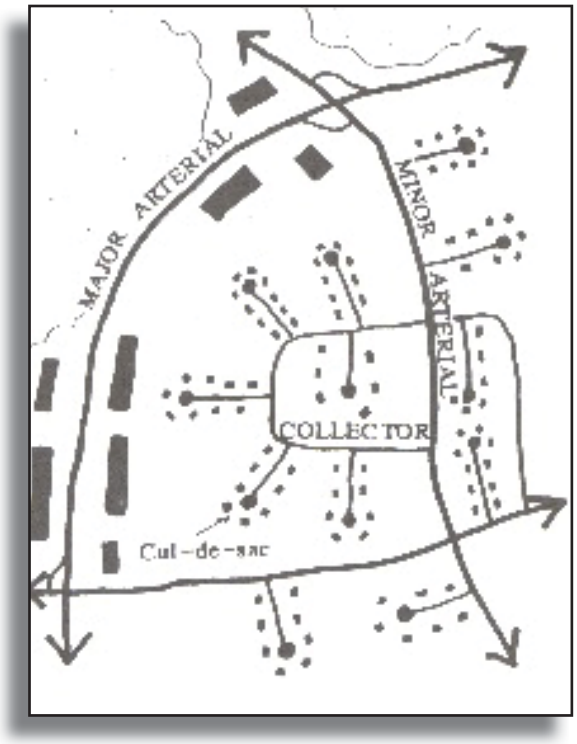
Traffic calming, such as chokers, helps moderate travel speeds through neighborhoods.

Objective 2.9
Connectivity

Objective 2.9

The City will maintain its connectivity ratio of 1.45 inside Route 4, and increase its connectivity ratio outside Route 4 from 1.19 to 1.35, by 2020.

Policy 2.9.1
The City will support connectivity by continuing to create new connections, both through new development and by identifying and implementing connectivity opportunities.



Disconnected development patterns like the one above result in longer trips and increase congestion.

Policy 2.9.2
The City will require that new development provide for public access, ingress, and egress by interconnecting streets within developments and with adjoining developments, consistent with City Code.

Policy 2.9.3
The City will continue to require that the proposed street system will be designed to provide a network of interconnected streets to facilitate the most advantageous development of the entire area. The City intends for existing and new residential developments to be connected by streets and/or bikeways and pedestrian networks to reduce vehicle miles of travel (VMT). This will help accommodate travel between new residential developments and nearby schools, neighborhood community centers, transit stops, parks, bikeways, commercial land uses, office developments and other compatible land uses and developable lands.

Policy 2.9.4
The City will consider implementing a CIP-funded bridge/street creek crossing program, to facilitate connectivity.

Objective 2.9
Connectivity
(continued)

Objective 2.9 (continued)

The City will maintain its connectivity ratio of 1.45 inside Route 4, and increase its connectivity ratio outside Route 4 from 1.19 to 1.35, by 2020.

Policy 2.9.5
The City will preserve the existing and future connected street system by protecting individual existing street connections and platted non-existing streets, and will consider restoring appropriate street, bicycle and pedestrian connections that were previously severed.

Policy 2.9.6
The City will require block length spacing and street connection requirements consistent with City Code.

Policy 2.9.7
The City will consider adopting connectivity mitigation measures as a condition of conditional rezoning and development approvals.

Policy 2.9.8
The City will consider additional policies to further discourage gated roadways except in unique circumstances.

Policy 2.9.9
By 2012, the City will evaluate optional methods for measuring and tracking connectivity.

Excessive use of cul-de-sacs has resulted in increased congestion, increased VMT and higher costs to provide City services. In many neighborhoods you can no longer "take a walk around the block" because there is little to no block structure.

Objective 2.10
Land Development

Objective 2.10

The City will adopt policies, guidelines and ordinances that ensure land develops in a manner consistent with achieving this goal.

Policy 2.10.1
The City recognizes the Thoroughfare Map, as adopted by MUMPO, as the official document/map stating the alignment of existing and future thoroughfares (see *Appendix A, Figure 6*).

Policy 2.10.2
The City will use the MUMPO Thoroughfare Plan Map and the City's Collector Map for acquisition and reservation of rights-of-way and for review of all development proposals and subdivision plats (see *Figure 7*).

Policy 2.10.3
The City will adopt and apply the Urban Street Design Guidelines Classification Map to help guide the planning and design of existing and future thoroughfares.

The City must add street capacity through road widenings and create a more connected street network to accommodate Charlotte's growth.

Policy 2.10.4
The City will review and update its right-of-way requirements and ordinances to help ensure the City is preserving thoroughfare rights-of-way, consistent with the Urban Street Design Guidelines, as necessary to accommodate the City's desired multimodal cross-sections for existing and future needs.

Policy 2.10.5
The City will continue to implement comprehensive access management and context-sensitive sight triangle and site design requirements, consistent with the Urban Street Design Guidelines.

Objective 2.10
Land Development
(continued)

Objective 2.10 (continued)

The City will adopt policies, guidelines and ordinances that ensure land develops in a manner consistent with achieving this goal.

Policy 2.10.6

The City will contine refining the existing CDOT Traffic Impact Study Guidelines so that any site development that generates 2,500 or more vehicular trips per day will be required to complete a multimodal transportation impact analysis.

Policy 2.10.7

The City will continue refining the requirements for transportation impact analyses to reflect the multimodal objectives and methods included in the Urban Street Design Guidelines and General Development Policies.

Goal 3

Collaborate with local and regional partners on land use, transportation and air quality to enhance environmental quality and promote long-term regional sustainability.

Objective 3.1

The City will coordinate and collaborate with local and regional partners as needed.

Policy 3.1.1
The City will coordinate with local and regional partners to ensure that the Long Range Transportation Plan complements and supports the TAP.

Policy 3.1.2
The City will continue to promote intergovernmental coordination with regional and local partners such as NCDOT, MPOs, CRAFT, COG and adjacent jurisdictions to address transportation, land use and air quality issues.

Policy 3.1.3
The City recognizes that reducing VMT per capita is critical to improving the region's air quality and will continue to coordinate with regional partners to develop and implement strategies to reduce per capita VMT.

NCDOT is facing funding shortfalls for state highways and interstates.

Objective 3.1
Local and Regional Coordination
(continued)

Objective 3.1 (continued)

The City will coordinate and collaborate with local and regional partners as needed.

Policy 3.1.4
The City will continue to annually collect and analyze data regarding local, regional and national trends in VMT, uncongested and congested travel times, population, employment, fuel prices and air quality, and report this information in the Transportation Action Plan Annual Report. The City will consider changing Focus Area Plans for Transportation and the Environment to incorporate targets for reducing vehicle trips and VMT.

Policy 3.1.5
The City will ensure that new area plans continue to consider transportation, VMT, economic and air quality impacts, and will consider VMT and vehicle trip reduction targets.

Policy 3.1.6
The City will work cooperatively with NCDOT to ensure that their transportation projects in the region meet the region's transportation and land use vision and air quality objectives.

To create a sustainable community, we must accommodate the needs of all travelers.

Policy 3.1.7
The City will work with its regional partners to ensure that the regional travel model is maintained and utilized to evaluate regional transportation and land use scenarios.

Policy 3.1.8
The City will coordinate with the Charlotte-Mecklenburg School system in an effort to locate more schools where children can walk or bicycle to school sites in an effort to reduce VMT, reduce energy consumption and create more livable neighborhoods.

Objective 3.1
Local and Regional Coordination
(continued)

Objective 3.1 (Continued)

The City will coordinate and collaborate with local and regional partners as needed.

Policy 3.1.9
The City will continue to work with its regional partners to evaluate the Centralina Council of Governments' Regional Transportation Planning Study to assess its recommendations and to determine how, or if, they should be implemented.

Policy 3.1.10
The City intends to use the Capital Investment Plan and Long Range Transportation Plan process, so that transportation projects that promote intermodal freight and goods movement are appropriately prioritized.

CATS Vanpools provide a comfortable, cost-effective way for groups of 5 to 15 commuters to share their ride to work.

Policy 3.1.11
The City will work with regional partners to promote a regional network of express and local bus service and vanpool facilities to enhance regional air quality and multimodal travel choices.

Policy 3.1.12
CATS will continue to collaborate with MTC member jurisdictions on the adoption and promotion of Joint Development Policies as guidance in implementing the Joint Development Principles that were adopted by all MTC members with jurisdiction over a rapid transit corridor.

Policy 3.1.13
The City will work with transportation partners to implement the recommendations of the regional Managed Lanes Study and create a regional network of high-occupancy toll (HOT) lanes and/or high occupancy vehicle (HOV) lanes.

Communicate land use and transportation objectives and services to key stakeholders.

Goal 4

Objective 4.1

The City will communicate and periodically update its land use and transportation objectives to stakeholders.

Policy 4.1.1
The City will update the Transportation Action Plan every five years, at a minimum, to ensure that Charlotte residents are provided the latest information regarding the City's short-term and long-term transportation conditions, objectives and accomplishments.

Policy 4.1.2
The City will develop a Transportation Action Plan Annual Report that can be distributed both in hard copy and electronically.

Policy 4.1.3
The City intends for periodic updates of the Capital Investment Plan (CIP) to be consistent with the Transportation Action Plan.

Policy 4.1.4
The City will continue to implement a bi-annual survey to determine baseline public awareness and knowledge of the strategies recommended in the TAP, including the Centers, Corridors and Wedges Growth Framework and the City's multimodal transportation approach.

Policy 4.1.5
The City intends for information presented to the public regarding transportation and land use plans undertaken by the City to include a description on how the plans and projects are consistent with and support accomplishing the goals and objectives of the Transportation Action Plan and the Centers, Corridors and Wedges Growth Framework.

Policy 4.1.6
The City will prepare an annual report describing the supply (quantities) of roadway miles, sidewalks, bikeways, transit service and the multimodal characteristics of thoroughfares, local streets and intersections.

Goal 5

Seek financial resources, external grants and funding partnerships necessary to implement transportation programs and services.

Objective 5.1

The City will annually review and update transportation conditions and funding assumptions to assess whether the City is "keeping pace" with transportation demands generated by growth and development.

Policy 5.1.1
The City will consider all potential funding opportunities to implement the Transportation Action Plan.

Policy 5.1.2
The City will update (no less than every 5 years) its list of financially feasible and proposed transportation projects in 5 and 10-year increments in conjunction with updates to the CIP and TIP.

Policy 5.1.3
The City will monitor current transportation funding revenues and expenditures on an annual basis to ensure that they are keeping pace with the assumptions in the Transportation Action Plan.

Policy 5.1.4
The City will continue to research opportunities to implement alternative transportation funding sources as identified by the Committee of 21.

The City will need to seek additional funding to keep pace with its transportation maintenance, capacity and livability needs.

Objective 5.1
Transportation Funding
(continued)

Objective 5.1 (continued)

The City will annually review and update transportation conditions and funding assumptions to assess whether the City is "keeping pace" with transportation demands generated by growth and development.

Policy 5.1.5
The City adopts the following figures by reference:

Figure 1:	**Centers, Corridors and Wedges Map**
Figure 2:	**2030 Corridor System Plan**
Figure 3:	**USDG Street Classification Map (Future Conditions)**
Figure 4:	**Locally Funded Transportation Programs and Improvements List**
Figure 5:	**Existing Bicycle Facilities Map**
Figure 6:	**Charlotte Thoroughfare Map**
Figure 7:	**Existing and Proposed Major Collectors**

(Figures 1-7 are included in the Appendix A of this Technical Document.)

Chapter 4

Existing Conditions

Chapter 4 describes existing transportation and land use baseline conditions to determine if we are meeting the City's mission of becoming the premier city in the nation for integrating land use and transportation choices. This chapter also:

- **identifies existing transportation needs** and current shortfalls to determine what, if any, changes should be considered in order to meet the City's mission statement;
- **highlights programs and projects** undertaken as a result of the adoption of the Transportation Action Plan in 2006; and
- **presents key land use and transportation measures that will be used throughout the 25-year planning horizon** to determine what progress the City has made in implementing the TAP and advancing the Centers, Corridors and Wedges Growth Framework.

Assessing the current performance of the transportation system — and reflecting on the progress made since the adoption of the Transportation Action Plan — is crucial to updating the plan of action for Charlotte's transportation system. Since the TAP was adopted in 2006, Charlotte DOT has developed a "Transportation Analysis Report" (TAR) that provides useful statistics on numerous transportation measures. Statistics from the TAR are used to supplement existing information and analysis about Charlotte's transportation system and transportation programs.

This Existing Conditions chapter details transportation-related achievements and issues in Charlotte. The **Existing Conditions Assessment** is summarized in a "report card" format at the end of this chapter, using an A-F grading scale. This same format is then used in Chapter 5 (Future Conditions) to show grade changes under existing conditions, versus changes with a fully funded Transportation Action Plan.

Statistical Indicators

To set the stage for analyzing existing conditions, the following transportation-related statistics give a snapshot of the existing challenges and opportunities facing Charlotte:

- Charlotte's population is expected to grow from approximately 775,000 today to 1,000,000 in 2035. This is comparable to adding the current population of Durham, Birmingham or Orlando to Charlotte's population.
- Charlotte is the 17th most populous city in the nation and, given current population trends, could be the 14th most populous by 2035.
- The Charlotte urban area is ranked 66th in population density, while being ranked 38th in population. Under current development trends, the region's density is not anticipated to change significantly by 2035. Charlotte's significant projected growth, combined with low density development, is inefficient and will create even greater challenges to the transportation system.
- The Committee of 21, a stakeholder group sponsored by the Charltote Chamber of Commerce, City of Charlotte and Mecklenburg County, recognized that "Transportation is a vital economic driver and a constant factor in our quality of life. The condition of roads and traffic across the county impacts our air quality, the movement of goods and services and the mobility of residents — whether as drivers, passengers, cyclists or pedestrians."

Some key indicators of the state of transportation in Charlotte include:

- 21 percent of Charlotte's thoroughfares are operating at Level of Service (LOS) "E" or "F" during the peak hour (on a scale of A to F). Under current development patterns — even with anticipated transportation improvements (base revenue) — the percentage will increase to over 40% by 2035.
- Signalized intersections outside Route 4 are almost four times more likely to be operating at LOS "E" or "F" than signalized intersections inside Route 4.
- Charlotte is ranked as the nation's 23rd most congested city by the Texas Transportation Institute in their annual assessment.
- 49 percent of Charlotteans believe their commute to work is "somewhat congested" or "very congested."
- Charlotte currently maintains over 2,400 miles of streets.
- Charlotte recently obtained the recommended 12-year road surfacing cycle due to increasing funding over the last several years from the City's General Fund.
- Charlotte maintains 725 traffic signals and adds an average of 18 new traffic signals per year to the system.

- Charlotte has an average of 22,000 motor vehicle crashes per year on streets within Charlotte.
- Charlotte has an adequate street network (connectivity) inside Route 4 but an inadequate street network outside Route 4.
- CATS service includes 39 local routes, 12 express routes and 5 commuter routes. CATS ridership was approximately 24.4 million boardings in FY 2010 — 8 million more boardings than in FY2004.
- The 9.6 mile South Corridor Lynx Light Rail Transit (LRT) line opened in 2007 with great success. The service was originally projected to provide around 9,100 weekday riders, but already averaged more than 16,000 weekday riders in 2009.
- Charlotte currently has over 140 miles of bikeways, an increase of almost 100 miles since the TAP was adopted in 2006. Most bike lanes are added in a cost-effective manner when roads are resurfaced. Additionally, 43% of Charlotte residents own bicycles, and there were over 70,000 bike-on-bus boardings on CATS buses in 2009.
- Charlotte has an estimated 1,600 miles of sidewalks. Approximately 55% of thoroughfares have sidewalks on both sides of the street, and 38% of local streets have sidewalks on at least one side of the street.

Analysis of Existing Conditions

Identifying the baseline situation is critical to understand how current supply and performance can or should change to accommodate Charlotte's anticipated growth while protecting its quality of life. The following transportation-related elements, systems and modes are included in the inventory:

Existing Conditions Inventory

4.1 Centers, Corridors and Wedges Growth Framework Implementation
4.2 Street Maintenance
4.3 Connectivity
4.4 Motorist Travel
4.5 Traffic Operations & Safety
4.6 Travel by Transit
4.7 Bicyclist Travel
4.8 Pedestrian Travel

Each of these factors is assessed in this chapter and given a "grade" of A to F. The summary "report card" for existing conditions is at the end of the chapter.

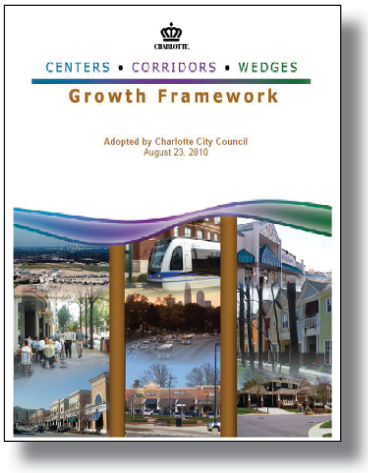
4.1 Centers, Corridors and Wedges Growth Framework Implementation

Background

The Charlotte City Council and Mecklenburg County Board of Commissioners adopted the "Centers and Corridors" framework for growth in the mid-1990s. The framework advocated for a clear development pattern which "provides a foundation for solid economic growth and quality of life." By increasing development in existing centers and corridors, the strategy improves employment opportunities and housing choices while making the best use of existing infrastructure and transportation.

City Council adopted the Centers, Corridors and Wedges Growth Framework in 2010 as an update to the original Centers and Corridors strategy. This growth framework uses three categories — Centers, Corridors and Wedges — to classify land within the City's sphere of influence. *Appendix A-1* identifies the Centers, Corridors and Wedges in Charlotte.

The **Centers, Corridors and Wedges Growth Framework** provides a vision for how Charlotte should grow and develop to meet the needs of an expanding and changing population. It provides guidance to help achieve this vision by:



- recognizing redevelopment as a key part of accommodating future growth, particularly in Activity Centers and Growth Corridors;
- supporting a variety of housing choices at appropriate locations;
- providing guidance to better match development types and intensities with infrastructure, particularly transportation facilities;
- emphsizing quality design and the importance of environmental considerations; and encouraging a variety of transportation choices.

- **ACTIVITY CENTERS** are focused areas of economic and/or mixed-use activity and are located throughout the City. They are also, in general, desirable locations for additional growth because of their strategic locations and typically well-developed infrastructure systems. There are currently 22 designated Activity Centers. The character of each of these varies considerably, from low-intensity Industrial Centers to compact and high-intensity Mixed Use Activity Centers.

- Center City is Charlotte's largest and most intensely developed Activity Center.
- SouthPark is an example of a Mixed-Use Activity Center.
- Charlotte Douglas Airport is an example of an Industrial Activity Center.

- **GROWTH CORRIDORS** include at least three high capacity transportation facilities — interstate or expressway, major thoroughfare(s), existing or planned rapid transit and/or a freight rail line — that run parallel to each other. Because of their extensive transportation system, Growth Corridors can support uses that need high levels of access, such as high density residential and office development, as well as concentrations of industrial, warehousing and distribution uses.

  Four distinct types of sub-areas have been identified within Growth Corridors:

  - **Transit Station Areas** are located within approximately ½ mile walking distance of an existing or planned rapid transit station.
  - **Interchange Areas** include property in Growth Corridors within approximately ½ to one mile of interstate or expressway interchanges, with access to and from all interchange quadrants.
  - **Established Neighborhood Areas** are those existing, primarily low density, residential communities that are located within the Growth Corridors. These areas are typically comprised of single family housing, but may also include some multi-family, commercial and civic uses, as well as some mixed or multi-use developments.
  - **General Corridor Areas** are those areas within the Growth Corridors that are outside the other three types of subareas.

  There are five designated Growth Corridors in Charlotte:

  - *South Corridor* includes the area generally between I-77 South and the South Corridor light rail transit (LRT) line;
  - *Southeast Corridor* includes Independence Boulevard (U.S. 74) and the proposed LRT or bus rapid transit (BRT) line along Independence;
  - *Northeast Corridor* includes I-85 North and the proposed Northeast LRT line;
  - *North Corridor* includes I-77 North and the proposed commuter rail line that parallels I-77; and
  - *West Corridor* includes I-85 South and the proposed BRT or Streetcar line along Wilkinson Boulevard.

- **WEDGES** are the large areas between Growth Corridors where residential neighborhoods have developed and continue to grow. Wedges consist mainly of low density housing, as well as a limited amount of moderate density housing and supporting facilities and services.

Why is the Centers, Corridors and Wedges Growth Framework important?

The location and design of new development required to support Charlotte's projected population and employment growth will influence the type and location of transportation facilities needed to support this growth. The City recognizes that it cannot afford to grow equally in all directions. In order to accommodate our growth in a fiscally responsible manner, the Centers, Corridors and Wedges Growth Framework can help us to best utilize our limited transportation resources.

Many of the City's streets cannot be further widened for automobiles without extraordinary cost and negative impacts on existing land uses and neighborhoods. Additional transportation capacity in many areas will be achieved through strategic widening, further development of pedestrian and bicycle facilities, enhanced transit, and new street connections to create a more connected street system that provides more capacity and travel choices for motorists, bicyclists, pedestrians and transit users.

The Centers, Corridors and Wedges Growth Framework provides an overall vision for future growth and development. It also provides general guidance for the development of future area plans. However, specific direction for land use decision-making will continue to be provided by policy documents such as area plans and General Development Policies, and by regulations such as zoning and subdivision ordinances.

In particular, the amount, intensity and type of new development will be determined by the applicable area plan. For residential development, the General Development Policies are used to determine appropriate density if the area plan does not specify the density. As area plans are developed, a number of factors are used to determine the amount of development that is appropriate for areas within each Activity Center, Growth Corridor or Wedge. These factors include available vacant or underutilized land and the existing and potential transportation network and capacity.

Locating appropriate levels of multi-family development into "centers" and "corridors" is critical to TAP's success.

Another key factor that will help to determine the appropriateness of future development, particularly in and adjacent to existing neighborhoods, will be the ability to reduce adverse impacts on the existing neighborhood character. This will be an especially important factor in not only the Wedges, but also the Established Neighborhood Areas, a subarea of Growth Corridors.

How is Charlotte doing on implementation of the Centers, Corridors and Wedges Growth Framework?

Since the adoption of the Centers and Corridors strategy in the mid-1990s, Charlotte has undertaken a number of initiatives that further define the Centers, Corridors and Wedges concept.

- **Development of the five-corridor rapid transit system** is most notable.
  - In the *South Corridor*, Charlotte's first rapid transit line — the Lynx Blue Line — opened in 2007 and has consistenty surpassed ridership estimates. Numerous new high density developments have been completed or are underway in the in-town station areas along the South Corridor.
  - The *Northeast* and *North Corridors* are in stages of engineering and design. The North Corridor (Red Line) will be served by commuter rail, with an opening date in 2019 if private funding can be secured. The Northeast Corridor, an extension of the existing light rail line in the South Corridor, is estimated to open in late 2016.
  - In the *West Corridor*, CATS began operation of the Sprinter enhanced bus service in 2009, with plans to serve the corridor with streetcar service in the future.
  - Implementation of rapid transit in the *Southeast Corridor* is on hold, pending the determination of what technology to provide and funding availability.

- **Complementary land use planning** is occurring concurrently. All area plans use the Centers, Corridors, and Wedges framework as a starting point for the development of more specific policy recommendations. For example, area plans will typically recommend greater intensification of land uses in transit station areas plan than in a Wedge.

- **In the last five years, City Council has adopted specific plans** that support the Centers, Corridors, and Wedges framework — such as the seven transit station area plans adopted in the South Corridor, three in the Northeast Corridor, and one in the North Corridor. The Northlake area plan, adopted in 2008, is a good example of a plan that addresses Activity Centers, Growth Corridors and Wedges within the study boundary, whereas the recently adopted University Research Park plan primarily addresses a Mixed-Use Activity Center.

- **The City has adopted two new policy areas of the General Development Policies (Environment and Infrastructure)** since the TAP was adopted in 2006. The Residential Location and Design policies help to further define the density and design of development that is appropriate in specific locations, while the Retail-Oriented Mixed/Multi-Use Centers policies provide guidance for the Activity Centers, Growth Corridors and the Wedges.

To ensure that the City is implementing the Centers, Corridors, and Wedges and Growth Framework, the City will annually monitor building permit data to ensure that we are

meeting land use goals (TAP Policies 1.1.2 and 1.1.3, and 1.1.4). As part of the 2010 TAP update, CDOT, Planning and CATS will work to refine these growth targets in time for the FY 13 Focus Area Plan.

Figure 4A: **Centers and Corridors Growth Targets**

Description	FY 2005 Percentage	FY 2010 Percentage	TAP Policy Targets for New Growth
Multi-Family Units in Activity Centers and Growth Corridors	62%	61%	70%
Office Employment in Activity Centers and Growth Corridors	75%	85%	75%

Is there a difference inside Route 4 versus outside Route 4?

In most cases, the Centers, Corridors and Wedges framework does not differentiate between the area inside Route 4 and the area outside Route 4. However, it is important to note that the street network and mixed-use development pattern *within* Route 4 results in a more efficient use of the transportation system, reduced VMT per capita and reduced congestion. As we continue to look to the Activity Centers and parts of Growth Corridors to accommodate future growth, it will be important to develop a street network and mixture of land uses that complements the Centers, Corridors and Wedges framework.

What is our grade today in Charlotte for implementing the Centers, Corridors and Wedges Growth Framework?

Charlotte has had the Centers and Corridors foundation already in place for almost 15 years. This growth framework is critical to how well the City accommodates the projected growth and maintains its quality of life. To be successful, Charlotte needs to continue to facilitate growth in appropriate locations within the Activity Centers and Growth Corridors (particularly Transit Station Areas) and better manage growth in the Wedges. Charlotte has made great strides in integrating land use and transportation, but we need to be even more consistent in the future in order to meet land use and transportation goals.

Centers and Corridors Implementation	
Existing Grade *Inside* Route 4	A-
Existing Grade *Outside* Route 4	A-

Based on the ongoing land use planning efforts, the recent General Development Policies update and the recent refinement of the Centers, Corridors, and Wedges Growth Framework, Planning Department staff believes the City receives an A- grade for implementation of the Centers, Corridors and Wedges Growth Framework both inside and outside Route 4.

4.2 Street Maintenance

Background

A city's streets — including its sidewalks, planting strips, trees, bicycle lanes and travel lanes — are among its most significant public places. Streets connect people to every destination within a city, provide access to public transit, encourage and serve economic development and are the corridors for travel for thousands of persons and motor vehicles every day. Streets are where neighbors cross paths, share news and where friends gather at a neighborhood restaurant for a meal. Streets are where residents walk to the corner market. Streets are where residents bicycle to the park and where a parent teaches a child the joy of riding a bicycle. Great streets can define a great city and its neighborhoods.

The City of Charlotte DOT is charged with maintaining over 2,400 miles of streets, and 725 signalized intersections over 300 square miles. Over the years, the City has done an excellent job in maintaining City streets through the annual street resurfacing program. The City historically has resurfaced roadways on a 12-year average.

Why is street maintenance important?

Research shows that the most cost-efficient resurfacing cycle is 12 years on average. A proactive pavement maintenance program focuses on preventing the degradation of a street's foundation (base and sub-base). Potholes and pavement cracking are a direct result of a street foundation failure.

Proactive and preventive maintenance, combined with a 12-year resurfacing cycle, results in appropriately maintained streets and the most cost-effective long-term upkeep of our streets. A reduction in preventive maintenance — and/or a resurfacing cycle that exceeds 12 years — will result in increased long-term resurfacing costs and overall degradation of pavement conditions.

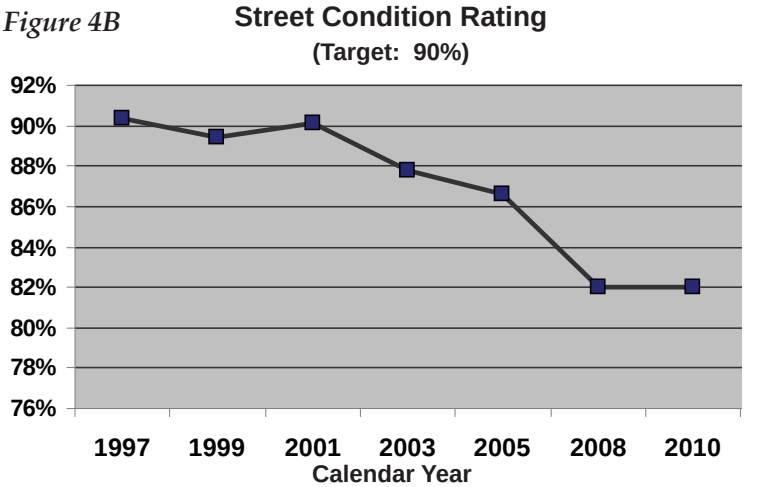
How is Charlotte doing?

In FY 04, the average resurfacing cycle was 16-18 years. This increased to a 20-25 year average in FY 05-FY07. The most recent pavement condition survey revealed that our streets are degrading. As seen in *Figure 4B* (next page), the City's Street Condition Rating has continued to drop from the target of 90% in 2001 to a low of 82% in 2010.

The City's goal is to maintain a rating of 90%. City Council increased funding for street maintenance by $4.3 million in 2006 to shorten the resurfacing cycle, allowing CDOT to pave and rehabiliate additional roads. Initially, asphalt price increases limited the benefit, but in the FY09-10 paving season, material prices were at their lowest levels in three years, allowing CDOT to resurface more miles of roads. With the additional funding

provided by City Council, CDOT is limiting the pavement condition's decline and reducing the overall paving schedule to the desired 12-14 year resurfacing cycle.

Figure 4B



While the City has dramatically improved its pavement conditions since the TAP's adoption, many state-maintained roadways continue to have poor pavement conditions. Poor state road conditions are reflected in a study by TRIP, a non-profit transportation research organization, entitled "Hold the Wheel Steady: America's Roughest Rides, and Strategies to Make Our Roads Smoother" (September, 2010). This study estimates that 42% of Charlotte's roads are in "good" condition, a rating that is among the lowest of the cities in its study. The study includes both state and locally-maintained roads. Charlotte's roads compare unfavorably with other Southeastern cities. The study recommends 75% as an appropriate goal for a "good rating"of community roads. According to the study, Charlotte's rough roads costs each Charlotte driver an estimated $264 annually in extra vehicle maintenance costs.

Percent of Roads Rated "Good" by TRIP

- Atlanta 84%
- Orlando 70%
- Tampa 62%
- Jacksonville 74%
- Nashville 62%
- **Charlotte 42%**
- Memphis 34%

Is there a difference inside Route 4 versus outside Route 4?

No, there is no difference in street maintenance inside versus outside Route 4. Neither NCDOT nor CDOT differentiates between resurfacing schedules inside or outside Route 4.

Street Maintenance	
Existing Grade *Inside* Route 4	B-
Existing Grade *Outside* Route 4	B-

What is our grade in Charlotte today on street maintenance?

Based on the reduction in our resurfacing cycle and how Charlotte compares to other southeastern metro areas with more than 500,000 population, CDOT believes the City receives a "B–" grade for improving the City's resurfacing schedule to 12-14 years, a significant improvement since the TAP was adopted in 2006.

4.3 Connectivity

Background

Connectivity is the degree to which a system of streets provides multiple routes and connections serving the same origins and destinations. Connectivity plays a key role in providing transportation choices. An area with high connectivity has multiple points of access around its perimeter as well as a dense system of parallel routes and cross connections within an area. Having a well-connected street system improves mobility and property accessibility, and promotes resiliency and redundancy of the transportation network. With good connectivity, land is easier to access, traffic is dispersed, and congestion is reduced.

Should there be a problem with a link in the transportation network, a well-connected network like that found in Center City, Plaza-Midwood, and Dilworth provides motorists, pedestrians, cyclists, and transit users with nearby and viable alternate routes. Areas like South Charlotte, on the other hand, are poorly connected and provide few, if any, alternate routes. The lack of connectivity poses significant transportation challenges often associated with difficult and costly solutions.

More than any other public space, the street network impacts Charlotte's residents each and every day. Everyone relies on the street network in one form or another as they engage in daily activities. The purpose of the street network is to connect places and to enable movement from one place to another. Depending on the design of the network, the quality of those connections can have an impact on travel choices, route options, emergency access, mix of land uses, pedestrian and bicycle activity and the viability of the transportation network.

Many of Charlotte's most walkable neighborhoods are also its neighborhoods that are most connected. Connectivity enables pedestrians, bicyclists and motorists to travel from Point A to Point B along multiple routes and in a more direct manner than in the more conventional subdivisions built in the last half of the twentieth century. The City's street connectivity program has begun to undo past mistakes by re-establishing a more connected street network. Strengthened land development regulations are ensuring that new streets are being built in a manner that provides a finer-grained street network and links land uses together.

Why is connectivity important?

The City of Charlotte believes that increasing connectivity is one of the critical elements needed to accommodate the level of growth that is anticipated for Charlotte. By encouraging a more connected street network that is neighborhood-scaled and composed of

short blocks, communities can address these issues while reducing traffic congestion. Connectivity can result in numerous benefits including:

- travel choices and route options,
- reduced congestion,
- improved emergency response times and fire station efficiencies,
- creates bicycling, walking and transit supportive environments,
- reduced congestion by eliminating unnecessary trips from thoroughfares,
- reduced number of Vehicle Miles of Travel, and
- reduced need for extremely large or "super-sized" intersections.

Charlotte's in-town neighborhoods inside Route 4 demonstrate how a more connected roadway network can result in reduced traffic congestion and in major thoroughfare intersections that are reasonably sized and compatible with adjacent neighborhoods.

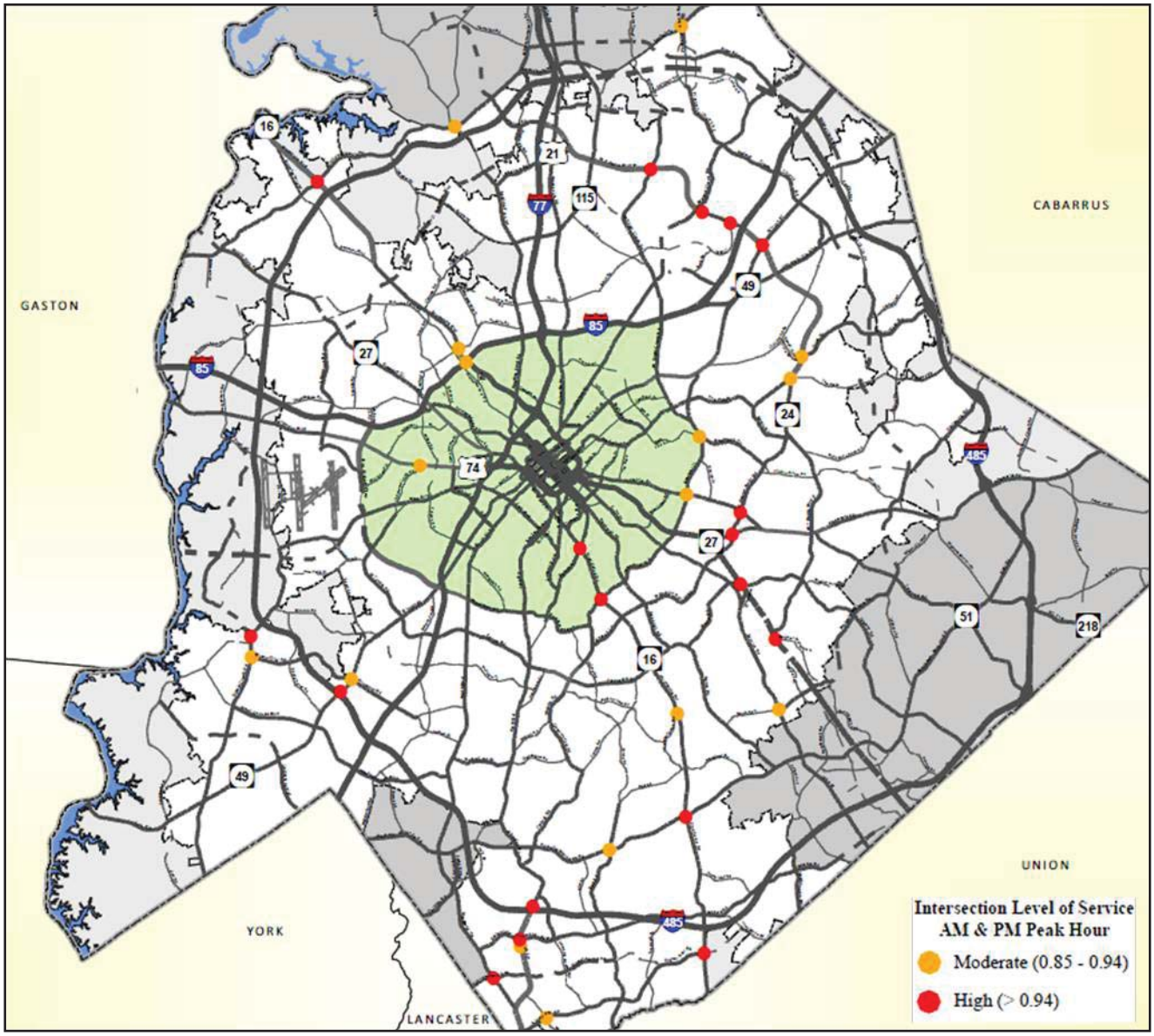
In order to accommodate Charlotte's anticipated 225,000 new residents, the City must implement a more connected and appropriately spaced system of local, connector and thoroughfare streets. This will require significant transportation investment, a commitment to integrating transportation and land use, and a more connected transportation system to address our transportation challenges.

The City strives to invest our limited transportation resources wisely while at the same time making appropriate land use and design decisions. Increasing connectivity to capture a greater share of short local trips will be one of the keys to accommodating the anticipated growth.

A well-connected street network provides benefits beyond the traditional transportation engineering and planning perspectives. School buses, solid waste trucks, and emergency responders, especially the fire department, all benefit from having good connectivity. Specifically, having a better-connected street network reduces the travel distance — and usually travel time — that it takes a fire truck to reach a fire. A 2008 Charlotte study found a strong correlation between the degree of connectivity in the service area of a fire station and the size of that service area.

- For example, Fire Station #2 on South Boulevard in the South End of Charlotte has an effective service area approximately 60% larger than that of Station #31 on Ridge Road near Highland Creek. The degree of connectivity in the South End and Dilworth is dramatically better than that in Highland Creek. Dilworth and South End generally have a gridded street network while Highland Creek is mostly cul-de-sacs. This expanded service area results in greater efficiencies and a significantly lower cost to provide fire service to connected places like Dilworth than to disconnected places like Highland Creek.

Figure 4C: **High Congestion Intersections 2010**



How is Charlotte doing on connectivity?

Several methods have been developed to quantify the degree of connectivity within an area. These methods include connectivity ratio (also known as connectivity index and link/node ratio), intersection density (number of intersections per unit area, usually per square mile), and route directness index (ratio of the as-the-crow flies distance between points A and B to the network distance between those same points). The most prevalent metric nationally is the connectivity ratio, obtained by calculating the number of street segments divided by the number of roadway nodes (or intersections).

Connectivity ratio ranges from 1.0 (one cul-de-sac) to 2.0 (an infinite grid). A connectivity index rating of 1.4 or above is considered "excellent," while 1.2 to 1.39 is considered "good" and below 1.2 is considered "poor." To achieve higher levels of connectivity in a specified area, it would be necessary to increase the number of segments coming together at an intersection.

According to CDOT's Transportation Analysis Report (TAR), Charlotte's city-wide connectivity ratio is 1.22. The score was higher inside Route 4 (1.45) and lower outside Route 4 (1.21).

- *The City believes the City needs to increase the City's overall connectivity score to 1.35 and meet the block spacing requirements of the Urban Street Design Guidelines.*

Achieving this score would enable the City's street system to better accommodate the city's travel demands, shorten trip distances and create a more sustainable Charlotte. To reach this goal of 1.35, connectivity will need to be increased in developing areas of Charlotte.

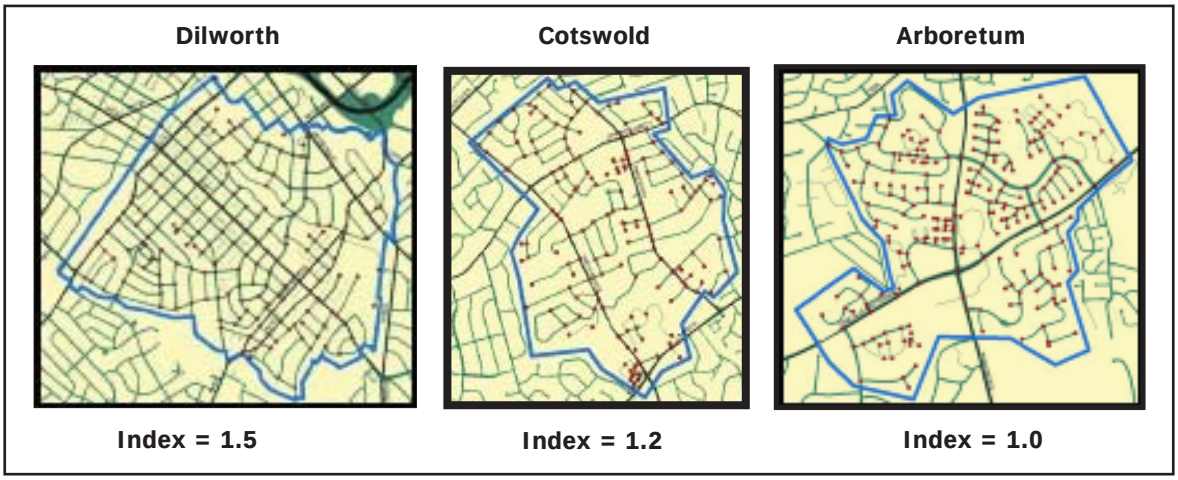
Fundamentally, all streets — not just thoroughfares — need to help support the City's mobility needs. As an example of this point, the Virginia Department of Transportation (VDOT) changed their subdivision street acceptance policy in 2009. One new requirement they made was that streets, to be eligible to be added to the VDOT system, must not only provide public use but also public benefit.

To paraphrase the VDOT regulations, cul-de-sacs in general fail to provide public benefit for several reasons (there are exceptions). VDOT believes that disconnected street networks have benefit-to-cost ratios less than one (i.e., they cost more to maintain and upgrade than the benefit they provide), and that they force VDOT to spend money to increase capacity on thoroughfares and at intersections unnecessarily. VDOT, like many state and local departments of transportation, is experiencing reduced, or at best, stable, levels of funding, and they feel that it is not good public policy to have to spend taxpayer money to widen thoroughfares and intersections when problems could have been avoided, or at least delayed, by having a fine-grained street network.

Is there a difference inside Route 4 versus outside Route 4?

Yes, generally neighborhoods inside Route 4 are more connected and have higher connectivity scores than neighborhoods outside Route 4. Major thoroughfares and signalized intersections inside Route 4 tend to be less congested than those located in the less connected areas outside Route 4. *Figure 4D* (facing page) gives connectivity scores for selected Charlotte neighborhoods.

Figure 4D: **Connectivity Index Comparison**



- The Dilworth community has an excellent connectivity score of 1.4.
- The Cotswold community, which is farther from Dilworth and Center City, has a less dense street network and has a poor connectivity score of 1.2.
- The Arboretum community has a very poor connectivity score of 1.0 (which is the lowest score possible). It has the sparsest street network of the three examples.

This comparative analysis demonstrates that the denser street networks—what exists in places like Dilworth —offer multiple route options, shorter travel distances, and shorter block lengths. Dilworth residents benefit from the highly connected network by being able to travel in a short and direct fashion to neighborhood-serving land uses.

What is our grade in Charlotte today on connectivity?

Charlotte's connectivity level and street network inside Route 4 continues to adequately accommodate high employment and high density development. Due to poor levels of connectivity outside Route 4, a significant number of Charlotte's streets and intersections are experiencing high levels of congestion.

Based on the excellent level of connectivity inside Route 4 and the poor level of connectivity outside Route 4, CDOT believes the City receives an "A" grade inside Route 4 and a "C–" grade outside Route 4.

Connectivity	
Existing Grade *Inside* Route 4	*A*
Existing Grade *Outside* Route 4	*C-*

4.4 Motorist Travel

Background

Charlotte's street system and development patterns have a direct impact on congestion and the level of service experienced by motorists. Charlotte, like many growing cities, has experienced an increase in Vehicle Miles of Travel per capita due to inefficient and disconnected street networks and sprawling auto-oriented development patterns. This dramatic increase in travel distances, along with a disconnected street network and lack of transit or other mode choices, make many trips accessible only by automobile. These characteristics help to create and perpetuate an over-utilization of the thoroughfare network which leads to congestion.

Much of Charlotte's population growth occurred during a time period when the City believed that it could accommodate virtually all travel by automobile. This approach led to a disconnected local street system with virtually all travel occurring on the thoroughfare system, particularly in the area outside Route 4. Through a combination of road widenings and intersection improvements, this approach worked for several decades. However, this approach is no longer working. Many of Charlotte's thoroughfares and intersections have been maximized for capacity and many can no longer be improved without extraordinary expense and sometimes significant impacts on adjacent land uses.

Moderating congestion is key to Charlotte's economic vitality and quality of life

The TAP calls for a balanced transportation approach that relies on a significant number of roadway and intersection improvements combined with a more connected development pattern so that Charlotte's growth can be accommodated over the long term. Since the adoption of the TAP, a total of $293 million (for 27 projects) has been used for the planning, design, and construction of thoroughfares and intersections for the benefit of motorists, while at the same time improving conditions for other modes of travel as well. These investments, and future investments as called for in the TAP, are critical in order for Charlotte to keep pace with its growth.

Why is motorist travel important?

The majority of trips in Charlotte are made by driving. While most growing cities experience some congestion, providing an adequate level of mobility is critical to maintaining the economic viability and quality of life in a community. Studies show that a region's ability or failure to provide a transportation system that can adequately move people and goods has a significant impact on whether jobs are created locally or shifted elsewhere.

In 2008, the Chamber of Commerce, City of Charlotte and Mecklenburg County convened "The Committee of 21," a stakeholder group formed for the express purpose of concentrating on Charlotte-Mecklenburg's network of roads to prioritize area needs. This group recognized that:

> *"Transportation is a vital economic driver and a constant factor in our quality of life. The condition of roads and traffic across the county impacts our air quality, the movement of goods and services and the mobility of residents — whether as drivers, passengers, cyclists or pedestrians."*

While recognizing the difficult economic conditions of the past few years, the Committee of 21 made a number of recommendations to provide long-term revenue sources for local road building.

Providing an adequate level of mobility for Charlotte residents and businesses is critical to sustain a growing economy and protecting Charlotte's quality of life. A development pattern that is mixed-use, based on the adopted Centers, Corridors and Wedges strategy and combined with enhanced pedestrian, bicycle, and transit networks, will help in reducing trip distances and addressing vehicle miles of travel issues. These strategies will help provide better mobility for motorists.

In addition to these strategies, the City must also invest in new roadways, widen existing roads, and grow in a more connected development pattern so that it can implement and maintain a mobility level similar to the mobility levels we currently experience inside Route 4.

How is Charlotte doing on motorist travel?

The Texas Transportation Institute, which monitors transportation data nationwide, rates Charlotte as the 23rd most congested urban area in the nation. In *Figure 4E* (next page), CDOT estimates that approximately 22% of Charlotte's major and minor thoroughfares are currently operating at high levels of congestion during the peak hour.

In *Appendix B-1* of this document, a map shows which of Charlotte's thoroughfares are currently (2010) operating at "Levels of Service" (LOS) E-F in the peak hour. CDOT

Figure 4E: **Peak Hour Levels of Service (LOS) of Roadways in Charlotte Sphere of Influence**

Peak Hour LOS	2010	
	Miles of Roads	% of Total
A, B, C	458.0	46.3%
D	316.6	32.0%
E, F	214.0	21.6%
Total	988.7	100.0%

Notes

- Roadways include Freeways, Expressways, Class II, Major & Minor Thoroughfares, Collectors.
- Levels of Service (LOS) are based on peak-hour traffic volumes and capacities of individual roadway links.
- Peak hour volumes using the Regional Travel Demand Model daily volume outputs and K factors.

Source: Charlotte Department of Transportation

estimates that approximately 9% of the City's intersections are at or over capacity in the peak hour.

The TRIP research organization reports that Charlotte (and other North Carolina cities) are struggling to keep pace with explosive population growth ("The Future of North Carolina's Transportation System: Preserving and Maintaining NC's Lifeline to Ensure Safe, Smooth and Efficient Mobility," March 2010). *Figure 4F* (facing page) summarizes the report's findings on costs resulting from "inadequate roads."

Figure 4F also underscores the point that Charlotte's rapid and sprawling growth (38th most populated urban area, but only the 66th most densely populated) is beginning to tax the city's transportation system and result in excessive congestion levels outside Route 4.

The City's computer models indicate that congestion on Charlotte's major thoroughfares will continue to worsen unless there is more done to widen key streets, provide more streets (increase connectivity) and do a better job organizing land uses in accordance with the Centers, Corridors, and Wedges Growth Framework.

As noted earlier, increased connectivity will play a major role in our ability to reduce congestion and maintain quality of life in the Charlotte area. The more the City can replicate and create the types of street networks found within Route 4, the better it will be able to provide a level of mobility and accessibility acceptable to Charlotte residents.

Figure 4F: **Annual Costs Per Driver due to Driving on North Carolina's Inadequate Roads**

Costs Per Driver	Charlotte	Raleigh-Durham	Greensboro Winston-Salem
Safety	$464	$464	$464
Congestion	$588	$385	$210
Vehicle Operating Costs	$218	$231	$297
Total	$1,270	$1,080	$971

Source: "The Future of North Carolina's Transportation System: Preserving and Maintaining NC's Lifeline to Ensure Safe, Smooth and Efficient Mobility" (TRIP, March 2010)

Since the adoption of the original TAP, the City has taken two significant steps in order to increase street network connectivity of Charlotte. First, the adoption of the *Urban Street Design Guidelines* and corresponding ordinance changes were adopted in 2007 and 2010, respectively, ensure that the City and private development create shorter block lengths and increased connectivity than was required in the past. Second, the City has begun funding a Connectivity Program that will produce street projects that provide strategic connectivity benefits.

With Charlotte's expected and continued growth, motorist travel will likely become increasingly characterized by some levels of congestion. Additional vehicular capacity is one component of addressing this issue but equally important will be implementing the Centers, Corridors and Wedges Growth Framework, increased travel choices, increased connectivity and shortening trip distance through an appropriate mixture of land uses.

Is there a difference inside Route 4 versus outside Route 4?

Yes, there is a dramatic difference in the levels of mobility, particularly during peak hours, depending on where you are in the city. Motorists traveling inside Route 4 experience significantly less congestion and are provided with far more route options than motorists traveling outside Route 4. According to the Transportation Analysis Report, 11% of thoroughfare miles inside Route 4 experience congestion while almost twice as many thoroughfares, 21.8%, experience congestion outside of Route 4. This difference highlights the importance of a dense street network, as the area inside Route 4 has over twice the lane miles of thoroughfares per square mile (17.78 versus 8.20) and five times the number if signalized intersections per square mile (7.36 versus 1.45) than outside Route 4.

The difference in congestion inside and outside Route 4 is also illustrated in *Figure 4C* (page 4-13), which depicts a growing "Ring of Congestion" outside Route 4, where signal-

ized intersections are operating at poor level of service during peak hours, as compared to significantly less congestion inside Route 4. Indeed, there are four times as many "highly congested" intersections outside Route 4 (73) than inside Route 4 (13). The high connectivity levels inside Route 4 continue to accommodate travel demand, while the disconnected network outside Route 4 is struggling to accommodate existing travel demand.

What is our grade in Charlotte today on accommodating motorist travel?

To date, Charlotte has done a good job accommodating motorist travel. Over the last several decades, Charlotte has tried to keep pace with travel demand through an active transportation program that funded a number of important projects. This approach generally worked in the past, as roads were converted from two lanes to four lanes and as intersections were widened. This approach kept Charlotte's ranking as the 23rd most congested city in the country from becoming worse.

However, congestion is beginning to increase, and the past approach is no longer viable for accommodating growth because many thoroughfares and signalized intersections can no longer be widened. In order to accommodate Charlotte's future growth, the City has begun using the *Transportation Action Plan* and *Urban Street Design Guidelines* to operate the City's street system more efficiently with selective widenings, creating and connecting streets, making multi-modal improvements, coordinating signal timing and encouraging a development pattern that results in a more connected street network to accommodate future growth. Based on current conditions, CDOT believes the City should receive an Inside Route 4 grade of "A-" and an outside Route 4 grade of "C+".

Motorist Travel	
Existing Grade *Inside* Route 4	***A-***
Existing Grade *Outside* Route 4	***C+***

4.5 Traffic Operations and Safety

Background

Providing for the safe, efficient, and orderly flow of traffic on a daily basis relies on a comprehensive transportation systems approach to traffic operations. Traffic operations—such as the installation and maintenance of signs, signals, and markings—provide system users with traffic information that is needed to complete their daily trips in a safe and efficient manner . Only through the application of strategic solutions can cities promote safety for all modes of travel and improve infrastructure maintenance and reliability of travel.

The Charlotte Department of Transportation (CDOT) currently maintains 725 traffic signals, with approximately 75% of those operating in an interconnected signal system. CDOT maintains 220 miles of signal interconnect and adds an average of 10 miles per year to this system. CDOT also analyzes an average of 22,000 motor vehicle crashes annually and implements safety counter-measures that address identified patterns of crashes based on this data.

The City of Charlotte works closely with the Charlotte-Mecklenburg Advocacy Council for People with Disabilities (ACPD) and the Metrolina Association for the Blind (MAB) to identify opportunities to improve accessibility for all users. One area the City is striving to improve is to provide accessible pedestrian signal devices that have auditory and vibro-tactile features which provide multi-sensory cues in helping visually impaired users to cross the street. To date, the City has upgraded 30 of the City's 725 existing signalized intersections to include these devices.

Why is it important to adequately fund traffic operations and safety?

Adequately-funded traffic operations result in increased efficiencies for the traveling public. Ensuring that all signals are part of a coordinated signal system allows staff to monitor and adjust signal timing based on changes in volumes and demand. Upgrading traffic signal controllers allows for advanced traffic signal operations, improved coordination of signals, installation of additional traffic control devices and increased safety for motorists during equipment failures.

By adequately funding traffic operations, road users also benefit from safety improvements to identified hazardous locations throughout the City. Traffic signs and pavement markings also provide transportation system users consistent, clear and highly visible guides for travel.

How is Charlotte doing?

Charlotte has made significant strides in maintaining the signal system. The City now re-times traffic signals every two years and has added a detector loop crew to improve maintenance/minimize "down" time. Since 2005, CDOT has replaced 405 controllers and cabinets, installed 53 new traffic signals, installed LED lenses in 715 traffic signals and 3,000 pedestrian signals, installed 210 video cameras, installed 115 miles of fiber optic cable connecting traffic signals and traffic surveillance cameras, and has implemented transit and emergency vehicle pre-emption and priority along two corridors.

Additionally, CDOT is in the process of converting its communications system from analog to digital (Ethernet) to facilitate bandwidth efficiencies/capacity and video capabilities for a web based traveler's advisory information system.

The other aspects of traffic operations include signs, markings and traffic safety. Adequately maintaining signs and markings requires compiling and updating a significant inventory of existing equipment which has yet to be funded. Likewise, traffic safety improvements can require significant funds for construction, particularly since most locations are constrained by existing land use and road geometries.

Since the year 2000, Charlotte's motor vehicle crash rate has decreased significantly, especially when controlling for the number of vehicle miles traveled, with 1,458 crashes per million vehicle miles in 2000 and 868 crashes per million vehicle miles in 2009. The rate of bicycle collisions per capita has also generally decreased over the last decade, with an average of 1.68 crashes per 10,000 people from 2000-2004, compared to an average of 1.39 crashes per 10,000 people from 2005-2009. The ratio of pedestrian collisions per capita has remained relatively consistent over the last decade.

Is there a difference inside Route 4 versus outside Route 4?

During 2009, 28% of all motor vehicle collisions occurred within Route 4 while 72 percent occurred outside Route 4. For the same time period, 40% of all pedestrian and bicycle collisions occurred within Route 4 while 60% occurred outside Route 4.

What is our grade in Charlotte today on traffic operations and safety?

A number of evaluation measures — such as the percent of signals on interconnect, the frequency of signal retiming, and trends in traffic safety — suggest that the City's staff assigned to traffic operations does a commendable job with the tools and resources available to them.

However, gaps do exist that will continue to impact the safe and efficient movement of transportation system users. These gaps include sign and marking inventories, safety project funding, safety project and program tracking and analysis, incident identification and management, timely implementation of Intelligent Transportation System (ITS) projects, and signal coordination and upgrades. Additionally, collision rates (including pedestrians) remain fairly high, in part due to many decades of poor pedestrian accommodations at intersections and along thoroughfares.

Traffic Operations and Safety	
Existing Grade *Inside* Route 4	***B-***
Existing Grade *Outside* Route 4	***C+***

4.6 Travel by Transit

Background

In 1998, the *2025 Integrated Transit/Land Use Plan* was developed to support the implementation of the Centers and Corridors strategy adopted by the Charlotte City Council and Mecklenburg County Board of Commissioners.

The Transit/Land Use plan recommended, in detail, that rapid transit and transit-oriented development be put in place in the five corridors defined in the Centers and Corridors plan. In addition, it recommended that local and express bus service be expanded in the "wedges" (areas between the corridors) and the small towns in Mecklenburg County.

A bond referendum implementing a one half percent increase to the sales tax for the purpose of funding these transit service improvements was passed in November, 1998. As a result of this, the Charlotte Area Transit System (CATS) was formed.

The South Corridor (generally, the area between South Boulevard and I-77) was the first location chosen to implement rapid transit technology (in this case, light rail was chosen). The LYNX Blue Line began operations in 2007.

CATS ridership has increased 106% since 1998.

Major Investment Studies (MIS) have been concluded for the four remaining corridors, and the *2030 Corridor System Plan* was developed and approved by the Metropolitan Transit Commission in November, 2006. The System Plan defines the alignments and technologies in each corridor and an implementation schedule for the system. It also includes a streetcar system in Uptown Charlotte, along Central Avenue and along Beatties Ford Road.

In August, 2001, the *Countywide Transit Services Plan* was completed. This document is a short-term (five-year) plan whose primary purpose is to identify specific transit service enhancements for implementation on a year-by-year basis. The plan provides a detailed blueprint for improving public transportation services in Mecklenburg County and included thorough input through a public participation process. Implementation is almost complete, and development of the second phase of the plan is underway.

CATS realizes that public transportation cannot realistically serve all person trips made within a metropolitan area. The flexibility of the automobile, combined with existing land use patterns and cost considerations, make it impossible for transit to compete for all trips. However, transit can compete effectively for market share in many situations, especially in Activity Centers and Growth Corridors.

To guide decisions on resource allocation and to provide a basis for measuring performance over time, CATS has defined and identified those markets where it will seek to be competitive. The selected local travel markets are consistent with the CATS Mission and will support attainment of the CATS Vision and the goals of the 2025 Integrated Transit/ Land Use Plan.

Over the last ten years CATS has developed a regional network of transportation solutions that has become a national showcase.

- CATS is a robust rapid transit system, providing many options to connect within neighborhoods and across the region with more than 70 routes and the LYNX Blue line providing over 80,000 system-wide daily customer trips.
- CATS has one of the safest bus systems in the country with less than one preventable accident every 100,000 miles.
- Three new community transit centers have been established along Beatties Ford Road, Eastland Mall and South Park Mall. New neighborhood shuttles connect at these community transit centers and to mainline routes.
- CATS has made significant improvements to customer amenities by replacing over 3,400 bus stops that display route name and number along with schedule information at each stop, and adding 300 new shelters and 89 benches along with concrete waiting pads for customers.

The LYNX Blue Line has been a success from opening day with over 16,000 boardings during average weekdays, which exceeded ridership projections for the first year. LYNX has

served over 14 million customer trips in three years with only one preventable accident, which makes LYNX the safest light rail system in the country.

Why is transit important?

Public transportation provides greater freedom, access, opportunity and choice for trip makers. It also strengthens communities by stimulating the economy, managing traffic congestion, decreasing dependency on foreign oil, creating jobs and preserving a healthy and safe environment.

In Charlotte, the development of the rapid transit system is a means of supporting land use initiatives to attain the vision of the Centers and Corridors strategy. By making the Centers and Corridors strategy more likely to succeed, transit will benefit the entire community, not just those who use the system. Those community-wide benefits, some of which are quantifiable, include:

- reducing the total of Vehicle Miles Traveled (VMT) in the region, when compared to the current (sprawl) scenario, by increasing the number of locations accessible to transit;
- making traffic management strategies more effective;
- helping the region to meet federal air quality requirements by slowing the growth of VMT per capita;
- shortening transit travel times by using exclusive rights-of-way not impeded by vehicular traffic;
- providing housing and lifestyle choices less dependent on private automobile use (largely unavailable now);
- maintaining the accessibility of the Center City;
- increasing regional growth potential;
- increasing mobility for all;
- improving accessibility to jobs and social services for the poor;
- reducing public infrastructure costs; and
- increasing urban revitalization.

How is Charlotte doing?

Since the formation of CATS in 2000, there has been a significant growth increase in transit service and usage in the Charlotte-Mecklenburg region. Average annual growth of ridership for that period has been 6.3%, and approximately 106% since 1998. In FY 2010, all CATS services combined to serve over 24.4 million passengers. CATS services are defined in three service groups:

- *Traditional* (fixed route bus service, community/activity center circulators, streetcar),
- *Special* (Human Services, Vanpool),
- *Rapid Transit* (Light Rail, Commuter Rail, Bus Rapid Transit).

CATS' "hub and spoke" bus system emanates from Center City.

■ **Traditional**

The majority of CATS' riders use traditional services, namely local, cross-town, community/activity-center circulators, express and regional express fixed route bus service. The current system is generally described as a "hub and spoke" system, with most routes emanating from Center City Charlotte. The system service hours are generally from 5:00 am to 2:00 am. There are:

- *39 local bus routes* with a base fare of $1.75, 12 express routes ($2.40 fare);
- *five regional express routes* connecting neighboring counties: Cabarrus, Union, Iredell, and Gaston, NC and York, SC ($3.50);
- *14 community circulators, or "neighborhood shuttles"* that combine with Community Transit Centers to more economically and efficiently serve neighborhoods that used to require mainline bus deviation. The fare for this service is $.70.
- *The Gold Rush downtown circulator* is a free fare service that consists of two routes served by fifteen rubber-wheeled trolley buses. The service is designed to provide access to the majority of residential, office and commercial activity within the I-277 freeway loop. Since its implementation in 2002, the Gold Rush has seen a 61% increase in ridership, to 1.1 million riders in FY 2010.

■ **Special Service**

- Paratransit service to qualified elderly and disabled residents in Mecklenburg County is provided by Special Transportation Services (STS). STS is a demand-response service, aided by mobile data terminals and computer dispatching and scheduling software. STS provides the paratransit service required by the Americans with Disabilities Act of 1990. The active fleet includes 84 vehicles. Ridership in FY2010 was approximately 235,000, with 2.5 million revenue miles of service.

- CATS' Vanpool Program serves a 100-mile radius around Charlotte. There are approximately 72 vanpools that provide service to patrons working first through third shifts. These vanpools operate seven days a week. To assist with the development of vanpools, CATS' customer service database allows for cross-referencing by home and work location and matches those with similar origins and destinations. CATS Vanpool program has eliminated more than 64 million commuter miles from the regional roadway system.

■ **Rapid Transit**

- The LYNX Blue Line is the Charlotte region's first light rail service. It is 9.6 miles long and operates from I-485 at South Boulevard to Uptown Charlotte. With 15 stations, including seven park and ride locations, the LYNX Blue Line provides a congestion free commute with a consistent travel time. LYNX operates seven days a week. Weekday service operates from 5:26 a.m. to 1:26 a.m. and service is available every 10 minutes during weekday rush hour and every 15 minutes during non-peak hours. Weekend service operates every 20 minutes during the day and every 30 minutes during late night hours.

In addition to the service groups described above, CATS also has different programs in place designed to improve passenger amenities, comfort, and ease of use and reliability of services. These programs include reviewing bus stop locations (both current and new) and the need for additional amenities (shelters, benches, etc.) at these locations.

■ **Park & Ride Facilities**

- There are 44 Park & Ride facilities serving the express and regional express routes, providing approximately 2,000 spaces. Most are privately owned lots which are leased, and used by mutual agreement or provided by development agreement. Six of the 44 lots are publicly-owned, providing approximately 1,100 spaces. In addition, there are seven Park & Ride lots located at stations along the LYNX line, adding approximately 1,200 spaces to the parking inventory.

■ **Community Transit Centers**

- Development of Community Transit Centers is another segment of CATS overall plan to provide community-wide public transportation services. These centers are designed as smaller, neighborhood-scale points that will provide connections to Center City, cross-town routes, future rapid transit and the neighborhood shuttles in the area. The centers will include amenities such as schedule and service information, weather-protected passenger waiting areas, public art integrated into facility design, pedestrian connections and on-site surveillance during transit service hours. Currently, there are three centers:

- SouthPark Community Transit Center,
- Rosa Parks Place on Beatties Ford Road, and
- Eastland Community Transit Center

Is there a difference inside Route 4 versus outside Route 4?

The area inside Route 4, from a transit service perspective, is vastly different from the area outside of Route 4 for a number of different reasons. Inside Route 4 is much smaller geographically, has different land development patterns, has a more connected street network which enhances transit access, and has a more significant proportion of transit users with generally shorter trip lengths.

In addition, because it is a smaller geographic area adjacent to Center City, the bus routes tend to be closer together, resulting in a large percentage of the area with more than adequate transit coverage. In fact, 93.8% of the population inside Route 4 lives within ¼ mile of a transit stop. As a result, these trips can be captured by local bus service and various neighborhood/community shuttles.

Outside Route 4 is characterized by commuters with longer trip lengths spread through a much greater area, making their accommodation more difficult and costly. These types of trips are served mainly by express service or with a rapid transit system. Again, because of the larger area size, and the fact that current bus service begins to spread out over that larger area, a smaller segment of the population is considered within transit system coverage. When looking at the population in Charlotte's sphere of influence, (excluding the area within Route 4) 45.6% live within ¼ mile of a transit.

What is our grade in Charlotte today on accommodating transit users?

With adequate coverage of the area inside Route 4 with transit service and the successful opening and operation of the Lynx light rail line, Charlotte currently does a good job of accommodating transit users.

Because of the inherent problems with the types of trips originating outside of Route 4, the lack of network connectivity and the current land use patterns in the area, Charlotte has a more difficult job accommodating those transit users. Although improvements to transit service have been made in this area, it is going to take a large capital investment and extraordinary changes to land development patterns — such as those called for in the Centers, Corridors and Wedges Growth Framework — in order for the area outside of Route 4 to attain a good/excellent rating in transit service.

Transit	
Existing Grade *Inside* Route 4	B
Existing Grade *Outside* Route 4	C-

4.7 Bicyclist Travel

Background

Charlotte, like many fast growing Sunbelt cities, spent several decades creating a disconnected street network and implementing roadway improvements which did not consider or accommodate bicycle travel. Hundreds of miles of new and widened streets were built with little to no thought being given to how street design would impact bicycle travel. The lack of bicycle accommodations on these roads was also compounded by reduced levels of connectivity as many communities forgot the benefits of a connected street network for all transportation users.

Many cities recognized this failure years ago, while other cities are just beginning to reverse their course on this issue. Charlotte, like many cities, is now committed to undoing these mistakes and transitioning towards becoming a bicycle-friendly community. This change will not take place overnight but through a long-term commitment — as reflected in the adoption of the original TAP, the adoption of the Charlotte Bicycle Plan in 2008, and through the continued funding of the Charlotte Bicycle Program. As bike lanes are added when roads are widened or built, as implementation of the bicycle and greenway plans continues, and as greenfield areas are developed in a more connected fashion — Charlotte is becoming a more bicycle-friendly community.

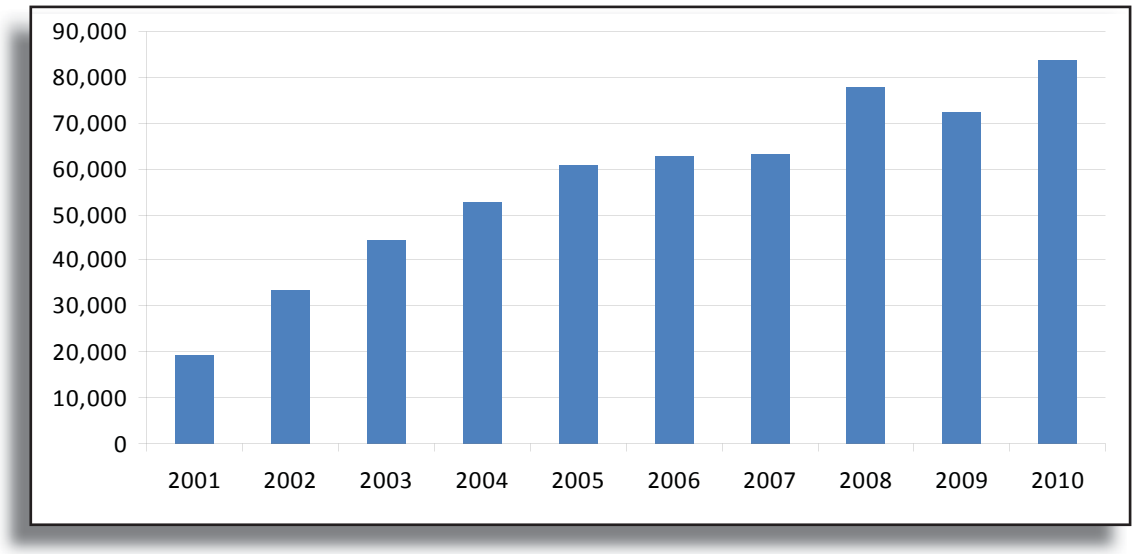
Why is bicycle travel important?

The City believes that Charlotte residents want travel options and to improve their quality of life. A bi-annual telephone survey routinely finds that roughly 80% of Charlotte residents believe streets should be designed to accommodate all users. They want a less-stressful lifestyle, a cleaner environment, affordable transportation and better health for themselves and their children. Bicycling is part of the solution. Bicycle-friendly communities experience reduced traffic, better air, and improved public health. Bicycle-friendly communities, like those with good schools and vibrant downtowns, are communities that offer a good quality of life for families, which can lead to higher property values and business growth.

The City believes that bicycle-friendly neighborhoods are more livable neighborhoods and that there is a significant demand for the City to become more bicycle-friendly. Based on a 2003 survey conducted by the UNC-Charlotte Urban Institute, there are approximately 290,000 bicycles that are owned by Charlotte residents. The survey found that there is at least one bicycle in over 60% of all households in the city.

Thus, there is a significant latent demand for bicycling in Charlotte. A good indication of this latent demand can be found in the tremendous growth in the number of CATS riders

Figure 4G: **Annual CATS Bikes on Bus Boardings**



who use the CATS bike rack on bus program. Every CATS bus has a bicycle rack which permits transit users to board with a bicycle. As seen in *Figure 4G* (above), the use of the bus mounted bicycle racks has steadily increased, with over four times as many bicycle boardings in 2010 than in 2001.

The City believes that by continuing to work towards an interconnected network of bicycle facilities, Charlotte can increase the likelihood of a number of trips being accommodated by bicycle and by transit.

How is Charlotte doing on bicycle facilities?

The City has made significant progress on improving bicycle conditions since the adoption of the TAP in 2006. Prior to 2000, there were no bicycle lanes in the city. In 2006, there were approximately 24 miles of bike lanes, 16 miles of greenways, and 4 miles of signed routes through neighborhoods. In 2010, there are over 63 miles of bike lanes, 39 miles of greenways and other off-street paths, and 37 miles of signed routes (see *Appendix B-3*). While we are improving, it is important to note that only 4.4% of Charlotte's thoroughfares include any accommodations for bicyclists. Clearly, there is more work to be done.

Based on the City's intersection Levels of Service (LOS) methodology, only 5% of the City's signalized intersections have an acceptable bicycle LOS of A-C. This is a direct result of little attention being given to bicyclist accommodations in the past when intersections were widened. In order to be a bicycle-friendly city, Charlotte will need to include bicycle accommodations when intersections are widened, and retrofit select intersections to better accommodate bicyclists.

Charlotte is beginning to make significant progress in providing bicycle facilities through these measures:

- The adoption of the *Charlotte Bicycle Plan* (2008) and the *Urban Street Design Guidelines* (2007) both ensure that bicycles are considered a routine part of planning and design of the city's streets. CDOT's road projects routinely incorporate bicycle lanes or other considerations.

- The City is committed to adding bicycle facilities when roadways are built, widened or resurfaced. Many of Charlotte's new bicycle lanes have been achieved when the re-surfacing schedule presents an opportunity to reallocate space on a roadway through striping. One challenge to this approach is that a number of the streets in the City are controlled by NCDOT. The City has taken strides in challenging NCDOT to refine their roadway designs so they include bicycle lane accommodations as part of their projects. NCDOT is becoming more flexible with regard to travel lane widths in order to accommodate bicycle lanes.

In a 2010 survey of residents, 80% said they wanted Charlotte to build streets that accommodate all users, including bicyclists.

- The City of Charlotte passed a bicycle parking ordinance that requires new development to provide bicycle parking. The Bicycle Program is also retrofitting bicycle racks into existing commercial centers through a bicycle parking partnership.

- The City has also added 37 miles of signed bike routes, most typically located on low-volume, low-speed bicycle-friendly streets that connect a variety of destinations. In addition, the City will use all available bicycle treatments, such as the recently MUTCD approved Shared Lane Markings, to better accommodate bicycle travel.

Greenways and Off-Road Trails

In addition to bicycle lanes and signed routes which are implemented by CDOT, the Mecklenburg County Park and Recreation Department continues to construct greenways to accommodate bicycle travel. Approximately 39 miles of greenways or off-street paths have been constructed within the City. Continued expansion of the greenway system will be coordinated with the City's bikeway system to develop an interconnected network of bikeways for Charlotte.

The Little Sugar Creek Greenway, for instance, will provide an off-road opportunity for cyclists to access the Uptown area, making it suitable for commuting and other trip purposes. In 2010, Mecklenburg County Park and Recreation finished the construction of a signature segment of Little Sugar Creek in the Midtown area, complete with stream restoration and connections to the mixed-use Metropolitan development.

The City is committed to working with Mecklenburg County to ensure that the City's bicycle facilities are connected to the greenway system to create a seamless bicycle facility network for all Charlotte residents.

Unfortunately, the Mecklenburg County Park and Recreation Department has had to severly reduce the funding of their greenway program due to the effect of the recession on available County funding. This reduction in funding will slow progress of the development of Charlotte's greenway system.

On-Road Bikeway Systems

Today, the City's biggest bicycling challenge is that much of its existing bikeway network does not connect. However, CDOT believes each new facility that is added is taking the City one step closer to its goal and continues to consider all opportunities for installing bicycle lanes or other facilities.

Another challenge is the lack of street connectivity outside Route 4, which means that many cyclists must use major roadways for all or a portion of a bicycle trip. Major roadways, especially those without bicycle lanes, are often intimidating to cyclists. Cyclists seeking direct routes off major roadways are often thwarted by cul-de-sacs, terminal streets, a lack of creek crossings or barriers erected to prevent through movement by automobiles. To become a more bicycle-friendly city, Charlotte must become a more connected city. Charlotte's commitment to reversing the "disconnected network" development pattern has led the City in the right direction.

With the adoption of the TAP and supplemental funding for resurfacing provided by Charlotte's City Council, the City's resurfacing cycle recently dropped from approximately every 25 years to the recommended 12-year resurfacing cycle. A significant number of the city's bicycle lanes are implemented when roadways are resurfaced and re-striped. By narrowing travel lanes during resurfacing, the City is often able to provide space for bicycle lanes. The only cost is the cost of the additional bicycle lane striping.

Piggy-backing bicycle lane projects with resurfacing projects has been a very effective and cost-efficient way for the City to add bicycle lanes. The City's ability to maintain a 12-year resurfacing cycle will have a significant impact on the ability to add bicycle lanes throughout the City.

In order to become a bicycle-friendly City, Charlotte will need to ensure that:

- all new and widened roads continue to include bicycle lanes in accordance with the Urban Street Design Guidelines and the curb-line policy of the Bicycle Plan,
- connectivity levels in developing areas continue to increase,
- we partner and perhaps add to the off-road network of trails,
- road resurfacing maintains a 12-year cycle, and
- we continue to fund the Bicycle Program at an appropriate level.

Is there a difference inside Route 4 versus outside Route 4?

Yes, bicycle travel is significantly better inside Route 4 than outside Route 4. According to the TAR, 6.7% of thoroughfares inside Route 4 have bicycle accomodations, while only 3.8% have accommodations outside Route 4. In addition, many bicyclists prefer to ride on low-volume local streets as long as they are connected and enable bicycle travel in a relatively direct path from their origin to their destination. Because the area inside Route 4 is much more connected than the area outside Route 4, bicyclists have many more local street options to travel to access their destinations.

Outside Route 4, where few subdivisions connect to each other or to adjacent land uses like parks, retail, schools or greenways, bicyclists are forced onto the higher-volume and higher-speed thoroughfares. In many cases, these thoroughfares have not been retrofitted to include bicycle lanes and are not considered comfortable or safe by many bicyclists. In addition, due to low connectivity many of the intersections outside Route 4 have been maximized to the point that they are not comfortable for many bicyclists.

Until the bicycle facility network matures to provide an interconnected network of facilities city-wide, the more connected areas inside Route 4 will provide a much better level of service for bicyclists than outside Route 4.

What is our grade in Charlotte today on accommodating bicycle travel?

While bicycle travel is much better inside Route 4 versus outside Route 4, Charlotte still has much work to do in both locations. Enhanced connectivity inside Route 4 enables bicyclists to avoid busy thoroughfares and travel on low-volume streets. Outside Route 4, many bicyclists are forced to travel on high-volume and high-speed roadways that have no bicycle accommodations. In addition, outside Route 4 many bicyclists have to travel through super-sized intersections that are challenging for many bicyclists. Based on these conditions, CDOT believes that the City's bicycling grade is "B+" inside Route 4, and "D" outside Route 4.

Bicycle Travel	
Existing Grade *Inside* Route 4	B+
Existing Grade *Outside* Route 4	D

4.8 Pedestrian Travel

Background

Communities across the nation, like Charlotte, are working to ensure that they develop in a walkable manner and provide appropriate pedestrian facilities. This is important because every trip begins and ends as a pedestrian trip. Walkable communities are more livable communities and lead to whole, happy, healthy lives for people of all ages who live in them.

Like much of the United States, the City of Charlotte inadequately addressed pedestrian travel from the late 1950s through the 1980s. Most of the land development projects constructed during this period provided no sidewalks and few interconnecting streets. Sidewalks that were provided during this time were often located right at the back of the curb, creating unpleasant walking conditions for pedestrians. The result is hundreds of miles of suburban and semi-rural roads with no sidewalks, dangerous pedestrian or uncomfortable conditions and little opportunity to travel as a pedestrian to a destination.

The City has made great strides since the 1980s in better accommodating pedestrians. For example, since 1998 the City has required new sidewalks to be provided on both sides of the street as development occurs, and has also implemented a capital investment program for sidewalk construction. The City has also taken a strong stance to ensure that new roadway construction projects either provide sidewalks or provide room for future sidewalk improvements so as not to create pedestrian barriers. With the adoption of the USDG, the City has stated a preference for sidewalks of adequate width, buffered from the road by wider planning strips and street trees. These positive changes are intended to accommodate diverse user groups, including the disabled, children and the elderly.

The City has an estimated 1,600 miles of completed sidewalks in place today.

- Approximately 55% of thoroughfares have sidewalks on both sides of the street and 38% of local streets have sidewalks on at least one side of the street.
- The staff has identified 479 miles of new sidewalk (both sides) that should be built along Charlotte's thoroughfares and 1,635 miles of new sidewalk needs (one side only) on Charlotte's local and collector streets.

While there is much work to be done, the City is making progress in becoming a more walkable community.

Why is pedestrian travel important?

Great cities are walkable cities. In order for Charlotte to maintain its quality of life and provide residents with the option of traveling in an active, healthy way, it must become a more walkable city. The City of Charlotte is growing rapidly with a diverse population.

Providing transportation choices and reducing vehicle miles of travel per capita will be key to how well we accommodate our growth. Given that every trip begins and ends as a pedestrian trip, it is critical that we do an excellent job accommodating Charlotte's pedestrians and the variety of travel options they desire.

How is Charlotte doing?

The City of Charlotte is a dynamic and diverse city of over 700,000 residents and significant strides have been made during the past ten years to re-establish an interconnected, pedestrian-friendly system. The City is committed to advancing a balanced transportation system that accommodates motorists, transit users, pedestrians and bicyclists.

The City's commitment to becoming a more "walkable" community is seen in its recent transportation bond initiatives, which allocate $7.5 million a year to construct and maintain sidewalks. In addition, the City's Urban Street Design Guidelines, emerging rapid transit system and pedestrian-oriented design standards, have laid a foundation for Charlotte to become a walkable community.

The City has begun to complete gaps in the sidewalk network.

The City's Pedestrian Program staff oversee the annual $7.5 million Sidewalk Program and serve as the City's pedestrian advocates. As Charlotte strives to become a "premier city," programs for pedestrian mobility will be enhanced and improved through the Transportation Action Plan, the USDG and the guidance of a formal Pedestrian Master Plan. The City has also recently won national awards for pedestrian-related initiatives from the Institute for Transportation Engineers and the Partnership for a Walkable America.

Sidewalks

It is Charlotte's current policy to construct – or require most land development projects to construct – sidewalks on both sides of all thoroughfares and on one side of all collectors and local streets. In some cases, this policy has been met with resistance by some residents preferring not to have sidewalks on their street. City staff work with residents on all projects to allow for public input into the design and work together towards design solutions. The current funding level allows for the construction of approximately ten miles of new sidewalk annually and comply with request-based maintenance of the existing sidewalk network.

In order to provide the funds where they are most needed, a ranking system is used to evaluate each section of potential sidewalk and to prioritize the segment based on such

Figure 4H: **Sidewalk Mileage Completed and Deficient in Charlotte (Including State-Maintained Thoroughfares)**

Street Type	Sidewalk Miles Constructed	Sidewalk Miles Not Complete	Total Street Miles	Percent Completed
Thoroughfares	584	479 (both sides)	1,063	55%
Locals/Collectors	1,016	1,635 (one side only)	2,651	38%
Total of All Street Types	1,600	2,114	3,714	43%

Source: Charlotte Department of Transportation
Note: Sidewalk is built on one side of all Locals and Collectors under the Sidewalk Program. Therefore, total street miles are divided in half to determine the percentage completion on one side only.

criteria as safety, network completion, transit access and proximity to schools and parks. In 2005, the City revamped its sidewalk prioritization process which has resulted in more advanced public involvement and created more structured and cost-effective decision points to implement sidewalk projects.

The City also partners with NCDOT to build sidewalks as NCDOT widens roadways in Charlotte. NCDOT's current policy is to fund 50% of the cost of sidewalks on NCDOT roadways they are improving. The City is responsible for 100% of the cost when we initiate a project on an NCDOT roadway. City staff would like to continue discussion with NCDOT to encourage the state to pay for 100% of the cost of sidewalks on state roadways. Historically, Charlotte has taken advantage of the 50% NCDOT match to ensure that these roadways include sidewalks as part of the project. It is important that the City continue to fund these partnering opportunities because it is cheaper to build sidewalks as part of the road widening project than to construct them as stand alone projects.

Through the sidewalk program, Charlotte has constructed dozens of miles of sidewalk. In addition, as roads are widened the City installs sidewalks as part of the project per the USDG. However, the City has much work to do to improve pedestrian conditions. Based on the City's intersection Levels of Service (LOS) methodology, 40% of the City's top 50 most congested intersections have a pedestrian LOS of E-F. In order to be a walkable city, Charlotte will need to add new sidewalks and retrofit selected intersections to better accommodate pedestrians at these locations.

In addition to building sidewalks, Charlotte is also focusing on a wide array of other pedestrian strategies such as:

- sidewalk maintenance and retrofitting of accessible ramps;

- signalized crosswalks;
- mid-block crossing treatments where necessary;
- continued installation of countdown pedestrian signals and pedestrian scale lighting;
- continued compliance with the Americans with Disabilities Act (ADA) and retrofit of ADA standards on existing facilities;
- more emphasis on pedestrian connections to bus stops and rapid transit stations;
- wider, more inviting sidewalks with wider planting (buffer) strips;
- additional multi-use paths (pedestrian and bicycle) on alignments separated from roads and streets;
- connection of neighborhoods to schools, parks and commercial areas;
- continued encouragement of land use and development patterns that promote connectivity and walking as a form of transportation;
- emphasis on pedestrian and bicycle features internal to developments;
- public awareness campaigns to educate pedestrians and drivers about pedestrian rights and responsibilities.

These focus areas, combined with a strong sidewalk construction program will provide a solid foundation for Charlotte to become a more pedestrian-friendly city.

Is there a difference inside Route 4 versus outside Route 4?

Yes, pedestrian travel is significantly better inside Route 4 than outside Route 4. While the sidewalk system is not complete inside Route 4, it is much more robust and connected. compared to outside Route 4. In addition to a more connected sidewalk system, the connected street system inside Route 4 enables many residents to travel in a direct path to surrounding land uses, destinations and transit. Through the Sidewalk Program, the City is systematically implementing sidewalks, based on priority, to complete the sidewalk system on thoroughfares and local streets.

While the City is making great strides to become more pedestrian-friendly, there is much work to be done outside Route 4. A key issue (discussed in this chapter on *pages 4-9 to 4-14*) is the lack of connectivity outside Route 4. Poor street connectivity and long block structure results in many trips not being viable for a pedestrian because of the street system's disconnected and circuitous nature. Not only does this impact pedestrian trips but also makes it difficult for pedestrians to directly access transit.

With a commitment to a more connected development pattern, the city can build upon its recent pedestrian advancements, particularly those outside Route 4. For example, new residential and commercial developments are required to include sidewalks and planting strips when they develop. The sidewalk requirements are resulting in more develop-

ments and neighborhoods that are coming on-line with sidewalk facilities. This will be even more effective if the surrounding areas develop in a more connected pattern to facilitate walking trips. According to the Transportation Analysis Report, local streets outside of Route 4 are about half as likely as those inside of Route 4 to have sidewalks (22% of local streets have sidewalk outside of Route 4, as compared to 42% inside Route 4).

CDOT now recommends (through the Urban Street Design Guidelines) a minimum 8-foot planting strip and 5-foot sidewalk so the City can create residential streets that are more consistent with some of our most walkable "inside Route 4" neighborhoods. Wider sidewalks are expected in areas of higher pedestrian demand, such as mixed-use or high-density residential land uses.

The area outside Route 4 will benefit as a number of thoroughfares are improved in the next 25 years. As major thoroughfares are widened, they are being built with sidewalk accommodations and wider planting strips to "buffer" pedestrians from passing traffic. However, there are many "farm to market" thoroughfares and collector roadways that are not scheduled to be widened or improved but are experiencing significant growth.

These increasingly busy corridors become barriers to any type of pedestrian trips because there are no sidewalks. While residents of these areas can walk within their subdivisions, they have little opportunity to leave the subdivisions on foot. In these areas, few residents can walk to the store, the park, their child's school or a nearby neighborhood. This results in increased congestion and a less healthy lifestyle. Until these roadways are upgraded to include sidewalks, many areas outside Route 4 will remain relatively "pedestrian-unfriendly."

What is our grade in Charlotte today on accommodating pedestrian travel?

Pedestrian travel is better inside Route 4 than outside Route 4 because there are more existing sidewalks, excellent connectivity, better planting strips, pedestrian signals, and pedestrians are in close proximity to a wide range of land uses and transit.

Pedestrian Travel	
Existing Grade *Inside* Route 4	B
Existing Grade *Outside* Route 4	D+

CDOT believes that the City is making good strides outside Route 4, but there is a long way to go to receive an acceptable grade. Based on current funding levels, missing or sub-standard sidewalks, the disconnected street system, wide roadways and intersections, significant number of sidewalk gaps and few pedestrian signals, CDOT believes the City should receive a "D+" grade outside Route 4.

Conclusion: Existing Conditions

Over the last decade, and especially within the last five years since adoption of the original Transportation Action Plan, Charlotte has made significant progress in developing an integrated land use and transportation strategy. The Centers, Corridors and Wedges Growth Framework provides a foundation for transportation and land use decisions and positions the City to best use its limited transportation dollars, wisely. Charlotte's significant growth provides great opportunity but also provides significant transportation challenges. In order for Charlotte to continue to accommodate its growth and protect its quality of life, some changes will be necessary as documented throughout the TAP Update.

The analysis of existing conditions in this chapter results in "grades" given for each of the eight components. These individual grades are summarized below in a comprehensive "report card" for existing conditions. The grades were assigned by staff. The grades are subjective, but represent the professional judgement and experience of staff (in some cases supplemented by national standards). The reasoning for each grade is given in the respective sections of this chapter. A similar report card on future conditions, based on implementation of proposed improvements, appears at the end of the next chapter.

Transportation Report Card

EXISTING CONDITIONS

Existing Conditions Inventory	Existing Grade	
	INSIDE Route 4	OUTSIDE Route 4
Centers and Corridors	*A-*	*A-*
Street Maintenance	*B-*	*B-*
Connectivity	*A*	*C-*
Motorist Travel	*A-*	*C+*
Traffic Operations and Safety	*B-*	*C+*
Transit Travel	*B*	*C-*
Bicyclist Travel	*B+*	*D*
Pedestrian Travel	*B*	*D+*

Chapter 5

Future Conditions

This chapter assesses anticipated transportation projects and programs to be implemented, and the future transportation conditions expected for 2015, 2025 and 2035. This chapter also:

- **enables the City to determine if existing and projected funding levels are adequate** to deliver quality transportation service and implement the City's mission and vision, and
- **makes an assessment of projected land use and transportation measures** to determine how well the City is meeting the Centers, Corridors and Wedges and transportation vision.

An assessment of future conditions is critical in order to determine if the City of Charlotte will be able to meet its mission of being the premier city in the country for integrating land use and transportation choices.

The central question is whether the City can expect to provide adequate transportation in the future. The conclusions presented in this chapter are based on the proposed funding levels recommended in the Transportation Action Plan.

Statistical Indicators

The following transportation-related statistics provide a snapshot of the future challenges and opportunities facing Charlotte:

- Charlotte's population will grow from approximately 775,000 today to an estimated 1,000,000 in 2035, and Charlotte could become the nation's 14th largest city by 2035.
- With enhanced funding, Charlotte's designated "Centers, Corridors and Wedges" will be able to successfully accommodate 40% of new households, 70% of new multi-family units, and 75% of new office development and new employment by 2035.
- 21.6% of Charlotte's thoroughfares and collectors are operating at Levels of Service (LOS) "E" and "F" during the peak hour today. Congestion is expected to get worse with the growth that is projected for Charlotte, but levels of congestion can be minimized through implementation of the Transportation Action Plan (TAP). The percent of congested thoroughfares is expected to be 10% less than without the TAP.
- Charlotte maintains over 2,300 miles of streets today and will maintain over 3,100 miles by 2035.
- Today the City's pavement condition rating is 82.0 and the City resurfaces streets on a 12-14 year cycle. This rating could decline to a 20-25 year cycle without appropriate funding.
- Charlotte has an estimated 1,600 miles of sidewalks, but only 55% of thoroughfares have sidewalks on both sides of the street and only 40% of local streets have sidewalks on at least one side of the street. The prposed funding level would construct 150 new/ retrofit sidewalks in the next 25 years.
- With the proposed funding, Charlotte would implement over 350 miles of bikeways in the next 25 years.

Roadways inside Route 4 have less congestion than those outside Route 4.

Analysis of Future Conditions

The analysis of future conditions starts from the baseline conditions described in the preceding chapter. It is structured according to the same categories used to assess existing conditions:

Components of Future Conditions Inventory

5.1 Centers, Corridors and Wedges Implementation
5.2 Street Maintenance
5.3 Connectivity
5.4 Motorist Travel
5.5 Traffic Operations & Safety
5.6 Travel by Transit
5.7 Bicyclist Travel
5.8 Pedestrian Travel

The assessment uses a proposed funding level for CIP projects of $100 million annually, and it also recognizes the difference in two basic geographic areas: older neighborhoods *inside Route 4* and newer suburban and edge growth areas *outside Route 4.*

5.1 Centers, Corridors and Wedges Growth Framework Implementation

Background: Centers, Corridors and Wedges in 2035

The Centers, Corridors and Wedges Growth Framework envisions most of Charlotte's growth — and the most intense development — to occur in areas that have or will have the most extensive transportation infrastructure system.

The success of the TAP hinges directly on meeting targets spelled out in TAP Policies 1.1.2. and 1.1.3 (page 3-3). They call for 70% of new multi-family units, and 75% of new office development to be located within "Activity Centers" and "Growth Corridors" consistent with adopted area plans.

The Centers, Corridors and Wedges Growth Framework was adopted by City Council on August 23, 2010. It describes an overall vision for future growth and development as well as general guidance for the development of future area plans (see page 4-4 for a description of the areas).

The City envisions that 70% of all new multi-family households will be located in Activity Centers and Growth Corridors.

The following programs and funding through 2035 are especially important in supporting the Centers, Corridors and Wedges goal:

- Sidewalk Construction Program ($150M)
- Bicycle Program ($25M)
- Area Plan Capital Improvement Program ($12.5M)
- Center City Implementation Program ($50M)
- Future Transit Station Area Infrastructure Program ($50M)
- Streetscape/Pedscape Program ($75M)

How will Charlotte be doing in 2035?

The TAP assumes that growth targets in Policies 1.1.2 and 1.1.3 will be met. Charlotte will be making significant progress in implementing the Centers, Corridors and Wedges Growth Framework.

- The transportation infrastructure needed to support higher density development in Activity Centers and Growth Corridors will be constructed to create a robust street network.
- Citizens will have numerous route and mode choices when they are traveling, with the greatest number of choices typically where residents and jobs are concentrated.
- The wedges will be characterized by lower density residential development and neighborhood-serving land uses.

▶ **Centers, Corridors and Wedges:** Under the proposed TAP funding, in the next 5 years, the City will be able to implement station area improvements at 2 stations and implement up to 5 new streetscape projects.

Is there a difference inside Route 4 versus outside Route 4 in 2035?

There is no difference inside Route 4 versus outside Route 4. Under the proposed funding scenario, there is a more extensive multi-modal transportation system in all Activity Centers and Growth Corridors. The Centers, Corridors and Wedges document notes that in limited cases, within Route 4, high density housing may be allowed in a wedge.

5.2 Street Maintenance

Background: Street Maintenance in 2035

By 2035, the Charlotte Department of Transportation (CDOT) could be responsible for maintaining more than 3,100 miles of streets, and 975 signalized intersections over 370 square miles. With the adoption and update of the TAP, the City is expected to seek funding to keep the resurfacing cycle near the optimum 12-year period. However, reductions in funding from the State of North Carolina, and increases in paving costs, are likely to outpace the funding increases needed to maintain the 12-year cycle.

The following programs and funding through 2035 are necessary to meet the street maintenance goals:

- Bridge Program ($75M)
- Curb and Gutter Maintenance Program ($12.5M)
- Railroad Grade Improvement Program ($1.05M)
- Street Resurfacing Program ($150M)
- Sidewalk Maintenance Program ($25M)

How will Charlotte be doing in 2035?

Charlotte has made great strides in recent years in returning to a 12-14 year resurfacing schedule. To maintain this resurfacing schedule through 2035 will require continued resources as the city continues to grow.

The Street Resuracing Program recommended in this TAP Update would provide additional dollars to the existing street resurfacing budget. Those funds would allow Charlotte DOT to keep City roads maintained on a 12-year cycle, with an average street condition rating of 90. If, however, reallocation of Highway Trust Fund dollars and decreases in Powell Bill funds continue, there may be insufficient allocation to Charlotte. In response to declining revenues, the City in the past has lengthened its resurfacing cycle to

Without funding as called for in the TAP, Charlotte's road conditions could deteriorate.

a 20- to 25-year cycle. That negative action could be avoided if the City can supplement existing Powell Bill funding sources so that the 12-year maintenance cycle can be met.

▶ **Street Maintenance:** Under the proposed TAP funding, in the next 5 years, the City will be able to supplement Powell Bill funding to be able to resurface streets at or near the 12-14 year resurfacing schedule.

Is there a difference inside Route 4 versus outside Route 4 in 2035?

There is no difference inside Route 4 versus outside Route 4 with respect to street maintenance. Charlotte's streets could see additional pavement degradation due to increased development pressure and construction activities without increased funding. Impacts could include increased time between street repairs and noticeable differences in ride quality and pavement ratings.

5.3 Connectivity

Background: Connectivity in 2035

Communities across the nation are requiring enhanced street connectivity in an effort to make their cities more livable, sustainable, walkable and less congested. Through the adoption of the *Urban Street Design Guidelines* in 2007, and related ordinance changes in 2010, the City has ensured that the street network develops in a way that will best accommodate Charlotte's anticipated growth. The TAP assumes that the City remains committed to enhancing connectivity through the TAP planning horizon of 2035.

The following program and funding is necessary to meet our connectivity goals through 2035:

- Street Connectivity Program ($125M in 2010 dollars)

Other City capital programs, including the Neighborhood Improvement Program, Area Plan Implementation Program and transit corridor infrastructure programs, need to be able to fund and construct new street connections as well. Such a comprehensive approach to implementing connectivity will help achieve the City's connectivity goals much faster than relying solely on the Street Connectivity Program and the land development process.

The City needs to increase the overall connectivity ratio to at least 1.35 and meet the Urban Street Design Guidelines' block spacing requirements in order to better accommodate Charlotte's travel demands, shorten trip distances, and create a more robust transportation network in Charlotte.

In 2010, Charlotte's city-wide connectivity ratio was 1.22. It was higher in the older, central neighborhoods inside Route 4 (1.45) than in the newer, suburban areas outside Route 4 (1.21).

Meeting the connectivity score goal will require an increase in connectivity in developing areas of Charlotte. Much of this connectivity will be provided by new development through the permitting process.

Connectivity will be critical to accommodate Charlotte's growth.

How will Charlotte be doing in 2035?

The Street Connectivity Program enables the City to continue proactively implementing connectivity opportunities by three means: (1) constructing new connections as capital projects; (2) partnering with developers to leverage public and private funding; and (3) corridor preservation and right-of-way acquisition. Most connections constructed

as capital projects are retrofits; they would not likely be constructed without the Street Connectivity Program.

The City will be able to create and plan for more strategic connections through right-of-way preservation. These connections are similar in function to today's major collector streets and have an important network need, but whose alignments are constrained by existing development or topographical and environmental barriers (such as creeks and lakes).

The City will be in a position to proactively construct and partner with the development community to develop an appropriately connected street network. Not only will a connected street network result in reduced congestion, it will dramatically improve multi-modal travel choices and opportunities.

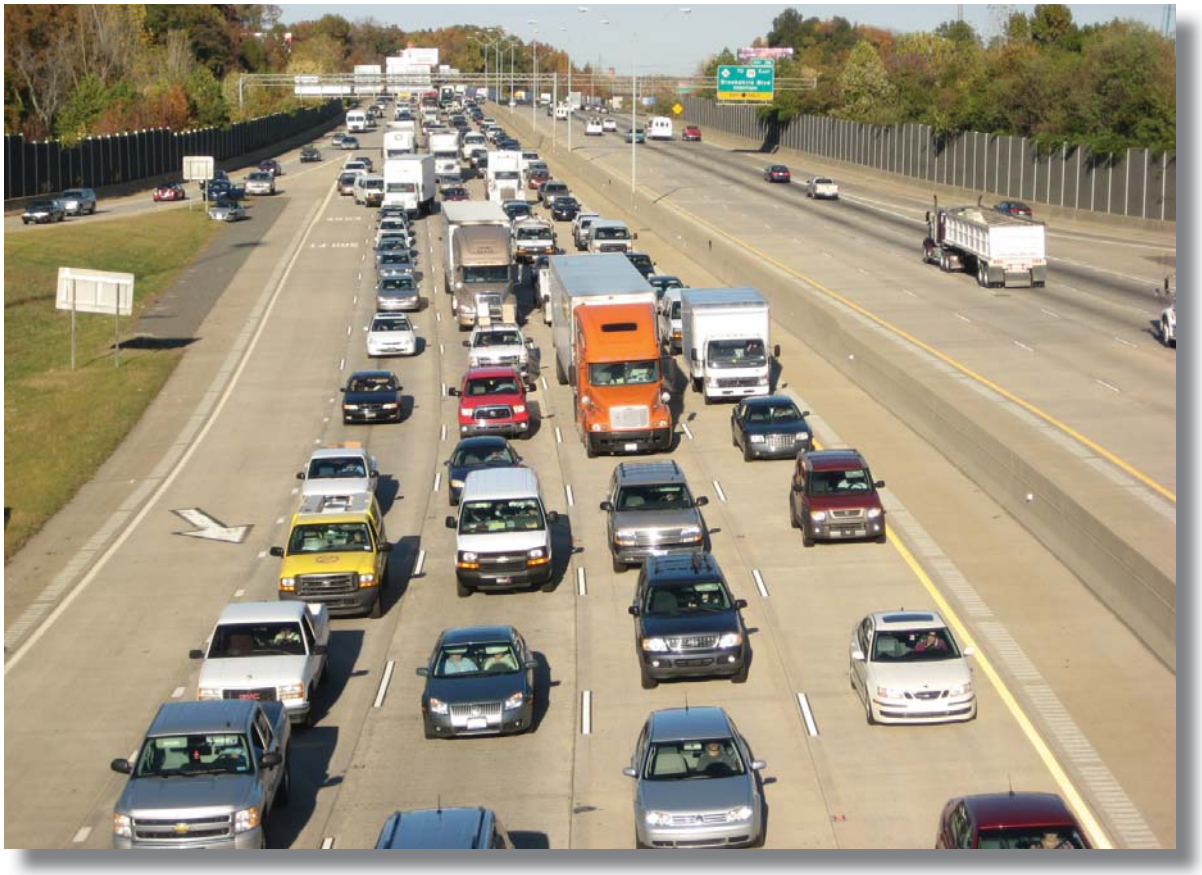
▶ **Connectivity:** Under the proposed TAP funding, in the next 5 years, the City will be able to implement up to 25 new street connections and stream crossings.

Is there a difference inside Route 4 versus outside Route 4 in 2035?

Inside Route 4 will remain the City's most connected area. The City will maintain and, when possible, improve the existing street network inside Route 4. Although there will likely still be a better street network inside Route 4 compared to the area outside Route 4, the objective is to reduce the difference in street network between the two areas.

Ultimately, the street network outside Route 4 will become more like the network inside Route 4. The City expects to use all three tools (capital projects, public/private partnerships and corridor preservation) to maintain and improve the overall street network both inside and outside Route 4.

A more connected street system benefits all travelers, reduces congestion, and improves emergency response times and efficiencies. Increasing connectivity will enable Charlotte to better accommodate our anticipated growth, shorten trip distances, improve air quality, and create a more robust transportation network both inside and outside Route 4.



Charlotte's transportation success is directly linked to how well we implement the Centers, Corridors and Wedges Growth Framework.

5.4 Motorist Travel

Background: Motorist Travel in 2035

Charlotte's population and employment growth — and corresponding motorist travel demand — are expected to increase significantly through 2035. Charlotte's street system and development patterns have a direct impact on congestion, the quality of a motor vehicle trip and how well we will accommodate our growth.

As Charlotte's population grows an additional 225,000 persons by 2035, the city's transportation system — particularly its road system — will be challenged to accommodate this growth. Under current transportation funding and development trends, CDOT transportation modeling suggests that the percentage of roadways experiencing high levels of congestion could increase between 2010 and 2035. The TAP seeks to moderate increasing congestion levels through a comprehensive toolbox of transportation investments.

In order to meet our mobility, economic development and quality of life goals, the City must remain committed to addressing our worsening traffic congestion issues. Our existing and future residents and businesses will continue to depend on our transportation system for their daily travel and business needs.

Charlotte's transportation funding can best be utilized by continuing to strategically fund transportation improvements; by implementing the Centers, Corridors and Wedges growth management strategy; and implementing a more connected street sytem and development pattern. To accommodate the increased travel demand and minimize congestion, the City will need to continue to fund a wide range of new roads, road widenings and a series of capacity-related transportation programs. CDOT is recommending the following programs and funding through 2035:

- Bridge Program ($75M)
- Farm to Market Road Improvement Program ($500M)
- Intersection Capacity and Multi-Modal Enhancement Program ($250M)
- Minor Roadway Improvement Program ($62.5M)
- Pedestrian and Traffic Safety Program ($25M)
- Public-Private Participation Program ($43.75M)
- Railroad Safety Improvement Program ($1.125M)
- State Highway Participation Program ($50M)
- Street Connectivity Program ($125M)
- Traffic Control Devices Upgrade Program ($75M)
- Traffic Flow Enhancement Program ($60M)
- Specific Thoroughfare and Street Projects ($750M)

Most growing cities experience some congestion but know that providing an adequate level of mobility is critical to maintaining the economic viability and quality of life of the city. Growing cities recognize that a region's ability or failure to provide a transportation system that can adequately move people and goods has a significant impact on whether jobs are created locally or shifted elsewhere.

Providing for a reasonable level of mobility — not only today but in 2035 with an additional 225,000 residents in Charlotte — will be critical to sustain our growing economy and protect Charlotte's quality of life. A transition to a 2035 development pattern that is mixed-use and based on the Centers, Corridors and Wedges strategy — combined with enhanced motorist, pedestrian, bicycle and transit networks — will help in addressing vehicle miles of travel issues and reducing trip distances. In addition to these strategies, we must also invest in new roadways, widening existing roads and achieving a more connected development pattern so that we can implement and maintain a mobility level similar to the mobility levels we currently experience inside Route 4.

How will Charlotte be doing in 2035?

Today, the Texas Transportation Institute, which monitors transportation data nationwide, rates Charlotte as the 29th most congested city in the nation. Without continued transportation investment at both the state and local levels, better street network and continued adherence to the Centers, Corridors and Wedges Growth Framework, Charlotte's congestion levels could increase significantly. With continued implementation of the Long Range Transportation Plan and the improvements called for in the TAP, CDOT estimates that congestion could be reduced by 10% versus a do-nothing scenario. *Appendix A, Figure 4* lists the toolbox of projects and programs that will help Charlotte keep pace with its growth. *Appendices B-5 and B-6* provide the lists of specific thoroughfare and local-funded street projects that are included in the TAP. By funding new roads, implementing road widenings, enhancing connectivity and implementing multi-modal enhancements, CDOT believes that a significant improvement in congestion and quality of life can be made.

> ▶ **Motorist Travel:** Under the proposed TAP funding, in the next 5 years, the City will be able to advance 10 major thoroughfare projects, 50 minor roadway projects, 10 intersection projects and 12 miles of farm to market road improvements.

Is there a difference inside Route 4 versus outside Route 4 in 2035?

Yes, CDOT expects there will continue to be enhanced mobility and transportation options inside Route 4 versus outside Route 4. The TAP calls for improvements in both geographical areas. While the TAP will help to implement significant improvements outside Route 4, this area will still experience some transportation challenges, particularly in areas where there is limited connectivity and street network. A key component of the TAP is to help ensure that new development comes on-line with the appropriate network and capacity improvements that is necessary to help minimize over-burdening the thoroughfare system and provides more transportation choices.

5.5 Traffic Operations and Safety

Background: Traffic Operations in 2035

CDOT estimates that in 2035 it will maintain and operate 975 signalized intersections, provide maintenance and inspection services on more than 200 bridges, install and maintain traffic control devices for more than 3,100 miles of streets, and provide engineering and operational improvements for motorist safety over an area of 370 square miles. The following programs and funding are necessary to meet goals through 2035:

- Bridge Program ($75M)
- Intersection Capacity and Multi-Modal Enhancement Program ($250M)
- Minor Roadway Improvement Program ($62.5M)
- Pedestrian and Traffic Safety Program ($25M)
- Railroad Safety Improvement Program ($1.13M)
- Railroad Grade Crossing Improvement Program ($1.05M)
- Traffic Control Devices Upgrade Program ($75M)
- Traffic Flow Enhancement Program ($60M)
- Specific Thoroughfare and Street Projects ($750M)

While the programs specified above are directly linked to the goals of Traffic Operations, it is also important to understand the impact on Traffic Operations that many other programs identified in the Transportation Action Plan will have. The following programs will result in additional equipment, markings, and signs for Traffic Operations staff to maintain over time.

With enhanced funding, Charlotte will be able to install 375 APS devices at intersections.

- Pedestrian Connectivity Program
- Street Connectivity Program
- Safe Routes to School Program
- Bicycle Program
- Center City Implementation Program
- Streetscape/Pedscape Program
- Traffic Calming Program

The additional maintenance and repair costs associated with these programs will grow over time as more projects are implemented and as additional traffic control assets are added to the City's inventory. Because of this, it is difficult to estimate future maintenance and repair needs, but it is nevertheless important to note these anticipated needs.

How will Charlotte be doing in 2035?

Under the proposed funding scenario, the City can continue to build on current programs that provide essential operational and safety improvements to the transportation network:

- The City will maintain its status of providing exceptional signal timing and maintenance
- Signal systems outside Route 4 can be improved to meet the anticipated growth. These system improvements will include additional ITS components, such as variable message signs, and an increased network of intersection monitoring tools.
- CDOT will be able to continue providing the analysis and engineering response to identify and correct safety problems at they arise.
- Incident management will play an increased role in 2035 to ensure that when problems do occur, the amount of delay experienced by system users will be minimized
- The growing segment of older drivers will have different needs and expectations than are now provided in our transportation network; proposed funding will provide for the installation of enhanced signs, markings, and other programs to help address their needs.
- The City can install many more "accessible pedestrian signal (APS) devices" at signalized intersections to aid visually impaired persons. Charlotte now has 55 intersections with APS devices.

The City will be able to meet many needs associated with implementing the *Urban Street Design Guidelines* and supporting transit initiatives to ensure that the transportation system is responsive and adequate for all modes of travel. The proposed funding level will be able to better support a balanced transportation network and better maintain an acceptable level of service system-wide.

▶ **Traffic Operations and Safety:** Under the proposed TAP funding, in the next 5 years, the City will be able to maintain a progressive level of signal system upgrades, traffic flow enhancements and inspect the City's bridges and make needed bridge repairs on a 2-year cycle.

Is there a difference inside Route 4 versus outside Route 4 in 2035?

Yes. Inside Route 4 — with its interconnected street network — levels of service can be maintained better under the funding scenario. However, outside Route 4 the

ability of the transportation network to adapt to increases in volume is largely dependent on key transportation investments and the ability to implement ITS solutions and integrate signal operations through coordinated signal systems and other improvements. The proposed funding level will help to ensure that a consistent transportation network is provided to all system users.

5.6 Travel by Transit

Background: Transit Travel in 2035

Investments in public transportation serve as a conduit to strengthen communities by providing a greater degree of mobility, freedom, access, opportunity and choice.

The *2025 Integrated Transit/Land Use Plan* and the *2030 Transit Corridor System Plan* call for the implementation of rapid transit lines located in the North, Northeast and Southeast corridors. In addition, the plans also call for implementation of modern streetcar to serve the airport in the West corridor and along Beatties Ford Road, through Uptown on Trade Street, along Central Avenue and terminating at Eastland Mall.

The investments in the rapid transit corridors and streetcar lines will enhance the CATS transit network and create the support necessary for land use development as set forth in the strategies and vision of the *2025 Integrated Transit/Land Use Plan* and the *Centers, Corridors and Wedges Growth Framework.*

In planning the corridor investments, CATS recognized the importance of developing connections between bus and rail services, improving bus-to-bus connections and simplifying the overall public transportation route network structure and providing connections between activity centers. In response, CATS is developing plans that will coordinate the implementation of the five rapid transit corridors and streetcar line with the development of bus-rail integration services.

Bus-rail integration services will provide customers increased mobility, transportation choices, and affordable connections among public transportation modes. A well developed bus-rail integration network will link customers between the Growth Corridors and Wedges, providing connections between rapid transit stations, Activity Centers,

community transit centers, traditional fixed route bus service and neighborhood/community circulators.

As a result of the comprehensive enhancements to the CATS network, the greater Charlotte region will experience measurable community-wide benefits directly correlated with the development of the rapid transit corridors. CATS has detailed quantifiable measurements (see pages 4-23 to 4-28) that will assess the agency's progress in supporting the Centers, Corridors and Wedges Growth Framework. The transportation network enhancements will increase the number of locations accessible to transit, resulting in an overall reduction of vehicle miles traveled (VMT) in the region when compared to the current land development scenario.

How is Charlotte doing in 2035?

The economic recession has had a significant adverse affect on CATS' primary revenue stream, the ½ percent sales tax for transit. As the public has tightened their belts to adjust to double digit unemployment and reduced earnings, their discretionary spending has been significantly curtailed. This has resulted in a 19% reduction in sales tax revenue from 2008 to the end of 2010. Although CATS is managing its services to this reduced level of funding, the drop in revenue has rendered the financial plan and implementation schedule of the *2030 Transit Corridor System Plan* unachievable.

In November and December 2010, CATS presented updated financial projections and worked with the Metropolitan Transit Commission (MTC) to redefine the transit investment plans. The results are as follows:

- CATS will maintain the current level of bus service for the Charlotte-Mecklenburg Region and will continue to utilize the route performance monitoring system to adjust routes to ensure the highest possible efficiency while meeting the evolving service demand on the system as a whole.
- CATS will reduce the scope of the LYNX Blue Line Extension Light Rail Project to an affordable project segment that will still qualify for a federal full funding grant agreement (¼ Local, ¼ State and ½ Federal Funding).
- CATS will identify and budget for a ¼ Local share of the North Corridor Commuter Rail Project.
- CATS will assist Engineering and Property Management in the design and construction of a 1.5 mile Streetcar Starter Line along Trade Street and Elizabeth Avenue from the Charlotte Transportation Center to Presbyterian Hospital.
- Continued investment in better street connectivity, bike and pedestrian transportation options are vital to the continued growth of transit as a competitive travel market share.

- Street connectivity improvements will provide CATS with the infrastructure necessary to streamline traditional bus service routing, thereby improving efficiencies and connections between transportation modes.
- Sidewalk and bike lane improvements will encourage pedestrian activity and promote non-vehicle connectivity with transit which will assist in reducing total VMT for the region.
- High occupancy highway improvements, through the auspices of High Occupancy Vehicle (HOV)/High Occupancy Toll (HOT) lane construction will also support the reduction of VMT.
- Investments in HOV/HOT lane improvements will additionally provide choice riders who live outside of Route 4 with improved travel time.
- Bus priority signalization technology will continue to improve transit travel time.

Such efficiency improvements increase the competitive advantage for CATS' express and regional express services. Ultimately, continued funding for transportation will improve the overall mobility within the greater Charlotte region by increasing the competitive advantage of the transit market share as a viable travel option.

> ▶ **Travel by Transit:** Under the proposed TAP funding, in the next 5 years, the City will be able to implement a wide array of transportation improvements (for buses, bicyclists and pedestrians) that make it easier for Charlotte residents to travel by transit.

Is there a difference inside Route 4 versus outside Route 4 in 2035?

A difference will still exist between transit service inside Route 4 and outside Route 4 in 2035. Based on their historic and geographical differences, land development patterns and street networks, the area inside Route 4 is predisposed to providing a significantly higher level of public transit service than the area outside Route 4.

Inside Route 4, overlap between transit service options will be present due to the close proximity of bus and rapid transit route options. Furthermore, the concentration of dense residential housing stock, the availability of pedestrian and bike connectivity, and the formidable street network will allow CATS to attract a greater concentration of travel by transit users than the area outside Route 4. As noted in Chapter 4, current transit coverage inside Route 4 is more than adequate, with 93.8% of the population living within ¼ mile of a transit stop.

The area outside Route 4 is historically challenged with less dense land use patterns. Commuters in the area outside Route 4 will continue to observe longer trip times and

commute lengths than inside Route 4, under the proposed funding scenario. This difference between the area inside and outside Route 4 will be due to lower land use density, greater distances between land uses, stunted vehicular connectivity in street network design, and minimal non-vehicular travel options limited by low availability of sidewalk and bike lane connectivity. Planned improvements will be made to continue to develop rapid transit services in the designated Growth Corridors, and express and regional express services in the Wedge areas.

Capital investments as a result of funding for transportation — coupled by the continued encouragement of closer, more-dense, mixed-use land use patterns with adequate pedestrian and bike accommodations — will significantly contribute to improved system coverage in the area outside of Route 4.

5.7 Bicyclist Travel

Background: Bicyclist Travel in 2035

With appropriate funding and a commitment to connectivity, Charlotte is poised to make great strides in becoming a more bicycle-friendly city by 2035.

Charlotte is working to undo the mistakes of decades of transportation improvements and land use patterns that failed to accommodate bicyclists. The lack of bicycle accommodations, combined with an increasingly disconnected street network, severely limited the "bikeability" of Charlotte.

Charlotte has been improving in this area and is expected to continue to do so over the next 25 years as roads are widened or resurfaced to include bicycle lanes and as Charlotte develops in a more connected fashion. A key factor in whether Charlotte becomes a more bicycle-friendly city will be determined by the extent to which Charlotte's growth framework is successful and future growth develops in a more connected fashion than has occurred over the last 50 years.

How will Charlotte be doing in 2035?

Charlotte will become a much more bicycle-friendly city under the proposed funding scenario. With the proposed funding, Charlotte will implement over 350 miles of bikeways, including 225 miles of bicycle lanes, 25 miles of off-road trails, 100 miles of new signed routes, and more bicycle parking. In addition, the funding will enable Charlotte to be developed in a more connected fashion which benefits all users, including bicyclists.

The future 2035 network of bicycle facilities is detailed on a map in *Appendix A, Figure 5*. This network will be a significant improvement over current conditions, and staff believes that Charlotte will have one of the most comprehensive networks of bikeways in the nation.

> ▶ **Bicyclist Travel:** Under the proposed TAP funding, in the next 5 years, the City will be able to implement a wide array of transportation improvements (for buses, bicyclists and pedestrians) that make it easier for Charlotte residents to travel by bicycle.

Is there a difference inside Route 4 versus outside Route 4?

Yes. Bicycle travel will continue to be significantly better inside Route 4 than outside Route 4.

Many bicyclists prefer to ride on low-volume local streets as long as they are connected and enable bicycle travel in a relatively direct path from their origin to their destination. Because the area inside Route 4 is much more connected than outside Route 4, bicyclists have many more local street options to travel to access their destinations.

Bicycle-friendly cities provide a network of bicycle lanes, bicycle routes and bicycle trails.

Outside Route 4, where few subdivisions connect to each other or to adjacent land uses like parks, retail, schools or greenways, bicyclists are forced onto higher volume and higher speed thoroughfares.

Staff expects that conditions outside Route 4 could be dramatically improved by more roads being funded for widening (including bicycle lanes and shared use paths) and by the network being developed in a more connected fashion. If this occurs, outside Route 4 conditions could be significantly improved over current conditions.

In 2035, bicycle travel will continue to be much better inside Route 4 versus outside Route 4, especially under the proposed funding scenario. If the City is able to improve connectivity outside Route 4 in developing areas — combined with the bicycle facility improvements called for in the proposed funding scenario — Charlotte could become one of the nation's premier bicycle-friendly cities.

5.8 Pedestrian Travel

Background: Pedestrian Travel in 2035

Walkability is critical to the long term success of a community. Walkable communities are more livable communities and promote a better quality of life for people of all ages.

Charlotte's suburban development in the mid-20th century, as in most American cities, included few sidewalks and few interconnecting streets. Those sidewalks that were built during this time often were located along the curb, next to the street, creating unpleasant and sometimes dangerous conditions for pedestrians.

In the last decade, the City has given greater attention to pedestrian needs, funding new sidewalks, crosswalks and other enhancements. The City now requires new sidewalks to be provided as development occurs and has also approved a capital investment program for sidewalk construction.

Walkable communities are more livable communities for all ages.

Furthermore, the City has taken a strong stance to ensure that new roadway construction projects either provide sidewalks or provide room for future sidewalk improvements so as not to create pedestrian barriers.

A continued commitment to becoming a more walkable city will result in a significant transformation for Charlotte over the next 25 years. During this period, Charlotte will undergo significant population growth and development. If the future built environment is developed in a more walkable manner, Charlotte will be better positioned to accommodate this rapid growth. The TAP's policies and programs set the stage for a future Charlotte that is more walkable, livable and provides more transportation choices.

How will Charlotte be doing in 2035?

Charlotte will continue to become a national leader in providing better pedestrian accommodations and sidewalks, and will become a leading city in walkability. Under the proposed funding scenario, the TAP will maintain sidewalk construction funding to construct sidewalks on both sides of all thoroughfares and to construct sidewalks on at least one side of all collector and local streets.

Figure 5A: **Sidewalk Mileage Complete in 2035**

Street Type	2010 Sidewalk Miles Constructed	2010 Sidewalk Miles Not Complete	2035 Miles Complete
Thoroughfares	584	479 (both sides)	684
Locals/Collectors	1,016	1,635 (one side only)	1,066
Total of All Street Types	1,600	2,114	1,750

Source: Charlotte Department of Transportation
Note: Sidewalk is built on one side of all Locals and Collectors under the Sidewalk Program. Therefore, total street miles are divided in half to determine the percentage completion on one side only.

The proposed funding level will enable the following:

- 150 miles of new/retrofit sidewalks, and
- 200 miles of sidewalk maintenance

The proposed funding scenario will result in continued funding for pedestrian facilities, which will improve pedestrian conditions throughout Charlotte. This approach will enable the City to proactively create better walking environments, capitalizing on opportunities as they arise through partnerships with new development and with NCDOT. The City will be in a position to partner on the front end, versus having to undertake costly retrofits on the back end of projects.

▶ **Pedestrian Travel:** Under the proposed TAP funding, in the next 5 years, the City will be able to implement +/- 30 miles of new sidewalks and repair 8 miles of broken sidewalk.

Is there a difference inside Route 4 versus outside Route 4?

Pedestrian travel in 2035 will continue to be significantly better inside Route 4 than outside Route 4. While the sidewalk system is not complete inside Route 4, it will continue to be much more robust and connected when compared to the area outside Route 4. Pedestrian travel inside Route 4 will continue to benefit from a more connected sidewalk system, a close proximity and greater mix of land uses, and more accessibility to transit.

The City will undergo significant development outside Route 4, through 2035. Pedestrian conditions will improve as new development comes on line and are required to provide sidewalks as part of the development process. The City will continue to make pedestrian connections, complete sidewalk gaps and improve mid-block crossing opportunities which would dramatically improve conditions outside Route 4.

In addition, the City will be constructing or widening additional streets by 2035 that will provide additional sidewalks as part of these projects. Most of these widenings will occur outside Route 4. Without these widening projects, many residents within subdivisions will not be able to access land uses outside of their subdivisions. In these areas, few residents will be able to walk to the store, to the park, or to their child's school. This will result in increased congestion and a less healthy lifestyle. Until these roadways are upgraded to include sidewalks, many areas outside Route 4 will remain relatively pedestrian unfriendly.

CDOT believes that good strides are being made outside Route 4, but that in order to make substantial improvements the City will need to fund the pedestrian programs recommended in this plan. In addition, the City will need to modify development standards to better promote connectivity and block spacing, improve sidewalk and planting strip standards and create more walkable environments. If the City does these things, Charlotte could become one of the nation's premier pedestrian-friendly cities both inside and outside Route 4.

Conclusion

Over the next few decades, Charlotte has the potential to make significant progress in implementing an integrated and balanced land use and transportation strategy. The Centers, Corridors and Wedges Growth Framework provides the guidance for making decisions that will best position the City to use limited transportation dollars wisely.

From a transportation standpoint, Charlotte's ability to accommodate the anticipated growth requires a comprehensive transportation investment through 2035. The TAP *(Appendix A, Figure 4:* Locally Funded Transportation Programs and Improvements) recommends a multi-modal approach to funding and building new streets, street widenings, safety and operational improvement projects, connectivity projects, pedestrian projects, and bicycle projects. Charlotte's ability to best accommodate its growth will rely on this comprehensive transportation and land use approach.

Chapter 6

Financial Element

Currently, the City of Charlotte does not have the necessary funding resources to become the premier city in the nation for integrating land use and transportation choices.

The City of Charlotte has experienced significant growth in population and continues to see an increase in vehicle miles traveled. Accommodating the additional demand on the transportation system will require additional financial investment over the 25-year life of this plan.

In addition to the ongoing growth in demand for transportation services, transportation construction and land costs also continue to increase. The transportation industry and communities are requiring more attention to safeguarding the natural environment and construction practices have changed to improve the way transportation projects affect their surroundings. These changes are necessary and desirable, but also costly. The increased demands on transportation funding continue to create a backlog of unfunded projects – and, as the backlog increases, so do the overall project costs.

This chapter will examine the current expected revenues, inventory the expected transportation needs of the City, specify the existing funding gap and then identify potential financing techniques to fund construction and maintenance of the transportation system over the next 25 years.

6.1 Existing Funding

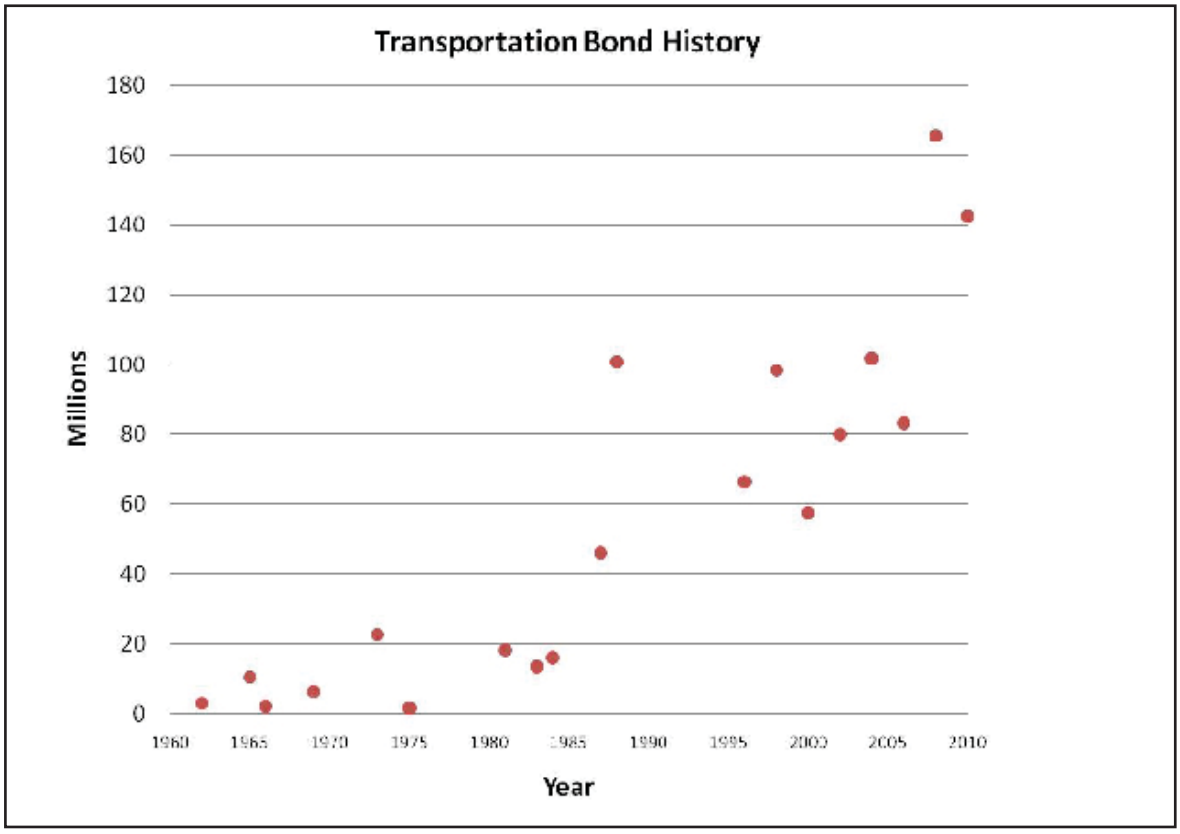
6.1.1 Roadway

The City of Charlotte has asked voters every few years to approve bonds for transportation improvements. For the most part, these bonds have been used for improvements on municipal roadways, but Charlotte's 1998 bond package ($98.0 million) was also used to finance improvements to many state roads.

Figure 6A (below) summarizes the history of transportation bonds in Charlotte. The City of Charlotte has been using bonds over 45 years to fund transportation improvements. A tax increase in 2006 funded enough revenue to have transportation bonds in 2006, 2008 and 2010. At this time, there is no capacity to fund a bond beyond the 2010 bond.

The Committee of 21 — formed by the Charlotte City Council, Mecklenburg County Commission and Charlotte Chamber of Commerce — was tasked to identify alternative funding other than bonding backed by the property tax. The findings of the Committee of 21 are used as a starting point in the discussion of Potential Revenue Sources in Section 6.4.

Figure 6A: **City of Charlotte Transportation Bonds**



6.2 Projected Expenditures

6.2.1 Background

Local projects and programs are primarily funded through bonds obligated by the property tax. The following section will give greater detail on the types of projects and programs funded through the TAP.

6.2.2 Major Thoroughfares and Roadways

The list of projects for local funding was derived from various sources: the Thoroughfare Plan, local Area Plans, the South Corridor Infrastructure program, and the MUMPO Long Range Transportation Plan. The projects were prioritized by City staff using the ten-point criteria (listed in *Appendix B-4*). Each project can receive up to five points, depending on how well they address the following criteria.

- Reduces Congestion
- Improves Safety
- Supports Rapid and Express Bus Transit
- Supports Land Use Planning Objectives
- Increases Accessibility to Uptown or Other Economic Centers in Charlotte Sphere of Influence
- Improves Connectivity
- Provides Multimodal Options
- Supports "Fragile" and "Threatened" Neighborhoods
- Improves Intermodal Connectivity
- Provides Positive Cost-Effectiveness

Based on these criteria, a prioritized list of local roadway needs was developed. This listing includes all necessary roadway projects to ensure that Charlotte's roadway system will be efficient over the next 25 years. *Appendix B-5* lists the locally funded projects in prioritized order with a description and estimated cost.

6.2.3 Transportation Programs

In order to address the numerous ongoing needs of Charlotte's transportation system, funding is allocated to a variety of transportation programs. A brief description of each program follows. *Figure 4 in Appendix A* summarizes the expected funding for each program, according to these program categories:

- *Capacity and Safety Improvements*
- *Pedestrian Pathways*
- *Bicycle Pathways*
- *Livable Neighborhoods and Centers*

CAPACITY AND SAFETY IMPROVEMENTS

6.2.3.1 Bridge Program

This program provides for the timely inspection, repair and replacement of sub-standard bridges throughout the City. The program's purpose is to maintain a safe bridge system by repairing and replacing bridges that do not meet structural capacity and width standards. Locations for bridge repairs and replacements are identified through the State's biennial inspection program and by the City's annexations.

The TAP provides a funding level of $75 million over the 25-year planning period. It is anticipated that this program will fund the continued inspection of all bridges in the City (currently 193) on a biennial basis and making repairs to these bridges as needed. It would also fund the replacement of 10 bridges over the same period.

6.2.3.2 Curb and Gutter Maintenance Program

This program provides adequate funding for the maintenance of the City's curb and gutters. Historically, Street Maintenance has funded an annual curb replacement contract focused on repairing and improving curbs in conjunction with repaving streets. These contracts were funded from the resurfacing budget during years of adequate appropriations. Due to decreasing funds for resurfacing and the increased cost in concrete, Street Maintenance has forgone an adequate replacement contract for the last three years and attempted to repair only sections of the absolute worst curbs. Funding an annual curb replacement program would allow Street Maintenance to once again replace curb that is in need of repair, especially in older neighborhoods, without forcing a reduction in resurfacing funds.

The TAP provides a funding level of $12.5 million over the 25-year planning period. It is anticipated that this program will fund the replacement of approximately 250 miles of curb and gutter throughout the City.

6.2.3.3 Farm-to-Market Road Improvement Program

This program provides funds to make improvements to farm-to-market roads located within the Charlotte city limits. The City has miles of narrow farm-to-market roads that serve as the primary routes for developing areas of the City. These roadways quickly become overburdened by traffic resulting in significant congestion and sometimes unsafe conditions. Examples of improvements include new curb-and-gutter, new sidewalks, additional lane width, and turning lanes to improve traffic flow.

This program requires a funding level of $500 million over the 25-year planning period. It is anticipated that this program will fund approximately 60 miles of improved roadways.

6.2.3.4 Intersection Capacity and Multi-Modal Enhancement Program

This program improves travel conditions for vehicles, pedestrians, bicyclists and transit users at existing intersections. Many intersections in the City of Charlotte are not pedestrian- or bicycle-friendly due to a number of factors, including but not limited to: a lack of pedestrian signals or crosswalks, signal timing issues, excessive crossing distances, no sidewalk or wheelchair ramps, no bicycle lanes and miscellaneous intersection design features. This program would provide funding to make intersections more multimodal while also increasing the capacity of the intersection.

Under this program, intersections would be ranked to determine their level of accommodations for pedestrians, bicyclists and motorists. Prioritization will be based on criteria such as the number of accidents, congestion levels, and pedestrian and bicyclist level of service. The intersections which rank highest each fiscal year would be programmed for multi-modal modifications that provide more balanced intersections and promote travel choices.

The TAP provides a funding level of $250 million over the 25-year planning period. It is anticipated that this program will fund approximately 50 intersection projects at approximately $5,000,000 each.

6.2.3.5 Major Thoroughfare and Street Projects

Based on evaluation criteria, a prioritized list of local roadway needs was developed. This category includes necessary roadway projects to ensure that Charlotte's roadway system will be efficient over the next 25 years. *Appendix B-5* lists the projects in prioritized order with a description and estimated cost.

The total cost of these projects is $750 million over the 25-year planning period.

6.2.3.6 Minor Roadway Improvement Program

This program provides relatively low-cost improvements to the roadway system that will increase traffic capacity and reduce accident potential. The project provides (a) small-scale safety improvements, (b) turn lanes at intersections, (c) widening of roads that have been partially widened through the subdivision process and (d) construction of additional intermittent lanes to allow for uninterrupted traffic flow where left turns are frequent. The program is needed to relieve traffic congestion, improve safety, and reduce energy consumption by providing "quick fix" and longer-term solutions to traffic problems where applicable.

The TAP provides a funding level of $62.5 million over the 25-year planning period. It is anticipated that this program will fund approximately 250 projects at approximately $250,000 each.

6.2.3.7 Pedestrian and Traffic Safety Program

This program consists of projects that enhance the safety of the transportation network. Projects include engineering improvements to existing facilities; equipment upgrades to enhance the functionality and safety aspects of traffic control devices; evaluation of new or innovative products that could potentially be adopted for wider use to address safety concerns; implementation of annual traffic safety educational campaigns; support to partners in traffic safety efforts (Charlotte-Mecklenburg Police Department, Safe Communities, Safety and Health Council, Traffic Safety Advisory Committee); and development of tools to further enhance the identification and treatment of safety concerns for all transportation system users.

The TAP provides a funding level of $25 million over the 25-year planning period. It is anticipated that this program will fund a variety of low-cost safety projects and provide educational oportunities to improve pedestrian and traffic safety.

6.2.3.8 Public-Private Participation Program

This program provides funding to projects that maximize the benefits of developer-required improvements to the road system through establishment of the future roadway alignment. During the development process, opportunities arise to have a project improved beyond what can normally be required from a developer. This program allows developers and the City to cost-share in these improvements. Need is based on proceeding with road improvements where development is occurring such that thoroughfares are developed in a timely manner and in accordance with their planned alignment.

The TAP provides a funding level of $43.75 million over the 25-year planning period. It is anticipated this program will fund approximately 250 projects at $175,000 each.

6.2.3.9 Railroad Grade Crossing Impovement Program

This program provides for replacement of railroad crossings by installing modular-type railroad crossing fittings or by other types of improvements to increase riding comfort. The program also removes rails at abandoned crossings. The intent of this program is to improve riding comfort and to reduce congestion at the track locations.

The TAP provides a funding level of $1.05 million over the 25-year planning period. It is anticipated that this program will fund approximately 70 railroad crossing improvement projects at $15,000 each.

6.2.3.10 Railroad Safety Impovement Program

This project provides funds for the City's share of installing railroad warning flashers. The need for this project is based on a statewide accident inventory that identi-

fies hazardous or potentially hazardous rail-highway grade crossings. The program is designed to correct high accident locations by reducing the probability of train-car collisions at unprotected grade crossings. The Federal Government, through the Federal Highway Safety Program, provides 90 percent of the funds for this program. The State provides the remaining 10 percent matching funds if the project is on a State system roadway. This program provides funding for the City's 10 percent matching funds for roadways that are not maintained by the State.

The TAP provides a funding level of $1.125 million over the 25-year planning period. It is anticipated that this program will fund approximately 75 projects at $15,000 each.

6.2.3.11 State Highway Participation Program

This program provides funds to review the planning and design of State highway projects and to ensure that sidewalks, landscaping, and other amenities are constructed as part of the State's project and that they conform to City standards. Currently NCDOT will only include sidewalks if requested by the City and if the City will contribute 50 percent of the cost of constructing the sidewalks. The need for this program is based on City Council's policy of participating in State road projects when significant benefits to local pedestrian and vehicular traffic will be realized. In addition, there is an identified need to improve the street lighting along several thoroughfares. The City is responsible for these upgrades.

The TAP provides a funding level of $50 million over the 25-year planning period.

6.2.3.12 Street Connectivity Program

This program will promote the goals of providing better connectivity throughout the City of Charlotte. This program would address this goal in several ways. The first method would inventory and implement needed street connections within and between neighborhoods. The second method would be to provide funding for constructing new connector and local streets that would provide improved access and connectivity as development occurs in developing parts of Charlotte.

The TAP provides a funding level of $125 million over the 25-year planning period. It is anticipated that this program will fund approximately 50 street connections, 3 miles of new connector streets, 25 stream crossings and funds for ROW protection.

6.2.3.13 Street Lighting Installation Program

This program would install lights on the 150 miles of thoroughfares that are not presently illuminated.

The TAP provides no funding for this program over the 25-year planning period. It is anticipated that if revenues increase in future TAPs, this program would be funded.

6.2.3.14 Street Resurfacing

This program would provide additional dollars to the existing street resurfacing budget. The Charlotte DOT has worked to keep City roads maintained on a 12-year cycle and an average street condition rating of 90. This ensures that roads are repaired prior to needing more serious reconstruction. Street maintenance and resurfacing is funded primarily through the North Carolina Powell Bill Fund. Due to reallocation of Highway Trust Fund dollars, Powell Bill funds have decreased, resulting in a smaller allocation to Charlotte. In response to declining revenues, the City had previously lengthened its resurfacing cycle to a 20- to 25-year cycle. This fund would supplement existing Powell Bill funding sources so that the 12-year maintenance cycle can be met.

The TAP provides a funding level of $150 million over the 25-year planning period. It is anticipated that this program will fund approximately 4,500 miles of resurfacing, not yet meeting the 12-year maintenance cycle. An additional $100 million would be required to meet this maintenance cycle.

6.2.3.15 Traffic Control Devices Upgrade Program

This program provides funding for the scheduled maintenance and replacement of obsolete traffic control devices, such as traffic signals and signs. Need is based on the age of the traffic controllers and the establishment of a program to address replacement on an annual basis. Replacing obsolete traffic controllers and loop detectors is necessary to maintain an optimal traffic flow as well as provide a safe travel environment. There are currently approximately 650 signal controlled intersections. As development occurs, there will be a need to add more signalized intersections.

There is also a need to upgrade traffic signs and markings to meet higher visibility standards. As our population ages, visibility will become more of an issue. New standards being implemented will meet this need. In addition, Accessible Pedestrian Signal devices (APS) will be installed at key intersections to assist visually impaired citizens to cross safely.

The TAP provides a funding level of $75 million over the 25-year planning period. It is anticipated that this program will fund the upgrade of approximately 1,250 signalized intersections, maintain the existing 725 signalized intersections as well as the new 325 signalized intersections expected over the next 25 years, upgrade all traffic signs and markings to meet higher visibility standards and install APS devices at 375 intersections.

6.2.3.16 Traffic Flow Enhancement Program

This program provides funding for methods to improve traffic flow by using existing streets more efficiently. This will be accomplished through three techniques: (1) optimal signal coordination (2) intelligent transportation systems and (3) incident management.

Optimal Signal Coordination: 80% of traffic signals currently operate in a coordinated system. The goal is to work toward having 100% of traffic signals in a coordinated signal system with traffic detection equipment within 5 years. This promotes a more efficiently operating signal system and minimizes maintenance of signal timing. Coordinated signal systems will also support the development of a fully integrated signal system that can be operated from one central signal control facility.

Intelligent Transportation System(ITS): ITS is an integral component of a transportation system that provides technologies necessary to operate the system more efficiently within the existing roadway infrastructure, thus minimizing the need for road widening in some areas. ITS is a traffic responsive signal system capable of providing real-time traffic surveillance, traffic counts and travel speed data to the operator. This data is used to determine levels of congestion and implement corresponding signal timing plans that take into account variations in daily traffic, thus minimizing travel delay. The system can also provide critical travel time information to users through variable message signs. Increased funding is proposed in the next 20 years to support deployment of ITS technologies along critical corridors.

Incident Management: This technique would assist CMPD in the clearance of motor vehicle incidents, serve as first responders to signal outages, provide additional traffic control during special events, and provide assistance to disabled motorists during AM and PM rush hours. It would also provide investigative services for road hazard identification and removal where appropriate, and coordinate with appropriate city staff to facilitate necessary changes in travel and minimize disruption to traffic.

The TAP provides a funding level of $60 million over the 25-year planning period. It is anticipated that this program will fund optimal signal coordination at $30 million, ITS at $10 million and incident management at $20 million.

PEDESTRIAN PATHWAYS

■ 6.2.3.17 Pedestrian Connectivity Program

This program will promote the goals of providing better pedestrian connectivity throughout the City of Charlotte. This program addresses this goal by implementing improved bicycle/pedestrian connections within and between neighborhoods.

The TAP provides no funding for this program over the 25-year planning period. It is anticipated that if revenues increase in future TAPs, this program would be funded.

■ 6.2.3.18 Safe Routes to School Program

This program provides funding to plan for and implement pedestrian/bike facility improvements in school areas. As part of the development of the City's sidewalk

policy, it was found that numerous school areas lack sufficient sidewalks. This program would allow City staff to look at a school area in a holistic manner and develop plans to better address and implement necessary upgrades to the pedestrian/bicycle network in the surrounding neighborhood.

The TAP provides no funding for this program over the 25-year planning period. It is anticipated that if revenues increase in future TAPs, this program would be funded.

■ 6.2.3.19 Sidewalk Construction Program

This program provides for the construction of new sidewalks throughout the City, as well as modifications to existing sidewalks to conform to the Americans with Disabilities Act (ADA). The need is determined by surveys of the roadway networks along thoroughfares and residential streets. The current policy states that every thoroughfare should ultimately have sidewalk on both sides, while residential streets should have sidewalk on at least one side. Sidewalks are prioritized for construction based on a fifteen-point set of criteria developed by CDOT. The program is needed to encourage pedestrian use, improve safety, and to provide connections within the existing sidewalk network.

The TAP provides a funding level of $150 million over the 25-year planning period. It is anticipated that this program will fund approximately 150 sidewalk miles.

■ 6.2.3.20 Sidewalk Maintenance Program

This program provides funds to maintain the expanding sidewalk network. CDOT Street Maintenance has been funding this work through the sidewalk construction CIP money. This program will provide a dedicated source of funding to maintain the sidewalk system at an adequate level of service.

The TAP provides a funding level of $25 million over the 25-year planning period. It is anticipated that this program will replace approximately 200 miles of sidewalk at $125,000 per mile.

BICYCLE PATHWAYS

■ 6.2.3.21 Bicycle Program

This program provides funding to implement projects specified in the Charlotte-Mecklenburg Bicycle Transportation Plan. Bicycle projects include further development of an interconnected system of bikeways incorporating on-street and off-street facilities. Paramount among the needs is a further increase in the amount of bike lane mileage on primary roadways, complemented by a connected system of signed bike routes utilizing low volume, low speed streets.

When completed, this system will enable efficient and safe bicycle transportation throughout and connecting sectors of the city. Funding will also permit targeting access for cyclists to the growing county greenway network as well as additional off-street opportunities identified through future planning processes. Improving bicycle access to bus routes and the light rail system will extend their service range and permit greater transportation options.

The TAP provides a funding level of $50 million over the 25-year planning period. It is anticipated that this program will add approximately 350 miles of bicycle facilities to the City's emerging bicycle network, including 225 miles of new bike lanes, 25 miles of off-road trails, 100 miles of new signed routes and bicycle parking.

LIVABLE NEIGHBORHOODS AND CENTERS

■ 6.2.3.22 Air Quality and Congestion Mitigation Program

This program will provide a funding source for projects that can help improve air quality within Charlotte. Air quality concerns increasingly affect the Charlotte region and this program will attempt to address this on a project level. This program would fund similar types of projects as those funded by the federal Congestion Mitigation and Air Quality program. These funds could also be used as matching funds for federally-funded air quality projects. Types of projects that could be funded include intersection signal re-timing and corridor coordination.

The TAP provides no funding for this program over the 25-year planning period. It is anticipated that if revenues increase in future TAPs, this program would be funded.

■ 6.2.3.23 Area Plan Capital Project Program

This program provides funding to implement improvements specified in adopted Area Plans. In recent years, CDOT staff has become more involved in the Charlotte-Mecklenburg Planning Department Area Plan process which has allowed staff to identify both short-term and long term transportation improvements within areas. Currently, there is no funding source to implement many of the transportation recommendations in area plans. Staff recommends having a funding allocation for each area plan so that they can work with area plan stakeholders to prioritize near-term improvements in the study area and move forward to implement these improvements. This program is needed to help provide transportation improvements that would help sustain, stabilize and enhance neighborhoods by providing a more efficient and safer multi-modal transportation system within area plan locations.

The TAP provides a funding level of $12.5 million over the 25-year planning period. It is anticipated that this program will fund approximately 25 projects at approximately $500,000 per area plan.

6.2.3.24 Center City Implementation Program

This program is supported by the Center City Transportation Study (CCTS), which was developed as the primary transportation infrastructure implementation program for several initiatives, including the Center City 2010 Vision Plan; the master plans and vision plans for the First, Second and Third Wards; the 2030 Transit System Plan; and a variety of individual facility plans or initiatives. The program will enable the City to systematically implement the recommendations of these plans and initiatives.

The program encompasses a variety of improvements to the pedestrian, bicycle, vehicular and transit systems within Center City. These improvements are defined in the CCTS and are classified in the following categories: (1) Street Pedestrian Enhancement Projects; (2) Pedestrian and Bicycle Connectivity Projects; (3) Conversions of One-way Streets to Two-way Streets; (4) Street Extensions/New Street Segments; and (5) Streets with Operational Modifications. These projects are fully described in the CCTS along with a priority or phasing program.

The TAP provides a funding level of $50 million over the 25-year planning period.

6.2.3.25 Future Transit Station Area Infrastructure Program

This program will provide a coordinated station area infrastructure upgrade program for the remaining four transit corridors. Building on work completed for the South Corridor Infrastructure Program (SCIP), station areas will be examined as to the types of infrastructure improvements needed to make the areas more accessible.

The TAP provides a funding level of $50 million over the 25-year planning period. It is anticipated this program will fund projects at 10 future station areas at $5,000,000 each.

6.2.3.26 Livable Centers Program

This program would fund transportation improvements within Activity Centers as defined by the Centers, Corridors and Wedges Growth Framework. An emphasis would be placed on alternative transportation improvements to make the Activity Center more bicycle- and pedestrian-friendly, as well as more economically competitive and livable. An example would be the study currently underway in the South Park area. By focusing on these Activity Centers, internal vehicle trips and vehicle miles of travel may be reduced due to the provision of alternative transportation facilities and complementary mixture of land uses.

The TAP provides no funding for this program over the 25-year planning period. It is anticipated that if revenues increase in future TAPs, this program would be funded.

6.2.3.27 Streetscape / Pedscape Program

This program would fund improvements to the physical elements installed within and along the street right-of-way that impact its usability, functionality, appearance and

identity. Good streetscapes enhance the community environment by providing access to land uses, locations for social interaction, and sites for locating and maintaining infrastructure and amenities.

The TAP provides a funding level of $75 million over the 25-year planning period. It is anticipated that this program will fund approximately 25 projects at approximately $3,000,000 each.

■ 6.2.3.28 Traffic Calming Program

This program provides funding for new traffic control devices or other "traffic calming" improvements (speed humps, circles and other innovative neighborhood traffic control devices). Need is based on neighborhood requests to control travel speeds through neighborhoods.

The TAP provides a funding level of $25 million over the 25-year planning period. It is anticipated that this program will fund approximate 25-30 smaller type projects (e.g. speed humps) per year and 3 larger type projects (e.g. traffic circles) per year.

6.3 Gap Analysis

Moving a plan from concept to reality requires money and the commitment to deliver the plan's recommended programs and projects. The City of Charlotte has a growing gap between transportation investment needs and available transportation funding.

The transportation programs and projects (described in Section 6.2) to be funded by the City of Charlotte for Fiscal Years 2011-2035 total $2,593,425,000. At this time, there are no future bonds planned. The following section will describe potential sources of new revenue sources to help close this gap.

6.4 Potential Revenue Sources

■ 6.4.1 Background

The City of Charlotte has traditionally relied on voter approved bonds to fund road improvements. Such bonds are funded through the City's property tax levy. While potentially a significant source of funding, the reliance on property tax funded debt for improvements has led to erosion in the transportation level of service over time as improvements have not been able to keep up with population growth and related demand on the City's transportation facilities.

Further, the City's reliance on voter-approved bonds creates uncertainty about future funding available for transportation projects, which presents problems for long-term planning.

In response to the City's transportation funding gaps, the City established the Transportation Committee of 21 was established to examine area transportation needs, identify long-term funding options and advocate for proposed funding sources. First convened in May 2008, the Committee has examined a wide range of funding options along with estimates of potential revenue associated with each option.

As a supplement to the Committee's funding option analysis, Duncan Associates was retained by the City of Charlotte to conduct a survey of communities to determine how rapidly-growing metro areas throughout the country — that are comparable in size to Charlotte — fund transportation improvements. The cities surveyed in the analysis are illustrated in *Figure 6B* (below) and include the following communities: Austin, TX; Fort Worth, TX; Orlando, FL; Tampa, FL; Atlanta, GA; Phoenix, AZ; Portland, OR; Seattle, WA; Denver, CO; San Diego, CA; and Raleigh, NC. These city transportation funding sources surveyed were used to develop potential funding options for Charlotte.

Figure 6B: **Cities Surveyed on Funding Transportation Improvements**

■ 6.4.2 Surveyed Cities — General Fund Revenue

The survey included an analysis of each city's general fund and the primary revenue sources for the general fund.

- Property and sales taxes are the primary revenue sources among the surveyed cities.
- The third most common major revenue sources are franchise and business license fees, which are major sources of revenue in Orlando, Tampa, Atlanta, Phoenix, Portland, Seattle, San Diego and Fort Worth.
- Transfers from city-owned utilities and utility taxes are significant sources of revenue in Austin, Orlando, Tampa, Portland, Seattle and Raleigh.
- Lodging taxes provide general fund revenue in Atlanta, Portland and San Diego.
- Phoenix is the only city in the survey with a local income tax.

Other revenue sources used by the surveyed cities include state revenue sharing, service charges, fines and fees, motor vehicle fees, alcohol taxes and real estate property transfer taxes.

■ 6.4.3 Surveyed Cities — Transportation Operating and Maintenance Funding

The transportation operating and maintenance budgets were examined and, where possible, funding for transit operations was excluded from the survey. Transportation operating and maintenance projects typically include road repaving, signs, traffic light maintenance, sidewalks and other street maintenance functions.

General fund transfers are the only source of operating and maintenance funding in Orlando, Atlanta and Fort Worth. The general fund is a significant source of funding for operations and maintenance in Phoenix, Seattle, Denver, San Diego and Raleigh. **Dedicated state funding** derived from fuel taxes provides support for operations and maintenance in Phoenix, Seattle and Raleigh; Tampa and Portland have **local gas taxes**.

A number of the cities surveyed have **dedicated tax and revenue funding** for transportation-related operating and maintenance costs. Both San Diego and Tampa dedicate a portion of the local sales tax, which is authorized by state law in California and Florida. The local transportation sales tax in San Diego is a voter approved quarter-cent sales tax, and the sales tax in Tampa is a portion of the local half cent sales tax (CIT funds). Denver has a dedicated mill levy for capital maintenance. Phoenix has a capital construction fund that is funded with a 2% tax on telecommunications. Portland dedicates parking fee and fine revenue for capital maintenance.

Austin uses reimbursements from city-owned water and electric utilities for maintenance and operations expenditures. **Utility fund transfers** recognize the cost or value of the city's transportation department services and maintenance costs associated with utility activity. Such fees are similar to **franchise fees** charged to privately owned utilities, recouping costs related to the privilege of using public right-of-way for installing infrastructure, such as storm drains, water mains, electric lines and cables.

Austin is the only city in the survey that charges residential and commercial property a "Transportation Utility Fee" (TUF). The fee provides almost 90% of the city's transportation fund revenues and is dedicated toward maintenance and repair, minor construction and support and planning expenditures. The TUF is included as a charge in the monthly utility bills. The current fee is about $80 annually for a single-family household, with higher fees for non-residential uses. This TUF is based on the average number of daily motor vehicle trips made by each residential customer, reflecting the size and use of each property.

■ 6.4.4 Surveyed Cities — Transportation Capital Funding

The survey examined the most recent capital improvement plan (CIP) funding sources for transportation projects to determine how each city funds road projects. In some instances, additional information on funding for major road projects was obtained through discussions with city staff and further analysis of past road project funding sources. Transportation CIPs typically include new roads and related facilities (sidewalks, bike lanes, bridges and traffic signals), intersection improvements, expansions of existing facilities and major improvement and rehabilitation projects. CIPs generally do not reflect minor developer contributions such as frontage improvements.

Voter approved bonds are the most common funding source for capital improvement projects and serve as major funding source in seven of the surveyed communities (Austin, Atlanta, Seattle, Denver, Fort Worth and Raleigh). Bond referenda typically outline the funding and projects that will be funded by the bonds. GO bond issues are utilized in Austin, Atlanta and Raleigh. Seattle, Denver and Fort Worth have a dedicated property tax millage for the voter-approved bond issues.

In addition to the bonds, **voter approved initiatives** in Tampa, Seattle and San Diego have provided additional funding sources for road projects. Tampa and San Diego both have voter-approved local sales taxes that are used to fund transportation projects.

Seattle voters approved a commercial parking tax and a head tax on employers to fund transportation infrastructure; however, the City suspended the head tax on employers in 2010 and relies on the parking tax revenue to pay the bonds. The commercial parking tax in Seattle is a 10% tax on commercial parking rates, which provides about $20 million per year for road funding. The head tax, also called an employee hours tax, was levied by the City on businesses based on the number of employees with deductions offered for

employees that did not utilize single-occupancy vehicles for commuting. The tax was suspended in 2010 because it was difficult to administer and it was seen as a disincentive for job creation. The higher than expected revenue from the commercial parking tax made it possible to suspend the head tax without affecting bond repayment.

Voter approval is not necessary for issuing debt in all of the surveyed cities. Tampa uses its local option gas tax to issue **revenue bonds**, Phoenix uses a secondary property tax to fund bonds, and Portland uses gas tax and parking revenue to fund bonds for transportation improvements. Most of the surveyed cities utilize tax incremental financing (TIF) to fund transportation improvements with debt issues in certain areas of each municipality that meet the qualifications for TIF district funding.

Local and state gas taxes, provided through revenue sharing agreements, fund capital projects in Orlando, Tampa, Phoenix, Portland and Denver. A local option gas tax is available to counties in Florida and Oregon with some of the proceeds distributed to cities based on population. State highway user funds from the state gas tax are distributed to cities based on population in Arizona, Colorado and North Carolina (Powell Bill funds) and dedicated for capital improvement projects in Phoenix and Denver. A portion of the State gas tax distribution is allocated for capital improvements in Raleigh.

General fund support for capital improvement projects is provided in Orlando, Atlanta, San Diego and Raleigh. In each of the cities, the amount of general fund support for the CIP is discretionary.

Eight communities in the survey have transportation **impact fees or development fees.** These communities include Orlando, Tampa, Atlanta, Phoenix, Portland, San Diego, Fort Worth and Raleigh. A similar approach is used in Seattle, where they have "Growth Payment Program" (GPP) districts in fast-growing neighborhoods and State Environmental Policy Act (SEPA) mitigation fees. Property developers with projects in a GPP district pay additional fees to fund the pedestrian, bicycle, and automobile transportation improvements necessitated by the increased traffic caused by rapid growth. SEPA mitigation fees are designed to offset environmental impacts of new development and fund multi-modal transportation. Similar to impact fees, GPP and SEPA payments are determined by zoning, nonresidential square-footage, and number of units.

In addition to the impact fee, San Diego uses Facility Benefit Assessment (FBA) **districts** to fund infrastructure for designated areas, typically in agreement with a developer or group of developers. The FBA results in a lien being levied on each parcel of property located within the area of benefit. The liens ensure that assessments will be collected on each parcel as development occurs and will be renewed annually with each update to the Financing Plan. The liens are released following payment of the assessment. The dollar amount of the assessment is based on the collective cost of each public facility and is equitably distributed over the area of benefit.

Portland, Denver, San Diego and Raleigh utilize special assessment districts to fund capital improvement projects in certain areas of these municipalities. Portland and Denver use local improvement districts (LIDs), and San Diego uses maintenance assessment districts (MADs). Raleigh utilizes municipal service districts that levy an additional property tax levy.

In Denver and San Diego the assessment districts are formed when a majority of property owners agrees to share in the cost of transportation infrastructure improvements. When property owners decide they want to form a LID or MAD, they agree to assume responsibility to pay for the project. The municipality works with property owners to determine the scope of the project and develops an assessment methodology. A variety of methods are used, including square footage, linear footage or equivalent dwelling unit. Assessment districts are beneficial in that they provide all of the funding needed for a particular public facility project in advance of the projected development activity.

Developer contributions (exactions) are utilized in most rapidly growing areas and can take the form of land donations or in-kind donations. Developer contributions are negotiated and agreed on as part of the approval process of development in most of the surveyed cities, but are not part of the primary funding source for CIP projects. San Diego has used developer agreements where certain rights of development are extended to the developer in exchange for certain extraordinary benefits given to the city.

A **summary** of transportation funding tools used by the surveyed cities is shown in *Figure 6-C* below. The most common dedicated funding source for transportation among the surveyed cities is the impact fee, with the second most common funding source the vehicle fee. The table does not show the use of exactions by the surveyed cities, since most cities utilize developer exactions on an ad hoc basis.

Figure 6C: **Surveyed Cities Transportation Funding Sources**

	GO Bonds	Property Tax	Sales Tax	Local Gas Tax	Impact Fee	Special District	R.E. Tax	Utility Fee	Franchise Fee	Vehicle Fee	Parking Tax
Charlotte, NC		X									
Raleigh, NC	X				X	X					
Austin, TX	X							X	X		
Fort Worth, TX		X			X						
Orlando, FL				X	X						
Tampa, FL			X	X	X						
Atlanta, GA	X				X					X	
Phoenix, AZ					X				X		
Portland, OR				X	X	X					
Seattle, WA		X					X			X	X
Denver, CO		X				X					
San Diego, CA			X		X	X	X			X	

■ 6.4.5 Transportation Funding Analysis Criteria

To be successful, transportation programs and projects require adequate funding. Although there are many possible funding sources, some may be more appropriate to a given place because they support other planning objectives such as traffic and parking congestion reduction, more accessible land use development, pollution reductions and increased equity.

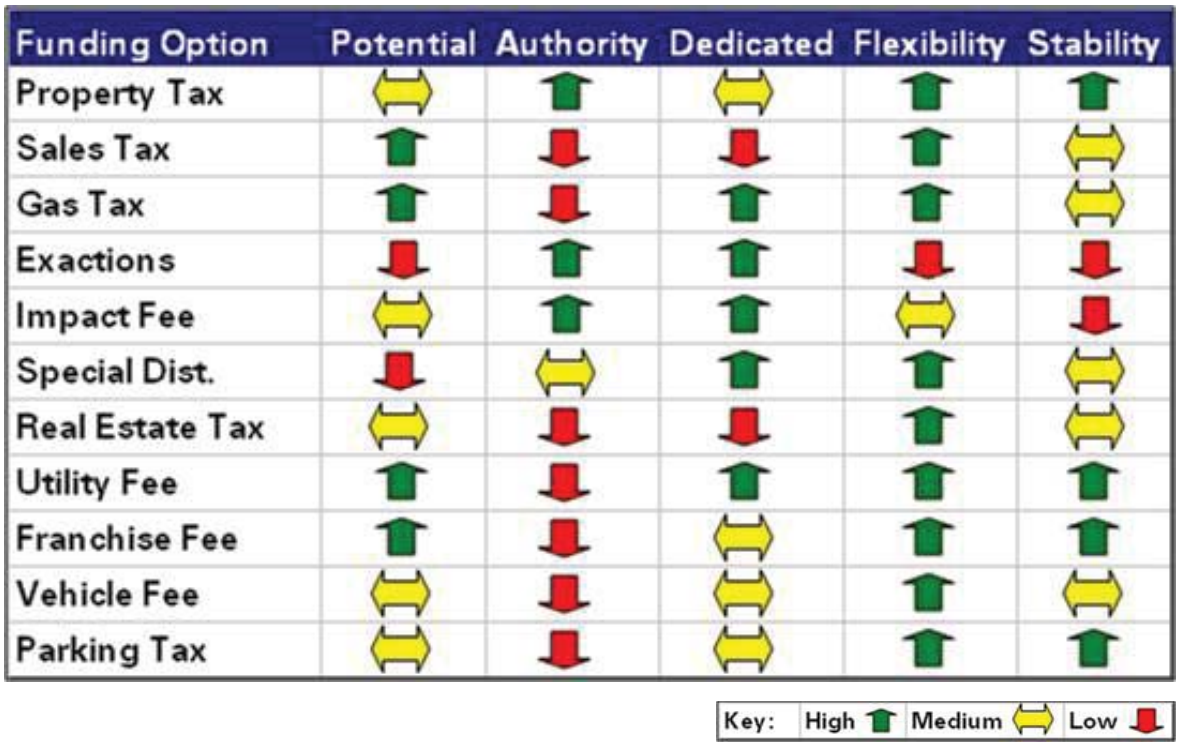
The best funding options provide adequate funding for transportation facilities, stable and predictable funding, are authorized under state law or within the city's legal authority, provide flexibility in the use of funds and can be equitably dedicated for transportation projects. The evaluation criteria used in the transportation funding analysis include the following:

- *Funding Potential:* Ability to provide sufficient revenues to cover a major portion of transportation facility costs. (Low < $10 mil; Medium = $10 mil to $25 mil; High > $25 mil)
- *Legal Authority:* Extent to which a particular financing technique has a sound legal basis in North Carolina. (Low = Not legal under current State law; Medium = Need authorizing legislation but there is legal precedence; High = Authorized by State law)
- *Dedicated Funding Source:* Extent to which funding can be dedicated toward transportation-related projects. (Low = Not dedicated to transportation; Medium = Discretionary funding that may be dedicated; High = Easily dedicated to transportation)
- *Flexibility of Use:* Ability to use funds on maintenance, operations and capital improvements and ability to program funding in different areas of the city. (Low = restrictive use of funds; Medium = Geographical or expenditure restriction; High = No restrictions on use of funds)
- *Stability:* Stability of funding source over time. (Low = Funding varies greatly year-to-year; Medium = Some variation due to economic changes; High = Steady funding)

■ 6.4.6 Funding Options for Consideration in Charlotte

This study examines several funding options derived from the surveyed city survey. This section includes a brief description, and an analysis of the general benefits and drawbacks of each option along with a measurement of how the option matches the funding criteria discussed in the prior section. A matrix showing each option and the corresponding criteria score is shown in *Figure 6D*.

Figure 6D: **Alternative Transportation Funding Analysis Matrix**



■ 6.4.6.1 Property Tax (Dedicated)

Dedicated property tax for transportation capital and maintenance needs. Property taxes are typically the largest source of revenue for municipalities. Property taxes may be allocated to capital funding through the general fund or dedicated to capital or bond issues through a separate ad valorem property tax levy.

Surveyed Cities:	Property taxes are part of the general fund revenue mix in all the surveyed cities. Seattle, Denver and Fort Worth have a dedicated property tax millage for the voter-approved bond issues.
Pro:	Broad based; may be used as backing for other bonds; voter approval ensures support
Con:	Not charged specifically to motorists; voter resistance to taxes
Funding Potential:	Moderate ($15.0 million annually based on $0.02 per $100 of valuation)
Legal Authority:	High
Dedicated Funding Source:	Moderate
Flexibility of Use:	High
Stability:	High

■ 6.4.6.2 Sales Tax (City)

Sales taxes are a widely used revenue source and are typically used to support the general fund in municipalities. Some cities have dedicated sales taxes for transportation improvements, depositing such revenue into segregated transportation fund accounts for the construction and maintenance of transportation facilities.

Surveyed Cities:	Local sales taxes are part of the general fund revenue mix in Austin, Atlanta, Phoenix, Seattle, San Diego and Fort Worth. Dedicated sales taxes for transportation are utilized in Tampa and san Diego.
Pro:	Broad based; may be used as backing for other bonds; voter approval ensures support
Con:	Not charged specifically to motorists; voter resistance to taxes
Funding Potential:	Moderate ($16.4 million annually for 0.50%)
Legal Authority:	Low
Dedicated Funding Source:	Low
Flexibility of Use:	High
Stability:	Moderate

■ 6.4.6.3 Gas Tax

In general, fuel taxes are an excise tax levied on a per-gallon basis. Fuel taxes are widely used by State governments to fund transportation, but only 15 states currently authorize local-option fuel taxes.

Surveyed Cities:	Local option fuel taxes are utilized in Tampa, Orlando and Portland. State fuel tax distributions are dedication for transportation funding in Phoenix, Seattle, Denver and Raleigh.
Pro:	Broad based; may be dedicated for bonds; charged specifically to motorists
Con:	Voter resistance to taxes; not indexed for price inflation
Funding Potential:	Moderate ($20.5 million annually per $0.05/gallon)
Legal Authority:	Low
Dedicated Funding Source:	High
Flexibility of Use:	High
Stability:	Moderate

■ 6.4.6.4 Developer Contributions

Developer contributions, also known as exactions, can take the form of land donations or in-kind donations, such as construction of public infrastructure. Development exactions are negotiated and agreed on as part of the permitting process of development. A developer either constructs required facilities as a condition of subdivision or provides funds for the fair share of the costs of such facilities, with construction being performed by the City.

Fort Worth utilizes community facility agreements (CFA) whenever public infrastructure is constructed or funded by a private party. Such agreements ensure that new development is adequately served by public infrastructure and that the infrastructure improvements are constructed according to City standards.

Public/private partnerships may be used to leverage developer contributions. Such partnerships are a formal arrangement between a public entity and a private developer for the development of a specific asset on publicly owned or controlled property. A developer may be granted the privilege of special assessment financing for new facilities, and use of municipal borrowing authority to reduce the developer's cost.

Surveyed Cities:	Most cities exercise this option on an ad-hoc basis
Pro:	Strong connection between payers and beneficiaries
Con:	Risk: not applied equitably and proportionately to all development
Funding Potential:	Low
Legal Authority:	High
Dedicated Funding Source:	High
Flexibility of Use:	Low
Stability:	Low

■ 6.4.6.5 Impact Fee

Impact fees are one-time charges to developers and builders. Revenues are used to pay for infrastructure improvements to support the demand for new transportation facilities generated by new development. Impact fees are based on the principle that new growth areas should be required to pay a pro rata share of the costs.

Surveyed Cities:	Orlando, Tampa, Atlanta, Phoenix, Portland, San Diego, Fort Worth and Raleigh.
Pro:	Pays for impacts of growth; local control; leverage for other funding

Impact Fee (continued

Con:	Limited uses; increases cost of development; paid only by growth (narrow base)
Funding Potential:	High ($26.0 million annually with a $2,500 single-family equivalent fee)
Legal Authority:	Moderate (requires State Act for authorization, legal precedence in North Carolina)
Dedicated Funding Source:	High
Flexibility of Use:	Moderate
Stability:	Low

■ 6.4.6.6 Special Districts

Special districts are geographic areas within which fees or taxes are collected to fund public facilities that benefit properties within the district. Unlike other financing techniques that target new development to pay a share of community improvements, special districts assess and tax all the properties in a defined area, developed or undeveloped.

Special districts have several advantages. First, special districts shift the burden of infrastructure finance from the general public to the properties that receive the benefits. Property owners are assured that their taxes will be used to provide and maintain public facilities that benefit them directly. Second, this financing scheme taxes both existing development and vacant land within the special district. Thus, revenue from the program is more predictable than other finance schemes such as impact fees, development taxes and developer exactions, which all depend on development cycles.

The structure of special districts varies widely across the states. Some special districts are temporary creations to raise revenue for specific improvements. Assessments may be imposed either as user fees or taxes. Special districts may be restricted to portions of a municipality or cross jurisdictional boundaries. In rapid growth areas, special districts are usually established as independent special-purpose governmental entities with ongoing responsibilities.

- **Community Facilities Districts (CFD):** CFDs, also referred to as Mello-Roos Districts in California, are special districts where property owners are taxed annually for their share of the debt service on any bonds that the CFD has issued and/or to pay for the cost of city services. The formation of CFDs may be initiated by owner/developer petition.
- **Local Improvement Districts (LID):** A LID is a method by which a group of property owners can share in the cost of transportation infrastructure improvements. A LID

Special Districts (continued)

can be used to make improvements in already established areas. A LID is a one-time assessment on property owners. The assessed cost must be distributed among property owners according to the proportionate benefits to each owner's land. A property owner may either pay the assessment in full, or some municipalities offer the option to finance the assessment. Financing plans may provide a property owner the option to pay the assessment over 5, 10 or 20 years with monthly or semiannual payments. If property ownership changes, payment responsibility remains with the property and does not follow the previous property owner. Assessments are secured by a lien on the property until paid.

- **Municipal Service Districts (MSD):** An MSD is a separate tax district within a municipality that pays an additional ad valorem tax rate in order to finance maintenance or capital projects beyond the typical level of service provided by the city.

- **Maintenance Assessment District (MAD):** A MAD is a legal mechanism by which property owners can vote to assess themselves to pay and receive maintenance services above-and-beyond what the City normally provides. A MAD is not typically used to provide funding for construction of new facilities.

- **Cost Reimbursement District (CRD):** A Cost Reimbursement District (CRD) provides a mechanism by which the developer/sub-divider may be reimbursed by benefiting development which proceeds within 20 years of formation of the CRD. The reimbursement occurs when a developer is required to construct public improvements that are more than that which is required to support its individual property/development. Reimbursement is secured by a lien on the benefiting properties with the lien due and payable only upon recordation of a final map or issuance of a building permit, whichever occurs first.

- **Tax Increment Financing District (TIF):** Tax increment financing is an internal accounting technique. No special fees or taxes are assessed. Instead, the portion of tax revenues attributable to new development are earmarked to retire bonds that finance the infrastructure improvements that stimulated the new development. TIFs are particularly attractive to cities because they can result in other taxing authorities, such as counties or school districts, contributing to the infrastructure costs.

Surveyed Cities:	San Diego (CFD, MAD, CRD), Denver (LID), Portland (LID) and Raleigh (MSD); most cities in the survey have TIF districts.
Pro:	Good nexus between facility benefit and payer; very little opposition from those outside district boundary; assessment is proportionate to benefit

Special Districts (continued)

Con:	Inflexible; not suitable for large-scale or widespread transportation improvements; require detailed feasibility and economic studies; may require approval of majority of property owners; TIFs may results in less unrestricted general fund revenue if improvement does not spur growth that would not have otherwise occurred somewhere else in the jurisdiction
Funding Potential:	Low (amount would vary based on size of district and tax rate)
Legal Authority:	Moderate
Dedicated Funding Source:	High
Flexibility of Use:	High
Stability:	Moderate

■ 6.4.6.7 Real Estate Transfer Tax

A real estate transfer tax, also known as a land or property transfer tax, is a sales tax on all real estate transactions involving land and is paid every time a deed changes hands. Real estate transfer taxes are based on the full sales price, reflecting the value of both the land and the infrastructure improvements. Because real estate transfer taxes are not dependent on new development but rather on an active real estate market, revenues from real estate transfer taxes are more predictable than revenues from other financing schemes such as impact fees.

Surveyed Cities:	San Diego and Seattle (goes into the general fund)
Pro:	Broader base than development-specific fees; efficient collection and assessment when real estate is transferred
Con:	Real estate transfer taxes cannot be adopted by local governments without state enabling legislation; low political appeal (strongly opposed by realtors); no direct connetion between payers and beneficiaries
Funding Potential:	Moderate ($16.5 million annually for 0.40%)
Legal Authority:	Low
Dedicated Funding Source:	Low
Flexibility of Use:	High
Stability:	Moderate

■ 6.4.6.8 Utility Fee

A transportation utility fee is a local utility charge to property for access to the road system. Road utility fees are typically used for road maintenance and repair but may also be used for capacity projects. Utility fees are levied upon property based on factors such as motor vehicle trip generation estimates, the number of parking spaces, the number of employees, front footage or a flat fee, depending on land use.

Surveyed Cities:	Austin
Pro:	Direct connection between payers and beneficiaries; broad base
Con:	Questionable legal authority; citizen opposition to higher fees
Funding Potential:	High ($40.0 million annually based on Austin fee revenue with $80/ year single family equivalent fee)
Legal Authority:	Low
Dedicated Funding Source:	High
Flexibility of Use:	High
Stability:	High

■ 6.4.6.9 Franchise Fee

Franchise fees, or local access fees, are fees paid by utilities to local government for the privilege of using public right-of-way for installing infrastructure, such as fiber optic cable, water lines, electric lines and other utility-related facilities. Franchise agreements, which are often negotiated between utility companies and municipalities, guarantee the utility exclusive service rights within the municipality. In North Carolina, the State sets the utility franchise fee rates and collects and distributes the revenue to municipalities.

Surveyed Cities:	Austin (cost recovery from publicly-owned utility dedicated to transportation fund) and Phoenix (telecom tax dedicated for transportation improvements); city-owned utility compensation provided to general fund in Austin, Orlando and Tampa; public utility franchise fee provided to general fund in Atlanta, Portland and Seattle
Pro:	Strong connection between payers and beneficiaries
Con:	Questionable legal authority for municipalities in North Carolina to increase rates; opposition to higher utility rates
Funding Potential:	High (potential revenue would vary based on rate)
Legal Authority:	Low (tax is applied at State level and remitted to municipality where power was purchased)

Franchise Fee (continued)

Dedicated Funding Source:	Moderate
Flexibility of Use:	Moderate (usually used for road/right-of-way maintenance)
Stability:	Moderate

■ 6.4.6.10 Vehicle Registration Tax (Local)

Many states provide authority to local governments to levy local vehicle registration fees that can be used for local transportation needs.

Surveyed Cities:	Atlanta (general fund), Seattle (Transportation Benefit District), San Diego (general fund) and Raleigh (general fund)
Pro:	Strong connection between payers and beneficiaries
Con:	Citizen opposition to higher fees
Funding Potential:	Moderate ($15.6 million annually with $30/vehicle fee)
Legal Authority:	Low (Charlotte already charges maximum fee allowed under North Carolina state law)
Dedicated Funding Source:	Moderate
Flexibility of Use:	High
Stability:	Moderate

■ 6.4.6.11 Commercial Parking Tax

A tax or fee imposed on commercial parking facilities. Parking fees are currently used in many areas in the United States, including Seattle. The commercial parking tax in Seattle is a 10% tax on commercial parking rates, which provides about $20 million per year for road funding.

Surveyed Cities:	Seattle
Pro:	Strong connection between payers and beneficiaries
Con:	Opposition from business owners; difficult to administer and collect tax
Funding Potential:	Moderate ($9.0 million annually per $0.50 rate)
Legal Authority:	Low

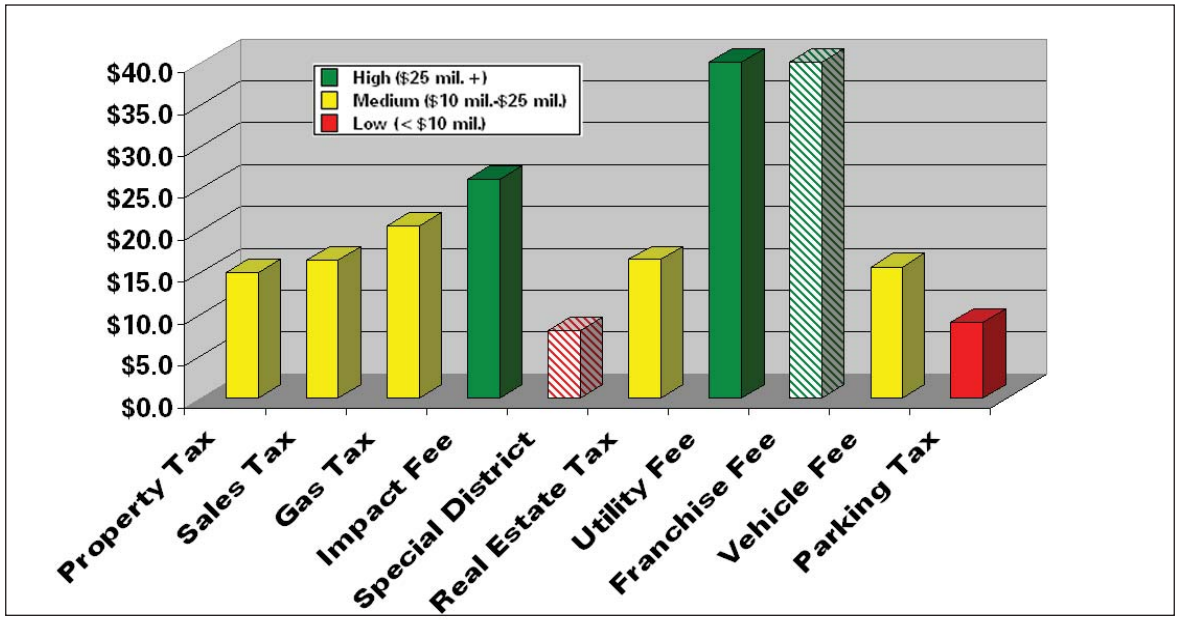
Commercial Parking Tax (continued)

Dedicated Funding Source:	Moderate
Flexibility of Use:	High
Stability:	Moderate

■ 6.4.7 Summary

The following table summarizes the additional potential revenue sources that the City of Charlotte could consider in addressing its 25-year transportation funding gap.

Figure 6E: **Estimated Yields for Charlotte from Various Revenue Sources**



Source: Charlotte Finance Department and Charlotte Department of Transportation

Most of these examples of local funding mechanisms presently are not available to North Carolina jurisdictions because specific authority to use them has not been granted by the General Assembly. Local units of government thus are restricted in their ability to employ new sources of revenue for transportation or any other public purpose.

In addition, if some of the revenue sources were allowed, they could only be collected at the County level. A mechanism would have to be developed on how these funds would then be sub-allocated back to the City. Addressing some of these historical legislative constraints should be an objective of a state/local partnership on behalf of unmet transportation needs.

Appendix A:

Adopted Figures

Figure 4:
Locally Funded Transportation Programs and Improvements List

Program Category	TAP Goal	To be accomplished during TAP timeframe using proposed funding level	2011-2015	2016-2025	2026-2035	Total 2011-2035
Motorists: Capacity and Safety Improvements						
Bridge Program	2	Inspect every city-maintained bridge (currently 193) every two years and make repairs as necessary ($35,000,000); replace 10 bridges ($40,000,000)	$ 15,000,000	$ 30,000,000	$ 30,000,000	$ 75,000,000
Curb and Gutter Maintenance Program	2	Replace 250 miles of curb & gutter @ $150,000/mile	$ 2,500,000	$ 5,000,000	$ 5,000,000	$ 12,500,000
Farm-to-Market Road Improvement Program	2	Modify rural roads to City standards (approx. 60 miles @ $8,000,000/mile)	$ 100,000,000	$ 200,000,000	$ 200,000,000	$ 500,000,000
Intersection Capacity & Multimodal Enhancement Program	2	Upgrade 50 intersections (@ $5,000,000 each)	$ 50,000,000	$ 100,000,000	$ 100,000,000	$ 250,000,000
Major Thoroughfare and Street Projects	2	Construct approximately 50 locally-funded projects (see Appendix B-5)	$ 150,000,000	$ 300,000,000	$ 300,000,000	$ 750,000,000
Minor Roadway Improvement Program	2	Construct 250 low-cost improvement projects @ $250,000 each	$ 12,500,000	$ 25,000,000	$ 25,000,000	$ 62,500,000
Pedestrian & Traffic Safety Program	2	Construct projects that enhance the safety of motorists and other travelers	$ 5,000,000	$ 10,000,000	$ 10,000,000	$ 25,000,000
Public-Private Participation Program	5	Share costs with private developers to create better projects (approx. 250 projects @ $175,000)	$ 8,750,000	$ 17,500,000	$ 17,500,000	$ 43,750,000
Railroad Grade Crossing Improvement Program	2	Improve 70 railroad grade crossings at $15,000 each	$ 210,000	$ 420,000	$ 420,000	$ 1,050,000
Railroad Safety Improvement Program	2	Improve 75 railroad crossing signals at $15,000 each	$ 225,000	$ 450,000	$ 450,000	$ 1,125,000
State Highway Participation Program	5	Share costs with State to create better projects, including funding to improve street lighting and sidewalks	$ 10,000,000	$ 20,000,000	$ 20,000,000	$ 50,000,000
Street Connectivity Program	2	Construct 50 street connections (@$1,000,000/ea.), 3 miles of new connector streets (@$8,000,000/mi.), 25 stream crossings (@$1,000,000/ea.) and funds for ROW protection (@$1,000,000/yr.)	$ 25,000,000	$ 50,000,000	$ 50,000,000	$ 125,000,000
Street Lighting Installation Program	2	Install streetlights on the 150 miles of thoroughfares that are not presently illuminated	$ -	$ -	$ -	$ -
Street Resurfacing Program	2	Maintain street resurfacing at 12-year resurfacing cycle	$ 30,000,000	$ 60,000,000	$ 60,000,000	$ 150,000,000
Traffic Control Devices Upgrade Program	2	Maintain all existing intersections (725) as well as 325 new intersections over next 25 years while upgrading 1250 (50/yr.) signalized intersections with new equipment ($30,000,000); construct new Traffic Management Center ($10,000,000); upgrade all signs and markings to meet higher visibility standard ($25,000,000), and upgrade 375 intersections over 25-years to include APS devices for visually impaired ($5,625,000).	$ 15,000,000	$ 30,000,000	$ 30,000,000	$ 75,000,000
Traffic Flow Enhancement Program	2	Improve traffic flow by using existing streets more efficiently through several techniques: Optimal signal coordination ($35,000,000), ITS ($15,000,000), and incident management ($25,000,000)	$ 10,000,000	$ 25,000,000	$ 25,000,000	$ 60,000,000
		Capacity and Safety Improvements Total	**$ 434,185,000**	**$ 873,370,000**	**$ 873,370,000**	**$ 2,180,925,000**

Figure 4:
Locally Funded Transportation Programs and Improvements List

Program Category	TAP Goal	To be accomplished during TAP timeframe using proposed funding level	2011-2015	2016-2025	2026-2035	Total 2011-2035
Pedestrian Pathways						
Pedestrian Connectivity Program	2	Construct 100 bike/ped connections (@$100,000 each) & 250 mid-block crossings (@$40,000/ea.)	$ -	$ -	$ -	$ -
Safe Routes to School Program	2	Implement projects at 25 schools at $1,000,000 each	$ -	$ -	$ -	$ -
Sidewalk Construction Program	2	Construct 150 miles of new sidewalks @$1,000,000/mile	$ 30,000,000	$ 60,000,000	$ 60,000,000	$ 150,000,000
Sidewalk Maintenance Program	2	Replace 200 miles of sidewalk @ $125,000/mile	$ 5,000,000	$ 10,000,000	$ 10,000,000	$ 25,000,000
		Pedestrian Pathways Total	**$ 35,000,000**	**$ 70,000,000**	**$ 70,000,000**	**$ 175,000,000**
Bicycle Pathways						
Bicycle Program	2	Create a network of 500 miles of bikeways, including bike lanes, bike routes and greenways	$ 10,000,000	$ 20,000,000	$ 20,000,000	$ 50,000,000
		Bicycle Pathways Total	**$ 10,000,000**	**$ 20,000,000**	**$ 20,000,000**	**$ 50,000,000**
Livable Neighborhoods and Centers						
Air Quality and Congestion Mitigation Program	3	Construct projects that can help improve air quality within Charlotte	$ -	$ -	$ -	$ -
Area Plan Capital Project Program	2	Implement 25 area plan projects at $500,000 each	$ 2,500,000	$ 5,000,000	$ 5,000,000	$ 12,500,000
Center City Implementation Program	1	Implement low-cost transportation infrastructure improvements as outlined in Center City Transportation Study	$ 10,000,000	$ 20,000,000	$ 20,000,000	$ 50,000,000
Centers and Corridors Implementation: Corridors	1	Complete station area projects in all four remaining corridors (10 stations @ $5,000,000 each)	$ 10,000,000	$ 25,000,000	$ 15,000,000	$ 50,000,000
Centers and Corridors Implementation: Centers	1	Implement 5 regional center projects ($5,000,000 each) and 10 subregional center projects ($2,000,000 each)	$ -	$ -	$ -	$ -
Streetscape/Pedscape Program	2	Implement 25 projects at $3,000,000 each	$ 15,000,000	$ 30,000,000	$ 30,000,000	$ 75,000,000
Traffic Calming Program	2	Construct 35-40 smaller projects (i.e. using speed humps) per year ($250,000) and 5 larger projects (i.e. using traffic circles or other) per year ($1,250,000)	$ 5,000,000	$ 10,000,000	$ 10,000,000	$ 25,000,000
		Livable Neighborhoods and Centers Total	**$ 42,500,000**	**$ 90,000,000**	**$ 80,000,000**	**$ 212,500,000**
		PROGRAM & PROJECT GRAND TOTAL	**$ 521,685,000**	**$ 1,053,370,000**	**$ 1,043,370,000**	**$ 2,618,425,000**

Appendix B:

Other Figures

Appendix B-5

Locally Funded Roadway Projects

(Listed in Priority Order)

Project Name	Project Limits	Existing Conditions	Proposed Improvement	Estimated Project Cost (000)
Fred D. Alexander Boulevard	Freedom Dr. (NC 27) to Brookshire Blvd. (NC 16)	n/a	New Road (4), Bike Lanes	$ 36,500
Beatties Ford Road	Capps Hill Mine Rd. to Sunset Rd.	2-lane road	Widening (4), Bike Lanes	$ 13,000
Idlewild Road	Piney Grove Rd. to Drifter Dr.	2-lane road	Widening (4), Bike Lanes	$ 8,000
Eastern Circumferential	University City Blvd. (NC 49) to Back Creek Church Rd.	n/a	New Road (4), Bike Lanes	$ 17,700
Martin Luther King Jr. Blvd. Extension	S. Graham St. to S. Cedar St.	n/a	New Road (2), Bike Lanes	$ 17,200
Sugar Creek Road/Norfolk Southern RR	Grade Separation	n/a	New grade separation over railroad	$ 5,000
36th St./Norfolk Southern RR	Grade Separation	n/a	New grade separation over railroad	$ 5,000
DeWitt Lane/Scaleybark Road Extensions	Cama Rd. to OPR	n/a	New Road (2), Bike Lanes	$ 5,500
Yancey Road Extension	OPR to South	n/a	New Road (2), Bike Lanes	$ 5,600
Shopping Center Drive Extension	IBM Dr. to Ikea Blvd.	n/a	New Road (2), Bike Lanes	$ 16,700
North Tryon Parallel Road Network	36th St to Old Concord Rd	n/a	New Road (2), Bike Lanes	$ 5,000
Prosperity Church Road	I-485 to Prosperity Ridge Rd.	n/a	New Road (2), Bike Lanes	$ 11,700
Westpark Drive Extension	Tyvola Rd to Archdale Rd.	n/a	New Road (2), Bike Lanes	$ 8,900
Hartford Avenue	Realign to Clanton Rd.	n/a	New Road (2), Bike Lanes	$ 2,600
Brevard/Caldwell Streets	Fifth St. to Twelfth St.	2-3 lanes (one-way)	Convert to two-way, 2-lane traffic	$ 4,500
Prosperity Church Road	Prosperity Ridge Road to Eastfield Road	n/a	New Road (2), Bike Lanes	$ 9,000
Euclid Avenue Extension	E. Morehead St. to Stonewall St.	n/a	New Road (2), Bike Lanes	$ 24,200
Sugar Creek Road	Graham St. to NC 115-Sugar Creek Rd. Connector	2-lane road	Widening (4), Bike Lanes	$ 28,200
Arequipa Drive Extension	Margaret Wallace Rd. to Sam Newell Rd.	n/a	New Road (2), Bike Lanes	$ 22,300
I-485 Northeast Crossing (eastern leg)	Johnston Oehler Rd. to Ridge Rd.	n/a	New Road (2), Bike Lanes	$ 16,400
Denmark Rd Extension	Sweden Rd to Arrowood Rd	n/a	New Road (2), Bike Lanes	$ 6,600
Krefeld Drive Extension	McAlpine Creek to Sardis Rd. North	n/a	New Road (2), Bike Lanes	$ 20,200
Nevin Road Extension	Black Walnut Ln. to IBM Drive	n/a	New Road (3), Bike Lanes	$ 20,200
Archdale Dr.-Shopton Rd. Connector	Nations Ford Rd. to South Tryon St.	n/a	New Road (2), Bike Lanes	$ 19,300
Clanton Road Extension	current terminus to Ashley Rd.	n/a	New Road (2), Bike Lanes	$ 13,600
Sweden Drive Extension	England Rd. to Arrowood Rd.	n/a	New Road (2), Bike Lanes	$ 19,100
Arrowood/Whitehall Connector	Arrowood Rd to Whitehall Park Dr	n/a	New Road (2), Bike Lanes	$ 9,400
Beatties Ford Road	Sunset Rd. to Fred D. Alexander Blvd.	2-lane road	Widening (4), Bike Lanes	$ 19,600
I-485 Northeast Crossing (western leg)	Johnston Oehler Rd. to Ridge Rd.	n/a	New Road (2), Bike Lanes	$ 12,000

Appendix B-5

Locally Funded Roadway Projects

(Listed in Priority Order)

Project Name	Project Limits	Existing Conditions	Proposed Improvement	Estimated Project Cost (000)
Fred D. Alexander Boulevard	Brookshire Blvd. (NC 16) to Sunset Rd.	n/a	New Road (4), Bike Lanes	$ 39,400
Hucks Road Extension	Old Statesville Rd.(NC 115) to Statesville Rd. (US 21)	n/a	New Road & Widening (4), Bike Lanes	$ 14,300
Eastern Circumferential	Back Creek Church Rd. to Rocky River Rd.	n/a	New Road (4), Bike Lanes	$ 35,000
Seneca Place Extension	South Blvd. to Old Pineville Rd.	n/a	New Road (2), Bike Lanes	$ 5,300
Hucks Road Extension	Sugar Creek Rd. to Old Statesville Rd. (NC 115)	n/a	New Road (4), Bike Lanes	$ 23,900
Fifth Street Extension	McDowell St. to Kings Dr.	n/a	Extend lane (1) from 5th St. ramp to Kings D	$ 5,700
Community House Rd. Extension	Community House Rd. to Endhaven Ln..	n/a	New bridge over I-485	$ 26,300
Thirty Sixth Street Extension	Graham St. to N. Tryon St.	n/a	New Road (2), Bike Lanes	$ 22,800
Hucks Road Extension	Statesville Rd. (US 21) to Northlake Center Pkwy.	n/a	New Road (4), Bike Lanes	$ 22,100
Freedom Drive	Toddville Rd. to Little Rock Rd./Fred D. Alexander Blvd.	2-lane road	Widening (4), Bike Lanes	$ 10,500
Greenhill Drive Extension	Old Pineville Rd. to South Blvd.	n/a	New Road (2), Bike Lanes	$ 16,000
Brevard Street	Stonewall St. to Trade St.	3-4 lanes (one-way)	Convert to two-way, 2-lane traffic	$ 1,200
West Boulevard Relocation (NC 160)	Airport Dr. to Byrum Dr.	n/a	New Road (4), Bike Lanes	$ 9,700
Mint/Poplar Streets	2nd St. to 6th St.	3-4 lanes (one-way)	Convert to two-way, 4-lane traffic	$ 2,500
Dixie River Road/NC 160 Connector	NC 160 to Dixie River Rd.	n/a	New Road (2), Bike Lanes	$ 15,000
Fred D. Alexander Boulevard	Sunset Rd. to Harris Blvd.	n/a	New Road (4), Bike Lanes	$ 37,800
Silverleaf Road Extension	Old Pineville Rd. to future extension of Westpark Dr.	n/a	New Road (2), Bike Lanes	$ 2,500
Garrison Road	Dixie River Road N. to Dixie River Road S.	2-lane road	New Road & Widening (2), Bike Lanes	$ 19,000
Remount Road Extension	Greenland Av. to Camp Green St.	n/a	New Road (2), Bike Lanes	$ 2,300
Belmeade Drive Relocation	Moore's Chapel Rd. to Belmeade Dr.	n/a	New Road (2), Bike Lanes	$ 11,900
Blair Road Extension	Albemarle Rd. to Rocky River Church Rd.	n/a	New Road (2), Bike Lanes	$ 2,700
Hucks Road Extension	Prosperity Church Rd. to Browne Rd.	n/a	New Road (4), Bike Lanes	$ 12,200
Ridge Road Extension	Prosperity Church Rd. to Eastfield Rd.	n/a	New Road (4), Bike Lanes	$ 10,700
Arlington Church Road	Albemarle Rd. (NC 24/27) to Rocky River Ch. Rd.	n/a	New Road (2), Bike Lanes	$ 10,800