The City of Charlotte

TRANSPORTATION Action Plan

Technical Document

CHARLOTTE.

May 2006

Transportation Action Plan

Technical Document

May 22, 2006

Charlotte Department of Transportation
Charlotte-Mecklenburg Planning Commission
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 "great things" to be accomplished are the transportation improvements Charlotte will need to make over the next 25 years to accommodate growth while preserving our quality of life.

The TAP is Charlotte's first comprehensive transportation plan. It evaluates our transportation system today and what it will be like in 2030. It spells out policies for meeting growth's challenges and identifies what improvements are needed, how much they will cost (approximately $3.5 billion) and what revenue sources might be considered. The TAP actually consists 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 on May 22, 2006 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.*

Contents

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 340,000 new residents will move to Charlotte. This is comparable to the population of St. Louis, Pittsburgh or Cincinnati moving to Charlotte. Charlotte is now the nation's 20th most populous city and could become the 10th most populous by 2030. This growth will increasingly strain Charlotte's limited transportation infrastructure.

If our 350,000 new residents were to bring with them 257 lane miles of freeways and 275 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.

This Transportation Action Plan (TAP) provides the framework to accommodate that growth through 2030. A key component of this framework is integrating the City's Centers and Corridors growth strategy and providing more transportation choices. The TAP spells out policies to support this strategy; evaluates how our transportation system functions now and how it would function in 2030 with and without the TAP; and examines alternatives for funding the transportation system investment needed.

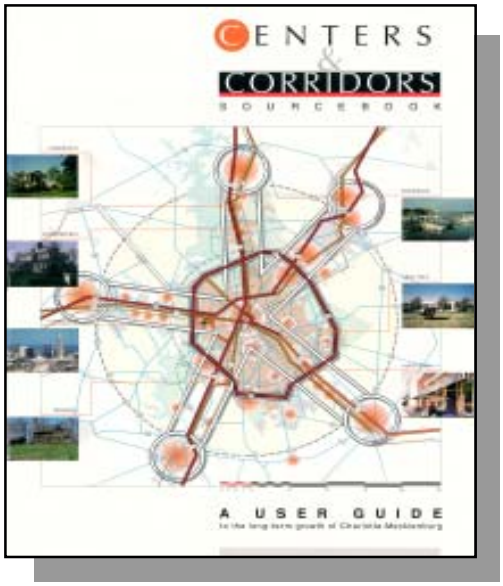
The TAP mission statement and five goals are already adopted in Charlotte's Focus Area Plan. Because transportation plays such a critical role in shaping the pattern and character of a community, it is essential that Charlotte's transportation investments and policies be further refined and aligned to support Charlotte's land use objectives.

The Transportation Action Plan 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 consists of two documents:

- ***TAP Policy Document,*** essentially Chapter 3 of this document, was adopted by the Charlotte City Council on May 22, 2006.
- ***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 and Corridors growth strategy. 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 its 1994 Centers and Corridors strategy. This strategy offers Charlotte the opportunity to develop a well-organized and cost-effective metropolitan area.



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. The Centers and Corridors growth management strategy has been widely endorsed. It was adopted by the City of Charlotte and Mecklenburg County in 1994 and endorsed again in 1997 through the adoption of the 2015 Plan.

The Centers and Corridors strategy 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, Figure 1* illustrates how the TAP and other City policy and current initiatives support the Centers and Corridors growth management strategy.

The Centers and Corridors concept uses a simple and clear development pattern to provide a foundation for Charlotte's economic growth, while protecting its quality of life. By increasing development in existing centers and corridors, the Centers and Corridors approach improves employment opportunities and housing choices and makes the best use of existing infrastructure and transportation resources. The TAP relies on two key Centers and Corridors policies being implemented:

- **TAP Policy 1.1.2**
  The City will encourage a minimum of 40% of new households and 70% of new multi-family units to be located within Centers and Corridors.
- **TAP Policy 1.1.3**
  The City will encourage 75% of new office development and 75% of new employment to be in Centers and Corridors.

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

Through the Transportation Action Plan, Charlotte will further define, refine and implement transportation policy that is consistent with the Centers and Corridors 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 and Corridors vision. The purpose of the *City of Charlotte Transportation Action Plan (TAP)* is to provide the comprehensive policy and implementation framework to achieve the City's vision of becoming a premier city.

The TAP 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 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 and Corridors strategy and the importance of following that strategy in order to accommodate Charlotte's unprecedented growth while protecting the City's quality of life.

Chapter 2 — Purpose of Plan
This chapter explains the need for a 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 transportation financial resources so that they can be used by elected officials and staff in making day-to-day and long-term transportation and 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. During the fall of 2004, the Charlotte City Council's Transportation Committee worked to develop draft goals and undertook a policy scan of existing City transportation policy. The Committee and staff identified a series of policy "gaps" that are addressed in the Transportation Action Plan. The TAP goals are shown in the box on the facing page.

Chapter 3 also shows the measurable objectives and policies that 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 that nation for integrating land use and transportation choices. This chapter identifies

City of Charlotte
Transportation Action Plan Goals

- **Goal 1**
  Continue implementation of the Centers and Corridors strategy.
- **Goal 2**
  Prioritize, design, construct and maintain convenient and efficient transportation facilities to improve safety, neighborhood livability, promote transportation choices 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.

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 and Corridors strategy.

Chapter 5 — Future Conditions
This chapter assesses anticipated transportation projects to be implemented by — and transportation conditions expected for — 2010, 2020 and 2030. 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 and Corridors strategy.

Chapter 6 — Financial Element
This chapter documents the existing and anticipated transportation revenue sources through 2030. The information regarding Federal, State, City and other sources is used in Chapters 4 and 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 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.

It is envisioned that the Transportation Action Plan will be a dynamic document that will be updated periodically to reflect changes and emerging opportunities.

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 and Corridors vision.
- 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 590,000 in 2000 to 930,000 in 2030. Employment is projected to increase from approximately 470,000 in 2000 to 850,000 in 2030. 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 and Corridors strategy. This plan will help implement the Centers and Corridors strategy 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 and Corridors strategy, 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 and Corridors strategies 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 and Corridors strategy and the Transportation Action Plan recognize that Charlotte's transportation system needs to be multi-modal. This is consistent with a 2004 UNCC 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 "(38%) and "provide alternative modes of transportation" (22%). In addition, 73% said they wanted the City to become "more bicycle friendly" and 88% said they wanted the City to become "more pedestrian-friendly. "

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 developing rapid transit system are relatively well defined and are an integral component of the City's Centers and Corridors strategy.

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 patterns are consistent with the City's Centers and Corridors strategy. A successful transportation strategy is directly linked to a successful land use strategy. The Centers and Corridors strategy 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 and Corridors strategy.

Goal 1

Objective 1.1

By 2007, the City will use annual measurements to verify that the Centers and Corridors strategies are being met.

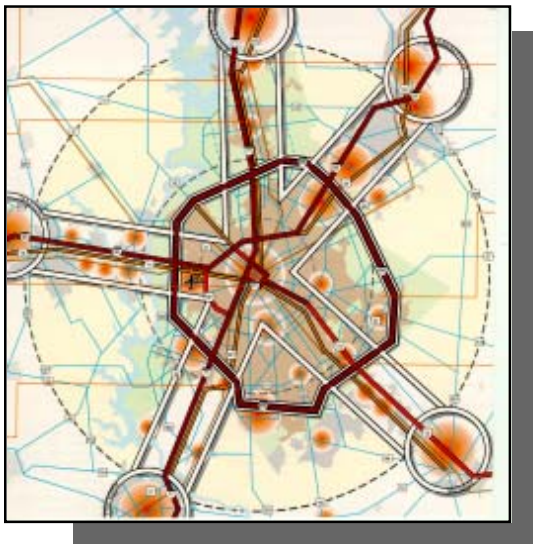
Policy 1.1.1
The City will adopt definitions of centers, corridors and wedges and a map delineating these locations for policy and implementation purposes (see *Appendix A, Figure 1*).

Policy 1.1.2
The City will encourage a minimum of 40% of new households and 70% of new multi-family units to be located within Centers and Corridors.

Policy 1.1.3
The City will encourage 75% of new office development and 75% of new employment to be in the centers and corridors.

Policy 1.1.4
The City will encourage a minimum of 65% of Charlotte residents to be located within ¼ mile of transit service.

Policy 1.1.5
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 and Corridors strategy.



The Centers and Corridors strategy will be used to guide growth into areas where it can best be served

Policy 1.1.6
The City intends for the TAP to support and enhance Council's adopted housing and neighborhood improvement plans.

Policy 1.1.7
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 and Corridors strategy by 2007.

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

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

Policy 1.2.3
The City will implement the I-485 Interchange Analysis transportation recommendations (as adopted by MUMPO in July, 1999) and ensure they are consistent with the Centers and Corridors strategy.

The City will invest in infrastructure in station areas, consistent with the Centers and Corridors strategy

proposed Scaleybark Transit Station

Objective 1.3
CATS 2025 Plan

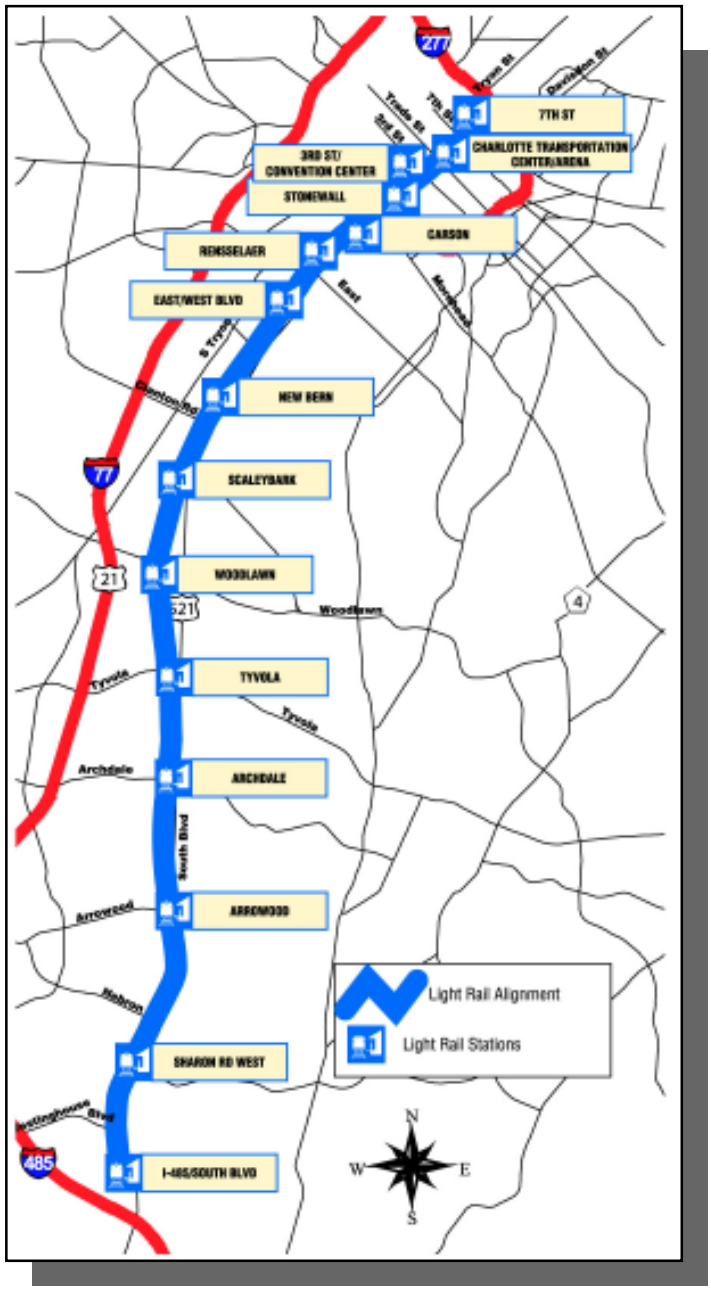
Objective 1.3

CATS will continue implementing the 2025 Corridor Systems Plan consistent with the Centers and Corridors Strategy.

Policy 1.3.1
CATS will continue construction of the five rapid transit corridors to support the Centers and Corridors Strategy (see *Appendix A, Figure 2*).

Policy 1.3.2
CATS will implement Streetcar service to support the Centers and Corridors strategy.

Policy 1.3.3
CATS will continue expansion of countywide transit service to ensure competitive service and growth in transit ridership while maximizing commuter choice.



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 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 meet land use objectives.

Policy 2.1.1
The City will classify existing and future streets based on the classification system as defined in the Urban Street Design Guidelines (see *Appendix A, 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 needs (see *Appendix A, Figure 4* for the proposed categories of locally funded transportation expenditures).

Policy 2.1.3
The City will annually prioritize intersection improvements in the Capital Investment Plan based on crash rates, congestion levels, pedestrian level of service and bicycle level of service as listed in the Urban Street Design Guidelines.

Queens Road 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 meet land use objectives.

Policy 2.1.4
The City will promote context-sensitive 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-sensitive streets that include transit, bicycle and pedestrian friendly design features as part of new or widened NCDOT street construction projects.

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

Policy 2.1.6
By 2007, the City will study opportunities and develop costs to create user-friendly and more 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 and meet land use objectives.

Policy 2.1.8
The City will adopt and update a "Major and Minor Thoroughfares Not to be Widened Map" and will update this map every five years in conjunction with the TAP update (see *Appendix A, Figure 5*).

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 2008, the City will consider defining transportation adequacy policies.

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.

Billy Graham Parkway has poor levels of service for motorists, bicyclists and pedestrians

Policy 2.2.4
By 2008, the City will consider flexible transportation mitigation measures, within Centers and 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 analyses 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 roadway projects based on the following ten CIP prioritization criteria: (1) reduce congestion; (2) improve safety; (3) support rapid and express bus transit; (4) support land use objectives; (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.

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 2.3.1
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 expand 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.

The bike-on-bus program continues to grow – now with over 52,000 bike-on-bus boardings annually

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

Policy 2.3.4
CATS headways for local 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.

Policy 2.3.5
The standard span of service for CATS local bus routes serving Uptown Charlotte will be 5:00 a.m. to 2:00 a.m. Span of service on crosstown routes will be 6:00 a.m. to 6:00 p.m. Exceptions will be based on ridership and productivity.

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.

The Independence Boulevard bus lanes provide expedited bus service for numerous transit users

Policy 2.3.6
The City recognizes that the MTC's adopted service policies regulate stop spacing and amenities. Stops are limited to 6-8 per mile along bus routes, except in Uptown Charlotte and other high-activity areas. Bus shelters will be provided at locations with at least 70 daily boardings. Benches will be provided at stops with at least 35 daily boardings.

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.

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 2.3.8
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.

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
The City recognizes that the MTC's service policies utilize the Route Performance Monitoring System as a statistical method to compare and analyze individual bus route performance over time and against comparable services. A rating of 1.0 represents average service. Routes performing below 1.0 are monitored and adjusted as needed to improve performance. Routes below 0.5 are closely scrutinized and written action plans for improvement are developed to address poor performance.

CATS ridership has increased almost 50% since 1997

Objective 2.4
Pavement Conditions

Objective 2.4

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

Policy 2.4.1
The City will monitor and report pavement condition ratings annually.

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'9 standards every 5 years.

Historically, the City resurfaced its roads at an optimal cycle of every 12 years, but that has slipped to a 20-25 year cycle

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.

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

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.

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 Intelligent Transportation Systems.

The City currently maintains over 650 signalized intersections

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 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.

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 2030 (see Appendix A, Figure 6).

Policy 2.6.1
The City will require bicycle lanes designed consistent with the Urban Street Design Guidelines, 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 2030. (see Appendix A, Figure 6).

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

Policy 2.6.5
By 2007, 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
By 2008, The City will consider requiring off-road bicycle and pedestrian trails requirements and/or connections for new development.

Policy 2.6.7
The City will implement the adopted bicycle-parking requirements for new development.

Policy 2.6.8
The City will update the Bicycle Plan every five years at a minimum.

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

Objective 2.7
Sidewalks

Objective 2.7

The City will construct over 625 miles of new sidewalks by 2030.

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.

Every trip begins and ends as a pedestrian trip

Policy 2.7.2
The City will prioritize sidewalk projects based on the City's adopted sidewalk prioritization process, as adopted in May, 2005.

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 easier, safer and more enjoyable for people to walk.

Charlotte's sidewalk program and improved sidewalk requirements make Charlotte a more walkable community for all users

Policy 2.7.4
The City will require new development to construct sidewalks consistent with the Urban Street Design Guidelines.

Policy 2.7.5
By 2007, the City will complete a sidewalk inventory of existing sidewalks and pedestrian elements.

Policy 2.7.6
By 2007, the City will adopt a pedestrian plan.

Objective 2.3
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, 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.

Traffic calming, such as speed humps, helps moderate travel speeds through neighborhoods

Policy 2.8.2
The City will develop policies to require new subdivisions to be designed to include traffic calming design features consistent with the Urban Street Design Guidelines.

Policy 2.8.3
The City will provide 25mph speed limit signs, school crossing guards and/or signals based upon the number of student walkers, as deemed appropriate on thoroughfares next to elementary or middle schools.

Policy 2.8.4
The City intends for all school speed zones to 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.

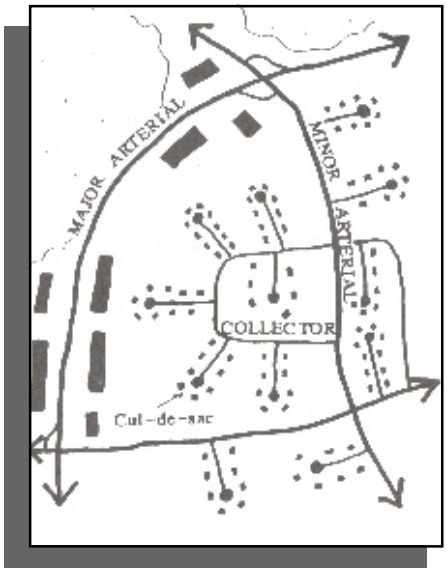
School zones require special attention and safety measures to protect children

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 2015.

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 street or subdivision designs that provide for public access, ingress, and egress by interconnecting streets, bike paths and walkways within developments and with adjoining developments.

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 so as to facilitate the most advantageous development of the entire neighborhood area. Stub streets will be provided to adjacent properties in accordance with the Subdivision Ordinance. Cul-de-sacs and other permanently dead-end streets are permitted where certain conditions offer no practical alternative to connectivity.

Policy 2.9.4
The City intends for existing and new residential developments to be connected by streets and/or bikeways and pedestrian systems in order 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 use, office developments and other compatible land uses and developable lands.

Policy 2.9.5
By 2007, the City will consider implementing an annually funded bridge/street creek crossing program to fund and facilitate connectivity between new residential subdivisions as they are permitted.

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 2015.

Policy 2.9.6
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 2.9.7
The City will require block length spacing and connection requirements consistent with the Urban Street Design Guidelines and residential General Development Policies.

Excessive use of cul-de-sacs results 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

Policy 2.9.8
By 2007, the City will consider adopting connectivity mitigation requirements as a condition of conditional rezoning.

Policy 2.9.9
By 2007, the City will consider connectivity mitigation requirements as part of area plans, subdivision approvals and commercial building permits.

Policy 2.9.10
By 2008, the City will consider requiring that cul-de-sacs in new developments be connected via pedestrian/bicycle connections, where feasible.

Policy 2.9.11
By 2008, the City will consider additional policy to further discourage private or gated roadways.

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.

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

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 7*).

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 *Appendix A, Figure 8*).

Policy 2.10.3
The City will annually review and update the Urban Street Design Guidelines Classification Map and the adopted Collector Map.

Policy 2.10.4
The City will adopt and recognize the Urban Street Design Guidelines Classification Map as the official document guiding the planning and design of existing and future streets.

Policy 2.10.5
By 2007, the City will review and update necessary right-of-way requirements and policies, guidelines and ordinances associated with the Thoroughfare Plan Map and Collector Map to ensure the City is preserving the right-of-way, consistent with the Urban Street Design Guidelines, necessary to accommodate the City's desired multi-modal cross-sections for existing and future needs.

Policy 2.10.6
By 2007, the City will develop 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 2.10.7
By 2006, the City will refine the existing CDOT Traffic Impact Study Guidelines so that any site development that generates 2500 or more vehicular trips per day will be required to complete a multi-modal transportation impact analysis.

Policy 2.10.8
By 2007, the City will refine the multi-modal transportation impact analysis to reflect the multi-modal objectives and methods included in the Urban Street Design Guidelines and General Development Policies.

Policy 2.10.9
By 2007, the City will consider requiring neighborhood transportation impact studies for new developments that exceed specific trip impact thresholds.

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

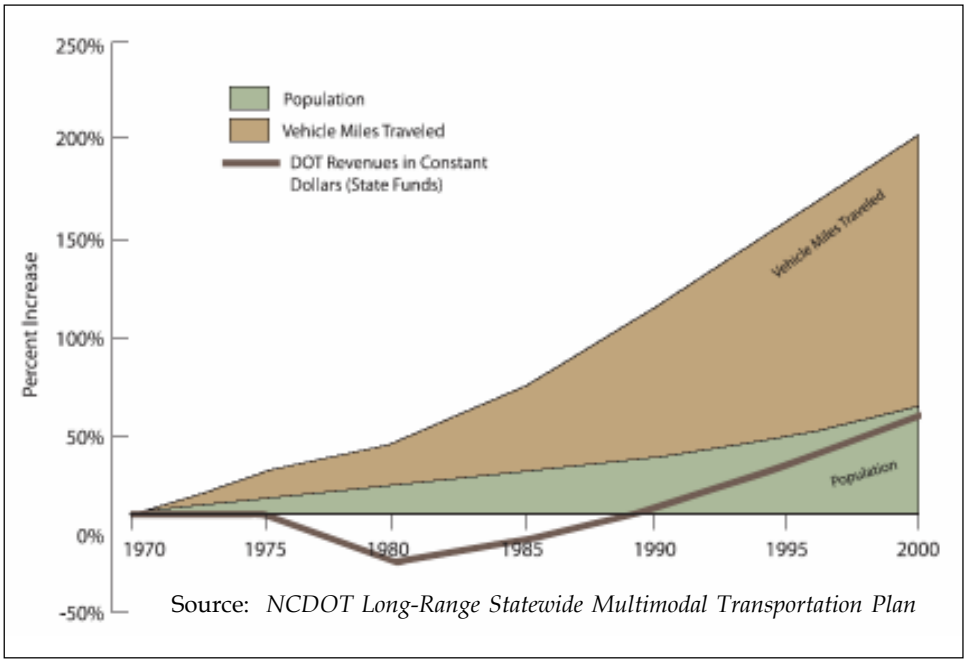
The City will coordinate and collaborate with local and regional partners as needed.

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 per capita VMT 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.

Across North Carolina, VMT is increasing at a faster rate than population. In Charlotte, residents inside Route 4 generate 50% fewer VMT per person than residents living outside Route 4



Source: *NCDOT Long-Range Statewide Multimodal Transportation Plan*

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 ensure that new area plans consider transportation, VMT and air quality impacts.

Policy 3.1.5
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 users

Policy 3.1.6
The City will work with regional partners to ensure that the regional travel model is maintained and utilized to evaluate regional transportation and land use scenarios.

Policy 3.1.7
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.

Policy 3.1.8
By 2007, the City will work with regional partners to evaluate the benefits of forming a regional planning organization by combining MPOs.

Policy 3.1.9
By 2008, the City will work with regional partners to consider a policy to analyze developments of regional impact.

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 3.1.10
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.

Policy 3.1.11
The City will work with regional partners to promote a regional network of express and local bus service and vanpool programs to enhance regional air quality and promote regional transit access.

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 MTC adopted Joint Development Principles that were adopted by all MTC members with jurisdiction over a rapid transit corridor.

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, so 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 summary brochure 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
By 2007, the City will establish a survey to determine baseline public awareness and knowledge of the strategies recommended in the TAP, including the Centers and Corridors strategy and the City's multi-modal transportation approach.

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

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.

a

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

Policy 5.1.4
By 2007, the City will conduct research on opportunities to implement alternative transportation funding sources and staff will compile a report for City Council to consider.

Objective 5.1
Transportation Funding
(continued)

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 5.1.5
The City adopts the following figures by reference:

Figure 1:	**Centers and Corridors Map**
Figure 2:	**2025 Corridor System Plan**
Figure 3:	**USDG Street Classification Map (Future Conditions)**
Figure 4:	**Locally Funded Transportation Programs and Improvements List**
Figure 5:	**Major and Minor Thoroughfares Not Anticipated to be Widened Through 2030 Map**
Figure 6:	**Existing and Future Bicycle Facilities Map**
Figure 7:	**Charlotte Thoroughfare Map**
Figure 8:	**Existing and Proposed Major Collectors**

These figures are included in 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;
- **clearly defines the Centers and Corridor boundaries** for staff and elected officials to use as a tool to help guide new development and transportation investments into appropriate locations; and
- **presents key 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 and Corridors strategy.

Assessing the current performance of the transportation system is crucial to developing a plan of action for all components of the City of Charlotte's transportation system. To establish a baseline of the needs and performance of the current system, existing conditions were inventoried and analyzed.

The result — 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 *with* and *without* the 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 590,000 today to 930,000 in 2030. This is comparable to adding the current population of St. Louis, Cincinnati or Pittsburgh to Charlotte's population.
- Charlotte is the 20th most populous city in the nation and, given current population trends, could be the 10th most populous by 2030.
- Charlotte is ranked 40th in population density and, under current trends, this is not anticipated to change significantly by 2030. Charlotte's significant projected growth, combined with low density development, is inefficient and will create even greater challenges to the transportation system.
- A 2005 City of Charlotte Business Retention survey indicated that roads/transportation infrastructure is the second worse "problem factor" out of twenty-four factors affecting Charlotte businesses.
- Charlotteans generate the 7th highest Vehicle Miles of Travel (VMT) per day per capita in the nation. This high level of VMT per capita has negative impacts on air quality, results in an inefficient use of the transportation system and increases congestion.
- 29 percent of Charlotte's thoroughfares and collector streets 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 60 percent by 2030.
- Signalized intersections outside Route 4 are ten times more likely to be operating at LOS "E" or "F" than signalized intersections inside Route 4.
- Charlotte is ranked as the nation's 24th most congested city by the Texas Transportation Institute, a research organization.
- Charlotte currently maintains over 2,300 miles of streets.
- Charlotte is now on a 20-25 year road resurfacing cycle, whereas the optimum cycle is recognized as 12 years.
- Charlotte maintains 650 traffic signals and adds an average of 25 new traffic signals per year to the system.
- Charlotte has an average of 25,000 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 33 local routes, 12 express routes and 6 commuter routes. CATS ridership was approximately 16.4 million boardings in FY 2004 and had over 180,000 vanpool riders.
- Construction of the 9.6 mile southern Light Rail Transit (LRT) line has begun and will be complete by 2007.
- Charlotte currently has 41 miles of bikeways. Most of the bikeways are being added in a cost-effective manner when roads are resurfaced. Additionally, over 60 percent of all households have at least 1 bicycle and there are now over 52,000 bike-on-bus boardings on CATS buses each year.
- Charlotte has an estimated 1,539 miles of sidewalks. Approximately 55 percent of thoroughfares have sidewalks on both sides of the street and 42 percent of local streets have sidewalks on at least one side of the street. At current funding levels, it would take over 100 years to have sidewalks on both sides of the thoroughfares and over 300 years to have sidewalks on at least one side of all local and collector streets.

Analysis of Existing Conditions

Identifying the baseline components is critical to address current needs and determine the best approach for accommodating Charlotte's anticipated growth while protecting its quality of life. The following transportation-related elements, systems and modes are included in the inventory:

Components of Existing Conditions Inventory

4.1 Centers and Corridors 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 component 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 and Corridors 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 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 plan improves employment opportunities and housing choices while making the best use of existing infrastructure and transportation.

An interdepartmental staff team is currently developing an update of the strategy to present to Council for adoption in 2006. This growth management strategy 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.

- **Centers** are focused areas of economic and/or mixed-use activity and are located throughout the City. They are also desirable locations for additional growth because of their strategic locations and are typically well developed infrastructure systems.
  - Center City is Charlotte's largest and most intensely developed center.
  - SouthPark is an example of a mixed-use activity center.
  - Charlotte Douglas Airport is an example of a special activity center.

- **Corridors** are areas where planned rapid transit lines, major arterial roads and interstates or expressways run parallel. Because of their extensive transportation system, the 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. There are five designated transportation corridors in Charlotte:
  - **South Corridor** includes I-77 South and the South Corridor light rail transit (LRT) line currently under construction;
  - **Southeast Corridor** includes Independence Boulevard 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 corridors where residential neighborhoods have developed and continue to grow. Uses that complement and support residential

development, such as neighborhood-serving retail and office, schools, parks and religious institutions, are also located in wedges The uses in the wedges are typically lower in intensity than the uses in centers and corridors.

Why is the Centers and Corridors strategy 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 and Corridors strategy can 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 (see *Appendix A, Figure 5* for "Major and Minor Thoroughfares Not Anticipated to be Widened Through 2030").

Additional transportation capacity in many areas will be achieved through strategic road widening, further development of pedestrian and bicycle facilities, enhanced transit, and a more connected street system that provides more capacity and travel choices for motorists, bicyclists, pedestrians and transit users.

One of the primary goals of the Centers and Corridors strategy is to guide high intensity growth to areas that have the infrastructure to support that growth and away from those areas that cannot support higher density development. Specifically, the Centers and Corridor strategy directs those uses that need high levels of accessibility to centers and corridors which have highly developed transportation systems. Lower intensity uses are directed to the wedges.

Using a growth management strategy that integrates land use and transportation planning will allow the City to effectively and efficiently use the limited resources available to build a transportation system to meet the community's needs.

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

How is Charlotte doing on Centers and Corridors implementation?

Since the adoption of the Centers and Corridors framework in the mid-1990s, Charlotte has initiated a number of programs that further the Centers and Corridors framework.

- **Development of the five-corridor rapid transit system** by CATS is most notable. The first rapid transit line—the South Corridor LRT—is under construction and scheduled for completion in 2007. Numerous new high density developments have been completed or are underway in the in-town station areas along the South Corridor.

- **Complementary land use planning** is occurring concurrently by the Planning Commission. Transit Station Area Principles, transit-oriented development (TOD) and transit-supportive (TS) zoning districts, and the South End Transit Station Area Plan have all been adopted since 2000.

- **Adoption of the first elements of the updated General Development Policies** also shows the progress that Charlotte is making in implementing the Centers and Corridors strategy. The Residential Location and Design policies help to further define the type of development that is appropriate in the Centers, Corridors and Wedges while the Retail-Oriented Mixed/Multi-Use Centers policies provide guidance for the Centers and the Wedges.

An update of the Centers and Corridors strategy, itself, is now underway. The update will further define the Centers and Corridors strategy by:

1) refining the definitions of Centers, Corridor and Wedges;
2) providing parcel specific boundaries for each area type;
3) providing land use, urban design, transportation and infrastructure policies for each area type; and
4) developing targets to measure success.

To ensure that the City is implementing the Centers and Corridors strategy, the City will annually monitor land use approvals to ensure that we are meeting land use goals (TAP Policy 1.1.2 and 1.1.3). The Centers and Corridors strategy recommends the City meet the following land use thresholds within the Centers and Corridors by 2030:

Figure 4A: **Centers and Corridors Land Use Goals**

Description	EXISTING PERCENTAGE in Centers and Corridors	2030 PERCENTAGE in Centers and Corridors
Multi-Family Units	**62%**	**75%**
Office Employment	**75%**	**75%**

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

The Centers and Corridors strategy does not differentiate between the area inside Route 4 and the area outside of 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 steer growth towards the Centers and Corridors, it will be important to develop a street network and mixture of land uses that complements the Centers and Corridors strategy.

What is our grade today in Charlotte for implementing the Centers and Corridors strategy?

Charlotte is fortunate to have a Centers and Corridors foundation already in place. This growth strategy will be critical to how well the City accommodates the projected growth and maintains its quality of life. To be successful, Charlotte needs to continue to direct growth into the Centers and Corridors 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 implement the Centers and Corridors strategy and meet its land use and transportation goals.

Centers and Corridors Implementation	
Existing Grade *Inside* Route 4	***B***
Existing Grade *Outside* Route 4	***B***

Based on the ongoing transit/land use planning efforts, the recent General Development Policies update and the current refinement of the Centers and Corridors growth management strategy, the Charlotte-Mecklenburg Planning Commission (CMPC) staff believes the City receives a "B" grade for implementation of the Centers and Corridors strategy 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, fuel economic development and are the corridors for travel for thousands of 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 for ice cream. 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 is charged with maintaining more than 2,300 miles of streets, and 650 signalized intersections over 269 square miles. Over the years, the City has done an excellent job in maintaining City streets through the annual street resurfacing program. The City has historically resurfaced roadways on a 12-year average.

Why is street maintenance important?

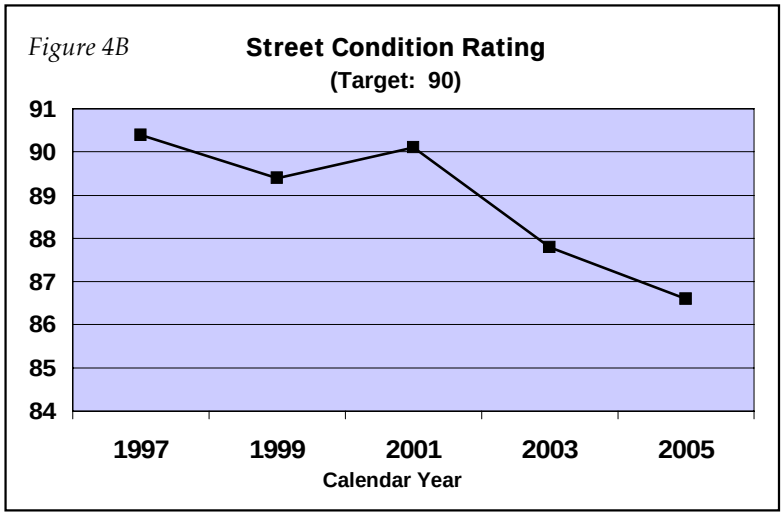
Research shows that the most cost-efficient resurfacing cycle is 12 years on average. A proactive pavement maintenance program focuses on preventing the degradation of a street's foundation (base and sub-base). Potholes and pavement cracking are a direct result of a street foundation failure.

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 more costly and overall degradation of pavement conditions.

How is Charlotte doing?

In FY 04, the average resurfacing cycle was 16-18 years. This is expected to increase to a 20-25 year average in FY 05. The most recent pavement condition survey revealed that our streets are degrading. As seen in Figure 4B, the City's Street Condition Rating has dropped from 87.8% in 2003 to 86.6% in the 2005 survey.

Figure 4B



The City's goal is to maintain a rating of 90%. Without an increase in Powell Bill funding or identifying an alternative funding source, this degradation is expected to continue.

The City is struggling to maintain the current street system for a variety of reasons. Some of these reasons include budget reductions, increasing resurfacing costs, an increasing number of miles of streets the city maintains, increasing traffic volumes, increasing miles of travel, significant number of utility cuts and inadequate road construction standards.

A national, non-profit transportation research organization, "TRIP," estimates that 52% of Charlotte's roads are in "good" condition, a rating that is among the lowest of the cities in its study ("Rough Road Ahead: Metro Areas with the Roughest Rides and Strategies to Make Our Roads Smoother," May 2005). The study includes both state and locally-maintained roads. Charlotte's roads compare unfavorably with other Southeastern cities.

Atlanta	84% of roads rated "good"
Orlando	83%
Tampa	73%
Jacksonville	65%
Nashville	57%
Charlotte	**52%**
Memphis	44%

The study recommends 75% as an appropriate goal for a "good rating"of community roads. According to the study, Charlotte's rough roads costs Charlotte drivers an estimated $218 annually in extra vehicle maintenance costs.

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

No, there is no difference in street maintenance inside versus outside Route 4.

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 "D" grade for resurfacing. These grades will get progressively worse if the 20-25 year resurfacing cycle continues.

Street Maintenance	
Existing Grade *Inside* Route 4	***D***
Existing Grade *Outside* Route 4	***D***

4.3 Connectivity

Background

Communities across the nation, including Charlotte, are requiring street connectivity in an effort to make their cities more livable, sustainable, walkable and less congested.

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.

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 overall connectivity.

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 which have been built over the last 40 years.

Why is connectivity important?

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:

- numerous 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.

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.*

As shown in Figure 4C (facing page) Charlotte's most congested intersections are located in relatively low density and low connectivity areas outside of Route 4. The number of congested intersections become more prevalent in the areas *farther away from Center City* with lower densities and a less connected grid network.

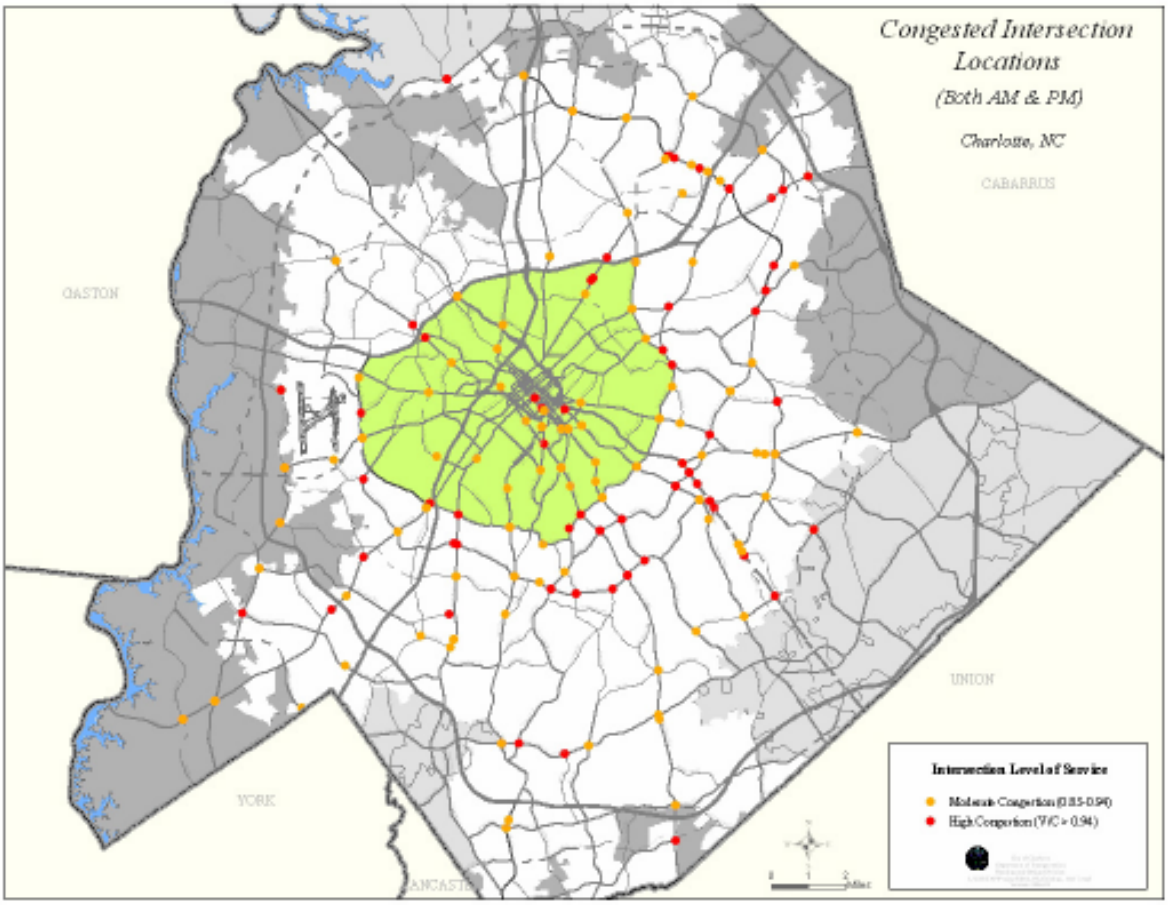
CDOT anticipates that more congested intersections will emerge in peripheral areas if these areas also develop in an unconnected development pattern. An unconnected development pattern will require us to widen roadways and intersections (where it is possible) to the point that they do not create livable, walkable, transit-oriented and sustainable neighborhoods. Even with improvements, many of these intersections will remain highly congested. In many other cases, our intersections and roadways have already been widened to the maximum extent. Further widening would either be too costly or too damaging to existing and established neighborhoods.

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 340,000 new residents, the City must implement a more connected and appropriately spaced system of local, connector and major 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.

Figure 4C: **High Congestion Intersections**



How is Charlotte doing on connectivity?

Several methods have been developed to determine the level of connectivity within an area. In most cases, a *connectivity index* is used to quantify how well a roadway network links destinations by calculating the number of street segments divided by the number of roadway nodes (or intersections).

A connectivity index of 2.5 is a perfect grid while a 1.0 rating is the lowest connectivity score that can be achieved. A connectivity index rating of 1.4 or above is "excellent," while 1.25 to 1.35 is considered "good" and below 1.25 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.

Charlotte's 2005 city-wide connectivity score was *1.25.* The score was higher inside Route 4 *(1.45)* and lower outside Route 4 *(1.19).*

- *CDOT 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.

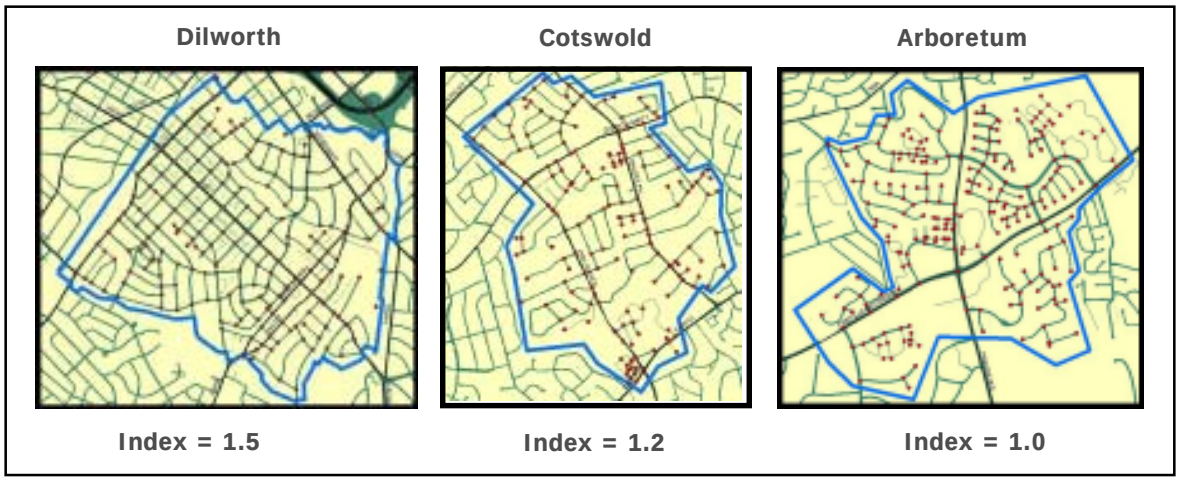
Is there a difference inside Route 4 versus outside Route 4?

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.

- The *Dilworth* community has an excellent connectivity score of 1.5.
- 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 dismal connectivity score of 1.0 (which is the lowest score possible). It has a very sparse street network and, of the three examples, is farthest from Center City.

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

Figure 4D: **Connectivity Index Comparison**



This high level of connectivity enables neighborhoods like Dilworth to be more walkable, bicycle-oriented, and more easily served by transit. It also enables them to be relatively congestion-free and to maintain neighborhood-friendly two-, three-, and four-lane roadways, instead of much larger roadways and intersections.

Many of Charlotte's intersections are large or "super-sized" because there is little connectivity in the area. The lack of connectivity forces most, if not all, trips to travel through the signalized intersection. This often requires dual left-turn lanes, right-turn lanes and sometimes additional through lanes to be added to the intersection.

Unfortunately, the addition of all these lanes results in an intersection that is primarily designed for automobiles and has little ability to comfortably accommodate pedestrians, bicyclists and transit users. These types of intersections often create physical, psychological and even visual barriers between and within neighborhoods.

The alternative to large intersections is highly connected neighborhoods and areas that have few, if any, "super-sized" intersections. This approach enables neighborhoods to have a dense network of streets that works to disperse traffic and thereby decrease automobile congestion on the thoroughfares. This dense and highly connected street system alternative benefits neighborhood residents by allowing them to have a majority of two-lane roadways, and only a few three- and four-lane roadways. This system of smaller roadways allows connected neighborhoods to be more pedestrian-oriented than less-connected neighborhoods.

A more connected street system benefits all travelers, reduces congestion and improves emergency response times and efficiencies. Increasing connectivity will enable the City

of Charlotte to better accommodate our anticipated growth, shorten trip distances, improve air quality and create a more sustainable community.

What is our grade in Charlotte today on connectivity?

Connectivity	
Existing Grade *Inside* Route 4	***A***
Existing Grade *Outside* Route 4	***D***

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 "D" grade outside Route 4.

4.4 Motorist Travel

Background

Charlotte's street system and development patterns have a direct impact on congestion and the quality of a motor vehicle trip. Charlotte, like many communities, is experiencing an increase in Vehicle Miles of Travel per capita due to inefficient and disconnected street networks and land use patterns that are increasing travel distances. This dramatic increase in travel distances, along with a disconnected street network, make many trips only accessible by automobile.

These characteristics help to create and perpetuate an over-utilization of the thoroughfare network which leads to congestion. Today, Charlotte has the 7th highest daily vehicle miles of travel per capita in the country — even though the City is the 20th most populous city in the nation.

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 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 and can longer be improved without extraordinary expense and sometimes significant impacts on adjacent land uses. *Appendix A, Figure 5* identifies Charlotte streets that CDOT does not believe will or should be widened through the 2030 time horizon.

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 best be accommodated.

Why is motorist travel important?

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 fact, the City of Charlotte 2005 Business Retention and Growth Program Survey found that Roads and Transportation Infrastructure was the second worst "problem factor" out of twenty-four factors affecting the success of Charlotte's business environment. Only public education rated worse than transportation on the list.

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

Providing a reasonable 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 and based on the adopted Centers and Corridors strategy—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 amd widen existing roads 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 24th most congested city in the nation. In Figure E, below CDOT estimates that approximately 29% of Charlotte's major and minor thoroughfares are currently operating at high levels of congestion during the peak hour.

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

Peak Hour LOS	2005		2010		2020		2030	
	Miles of Roads	% of Total	Miles of Roads	% of Total	Miles of Roads	% Total	Miles of Roads	% Total
A, B, C	457.65	38.85%	432.49	35.55%	298.81	23.63%	167.21	12.97%
D	374.96	31.83%	372.09	30.58%	375.14	29.67%	300.75	23.32%
E, F	345.24	29.31%	412.11	33.87%	590.60	46.70%	821.73	63.72%
Total	1177.85	100.00%	1216.69	100.00%	1264.55	100.00%	1289.69	100.00%

Notes

- Roadways include Freeways, Expresways, 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.
- For 2010, 2020 and 2030 the capacities assume that roadway improvements are implemented consistent with MUMPO's 2030 Long Range Transportation Plan.

Source: Charlotte Department of Transportation DOT

In *Appendix B-1*, a map shows which of Charlotte's thoroughfares are currently (2005) operating at "Levels of Service" (LOS) E-F in the peak hour. CDOT estimates that approximately 20% of the City's intersections experience moderate to high levels of congestion during the peak hour.

The TRIP research organization reports that Charlotte (and other North Carolina cities) are struggling to keep pace with explosive population growth ("Paying the Price for Inadequate Roads in North Carolina," April 2004). Figure 4F (facing page) summarizes the report findings costs resulting from "inadequate roads."

Figure 4F also underscores the point that Charlotte's rapid and sprawling growth (20th most populated but only 40th most densely populated) is beginning to tax the city's transportation system and result in excessive congestion levels outside Route 4. The

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

Costs Per Driver	Charlotte	Raleigh-Durham	Greensboro Winston-Salem	Fayetteville	North Carolina
Safety	$464	$464	$464	$464	$464
Congestion	$588	$385	$210	$2943	$60
Vehicle Operating Costs	$218	$231	$297	$220	$296
Total	$1,270	$1,080	$971	$978	$820

Source: "Paying the Price for Inadequate Roads in North Carolina" (*TRIP*, April 2004)

City's computer models indicate that congestion on the 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 and Corridors strategy.

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.

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 and Corridors land use strategy, increased travel choices, increased connectivity and shortening trip distance through an appropriate mixture of land uses.

However—as Chapter 5 (Future Conditions) will document—even with the improvements outlined in the 2030 Long Range Transportation Plan, a continuation of current development patterns will result in a significant increase in congestion in the future.

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.

Figure 4C (page 4-17) depicted a growing "Ring of Congestion" outside Route 4, where signalized intersections are operating at poor level of service during peak hours, as

compared to significantly less congestion inside Route 4. Indeed, there are ten times as many "highly congested" intersections outside Route 4 (62) than inside Route 4 (6). 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 bond program that funded a number of important projects. This approach generally worked, as many roads were converted from two lanes to four lanes and as intersection improvements were implemented. This approach kept Charlotte's ranking as the 24th most congested city in the country from being even worse. Without transportation bonds, this ranking would most likely have been worse.

However, congestion is beginning to increase rapidly and, unfortunately, 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, CDOT envisions using the City's thoroughfare system more efficiently — combined with selective widenings, creating new streets, making multi-modal improvements, coordinating signal timing and following a development pattern that results in a more connected street network to accommodate future growth.

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

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".

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, improve infrastructure maintenance and integrate land use and transportation objectives.

The Charlotte Department of Transportation (CDOT) currently maintains 650 traffic signals, with approximately 70% of those operating in an interconnected signal system. CDOT maintains 117 miles of signal interconnect and installs an average of 20 miles per year to this system. CDOT also analyzes an average of 25,000 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 15 of the City's 650 existing signalized intersections to include these devices. Clearly, there is more work to be done.

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 can also be improved through adequate funding by providing transportation system users consistent, clear, and highly visible guides along the transportation network.

How is Charlotte doing?

The Federal Highway Administration's "National Traffic Signal Report Card" (April, 2005) gave the City of Charlotte a score of 88.5 out of 100 (B+) for it's efforts in signal maintenance, signal retiming, the presence of coordinated systems and proactive management. The City's score is recognized as one of the best in the nation.

The other aspects of traffic operations are not quite at the same level as traffic signals. These aspects include signs, markings, and traffic safety. Adequately maintaining signs and markings requires a significant inventorying 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. Addressing traffic safety problems at the motorist level also requires significant funding for public awareness and enforcement activities. Since Charlotte has begun public awareness campaigns for traffic safety, the number of crashes has decreased by 7% annually.

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

During 2004, 33% of all motor vehicle collisions occurred within Route 4 while 67% occurred outside Route 4. For the same time period, 46% of all pedestrian and bicycle collisions occurred within Route 4 while 54% occurred outside Route 4.

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

A number of evaluation measures—including the national Traffic Signal Report Card, and the before-and-after crash data evaluated for safety improvements—suggest that the City's staff assigned to traffic operations does a commendable job with the tools and resources available to them.

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

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.

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

CATS ridership has increased 50% since 1998

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 current schedule calls for construction to be completed and service to begin in 2007.

Major Investment Studies (MIS) have been concluded for the four remaining corridors, and the **2025 Corridor System Plan** was developed and approved by the Metropolitan Transit Commission in November, 2002. 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.

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.

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 6.5%, and approximately 50% since 1998. In FY

2005, all CATS services combined to serve over 17.5 million passengers. CATS services are defined in four service groups:

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

Three of the four groups (traditional, special and historic) are currently available, while rapid transit (South Corridor Light Rail Project) is scheduled to open in 2007.

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

Traditional

The majority of CATS' riders use traditional services, namely local, cross-town, community 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:

- *33 local bus routes* with a base fare of $1.20, 14 express routes ($1.65 fare);
- *six regional express routes* connecting neighboring counties: Cabarrus, Union, Iredell, Gaston, Lincoln and York, SC ($2.40);
- *20 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 $.50.

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 83 vehicles. Ridership in FY2005 was approximately 210,000 (9% increase over 2004) with 2.2 million revenue miles of service (46% increase over 2004).

- CATS' Vanpool Program serves a 100-mile radius around Charlotte. There are approximately 73 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.

■ **Historic**

- The Trolley was re-initiated in 2004 to serve as a tool for economic development and as a tourism draw. Service hours are 7 am - 8:15 pm (Monday-Thursday), 7 am - 10:45 pm (Friday), 10 am - 10:45 pm (Saturday), 11 am - 6:45 pm (Sunday) with a fare of $1.00 per ride. The service has been highly successful, with ridership exceeding expectations in the first full year of operation (almost 264,000 riders in FY 2005).

- The Gold Rush downtown circulator is a free fare service that consists of three 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 65% increase in ridership, to 1.3 million riders in FY 2005.

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. Since FY 2001, approximately 4.000 new bus stop signs, 200 shelters and 50 benches have been installed at bus stop locations throughout the service area.

■ **Park & Ride Facilities**

- There are 46 Park & Ride facilities serving the express and regional express routes, providing approximately 2000 spaces. Most are privately owned lots which are leased, used by mutual agreement or provided by development agreement. Four of the 46 lots are publicly owned, providing approximately 600 spaces, and two more are currently under construction (Mallard Creek Road in University Research Park and Huntersville Northcross) which will add an additional 530 spaces in 2006.

- **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-scaled 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 is a transit center at Southpark Mall and two more scheduled to open in 2006 (Rosa Parks at Beatties Ford Road and Rosa Parks Place, and Eastland Mall).

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, 93.4% of the population inside Route 4 lives within ¼ mile of a transit stop, and that number increases to 98.1% when expanded to ½ 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 mainly served 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) 44.4% live within ¼ mile of a transit stop and 69.5% live within ½ mile of a transit stop.

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

With the coverage of the area inside Route 4 with transit service and the implementation of improvements defined in the Countywide Transit Services study, 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, transit has a more difficult job accommodating those transit users. Although significant 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 and Corridors strategies and goals, 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 the last 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. In the future—as roads are widened, as new roads are built, as the Greenway plan is implemented and as greenfield areas are developed in a more connected fashion—Charlotte will become a bicycle-friendly community.

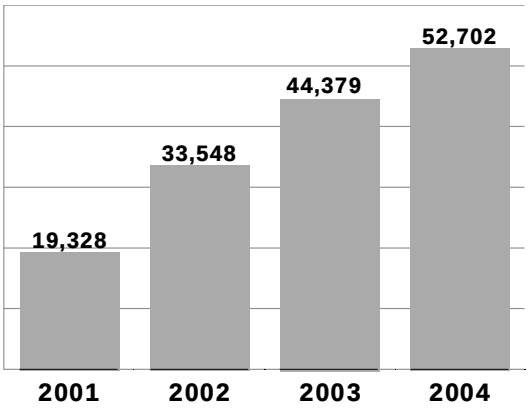
Why is bicycle travel important?

The City believes that Charlotte residents want travel options and to improve their quality of life. 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.

CDOT 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 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, the use of the bus mounted bicycle racks continues to grow in popularity.

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



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

How is Charlotte doing on bicycle facilities?

Bicycling conditions in Charlotte have been improving over the past few years, but still remain a challenge. Prior to 2000, there were no bicycle lanes in the city, but today there are over 24 miles of bike lanes, 16 miles of greenways, and 4 miles of signed routes through neighborhoods (see *Appendix B-3*). While we are improving, it is important to note that only 1.2% of Charlotte's streets include any accommodations for bicyclists. Clerly, there is more work to be done.

Based on the City's intersection Levels of Service (LOS) methodology, 100% of the City's top fifty (50) most congested intersections have a bicycle LOS of E-F. This is a direct result of little attention being given to bicyclist accommodations when intersections have been widened in the past. 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.

Even though we have comparatively few bicycle facilities to date, Charlotte is beginning to make significant progress:

- First, the City is committed to adding bicycle facilities when roadways are widened or resurfaced. One challenge to this approach is that a number of the streets in the City are controlled by NCDOT. The City is beginning to make strides to challenge NCDOT to refine their roadways designs so that they include bicycle lane accommodations as part of their projects. In some cases the City will need NCDOT to be more flexible with regard to travel lane widths in order to accommodate bicycle lanes.
- Another recent accomplishment is that the City of Charlotte passed a progressive bicycle parking ordinance that requires new development to provide convenient and secure bicycle parking.
- Charlotte was given "honorable mention" recognition in 2005 by the League of American Bicyclists for the progress the city is making. However, even with these advancements, Charlotte trails cities such as Cary, Chattanooga, Denver, Orlando and Washington, D.C., who have been formally recognized as "Bicycle Friendly Communities."

Greenways and Off-Road Trails

In addition to bicycle lanes and signed routes which are implemented by CDOT, Mecklenburg County Parks and Recreation Department continues to construct greenways to accommodate bicycle travel. Approximately 16 miles of greenways are currently constructed. Continued expansion of the greenway system will be coordinated with the City's bikeway system to develop an interconnected network of bikeways for Charlotte.

In a 2004 survey of residents, 73% said they wanted Charlotte to become more bicycle friendly by building bicycle lanes and trails

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. CDOT 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.

As part of this plan CDOT will be exploring partnerships with utility providers to determine if there are opportunities to reate a network of off-road trails that follow utility corridors. If these corridors are available for off-road trails, the City of Charlotte could supplement its on-road bicycle system with a comprehensive network of off-road trails to create a transportation system for all users.

On-Road Bikeway Systems

Today, the City's biggest bicycling challenge is that some of its existing bikeway systems do not connect. However, CDOT believes each new facility that is added is taking the City one step closer to its goal.

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.

Another obstacle to making Charlotte more bicycle-friendly, is the increase in the City's resurfacing cycle from every 12 years to 20-25 years. 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 add 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 inability to maintain a 12-year resurfacing cycle, not only impacts motorists, but is slowing 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, that connectivity levels in developing areas continue to increase, that we partner and perhaps add to the off-road network of trails, that road resurfacing maintains a 12-year cycle, and that we continue to fund the Bicycle Program at an appropriate level. As more bikeways are put in place, the City anticipates that it will begin to develop the type of interconnected networks that rival our competitor cities nationwide.

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

Yes, bicycle travel is 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 inside Route 4 is much more connected than 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 retro-fitted 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 "F" outside Route 4.

Bicycle Travel	
Existing Grade *Inside* Route 4	***B***
Existing Grade *Outside* Route 4	***F***

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 needs from the late 1950s through the 1980s. Much of the development 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 thousands 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, the City requires new sidewalks to be provided 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. The City is also making great strides to accommodate its diverse user groups, including the disabled, children and the elderly.

The City has an estimated 1,539 miles of completed sidewalks in place today.

- Approximately 55% of thoroughfares have sidewalks on both sides of the street and 42% of local streets have sidewalks on at least one side of the street.
- The staff has identified 446 miles of new sidewalk needs (both sides) on Charlotte's thoroughfares and 1,338 miles of new sidewalk needs (one side only) on Charlotte's local and collector system.

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, as it becomes one of the most populated cities in the country, it must become a more walkable city. The City of Charlotte is growing rapidly with a diverse population, and 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 just over 600,000 residents and significant strides have been made during the past five to 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, pedestrian and bicyclists.

The City's commitment to becoming a more "walkable" community is seen in its recent transportation bond initiatives, which allocates $5 million a year to construct and maintain sidewalks. In addition, the City's "Smart Growth Principles" — as well as the forthcoming 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 hired a full time Pedestrian Program Manager to manage the annual $5 million Sidewalk Program and to serve as the City's pedestrian advocate. As Charlotte strives to become a "premier city," programs for pedestrian mobility will be enhanced and improved through the Transportation Action Plan 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 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. The current funding level allows for the construction of approximately ten miles of new sidewalk annually and 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 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 roadways they control when those roadways are being improved. While we believe that NCDOT should pay for 100% of the cost of these sidewalk improvements, we recognize that it will take time to change their policy. Until then we will continue to partner with them. 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

Figure 4H: **Sidewalk Mileage Completed and Deficient in Charlotte**

Street Type	Sidewalk Miles Constructed	Sidewalk Miles Not Complete	Total Street Miles	Percent Completed
Thoroughfares	**565**	**466 (both sides)**	**1,031**	**55%**
Locals/Collectors	**974**	**1,338 (one side only)**	**2,312**	**42%**
Total of All Street Types	**1,539**	**1,804**	**3,343**	**46%**

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.

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 systematically installs sidewalks as part of the project. 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.

Staff has identified 446 miles of new sidewalk needs (both sides) on Charlotte's thoroughfares and 1,338 miles of new sidewalk needs (one side only) on Charlotte's local and collector system. The City has constructed approximately 1,540 miles of existing sidewalks.

Under the City's current annual funding level, it will take the City 109 years to complete sidewalks on both sides of all thoroughfares and 314 years to have sidewalks on one side of all local and collector streets. The TAP is seeking to accelerate sidewalk funding and sidewalk projects to reduce this to 37 years and 107 years, respectively.

In addition to building sidewalks, Charlotte is also focusing on a wide array of other pedestrian needs 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 retro-fit 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 developments 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.

One area in which Charlotte is still tracking behind other communities—including surrounding communities—is by requiring only a 4-foot planting strip and a 4-foot sidewalk on residential streets. CDOT is recommending (through the draft Urban Street Design Guidelines) that the City adopt an 8-foot planting strip and a 5-foot sidewalk so the City can create residential streets that are more consistent with some of our most walkable "inside Route 4" neighborhoods.

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 their 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. Inside Route 4's grade can improve from a "B" to an "A" by funding the Sidewalk Program (as called for in this plan) so that the City can complete the sidewalk system inside Route 4 in a more timely manner.

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 sidewalks, current sidewalk and planting strip standards, 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

Over the last decade, Charlotte has made significant progress in developing an integrated land use and transportation strategy. The Centers and Corridors strategy 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.

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	*B*	*B*
Street Maintenance	*D*	*D*
Connectivity	*A*	*D*
Motorist Travel	*A*	*C*
Traffic Operations and Safety	*C-*	*C-*
Transit Travel	*B+*	*C-*
Bicyclist Travel	*B*	*F*
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 2010, 2020 and 2030. 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 and Corridors strategies 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 adequately accommodate its future transportation needs. The determination is made at two levels: how needs will be met at the "base rate" representing current transportation funding trends, or at the "enhanced rate" represented by the funding levels recommended in the Transportation Action Plan.

The result — the **Future Conditions Assessment** — is summarized in a "report card" format at the end of this chapter, using an A-F grading scale for both the **base rate** and an **enhanced rate,** both inside and outside Route 4. A comparable format was used for existing conditions, and the summary of the Existing Conditions Assessment can be found on page 4-36.

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 590,000 today to an estimated 930,000 in 2030, and Charlotte could become the nation's 10th largest city.
- With enhanced funding, Charlotte's designated "Centers" and "Corridors" will successfully accommodate 40% of new households, 70% of new multi-family units, and 75% of new office development and new employment by 2030.
- 29% 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 this area, but levels of congestion can be minimized through implementation of the Transportation Action Plan (TAP). The percent of Charlotte thoroughfares and collectors operating at LOS "E" and "F" in 2030 is expected to increase to 46% inside Route 4 and 62% outside Route 4 under the *base* funding. With TAP implementation, these percentages are estimated to drop to 25% and 42%, respectively.
- Charlotte maintains over 2,300 miles of streets today and will maintain over 3,100 miles by 2030.
- Charlotte is currently on a 20-25 year road resurfacing cycle, whereas the optimum cycle is recognized as 12 years. In 2030, under *base* funding, the resurfacing cycle will remain between 20-25 years—but with *enhanced* funding the City will return to a 12-year resurfacing cycle.
- Today the City's pavement condition rating is 86.6. This rating will deteriorate to 72 by 2030 under *base* funding but will meet the target of 90 with *enhanced* funding.
- Charlotte maintains 650 traffic signals and expects to maintain approximately 975 by 2030.
- Charlotte now has 41 miles of bikeways. The City will strive to add 10 miles per year under the *base* condition, but this will likely be compromised by a delayed resurfacing schedule. Under the *enhanced* funding level, Charlotte will implement over 500 miles of bikeways, including 25 miles of off-road bicycle trails.
- Charlotte has an estimated 1,539 miles of sidewalks with 55% of thoroughfares having sidewalks on both sides of the street and 42% of local streets having sidewalks on at least one side of the street. At the *base* funding level it is estimated to take over 100 years to have sidewalks on both sides of the thoroughfares and over 300 years to have sidewalks on at least one side of all local and collector streets. These numbers drop to 37 years and 107 years with *enhanced* funding.

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 and Corridors 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 two differing assumptions: funding for proposed projects at the *base* rate and funding at the *enhanced* rate represented by this Transportation Action Plan. The assessment also recognizes the differences in two basic geographic areas: older neighborhoods *inside Route 4* and newer suburban and edge growth areas *outside Route 4.*

Each component is given a "grade" of A to F, and a summary "report card" for future conditions is at the end of the chapter.

5.1 Centers and Corridors Implementation

Background: Centers and Corridors in 2030

The Centers and Corridors strategy calls for directing most of Charlotte's growth—and the most intense development—to those areas that have the most extensive transportation infrastructure system.

The success of the TAP hinges directly on meeting our Centers and Corridors land use targets. The targets are spelled out in TAP Policies 1.1.2. and 1.1.3 (page 3-3). They call for 40% of new households, 70% of new multi-family units, and 75% of new office development to be located within "centers" and "corridors."

To successfully implement the Centers and Corridors strategy, the City will ensure that 70% of all new multi-family households will be located in centers and corridors

The Centers and Corridors strategy is now being refined and expanded. More specific guidance for development within the areas designated as Centers, Corridors and Wedges (see *page 4-4* for a description of the areas) is being developed. Boundaries for each of the three types of areas are also being identified. The updated Centers and Corridors strategy will serve as an overarching policy framework for a range of development-related policies and implementation activities, including transportation capital improvements.

The following programs and funding through 2030 are especially important in meeting the Centers and Corridors goals:

- Pedestrian Connectivity Program ($30M)
- Sidewalk Construction Program ($356M)
- Bicycle Program ($47.5M)
- Area Plan Capital Improvement Program ($25M)
- Center City Implementation Program ($52M)
- Future Transit Station Area Infrastructure Program ($170M)
- Livable Centers Program ($45M)
- Streetscape/Pedscape Program ($75M)

How is Charlotte doing in 2030 under the "base" funding scenario?

The TAP assumes that growth targets in Policies 1.1.2 and 1.1.3 will be met. Under the "base" funding scenario, many of the public sector transportation improvements needed to support the Centers and Corridors strategy will *not* be made. While private development will continue to provide some transportation infrastructure in these areas under base funding, it is likely that there will be numerous sidewalk gaps and missed connection opportunities. Under the base funding scenario:

- The pedestrian network will be inconsistent, with many areas still lacking sidewalks, even within areas defined as Centers and Corridors. Areas planned for high intensity development within Centers and Corridors will not have the transportation infrastructure—both street network and pedestrian facilities—needed to support this development.

- It is possible that transit station areas may not reach their economic development potential due to the lack of transportation facilities needed to make these areas attractive for new higher density development.

- The designated Centers may not develop to their full potential as mixed-use pedestrian-friendly districts because they will lack the needed pedestrian facilities.

In general, the Centers and Corridors strategy will not be implemented adequately because of the lack of transportation infrastructure needed to complement the more intense development in Centers and Corridors.

How is Charlotte doing in 2030 under the "enhanced" funding scenario?

Again, the TAP assumes that the growth targets in Policies 1.1.2 and 1.1.3 will be met. Charlotte will be making significant progress in implementing the Centers and Corridors strategy under the "enhanced" funding scenario.

- The transportation infrastructure needed to support higher density development in Centers and 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 in Centers and Corridors where residences and jobs are concentrated.

- The wedges will be characterized by lower density residential development and neighborhood-serving land uses.

Is there a difference inside Route 4 versus outside Route 4 in 2030 under the base funding scenario or the enhanced funding scenario?

There is no difference inside Route 4 versus outside Route 4 with regard to the Centers and Corridors strategy. However, under the enhanced funding scenario, there is a much more extensive multi-modal transportation system in Centers, Corridors and Wedges than under the base funding scenario in 2030.

How would you grade Charlotte in 2030 on implementing the Centers and Corridors strategy under the base funding scenario versus the enhanced funding scenario?

Under the *base* funding scenario, Charlotte will have a less extensive multi-modal transportation system. Needed enhancements to the existing street network, especially within areas defined as Centers and Corridors will not be made and, as a result, more intense development will not have the infrastructure needed to support it. Improvements for pedestrians and bicyclists will be minimal. Many people will travel almost exclusively by automobile due to the limited pedestrian and bicycle networks.

Centers and Corridors		
	Base Funding	Enhanced Funding
2030 Grade *Inside* Route 4	***D***	***A-***
2030 Grade *Outside* Route 4	***D***	***A-***

Under the base funding scenario, the Centers and Corridors strategy will not be fully implemented. The *enhanced* funding scenario will result in extensive implementation of the Centers and Corridors strategy. Most Centers and Corridors will have a street network that is dense, interconnected and multi-modal. This extensive transportation system will support high intensity development in the Centers and Corridors.

Charlotte's transportation success is directly linked to how well we implement the Centers and Corridor growth management strategy

5.2 Street Maintenance

Background: Street Maintenance in 2030

In 2030, the Charlotte Department of Transportation (CDOT) estimates it will maintain more than 3,100 miles of streets, and 975 signalized intersections over 370 square miles. CDOT analysis shows that a 12-year resurfacing cycle is the optimum resurfacing cycle from a cost-efficiency and pavement degradation standpoint. In the past, prior to 2002, the City resurfaced roadways on a 12-year average.

The following programs and funding through 2030 are necessary to meet the street maintenance goals:

- Bridge Program ($82M)
- Curb and Gutter Maintenance Program ($96M)
- Railroad Grade Improvement Program ($1M)
- Street Resurfacing Program ($235M)
- Sidewalk Maintenance Program ($98M)

How is Charlotte doing in 2030 under the "base" funding scenario?

With "base" funding, Charlotte's resurfacing schedule will continue on a track of approximately 20-25 years. As a result of this inadequate resurfacing schedule between 2005-2030, the "pavement condition index of Charlotte's roadways is expected to decline from 86.6 in 2005 to an estimated 72 in 2030. The decline is due to a resurfacing cycle of 20-25 years rather than the optimum 12-year cycle.

Under base funding, Charlotte will continue to track behind other Southeastern cities in regard to street pavement conditions (see page 4-9) . Deteriorating pavement conditions will directly impact Charlotte drivers through increased maintenance costs. Charlotte drivers currently absorb an additional $218 in extra maintenance costs due to poorly maintained roads (page 4-17). This cost will likely increase under base funding as street pavement conditions worsen due to a continued 20-25 year resurfacing cycle as well as increases in traffic.

Under the base scenario, Charlotte's road conditions will continue to deteriorate

How is Charlotte doing in 2030 under the "enhanced" funding scenario?

Under the "enhanced" funding scenario, Charlotte's resurfacing schedule will return to a 12-year optimum cycle. Charlotte's roads will maintain an excellent pavement condition index rating of 90 or better. Charlotte's roads will compare favorably to other Southeastern cities that maintain their roads at quality levels.

Is there a difference inside Route 4 versus outside Route 4 in 2030 under the base funding scenario or the enhanced funding scenario?

There is no difference inside Route 4 versus outside Route 4 with respect to street maintenance. However, under the enhanced funding scenario, Charlotte's roadways are maintained significantly better than under the base funding scenario in 2030.

How would you grade Charlotte in 2030 on street maintenance under the base funding scenario versus the enhanced funding scenario?

Under the base funding scenario, Charlotte's roads will deteriorate beyond current conditions and Charlotte will trail behind other southeastern communities regarding street maintenance. Under the enhanced funding scenario, Charlotte will return to a 12-year resurfacing cycle and Charlotte roadways will be highly maintained with a pavement condition index that exceeds 90. CDOT believes Charlotte receives a "D minus" grade under the base funding scenario and an "A" grade under the enhanced funding scenario.

Street Maintenance		
	Base Funding	Enhanced Funding
2030 Grade *Inside* Route 4	***D-***	***A***
2030 Grade *Outside* Route 4	***D-***	***A***

5.3 Connectivity

Background: Connectivity in 2030

Communities across the nation, including Charlotte, are requiring enhanced street connectivity in an effort to make their cities more livable, sustainable, walkable and less congested. Charlotte has already implemented a series of requirements to develop in a more connected fashion. These existing requirements will be enhanced through the new Urban Street Design Guidelines to ensure that the City 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 2030.

The following program and funding is necessary to meet our connectivity goals through 2030:

- Street Connectivity Program ($365M)

How is Charlotte doing on connectivity in 2030 under the "base" funding scenario?

In 2005, Charlotte's city-wide connectivity score was 1.25. It was higher in the older, central neighborhoods *inside* Route 4 (1.45) than in the newer, suburban areas *outside* Route 4 (1.19.)

CDOT believes the City needs to increase the City's overall connectivity score to 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 sustainable Charlotte.

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. However, if adequate funding is available, it is possible that the City would participate in connectivity by partnering with developers to implement new roadways and key connections across creeks as new development comes on line.

This would enable the City to proactively implement connectivity opportunities instead of delaying these projects or having these opportunities slip by because the City was not able to fund a fair share of a project. However, with limited funding under the "base" funding scenario, the City will have little ability to retrofit existing disconnected areas or to partner with developers to make connections as development comes on line.

Connectivity will be critical to accommodate Charlotte's growth

This may result in some connection requirements being waived or opportunities missed to establish a street network that would have long-term benefits. Missed opportunities, due to limited funding, will likely compromise the City's ability to meet the 1.35 goal and potentially result in higher levels of congestion than if connectivity programs and projects were funded.

How is Charlotte doing on connectivity in 2030 under the "enhanced" funding scenario?

Under the enhanced funding scenario, Charlotte will be able to implement an estimated 375 street connections and over 30 miles of new connector roads and 100 miles of new City-funded local streets to make key connections. These connections will be coordinated with new connections that are required by new development to create a street network that is much more capable of accommodating Charlotte's transportation needs in 2030.

With enhanced funding, 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.

Is there a difference inside Route 4 versus outside Route 4 in 2030 under the base funding scenario or the enhanced funding scenario?

Yes, there is a dramatic difference between the two scenarios in 2030, with the greatest potential impact primarily outside Route 4. Under both scenarios, inside Route 4 will remain the City's most connected area. The City will strive to protect the existing street network inside Route 4. Under the enhanced funding scenario, the city would be in a position to identify and fund desired connectivity projects outside Route 4 which cannot be done under the base funding scenario.

Under the base funding scenario, the City will have little ability to proactively implement or partner with the development community on connectivity projects in developing areas. This will result in the development community having to absorb these costs or the connection requirements being waived. This will likely result in missed opportunities to advance important road connectivity projects. On the other hand, under the enhanced funding scenario, Charlotte will be able to proactively engage and implement new streets and connections as development is occurring to ensure that there is an adequate and well connected street network in place to accommodate our growth.

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 sustainable community *both* inside and outside Route 4.

How would you grade Charlotte in 2030 on connectivity under the base funding scenario versus the enhanced funding scenario?

With or without enhanced funding, Charlotte will receive high marks for connectivity inside Route 4 in 2030. The City recognizes the benefits of the connected street system

and will closely scrutinize any request that diminishes that street network inside Route 4. However, outside Route 4 under the base funding scenario, the City will rely primarily on stricter connectivity requirements and the development community to implement a more connected street system. While some connectivity enhancements will be made outside Route 4, the base funding scenario will not enable the City to partner on projects and will result in a connected street system that is not as robust as it should be.

Connectivity		
	Base Funding	Enhanced Funding
2030 Grade *Inside* Route 4	***A***	***A+***
2030 Grade *Outside* Route 4	***C-***	***B***

Under enhanced funding, the City will be in a position to directly participate as development comes on line to ensure that the street system is being implemented appropriately. With enhanced funding levels—and USDG block spacing requirements—the staff believes it is possible to re-create a street network outside Route 4, especially in developing areas, that is almost comparable to areas inside Route 4.

5.4 Motorist Travel

Background: Motorist Travel is 2030

Charlotte's population and employment growth—and corresponding motorist travel demand—are expected to increase significantly through 2030. 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 this growth.

As Charlotte's population grows an additional 350,000 persons by 2030, the city's transportation system—particularly its road system—will be challenged to accommodate this growth. Indeed, under current transportation funding and development trends, CDOT transportation modeling suggests that *the percentage of roadways experiencing high levels of congestion will more than double*—from 29% to 64%—between 2005 and 2030.

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 depend and will depend on our transportation system for their travel needs.

Charlotte's limited transportation funding can best be utilized through the Centers and Corridors growth management strategy and enhanced connectivity requirements. To accommodate the increased travel demand and minimize congestion, the City will need

to aggressively 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 2030:

- Bridge Program ($82M)
- Farm to Market Road Improvement Program ($190M)
- Intersection Capacity and Multi-Modal Enhancement Program ($400M)
- Minor Roadway Improvement Program ($75M)
- Pedestrian and Traffic Safety Program ($37.5M)
- Public-Private Participation Program ($67.5M)
- Railroad Safety Improvement Program ($1.1M)
- State Highway Participation Program ($60M)
- Street Connectivity Program ($365M)
- Traffic Control Devices Upgrade Program ($65M)
- Traffic Flow Enhancement Program ($75M)
- Specific Thoroughfare and Street Projects ($753M)

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 2030 with an additional 350,000 residents in Charlotte—will be critical to sustain our growing economy and protect Charlotte's quality of life. A transition to a 2030 development pattern that is mixed-use and based on the Centers and Corridors 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 is Charlotte doing on motorist travel in 2030 under the "base" funding scenario?

Today, the Texas Transportation Institute rates Charlotte as the 24th most congested city in the nation. Where we will fall on the TTI's rating system in 2030 remains to be seen. However, in developing the TAP, CDOT ran the transportation model for 2010, 2020 and 2030 and noted an alarming but not unexpected trend. Under current development patterns and the planned projects in the 2030 LRTP, Charlotte's thoroughfares and collectors

will become *increasingly* congested. As indicted in Figure 5A, below, 29% of Charlotte's thoroughfares and collectors are now operating at a poor level of service (LOS E or F) in the peak hour. CDOT estimates that this will increase to almost 64% by 2030 under the base funding.

In short, under the base funding scenario and continued development patterns, traffic congestion will become significantly worse by 2030. Figure 5A details the percent of thoroughfares and collectors operating at LOS E/F through 2030.

Figure 5A: **Peak Hour Levels of Service (LOS) of Roadways in Charlotte Sphere of Influence**

Peak Hour LOS	2005		2010		2020		2030	
	Miles of Roads	% of Total	Miles of Roads	% of Total	Miles of Roads	% Total	Miles of Roads	% Total
A, B, C	457.65	38.85%	432.49	35.55%	298.81	23.63%	167.21	12.97%
D	374.96	31.83%	372.09	30.58%	375.14	29.67%	300.75	23.32%
E, F	345.24	29.31%	412.11	33.87%	590.60	46.70%	821.73	63.72%
Total	1177.85	100.00%	1216.69	100.00%	1264.55	100.00%	1289.69	100.00%

Notes

- Roadways include Freeways, Expresways, 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.
- For 2010, 2020 and 2030 the capacities assume that roadway improvements are implemented consistent with MUMPO's 2030 Long Range Transportation Plan.

Source: Charlotte Department of Transportation DOT

A map of Charlotte thoroughfares that are anticipated to be operating at the poor peak hour levels in 2030 is shown in *Appendix B-2.* This map depicts which thoroughfares would be operating at the LOS E-F in the peak hour in 2030 under the base scenario. Under that scenario, Charlotte will build 300 fewer lane miles of streets than with the enhanced funding scenario, and all modes of travel will be negatively impacted.

How is Charlotte doing in 2030 under the "enhanced" funding scenario?

Under the enhanced funding scenario, CDOT believes the motorist level of service can be maintained or improved over today's rates. *Appendix A, Figure 4* lists the specific thoroughfare and street projects that will be locally funded in the TAP. By funding new roads, making road widenings, enhancing connectivity and implementing multi-modal

enhancements, CDOT estimates that we can *reduce congestion* from the base condition in 2030 by 21% inside Route 4 and 20% outside Route 4. This would be a dramatic improvement both inside and outside Route 4.

Is there a difference inside Route 4 versus outside Route 4 in 2030?

Yes, there is a dramatic difference in the levels of mobility—particularly during peak hours—depending on where you are in the City and under which funding scenario is implemented.

- Under the base funding scenario, 46% of roadways will be highly congested inside Route 4 and 62% will be highly congested outside Route 4 during an AM or PM peak hour.
- Under the enhanced funding scenario, 25% of roadways will be highly congested inside Route 4 and 42% will be highly congested outside Route 4 during an AM or PM peak hour.

In both funding scenarios, motorists traveling inside Route 4 experience significantly less congestion and are provided with far more route options than motorists traveling outside Route 4.

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

How would you grade Charlotte in 2030 on accommodating motorist travel?

Motorist travel in 2030 will be affected significantly by the choices that are made today. If Charlotte continues under its current development trend, with minimal connectivity and limited transportation funding, the quality of motorist travel will deteriorate significantly. However, if Charlotte adheres to the TAP policy recommendations and an appropriate level of transportation funding is provided, motorist travel conditions will be greatly enhanced over the base conditions.

The transportation approach that was sufficient over the last several decades will not be able to keep pace with our projected growth. As described in Chapter 4, Charlotte has

tried to keep pace with travel demand through an active transportation bond program that funded a number of important projects. This approach generally worked as many roads were converted from two lanes to four lanes, and intersections were widened. This approach helped minimize Charlotte's congestion, but congestion today is increasing.

The past approach is no longer viable because many thoroughfares and signalized intersections already are at their maximum feasible width. To accommodate Charlotte's future growth, CDOT envisions using the thoroughfare system more efficiently, combined with selective widen-ings, creating new streets, multi-modal improvements and a development pattern that results in a more connected street network to accommodate future growth.

Under the base funding scenario, CDOT would give the City a 2030 grade of "B" inside Route 4 and a "D" outside Route 4. Under the enhanced funding scenario, CDOT would give the City a 2030 grade of "A" inside Route 4 and a "B" outside Route 4.

Motorist Travel

	Base Funding	Enhanced Funding
2030 Grade *Inside* Route 4	***B***	***A***
2030 Grade *Outside* Route 4	***D***	***B***

5.5 Traffic Operations and Safety

Background: Traffic Operations in 2030

CDOT estimates that in 2030 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 2030:

- Bridge Program ($82M)
- Intersection Capacity and Multi-Modal Enhancement Program ($400M)
- Minor Roadway Improvement Program ($75M)
- Pedestrian and Traffic Safety Program ($37.5M)
- Railroad Safety Improvement Program ($1.1M)
- Railroad Grade Crossing Improvement Program ($1.05M)
- Traffic Control Devices Upgrade Program ($70.6M)
- Traffic Flow Enhancement Program ($75M)
- Specific Thoroughfare and Street Projects ($753M)

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.

- 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 is Charlotte doing on traffic operations in 2030 under the "base" funding scenario?

The basic operational needs of the transportation system will continue to be met in 2030 under both the base and enhanced funding scenarios. These basic needs include signal maintenance, sign and pavement marking installation and maintenance, and signal timing. However, the scale and extent of operational improvements to address key safety and mobility concerns will *not* be adequately addressed through the base funding scenario. There are several specific concerns:

- *Aging Drivers:* The number of drivers aged 65 and older will increase from 36 million in 2005 to more than 50 million in 2020, according to Federal Highway Administration estimates. The aging of America's population will require transportation officials to adjust standards and practices to adequately address the needs of older drivers. Such changes will include larger and brighter signs, roadway geometry changes, revised pedestrian facilities, and signal timing adjustments. Under the base funding scenario, the ability of Traffic Operations to meet the needs of this user group will be limited.

Charlotte will need to do a better job accommodating our growing "senior" population

- *Visually Impaired Residents:* Under the base funding scenario, the City will be able to implement accessible pedestrian signal (APS) devices at only a minimal number of signalized intersections. Under the enhanced funding level, however, the City could install 15 APS devices each year, or a total of 375 additional signalized intersections by 2030.

- *Hazardous locations:* The City will also be limited in its ability to identify and treat transportation network locations that are identified as hazardous to system users. As alternative modes of transportation gain acceptance during the coming years, the ability to quickly correct or mitigate hazardous conditions will continue to be a significant need. Locations that have been suitable for only one mode of transportation may need safety improvements to ensure the appropriate levels of service for all users.

- *Bridge replacement:* Currently, and under the base funding scenario, the City does not have a program in place for the replacement of obsolete bridges. The existing City program only provides for the ongoing maintenance and inspection of bridges. For bridge replacement, the City must rely on NCDOT to provide the funding for these projects. The State bridge program only funds the replacement of existing structures and provides limited means for bridge relocations or retrofits. The City, on the other hand, might want a bridge reconstructed in a different location or provide for the more timely replacement of an obsolete structure as part of redevelopment or in the interest of connectivity,

- *Signalization:* While the City will be able to continue to provide maintenance services to the estimated 975 signals under the base funding scenario, it will not be able to adequately meet the needs of the projected population growth *and* maintain reasonable levels of service. CDOT will likely be able to maintain levels of service within Route 4 with minor capital investment, given the interconnected street network. However, the impact of population growth in areas outside Route 4—with the lack of an interconnected street network—will result in significant problems related to signal timing and the ability for the transportation system to accommodate other modes of travel. The alternative is to provide the means to develop a responsive transportation system through the use of ITS technology and interconnected signal systems. This *cannot* be accomplished under the base funding scenario.

How is Charlotte in 2030 under the "enhanced" funding scenario?

Under the enhanced 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, as recognized in the National Signal Report Card (see page 4-19).

- 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 2030 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; enhanced 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 only 25 intersections with APS devices; under the enhanced funding scenario that number could increase to 400 by 2030.

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

With enhanced funding, the City will be able to meet 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. That funding level will be able to fully support a balanced transportation network and maintain an acceptable level of service system-wide.

Is there a difference inside Route 4 versus outside Route 4 in 2030 under the base funding scenario or the enhanced funding scenario?

Yes. Inside Route 4, with its interconnected street network, levels of service can be maintained under the base funding scenario. However, outside Route 4 the ability of the transportation network to adapt to increases in volume is largely dependant on the ability to implement ITS solutions and integrate signal operations through coordinated signal systems and other improvements. This divide will continue to increase over time leading

to significant impacts for users of all modes throughout the entire transportation system, particularly those outside Route 4. The enhanced funding level will ensure that a consistent transportation network is provided to all system users.

How would you grade Charlotte in 2030 on traffic operations under the base funding scenario versus the enhanced funding scenario?

Charlotte's traffic operations and transportation efficiency will be significantly improved under the enhanced funding scenario. These increased efficiencies are a key component to better accommodating our projected growth and increased travel demand.

Connectivity		
	Base Funding	Enhanced Funding
2030 Grade *Inside* Route 4	***C***	***A***
2030 Grade *Outside* Route 4	***D***	***A***

5.6 Travel by Transit

Background: Transit Travel in 2030

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 2025 Corridor System Plan call for the implementation of five rapid transit lines located in the North, Northeast, South, Southeast, and West corridors. Along with the rapid transit investments, CATS will also place into service a streetcar line connecting two historically transit-oriented corridors. The streetcar service will operate from 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 line 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 and Corridors Plan.

In planning the corridor investments, CATS recognized the importance of developing connections between bus and rail services, improving bus to bus connections, simplifying the overall public transportation route network structure, and providing connections between activity centers. In response, CATS is developing bus-rail integration plans that 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 afford connections between public transportation modes. A well developed bus-rail integration network will link customers between the corridors and wedges, providing connections between rapid transit stations, community transit centers, traditional fixed route bus service, neighborhood/community circulators, and major activity centers.

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 4-20 to 4-26) that will assess the agency's progress in supporting the Centers and Corridors Plan. 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 sprawl scenario. The slowing VMT trend will indicate progress toward the region's goal to meet federal air quality standards.

How is Charlotte doing on transit in 2030 under the "base" funding scenario?

Under the base funding scenario CATS expects to reach its goal of completing the 2025 Corridor System Plan. With the implementation of the rapid transit corridors and enhancements to the existing bus network, CATS will dramatically increase the amount of transit service provided in the region. As CATS restructures the network design, the agency will progress from a small radial system to a larger regional network.

- Advancements will be made to improve passenger amenities for customers.
- Increases in service delivery will warrant new bus stop signs, shelters, benches, community transit centers, park and rides, and rapid transit stations.
- New satellite community transit center facilities and rapid transit stations will provide decentralized transfer points which will improve local and crosstown connections, and link together bus and rail services.
- In wedge areas, CATS will expand local and express bus service to provide public transportation choices between the corridors.

As a result of the service developed under the base funding scenario, CATS will experience a significant increase in transit service use and an overall expansion of the ridership base.

How is Charlotte doing in 2030 under the "enhanced" funding scenario?

CATS considers the current revenue stream to be sufficient for system operations. Thus, in 2030 under the enhanced funding scenario, CATS does not plan to request additional

local funding for transit. However, CATS will endorse enhanced funding for transportation improvements which support transit-friendly corridors and improvements that will assist the agency to increase regional mobility. CATS encourages the use of enhanced transportation funds that will afford Charlotte with better street connectivity, bike and pedestrian transportation options, and support 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 also assist to improve transit travel time.

Such efficiency improvements increase the competitive advantage for CATS' express and regional express services. Ultimately, enhanced 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.

Is there a difference inside Route 4 versus outside Route 4 in 2030 under the base funding scenario or the enhanced funding scenario?

A difference will still exist between transit service inside Route 4 and outside Route 4 in 2030 under both funding scenarios. 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.

Under the base funding scenario, CATS will be better able to provide transit service to a larger percentage of users within the area inside Route 4 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 formidable street network will allow CATS to attract a greater concentration of travel by transit users than the area outside Route 4.

Under the enhanced funding scenario in 2030, the area inside Route 4 will have the potential to achieve an A+ TAP rating for travel by transit. As stated in Chapter 4, current transit coverage inside Route 4 is more than adequate, with 93.4% of the population living within ¼ mile of a transit stop and 98.1% living within ½ mile of a transit stop.

Enhanced funding for transportation applied inside Route 4 will increase the capability for the city to provide transit-supportive improvements to pedestrian, bike, and vehicular connectivity. In turn, as the number of transit-supportive amenities rises so will the ability of CATS to supply a greater level of transit service. Thus, as CATS provides a greater level of service, the total percentage of the population living within ¼ and ½ mile of a transit stop will increase, enhancing the propensity for travel by transit.

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 base 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. Under the base funding scenario, planned improvements will be made to develop rapid transit services in the designated corridors, and express and regional express services in the wedge areas.

In 2030, under the enhanced funding scenario, improvements in the area outside Route 4 will provide the means for CATS to expand the availability of travel by transit for the choice customer. Enhancements to HOV/HOT dedicated travel lanes reduce commute times for users and VMT in the region. Improved connectivity in the street network will support the development of more comprehensive land use patterns.

Thus, capital investments as a result of enhanced 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.

How would you grade Charlotte in 2030 on accommodating transit users under the base funding scenario versus the enhanced funding scenario?

- *2030 Grade Inside Route 4 for Base Funding:* Grade A
  The well integrated grid system inside Route 4 will provide the street network infrastructure necessary to promote streamlined, efficient transit. The radial routes inside Route 4 will be closer together and will provide formidable service headways as well as the ability to connect easily between transit modes. Sidewalk availability and pedestrian connectivity will be high for the user; however potential improvements

and upgrades to pedestrian and bike infrastructure would boost the propensity for travel by transit.

- *2030 Grade Inside Route 4 for Enhanced Funding:* Grade: A+
  Enhanced funding inside Route 4 will provide improvements and upgrades to transit supportive amenities. Improved connectivity in vehicular, pedestrian, and bike infrastructure will provide CATS the ability to elevate the operational level of service for the customer.

- *2030 Grade Outside Route 4 for Base Funding:* Grade: B-
  As previously discussed, the area outside Route 4 faces the challenge of low density and great distances between land uses. CATS will continue to rely on customers to come to the rapid transit stations or designated park and rides of their own accord. Improvements will be needed to increase the competitive nature of transit in wedge areas between the corridors.

- *2030 Grade Outside Route 4 for Enhanced Funding:* Grade: B
  Under the enhanced funding scenario, CATS will be able to raise its competitive advantage in the choice market for the travel by transit market share outside Route 4. Enhanced funding investments in HOV/HOT dedicated right-of-way travel lanes and use of signal priority technology will increase the competitive position of transit travel through improved convenience and reduced travel times.

Travel by Transit

	Base Funding	Enhanced Funding
2030 Grade *Inside* Route 4	***A***	***A+***
2030 Grade *Outside* Route 4	***B-***	***B***

5.7 Bicyclist Travel

Background: Bicyclist Travel in 2030

With appropriate funding and a commitment to connectivity, Charlotte is poised to make great strides in becoming a bicycle-friendly city by 2030.

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 is now improving in this area and is expected to

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

How is Charlotte doing in 2030 under the "base" funding scenario?

Charlotte will become a more bicycle-friendly city under both the base funding scenario and the enhanced scenario. Under the base funding scenario, Charlotte will continue to add bicycle lanes as roads are widened and as roads are resurfaced. However, there are limitations at the base funding level.

- The base funding scenario will result in City streets being resurfaced less often, which will impact opportunities to restripe roads with bicycle lanes.
- Approximately 300 lane miles of roads will not be widened under base funding which would be widened (with bicycle lanes) under the enhanced funding scenario.
- Charlotte will not be able to embark on building off-road bicycle trails that would supplement the City's on-road bicycle facilities and complement the County's greenways program.
- Under the base funding scenario, it is unlikely that Charlotte will be able to provide the enhanced level of connectivity that is essential to the bicycling community and which would be provided under the enhanced funding levels.

Under the base funding level, staff believes that we will make progress in becoming a bicycle friendly city but we will not be one of the nation's leaders—such as Cary, Chattanooga, Denver, Orlando and Washington, D.C.—who have been formally recognized as "Bicycle-Friendly Communities."

How is Charlotte doing in 2030 under the "enhanced" funding scenario?

Charlotte will become one of the leading bicycle-friendly cities in the nation under the enhanced funding scenario. With enhanced funding, Charlotte will implement over 500 miles of bikeways, including 275 miles of bicycle lanes and 25 miles of off-road trails. In addition, enhanced funding will enable Charlotte to be developed in a more connected fashion which benefits all users, including bicyclists.

The future 2030 network of bicycle facilities (with the base funding in the TAP) is detailed on a map in *Appendix A, Figure 6*. This network will be a significant improvement over current conditions, but there will still be significant gaps and missed connection opportu-

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

nities under the base funding scenario. Under the enhanced funding level, staff believes that Charlotte will have one of the most comprehensive networks of bikeways in the nation by 2030.

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. 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.

Under the enhanced funding scenario, staff expects that conditions outside Route 4 could be dramatically improved by more roads being funded for widening (including bicycle lanes) 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. Without enhanced funding, it is likely that bicycling conditions outside Route 4 will not

change dramatically, other than some roads being widened to include bicycle lanes.
How would you grade Charlotte in 2030 on accommodating bicycle travel?

In 2030, bicycle travel will continue to be much better inside Route 4 versus outside Route 4, especially under the base 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 enhanced funding scenario—Charlotte could become one of the nation's premier bicycle-friendly cities.

Bicycle Travel		
	Base Funding	Enhanced Funding
2030 Grade *Inside* Route 4	***B***	***A***
2030 Grade *Outside* Route 4	***D***	***B***

While the rating for the area outside Route 4 is only a "B" with enhanced funding, it will still demonstrate a remarkable turnaround by the City in creating a bicycle-friendly city in a 25-year period.

5.8 Pedestrian Travel

Background: Pedestrian Travel in 2030

Walkability is critical to the long term success of a community. Walkable communities are more livable communities and promote a better qualify 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 recent years, the City has given greater attention to pedestrian needs. 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 is Charlotte doing in 2030 under the "base" funding scenario?

Under the base funding scenario, staff estimates that the City will be able to construct approximately 212 miles of retrofit sidewalks between 2005 and 2030, compared to 540 miles with the enhanced funding scenario. Under the base funding, it will take the City 109 years to complete sidewalks on both sides of all thoroughfares and an estimated 314 years to have sidewalks on one side of all local and collector streets.

Under base funding, the City will have to maintain sidewalks out of its capital budget and will not be able to implement existing and future pedestrian connection projects, continue a sidewalk maintenance program or develop a safe routes to school program. In addition, the City will not be able to respond to the growing number of requests for mid-block crossing accommodations.

The base level of funding will maintain the status quo approach, but will not enable Charlotte to develop into a premier walkable city. Staff estimates that the base funding will allow for the following:

- 250 miles of new/retrofit sidewalks,
- 25 mid-block crossings,
- 0 ped-bike connections,
- 0 "Safe Routes to Schools" projects,
- Minimal sidewalk maintenance, and
- 0 connectivity mitigation projects.

How is Charlotte doing in 2030 under the "enhanced" funding scenario?

Under the enhanced funding scenario, Charlotte will become a national leader in providing better pedestrian accommodations and sidewalks, and will become a leading city in walkability. Under the enhanced funding scenario, the TAP will accelerate sidewalk construction funding to construct sidewalks on both sides of all thoroughfares within 37

Figure 5B: **Sidewalk Mileage Complete in 2030 with Base Funding and Enhanced Funding**

Street Type	2005 Sidewalk Miles Constructed	2005 Sidewalk Miles Not Complete	2030 Miles Complete with Base Funding	2030 Miles Complete with Enhanced Funding
Thoroughfares	565	466 (both sides)	671	837
Locals/Collectors	974	1,338 (one side only)	1,080	1,244
Total of All Street Types	1,539	1,804	1,751	2,081

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.

years and to construct sidewalks on at least one side of all collector and local streets within 107 years. This is a substantial improvement over the base funding level. In addition, the enhanced funding level will enable the following:

- 580 miles of new/retrofit sidewalks,
- 250 mid-block crossing projects,
- 500 ped-bike connections,
- 50 Safe Routes to Schools projects,
- Allow for sidewalk maintenance on a 120-year cycle, and
- 75 connectivity mitigation projects.

The enhanced funding scenario will result in a comprehensive approach to funding pedestrian facilities, which will dramatically 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.

Is there a difference inside Route 4 versus outside Route 4 in 2030?

Under the base funding scenario, pedestrian travel in 2030 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. 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.

The City will undergo significant development outside Route 4, through 2030. Pedestrian conditions will improve as new dvelopment comes on line and are required to provide sidewalks as part of the development process. Under the enhanced funding senario, the City would be in a position to make pedestrian connections, complete sidewalk gaps and improve mid-block crossing opportunities which would dramatically improve conditions outside Route 4. Under base funding, few of these improvements could be made.

In addition,at the enhanced funding level the City would be constructing or widening 300 additional lane miles of streets by 2030 that will not be widened under the base funding scenario. These widenings will provide an additional 300 miles of sidewalks as part of these projects. Most of these widenings will occur outside Route 4 if they are funded. 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 under the base funding scenario.

How would you grade Charlotte in 2030 on street maintenance under the base funding scenario versus the enhanced funding scenario?

Pedestrian travel will likely be better inside Route 4 than outside Route 4 because there are more sidewalks, excellent connectivity, better planting strips and pedestrians are in close proximity to a wide range of land uses and transit. The grade for inside Route 4 can improve from "B" to "A" by funding the pedestrian programs as called for in this plan so that the City can complete the sidewalk system inside Route 4 in a more timely manner.

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.

Pedestrian Travel

	Base Funding	Enhanced Funding
2030 Grade *Inside* Route 4	***B***	***A***
2030 Grade *Outside* Route 4	***F***	***B***

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 and Corridors strategy provides the framework for making transportation and land use decisions and will best position the City to use its limited transportation dollars wisely.

However, from a transportation standpoint, Charlotte's ability to accommodate the anticipated growth requires *an increased and balanced transportation investment through 2030*. The TAP (*Appendix A, Figure 4:* Locally Funded Transportation Programs and Improvements) recommends a balanced approach to funding new streets, street widenings, safety and operational improvements, connectivity improvements, pedestrian improvements, bicycle improvements and quality of life and livability improvements. *Charlotte's ability to best accommodate its growth will rely on this comprehensive transportation and land use approach.*

The "report card" below summarizes Charlotte's future transportation grades for Inside and Outside Route 4. 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.

Transportation Report Card

FUTURE CONDITIONS (2030)

FUTURE CONDITIONS ASSESSMENT	INSIDE ROUTE 4		OUTSIDE ROUTE 4	
	Base Funding	Enhanced Funding	Base Funding	Enhanced Funding
Centers and Corridors	*D*	*A-*	*D*	*A-*
Street Maintenance	*D-*	*A*	*D-*	*A*
Connectivity	*A*	*A+*	*C-*	*B*
Motorist Travel	*B*	*A*	*D*	*B*
Traffic Operations and Safety	*C-*	*A*	*D*	*A*
Transit Travel	*A*	*A+*	*B-*	*B*
Bicyclist Travel	*B*	*A*	*D*	*B*
Pedestrian Travel	*B*	*A*	*D*	*B*

Base Funding = Without Transportation Action Plan
Enhanced Funding = With Transportation Action Plan

Chapter 6

Financial Element

At present, Charlotte does not have the necessary funding resources to meet its goal of becoming "the premier city in the nation for integrating land use and transportation choices."

Our growing city's transportation needs over the next 25 years exceed our resources. Increases in construction and land costs, environmental safeguards, changing construction practices and an ever-growing backlog of projects add to the cost. This chapter:

- **looks at ways to meet the goal and accommodate the growth** in demand for transportation services;
- **examines expected revenues,** compares these figures with the inventory of transportation needs, determines the funding gap and cites financing techniques under study for closing that gap and implementing the TAP.

6.1 Existing Funding

6.1.1 Roadway

Funding Sources

- Funding for streets and highways within Charlotte comes primarily through the **State Transportation Improvement Program (STIP)**, which incorporates federal and state revenues.

- In addition to STIP funding, 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.

- For a number of years, overall funding levels for projects on the State system in North Carolina have been uncertain. North Carolina uses a **Highway Distribution Formula** (Equity Formula) that dictates how funding is apportioned to each region of the state. However, the funding levels for the urban areas are not guaranteed and can vary from year to year.

- For at least the last ten years, the Charlotte region has received much of its highway funding through the **Urban Loop Fund**. When the Charlotte Outer Loop (I-485) is complete, this funding source will be used by NCDOT to complete other urban loops in North Carolina through the year 2027.

Assumptions

What assumptions can be made about these funding sources and funding levels in the future? The Mecklenburg-Union Metropolitan Planning Organization (MUMPO) *2030 Long Range Transportation Plan* (LRTP) makes certain assumptions regarding changes in some funding sources beyond the current STIP. Beginning in 2011-2013, the LRTP assumes that funding will transition from the State's current Equity Formula to a revised one as indicated in State statutes governing when the formula can be revised.

The revenue projections used to develop the LRTP's financial plan are based on historic trends and basic assumptions about future funding sources. The assumptions used in projecting NCDOT funding include:

1. MUMPO funding in the 2006-12 STIP will remain constant

   Equity Funds = $293 million ($42 million per year)
   Urban Loop Funds = $352 million ($50 million per year)
   Total Funds = $645 million ($92 million per year)

2. The annual transfer of Highway funds to the State's General Fund will end.
3. North Carolina's donor state status regarding the return of federal highway dollars to the State increases from 90.5 cents to 95 cents on the dollar.
4. Urban Loops funds will be made available for retrofitting I-485 and for construction of the Garden Parkway from I-485 across the Catawba River into Gaston County.
5. The Monroe Connector project (STIP #U-3329) will be built as a toll facility.

Revenue Forecasts

The following revenue forecasts are included in the LRTP assumptions:

Horizon Year	**2006-2010**	**2011-2020**	**2021-2030**	**Total**
Loop Funds	$218,677,000	$316,108,000	$96,000,000	$630,785,000
Toll Funds	-0-	$150,000,000	-0-	$150,000,000
Other State	$302,657,000	$1,114,500,000	$1,000,000,000	$2,417,757,000
Local Funds	$121,675,000	$275,000,000	$275,000,000	$671,675,000
Total Available	**$643,009,000**	**$1,855,608,000**	**$1,371,000,000**	**$3,869,617,000**

Note: Revenue forecasts are in 2005 constant dollars.

TAP Revenue Forecasts

The revenue forecasts for the TAP use the same assumptions as the MUMPO LRTP for *federal and state* funding but a lower funding level for the *locally funded* projects. Locally funded projects are primarily funded through the City of Charlotte Capital Investment Plan (CIP).

Transportation projects in the CIP receive their funding through the issuance of general obligation bonds, which are funded through property tax revenues. Since the completion of the LRTP, the revenue projections have been adjusted to reflect a lower level of bonding activity by the City. The assumptions for the local funding will assume funding from

future City bonds at an average of $13.0 million per year, for a total of $325 million for the 25-year plan. A later section of this chapter will detail possible alternative funding sources.

Operation and maintenance of the roadway system is funded by a combination of local funds, state-aid-to-municipalities funds (Powell Bill), and state maintenance funds. In recent years, North Carolina has emphasized maintaining and preserving its existing transportation infrastructure, as indicated in the State's Long-Range Statewide Multi-Modal Transportation Plan.

The Powell Bill funding has two issues that negatively affect Charlotte's ability to maintain the street system. First, the Powell Bill allocation formula uses centerline miles as a factor, not lane miles. Since urban areas such as Charlotte have many four and six-lane roads, the amount of money received for maintenance does not correspond to the true costs for this maintenance. Secondly, the downturn in the economy and its financial impact on state and local governments has impacted the total Powell Bill dollars available for maintenance.

Optimally, streets should be resurfaced on a 12-year cycle in order to prevent more costly reconstruction activities. At current funding levels, the street resurfacing schedule provides for maintenance on a 20- to 25-year schedule. If Powell Bill funding is not increased, the City of Charlotte will have to continue to fund the shortfall, either through the general fund, the Capital Investment Plan (using capital bonding), or other funding sources.

Figure 6A, below, shows the overall status of City financial projections *without any new funding sources* for all transportation programs, other than transit. The projections for revenues are based on 2005 dollars.

Figure 6A: **Transportation Revenues (except Transit)**

	2006-2010	2011-2020	2021-2030	Total
OPERATING REVENUE				
Street Maintenance	$49.9	$99.8	$99.8	$249.5
Powell Bill Funds	$88.3	$176.7	$176.7	$441.7
Total	**$138.2**	**$276.5**	**$2766.5**	**$691.2**
CAPITAL REVENUE				
Federal/State	$521.3	$1,580.6	$1,096.0	$3,197.9
Local	$65.0	$130.0	$130.0	$325.0
Total	**$586.3**	**$1,710.6**	**$1,226.0**	**$3,552.9**

figures in millions of dollars

6.1.2 Transit

Funding for transit services is a combination of federal, state and local sources. In 1998, Mecklenburg County voters approved a one-half cent local sales tax to fund expansion of the transit system and to implement rapid transit improvements in major corridors.

CATS has developed a financial plan for the public transportation system that is consistent with the *2025 Corridor System Plan*. This plan includes capital expenditures and operation/maintenance costs reflecting growth of the current bus service, plus rapid transit service in all five corridors defined in the *2025 Integrated Transit/Land Use Plan for Charlotte-Mecklenburg*.

Operating revenues include passenger fares, service reimbursements, maintenance-of-effort payments, sales tax revenues, and state maintenance assistance. Federal and State grants, along with the annual operating balance, would be used to finance the proposed capital program.

Figure 6B documents the anticipated transit operating revenues and transit capital revenues respectively, by source through 2030. These projections, unlike projections for the roadway program, are based on anticipated revenue growth, inflation and significant federal and state participation (50% federal and 25% state) in rapid transit new starts.

Figure 6B: **Transit Operating and Capital Revenues**

Transit	2006-2010	2011-2020	2021-2030	Total
OPERATING REVENUE				
Passenger Fares	$88.38	$465.98	$788.73	$1,343.10
Service Reimbursements	$6.29	$38.27	$54.27	$98.82
Maintenance of Effort	$93.00	$185.99	$185.99	$464.98
State Maintenance Assistance	$90.08	$344.19	$505.45	$939.72
Half-Cent Sales Tax Revenue	$361.18	$1,124.94	$1,924.83	$3,410.96
Other Revenue	$361.18	$1,124.94	$1,924.83	$219.64
Total Operating Revenue	**$669.50**	**$2,229.35**	**$3,578.38**	**$6,477.22**
CAPITAL REVENUE				
Federal Funds	$472.99	$717.43	$658.99	1,849.41
State Funds	$214.25	$241.55	$132.85	$588.65
Certificates of Participation	$165.72	$100.00	$0.00	$265.72
Total Capital Revenue	**$852.96**	**$1,058.98**	**$791.84**	**$2,703.78**

figures in millions of dollars

6.1.3 Bicycle and Pedestrian

Funding for pedestrian and bicycle facilities is included in the CIty's Capital Investment Plan (CIP) as the Bicycle Program and Sidewalk Construction Program. Historically, these programs are funded from General Obligation bond funding.

Additionally, construction is completed as part of the construction of State highway projects. It is the City's policy to include sidewalks and provisions for bicycles on all road projects where feasible. These amenities are funded as incidental costs to the projects or, if necessary, as locally funded additions to NCDOT projects.

6.2 Projected Expenditures

6.2.1 Roadway

Roadways are funded through a combination of federal, state and local funding. Federal and state funding through the State Transportation Improvement Program (STIP) must be financially constrained. This means that MUMPO cannot plan for projects that cost more than the expected revenues during the proposed planning period.

Therefore, it is assumed for planning purposes of the TAP that there is no "funding gap" for federal and state funded projects during the 2006-2030 planning horizon of MUMPO's 2030 Long Range Transportation Plan. While there are potentially needed projects that cannot be funded during the proposed planning horizon, the projects listed in the existing MUMPO 2030 LRTP are expected to be funded by existing or proposed funding. *The federal and state funded roadway projects are listed in Appendix B5.*

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 B4*). 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 B6 lists the locally funded projects* in prioritized order with a description and estimated cost.

6.2.2 Transit

CATS has developed a financial plan for the public transportation system that is consistent with the CATS 2025 Corridor System Plan and is financially constrained. The savings from operations are placed in a capital reserve that is drawn down as needed to provide the local match for the individual rapid transit capital projects and other system expansions. The major projects identified in the 2025 Corridor System Plan are:

- South Corridor
- North Corridor
- Northeast Corridor
- Southeast Corridor
- West Corridor
- Trade Street / Central Avenue / Beatties Ford Road Streetcar
- Charlotte Gateway Station

Figure 6C documents the anticipated transit operation and capital expenses through 2030. These projections are based on anticipated expenditures and include adjustments for inflation.

Figure 6C: **Transit Operating and Capital Expenses**

Transit Expenses	2006-2010	2011-2020	2021-2030	Total
Operating and Maintenance Expenses	$514.35	$1,912.18	$2,808.05	$5,234.58
Capital Expenditures	$916.81	$1,464.54	$1,100.00	$3,481.35
Total Transit Expenses	**$1,431.16**	**$3,376.72**	**$3,908.05**	**$8,715.93**

figures in millions of dollars

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. *Appendix B-6* summarizes the expected funding for each local transportation program, according to these program categories:

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

MOTORIST CAPACITY AND SAFETY IMPROVEMENTS

6.2.3.1 Bridge Program

This program provides for the timely inspection, repair and replacement of substandard 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.

This program requires a funding level of $82 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 93) on a biennial basis and making repairs to these bridges as needed. It would also fund the replacement of 35 bridges over the same period.

6.2.3.2 Curb and Gutter Maintenance Program

This program provides funding for the maintenance of the City's curbs 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 3 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.

This program requires a funding level of $98.5 million over the 25-year planning period. It is anticipated that this program will fund the replacement of approximately 600 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 $190 million over the 25-year planning period. It is anticipated that this program will fund approximately 65 miles of improved roadways. This would also fund the installation of 375 miles of new curb-and-gutter along existing streets.

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 are not pedestrian- or bicycle-friendly due to a number of factors, such as 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.

This program requires a funding level of $400 million over the 25-year planning period. It is anticipated that this program will fund approximately 100 intersection projects at approximately $4,000,000 each.

6.2.3.5 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.

This program requires a funding level of $75 million over the 25-year planning period. It is anticipated that this program will fund approximately 300 projects at approximately $250,000 each.

6.2.3.6 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.

This program requires a funding level of $37.5 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 opportunities to improve pedestrian and traffic safety.

6.2.3.7 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.

This program requires a funding level of $67.5 million over the 25-year planning period. It is anticipated that this program will fund approximately 375 projects at $175,000 each.

6.2.3.8 Railroad Grade Crossing Impovement Program

This program provides for replacement of railroad crossings by installing modular-type railroad crossing fittings or by providing 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.

This program requires 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.

6.2.3.9 Railroad Safety Improvement 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 identifies 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 ten percent matching funds if the project is on a State system roadway. This program provides funding for the City's ten percent matching funds for roadways that are not maintained by the State.

This program requires 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.

6.2.3.10 Specific Thoroughfare and Street Projects

Based on evaluation criteria, a prioritized list of local roadway needs was developed. This category includes all necessary roadway projects to ensure that Charlotte's roadway system will be efficient over the next 25 years. *Appendix B6* lists the projects in prioritized order with a description and estimated cost.

The total cost of these projects is $760 million over the 25-year planning period.

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% of the cost of constructing the sidewalks. The need for this program is based on 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.

This program requires a funding level of $60 million over the 25-year planning period. It is anticipated that this program will fund $2 million per year to fund these additions to NCDOT projects. The program also includes an additional $10 million to fund street lighting upgrades.

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.

This program requires a funding level of $365 million over the 25-year planning period. It is anticipated that this program will fund approximately 375 street connections, 30 miles of new connector streets and 100 miles of new local streets.

6.2.3.13 Street Resurfacing Program

This program would provide additional dollars to the existing street resurfacing budget. CDOT has attempted 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 has 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.

This program requires a funding level of $255 million over the 25-year period. It is anticipated that this program will fund approximately 4,500 miles of resurfacing, meeting the 12-year maintenance cycle and an average street condition rating of 90.

6.2.3.14 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.

This program requires a funding level of $70.625 million over the 25-year planning period. It is anticipated that this program will fund the replacement of approximately 1,250 signalized intersections, maintain the existing 650 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.

6.2.3.15 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. This results in cost savings and less impact on surrounding properties. 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 Traffic Flow Enhancement Program requires a funding level of $75 million over the 25-year planning period. It is anticipated that this program will fund optimal signal coordination at $35 million, ITS at $15 million and incident management at $25 million.

PEDESTRIAN PATHWAYS

6.2.3.16 Pedestrian Connectivity Proogram

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.

This program requires a funding level of $30 million over the 25-year planning period. It is anticipated that this program will fund approximately 500 bike/pedestrian connections and 250 mid-block crossings.

6.2.3.17 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.

This program requires a funding level of $50 million over the 25-year planning period. It is anticipated that this program will fund approximately 50 school area projects at $1,000,000 each.

6.2.3.18 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.

This program requires a funding level of $356 million over the 25-year planning period. It is anticipated that this program will fund approximately 550 sidewalk miles. This program would also fund sidewalks for approximately 75 connectivity mitigation projects at $300,000 each.

6.2.3.19 Sidewalk Maintenance Program

This program provides funds to maintain the expanding sidewalk network. 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.

This program requires a funding level of $100.5 million over the 25-year planning period. It is anticipated that this program will replace approximately 700 miles of sidewalk at $140,000 per mile.

BICYCLE PATHWAYS

■ 6.2.3.20 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 all sections of the city. Funding will also permit targeting access for cyclists to the growing county greenway network in addition to 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.

This program requires a funding level of $47.5 million over the 25-year planning period. It is anticipated that this program will add approximately 500 miles of bicycle facilities to the City's emerging bicycle network, including 275 miles of new bike lanes, 25 miles of off-road trails, 200 miles of new signed routes and bicycle parking.

CENTERS, CORRIDORS AND LIVABLE NEIGHBORHOODS

■ 6.2.3.21 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 (CMAQ). 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.

This program requires a funding level of $50 million over the 25-year planning period. It is anticipated that this program will fund approximately 25 projects at approximately $2,000,000 each.

6.2.3.22 Area Plan Capital Project Program

The transportation component of this program provides funding to implement transportation improvements or studies specified in adopted Area Plans. In recent years, CDOT staff has become more involved in the Charlotte-Mecklenburg Planning Commission 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 CDOT recommendations for 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 to sustain, stabilize and enhance neighborhoods by providing a more efficient and safer multi-modal transportation system within area plan locations.

This program requires a funding level of $25 million over the 25-year planning period. It is anticipated that this program will fund approximately 50 projects at approximately $500,000 per small area plan.

6.2.3.23 Center City Implementation Program

This program is supported by the Center City Transportation Plan (CCTP), 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 2025 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, vehic-ular and transit systems within Center City. These improvements are defined in the CCTP 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 CCTP along with a priority or phasing program.

This program requires a funding level of $52 million over the 25-year planning period.

6.2.3.24 Centers and Corridors Implementation: Centers Program

This program would fund transportation improvements within Centers, as defined by the Centers and Corridors Strategy. An emphasis would be placed on alternative transportation improvements to make Centers 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 Centers, internal vehicle trips and vehicle miles of travel may be reduced through the provision of alternative transportation facilities and a complementary mixture of land uses.

This program requires a funding level of $45 million over the 25-year planning period. It is anticipated that this program will fund approximately five Regional Center projects and ten Sub-Regional Center projects.

6.2.3.25 Centers and Corridors Implementation: Corridors Program

The transportation component of this program provides for a coordinated station area infrastructure upgrade program for the remaining four transit corridors. Building on the 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.

This program requires a funding level of $170 million over the 25-year planning period. It is anticipated that this program will fund projects at 34 future station areas at $5,000,000 each.

6.2.3.26 Streetscape/Pedscape Program

The transportation component of 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.

This program requires 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.

6.2.3.27 Traffic Calming Program

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

This program requires a funding level of $28 million over the 25-year planning period. It is anticipated that this program will fund approximate 35-40 smaller type projects (such as speed humps) per year and three larger type projects (such as traffic roundabouts) per year.

6.3 Gap Analysis

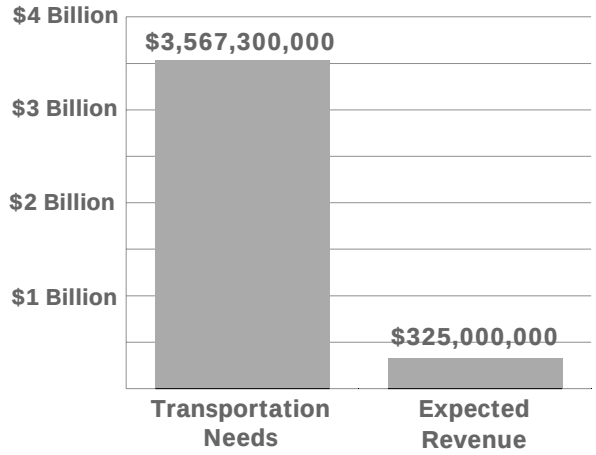
Moving a plan from concept to reality requires money and the commitment to deliver the plan's recommended programs and projects. The City of Charlotte has a growing gap between transportation investment needs and available transportation funding.

For planning purposes of the TAP, it is assumed that there is no "funding gap" for federal and state funded projects during the 2006-2030 planning horizon of the TAP. While it is likely that there are needed federal and state projects that cannot be funded during the proposed planning horizon, the projects listed in the current MUMPO Long Range Transportation Plan are expected to be funded by existing or proposed funding.

Likewise, the revenues for transit are projected to be adequate to meet CATS' capital and operating needs for the current adopted system plan. CATS' *2025 Corridor System Plan* goes into greater detail regarding their financial assumptions, including federal and state participation.

As shown in *Figure 6D*, below, the City's transportation needs ($3.5 billion) far outpace the projected revenues that could be generated from general obligation bonds (estimated at $325 million) over the 25-year plan horizon. If the City desires to close this funding gap and fund the projects and programs called for in the TAP, other transportation funding sources will need to be considered.

Figure 6D: **Transportation Needs and Expected Revenue**



▶ *Transportation programs and projects to be funded by the City of Charlotte for Fiscal Years 2006-2025 total $3,567,300,000. Expected revenues during this same period are $325,000,000, less than one-tenth of the total need. This results in a funding gap of $3,242,300,000.*

6.4 Potential Funding Sources

The previous section summarized the significant funding gap that exists between the City's transportation needs and projected transportation revenues. The City has many existing and projected transportation deficiencies but staff recognizes that it will take time to further consider additional transportation funding sources to close the transportation funding gap. Policy 5.1.4 of the TAP Policy Document states:

> *By 2007, the City will conduct research on opportunities to implement alternative transportation funding sources and will compile a report for City Council to consider.*

Local governments throughout the country have employed many varied, and in some cases innovative, techniques to fund transportation improvements. The City Council Budget Committee is currently reviewing alternative revenue options that could be used to address transportation and other infrastructure and funding needs. As of February, 2006, the Budget Committee is researching the following revenue sources:

- Cell Phone Tax*
- Emissions Fee*
- Impact Fees*
- Land Transfer Tax*
- Occupancy Tax*
- Parking Fee*
- Payroll Tax*
- Property Tax
- Rental Car Tax*
- Sales Tax on Services*
- Solid Waste Collection Fee
- Street Degradation Fee
- Toll Roads*

** indicates that this revenue source would require State Legislature approval*

The Transportation Action Plan's Policy 5.1.4 is a critical step in closing the funding gap, implementing the TAP and helping to ensure that the City of Charlotte becomes one of the premier cities in the country for integrating land use and transportation choices.